

CONSTRUCTION & DEMOLITION WASTE MANAGEMENT PLAN
FOR DEVELOPMENT
AT
ST. EDMUNDS,
ST LOMANS ROAD,
PALMERSTOWN,
DUBLIN 20



Prepared for

Moykerr Limited

Prepared by

Traynor Environmental Ltd

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This report refers, within the limitations stated, to the condition of the site at the time of the report. No warranty is given as to the possibility of future changes in the condition of the site. The report as presented is based on the information sources as detailed in this report, and hence maybe subject to review in the future if more information is obtained or scientific understanding changes.

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1.0 INTRODUCTION

Traynor Environmental Ltd has prepared this Construction & Demolition Waste Management Plan (C&DWMP) on behalf of Moykerr Limited. The development is an amendment to the development currently being undertaken on site, previously granted SHD proposal ABP 305857-19. It consists of the construction 4 no apartment blocks ranging height from 2-9 storeys comprising 313 no. residential units, a creche and amenity space. This will provide an increase of 61 no. additional apartments. All the residential units will have associated private open space/ balconies/ terraces facing north/ south/ east/ west. The development will include 214 no. car parking spaces, 5 motorcycle parking spaces and 378 no. bike parking spaces. The site is accessed through the existing vehicular access to the west, off the unnamed road to the west. There will be a number of pedestrian entrances along St. Loman's Road, the Fonthill Road (R113) and the unnamed road to the west. The upgrading and re-landscaping of 4,400sq.m of land to the east of the site in the ownership of South Dublin County Council. In addition to all of the new facilities all other site services and works to enable the development of the site will also be provided including site, bin stores, ESB substations, associated roadworks and services connections, a large quantity of public and communal open space, boundary treatment works and landscaping. A full development description is included in the statutory notices.

The purpose of this plan is to provide information necessary to ensure that the management of construction and demolition (C&D) waste at the site is undertaken in accordance with current legal and industry standards including the Waste Management Acts 1996 - 2011 and associated Regulations, Protection of the Environment Act 2003 as amended, Litter Pollution Act 1997 and the Eastern-Midlands Region Waste Management Plan 2015 – 2021. In particular, this Plan aims to ensure maximum recycling, reuse and recovery of waste with diversion from landfill, wherever possible. It also seeks to provide guidance on the appropriate collection and transport of waste from the site to prevent issues associated with litter or more serious environmental pollution (e.g. contamination of soil and/or water).

This C&DWMP includes information on the legal and policy framework for C&D waste management in Ireland, estimates of the type and quantity of C&D waste to be generated by the proposed development and makes recommendations for management of different waste streams.

2.0 CONSTRUCTION & DEMOLITION WASTE MANAGEMENT IN IRELAND

2.1 European & National Level

The project will follow the “EU Construction and Demolition Waste Management Protocol 2016”. A construction and Demolition (C&D) waste is the largest waste stream in the EU – it represents about third of all waste produced. This Protocol fits within the construction 2020 strategy, as well as the communication on resource efficiency opportunities.

The overall aim of this protocol is to increase confidence in the C&D waste management process and the trust in the quality of C&D recycled materials. This will be achieved by:

- Improved waste identification, source separation and collection.
- Improved waste logistics.
- Improved waste processing.
- Quality management.
- Appropriate policy and framework conditions.

One of the guiding principles of European waste legislation, which has in turn been incorporated into the Waste Management Act 1996 as amended and subsequent Irish legislation, is the principle of "duty of care". This implies that the waste producer is responsible for waste from the time it is generated through until legal disposal (including its method of disposal.) Following on from this is the concept of “polluter pays” whereby the waste producer is liable to be prosecuted for pollution incidents, which may arise from incorrect management of waste produced, including the actions of any contractors engaged (e.g.: for collection and transport of waste / Permits). The most recent national policy document was published in July 2012, entitled ‘*A Resource Opportunity - Waste Management Policy in Ireland*’. This document stresses the environmental and economic benefits of better waste management, particularly in relation to waste prevention. The document sets out several actions in relation to C&D waste and commits to undertake a review of specific producer responsibility requirements for C&D projects over a certain threshold.

2.2 National Level

The Irish Government issued a policy statement in September 1998 known as '*Changing Our Ways*', which identified objectives for the prevention, minimisation, reuse, recycling, recovery and disposal of waste in Ireland. The target for C&D waste in this report was to recycle at least 50% of C&D waste within a five-year period (by 2003), with a progressive increase to at least 85% over fifteen years (i.e. 2013).

In response to the *Changing Our Ways* report, a task force (Task Force B4) representing the waste sector of the already established Forum for the Construction Industry, released a report entitled '*Recycling of Construction and Demolition Waste*' concerning the development and implementation of a voluntary construction industry programme to meet the Government's objectives for the recovery of C&D waste.

The most recent national policy document was published in July 2012, entitled '*A Resource Opportunity - Waste Management Policy in Ireland*'. This document stresses the environmental and economic benefits of better waste management, particularly in relation to waste prevention. The document sets out a number of actions in relation to C&D waste and commits to undertake a review of specific producer responsibility requirements for C&D projects over a certain threshold.

The National Construction and Demolition Waste Council (NCDWC) was launched in June 2002, as one of the recommendations of the forum for the construction industry, in the Task Force B4 final report. The NCDWC subsequently produced '*Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects*' in July 2006 in conjunction with the then Department of the Environment, Heritage and Local Government (DoEHLG). The guidelines outline the issues that need to be addressed at the pre-planning stage of a development all the way through to its completion. These guidelines have been followed in the preparation of this document and include the following elements:

- Predicted C&D wastes and procedures to prevent, minimise, recycle and reuse wastes;
- Waste disposal/recycling of C&D wastes at the site;
- Provision of training for waste manager and site crew;
- Details of proposed record keeping system;
- Details of waste audit procedures and plan; and
- Details of consultation with relevant bodies.

Section 3 of the Guidelines identifies thresholds above which there is a requirement for the preparation of a C&D Waste Management Plan for developments. This development requires a C&DWMP under the following criterion:

- New residential development of 10 houses or more; and
- Demolition/renovation/refurbishment projects generating in excess of 100m³ in volume, of waste.

Other guidelines followed in the preparation of this report include ‘*Construction and Demolition Waste Management – a handbook for Contractors and Site Managers*’ published by FÁS and the Construction Industry Federation in 2002.

These guidance documents are considered to define best practice for C&D projects in Ireland and describe how C&D projects are to be undertaken such that environmental impacts and risks are minimised and maximum levels of waste recycling are achieved.

2.3 Regional Level

The proposed development is located in the Local Authority area of South Dublin County Council (SDCC).

The *Eastern-Midlands Region Waste Management Plan 2015 – 2021* is the regional waste management plan for the SDCC area published in May 2015. This Plan replaces the previous Waste Management Plan due to changing National policy as set out in *A Resource Opportunity: Waste Management Policy in Ireland* and changes being enacted by the *Waste Framework Directive (WFD) (2008/98/EC)*. The Regional Plan sets out the strategic targets for waste management in the region but does not set a specific target for C&D waste. However, the *Waste Framework Directive* sets Member States a target of “70% preparing for reuse, recycling and other recovery of construction and demolition waste” (excluding natural soils and stones and hazardous wastes) to be achieved by 2020.

The South Dublin County Council *County Development Plan 2016 – 2022* sets out a number of policies for the South Dublin County area, in line with the objectives of the regional waste management plan. Waste objectives with a particular relevance to the proposed development are:

Policies:

- **EI5 Objective 1** - To support the implementation of the Eastern–Midlands Region Waste Management Plan 2015-2021 by adhering to overarching performance targets, policies and policy actions.
- **EI5 Objective 2** - To support waste prevention through behavioural change activities to de-couple economic growth and resource use.
- **EI5 Objective 3** - To encourage the transition from a waste management economy to a green circular economy to enhance employment and increase the value recovery and recirculation of resources.
- **EI5 Objective 4** - To provide, promote and facilitate high quality sustainable waste recovery and disposal infrastructure/ technology in keeping with the EU waste hierarchy and to adequately cater for a growing residential population and business sector.
- **EI5 Objective 5** - To provide for and maintain the network of bring infrastructure (e.g. civic amenity facilities, bring banks) in the County to facilitate the recycling and recovery of hazardous and non-hazardous municipal wastes.

- **E15 Objective 6** - To seek the provision of adequately sized public recycling facilities in association with new commercial developments and in tandem with significant change of use/extensions of existing commercial developments where appropriate.
- **E15 Objective 7** - To develop a countywide network of green waste centres in suitable locations to expand the collection system for compostable waste.
- **E15 Objective 8** - To secure appropriate provision for the sustainable management of waste within developments, including the provision of facilities for the storage, separation and collection of such waste.

Construction and Demolition Waste Construction and demolition waste management plans should be submitted as part of development proposals for projects in excess of any of the following thresholds:

- New residential development of 10 units or more,
- New developments other than above, including institutional, educational, health and other public facilities, with an aggregate floor area in excess of 1,000 sq metres,
- Demolition/renovation/refurbishment projects generating in excess of 100 cubic metres in volume of construction and demolition waste, and Civil engineering projects in excess of 500 cubic metres of waste materials used for development works on the site.

A Construction and Demolition Waste Management Plan, as a minimum, should include provision for the management of all construction and demolition waste arising on site, and make provision for the re-use of said material and/or the recovery or disposal of this waste to authorised facilities by authorised collectors. Where appropriate, excavated material from development sites should be reused on the subject site.

2.4 Objectives

The objectives of the CDWMP are as follows:

- Promote an integrated approach to waste management throughout the project construction stage and to set out appropriate responsibilities;
- Promote sustainable waste management in line with waste management hierarchy;
- Provide an outline for the management of wastes arising from construction works for the project in accordance with the relevant Irish and EU waste management legislation; and
- Provide a framework for the designers and the Principal Contractor to appropriately manage waste generated during the course of the project. Both the designers and the Principal Contractor will be responsible for implementing the findings and recommendations of the CDWMP in their Site Waste Management Plan (SWMP).

The CDWMP outlines methods to achieve waste prevention, maximum recycling and recovery of waste and provides recommendations for the management of the various anticipated waste streams. The plan also provides guidance on

collection and transport of waste to prevent issues associated with litter or more serious environmental pollution (e.g. contamination of soil or water resources). The CDWMP describes the applicable legal and policy framework for C&D waste management in Ireland (both nationally and regionally).

2.5 Legislative Requirements

The primary legislative instruments that govern waste management in Ireland and applicable to the project are:

- Waste Management Act 1996 (No. 10 of 1996) as amended. Sub-ordinate legislation includes:
 - European Communities (Waste Directive) Regulations 2011 (SI 126 of 2011) as amended
 - Waste Management (Collection Permit) Regulations (S.I No. 820 of 2007) as amended
 - Waste Management (Facility Permit and Registration) Regulations 2007, (S.I No. 821 of 2007) as amended
 - Waste Management (Licensing) Regulations 2004 (S.I. No. 395 of 2004) as amended
 - Waste Management (Packaging) Regulations 2014 (S.I. 282 of 2014) as amended
 - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997)
 - Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015)
 - European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
 - European Union (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended
 - Waste Management (Food Waste) Regulations 2009 (S.I. 508 of 2009), as amended
 - European Union (Household Food Waste and Bio-waste) Regulation 2015 (S.I. No. 191 of 2015)
 - Waste Management (Hazardous Waste) Regulations, 1998 (S.I. No. 163 of 1998) as amended
 - Waste Management (Shipments of Waste) Regulations, 2007 (S.I. No. 419 of 2007) as amended
 - Waste Management (Movement of Hazardous Waste) Regulations, 1998 (S.I. No. 147 of 1998)
 - European Communities (Transfrontier Shipment of Waste) Regulations 1994 (SI 121 of 1994)
 - European Union (Properties of Waste which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015)
- Environmental Protection Act 1992 (No. 7 of 1992) as amended.
- Litter Pollution Act 1997 (No. 12 of 1997) as amended.
- Planning and Development Act 2000 (No. 30 of 2000) as amended.

One of the guiding principles of European waste legislation, which has in turn been incorporated into the *Waste Management Act 1996 - 2001* and subsequent Irish legislation, is the principle of “*Duty of Care*”. This implies that the waste producer is responsible for waste from the time it is generated through until its legal recycling, recovery or disposal (including its method of disposal). As it is not practical in most cases for the waste producer to physically transfer all waste from where it is produced to the final destination, waste contractors will be employed to physically transport waste to the final destination. Following on from this is the concept of “*Polluter Pays*” whereby the waste producer is liable to be prosecuted for pollution incidents, which may arise from the incorrect management of waste

produced, including the actions of any contractors engaged e.g. for transportation and disposal/recovery/recycling of waste.

It is therefore imperative that the client ensures that the waste contractors engaged by construction contractors are legally compliant with respect to waste transportation, recycling, recovery and disposal. This includes the requirement that a contractor handle, transport and recycle/recover/dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of any of these activities.

A collection permit to transport waste must be held by each waste contractor which is issued by the National Waste Collection Permit Office (NWCPO). Waste receiving facilities must also be appropriately permitted or licensed. Operators of such facilities cannot receive any waste, unless in possession of a Certificate of Registration (COR) or Waste Facility Permit granted by the relevant Local Authority under the *Waste Management (Facility Permit & Registration) Regulations 2007 and Amendments* or a waste or IED licence granted by the EPA. The COR/permit/licence held will specify the type and quantity of waste able to be received, stored, sorted, recycled, recovered and/or disposed of at the specified site.

3.0 DESCRIPTION OF THE PROJECT

3.1 Location, Size and Scale of the Development

The development is an amendment to the development currently being undertaken on site, previously granted SHD proposal ABP 305857-19. It consists of the construction 4 no apartment blocks ranging height from 2-9 storeys comprising 313 no. residential units, a creche and amenity space. This will provide an increase of 61 no. additional apartments. All the residential units will have associated private open space/ balconies/ terraces facing north/ south/ east/ west. The development will include 214 no. car parking spaces, 5 motorcycle parking spaces and 378 no. bike parking spaces. The site is accessed through the existing vehicular access to the west, off the unnamed road to the west. There will be a number of pedestrian entrances along St. Loman's Road, the Fonthill Road (R113) and the unnamed road to the west. The upgrading and re-landscaping of 4,400sq.m of land to the east of the site in the ownership of South Dublin County Council. In addition to all of the new facilities all other site services and works to enable the development of the site will also be provided including site, bin stores, ESB substations, associated roadworks and services connections, a large quantity of public and communal open space, boundary treatment works and landscaping. A full development description is included in the statutory notices.

3.2 Details of the Non-Hazardous Wastes to be produced

There will be topsoil and subsoil excavated to facilitate demolition of buildings and construction of the new building's foundations, installation of services and site levelling. DBFL have estimated that the total volume of material to be excavated will be approximately 41000m³ of cut of which 80-90% of this will need to be taken off site. Surplus material that requires removal from site and it is deemed to be a waste, removal and reuse/recycling/recovery/disposal of the material will be carried out in accordance with the *Waste Management Act 1996* (as amended), the *Waste Management (Collection Permit) Regulations 2007* (as amended) and the *Waste Management (Facility Permit & Registration) Regulations 2007* (as amended). The volume of waste requiring recovery/disposal will dictate whether a Certificate of Registration (COR), permit or license is required by the receiving facility.

During construction there will be construction waste generated, in addition to demolition waste, there may be a surplus of building materials, such as timber off-cuts, broken concrete blocks, cladding, plastics, metals and tiles generated. There may also be excess concrete during construction and demolition which will need to be disposed of. Plastic and cardboard waste from packaging and oversupply of materials will also be generated. Waste will also be generated from construction and demolition workers e.g. organic/food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided onsite during the construction phase. Waste printer/toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently from site offices.

3.3 Potentially Hazardous Wastes to be Produced

3.3.1 Contaminated Soil

In the event that any potentially contaminated material is encountered, it will need to be segregated from clean/inert material, tested and classified as either non-hazardous or hazardous in accordance with the EPA publication entitled '*Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous*' using the *HazWasteOnline* application (or similar approved classification method). The material will then need to be classified as clean, inert, non-hazardous or hazardous in accordance with the *EC Council Decision 2003/33/EC*, which establishes the criteria for the acceptance of waste at landfills.

3.3.2 Fuel/Oils

As fuels and oils are classed as hazardous materials, any on-site storage of fuel/oil, all storage tanks and all draw-off points will be bunded (or stored in double-skinned tanks) and located in a dedicated, secure area of the site. Provided that these requirements are adhered to and site crew are trained in the appropriate refuelling techniques, it is not expected that there will be any fuel/oil wastage at the site.

3.3.3 Other known Hazardous Substances

Paints, glues, adhesives and other known hazardous substances will be stored in designated areas. They will generally be present in small volumes only and associated waste volumes generated will be kept to a minimum. Wastes will be stored in appropriate receptacles pending collection by an authorised waste contractor. In addition, WEEE (containing hazardous components), printer toner/cartridges, batteries (Lead, Ni-Cd or Mercury) and/or fluorescent tubes and other mercury containing waste may be generated during C&D activities. These wastes (if encountered) will be stored in appropriate receptacles in designated areas of the site pending collection by an authorised waste contractor.

3.4 Main C&D Waste Categories

The main non-hazardous and hazardous waste streams that will be generated by the construction and demolition activities at the site are shown in Table 3.1. The List of Waste (LoW) code (as effected from 1 June 2015) (also referred to as the European Waste Code or EWC) for each waste stream is also shown.

Waste Material	LoW Code
Concrete	17 01 01
Bricks	17 01 02
Tiles and ceramics	17 01 03
Wood	17 02 01-03
Glass	17 02 02
Plastic	17 02 03
Bituminous mixtures, coal tar and tarred products	17 03 02
Copper, Bronze, Brass	17 04 01
Aluminium	17 04 02
Lead	17 04 03
zinc	17 04 04
Iron & steel	17 04 05
tin	17 04 06
Mixed metals	17 04 07
Soil and Stones	17 05 04
Gypsum-based construction material	17 08 02
Mixed C&D waste	17 09 04
Biodegradable waste	20 02 01
Mixed municipal waste	20 03 01

Table 3.1 Typical waste types generated and EWCs.

4.0 WASTE MANAGEMENT

4.1 Demolition Waste Generation

The site at present is partially a greenfield / brownfield site. The proposed development is located at St Edmunds, St Lomans Road, Palmerstown, Dublin 20. No demolition works at the site will be required.

4.2 Construction Waste Generation

Table 4.1 shows the breakdown of C&D waste types produced on a typical site based on data from the EPA *National Waste Reports*, the *GMIT15* and research reports.

Waste Types	%
Mixed C&D	33
Timber	28
Plasterboard	10
Metals	8
Concrete	6
Other	15
Total	100

Table 4.1 Waste materials generated on a typical Irish construction site

Table 4.2 shows the predicted construction waste generation for the proposed development based on the information available to date along with the targets for management of the waste streams. The predicted waste amounts are based on a waste generation rate per 100m² development floor area, using the waste breakdown rates shown in Table 4.1.

Waste Types	Tonnes	Reuse		Recycle/Recover		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	1507.97	10	150.80	80	1206.37	10	150.80
Timber	1279.49	40	511.80	55	703.72	5	63.97
Plasterboard	456.96	30	137.09	60	274.18	10	45.70
Metals	365.57	5	18.28	90	329.01	5	18.28
Concrete	274.18	30	82.25	65	178.21	5	13.71
Other	685.44	20	137.088	60	411.26	20	137.09
Total	4569.60		1037.30		3102.76		429.54

Table 4.2 Estimated on and off-site reuse, recycle and disposal rates for construction waste generated at the site.

4.3 Soil Management

Project works will result in the excavation of soils as part of the site development. The Principal Contractor will, prepare a project-specific Soil Management Plan, which will detail the following as a minimum:

- Detail in-situ (prior to excavation) and ex-situ (post excavation) methodologies to classify waste soil for appropriate disposal, in accordance with relevant Irish and EU legislation and guidance,
- Identify reuse requirements and soils suitable for reuse on site in consultation with the design team, including assessment methodology to determine which soils are suitable for re-use onsite,
- Site management procedures, including waste minimisation, stockpile management, temporary storage procedures, waste licence requirements,
- Waste Management documentation, including waste generation record keeping, waste transfer notes and confirmation of appropriate disposal.

4.3.1 Excavated Soil & Materials

A Soil Waste Classification will be produced ahead of works. The SWMP to be developed by the Principal Contractor will detail relevant procedures, including further environmental sampling, testing and assessment requirements, sampling protocols and sample density targets. Where any hotspots of potential contamination are encountered, and prior to excavation, further assessment will be undertaken by a suitably qualified environmental scientist to determine the nature and extent of remediation required.

4.3.2 Soil for Reuse on Site

Where the Principal Contractor proposes to reuse excavated soil within the works e.g. as backfill, and where reuse is permitted in accordance with the relevant legislation and provided that the reuse meets the engineering requirements for material used within the works, the Principal Contractor shall set out their proposal for its management, documentation and reuse. This shall include:

- Delineation of areas where excavated soil is intended for disposal off-site as waste, and where it is intended for re-use on site;
- Identification and recording of the location from where the soil will be excavated and its proposed re-use location and function;
- Engineering assessment to confirm its suitability for re-use;
- Any proposed treatment or processing required enabling its reuse, as well as any associated treatment permits or licences; and

- Determination of by-product or end-of-waste status with the EPA under Article 27 or Article 28, where applicable (not anticipated).

4.3.3 Soil for Removal Off-Site

Where appropriate, excavated soil and material intended for recovery or disposal off-site shall require Waste Assessment Criteria (WAC) testing and subsequent waste classification in order to select an appropriate receiving facility for the waste. It is noted that natural soil showing no visual or olfactory signs of impact may, in certain circumstances, be classified without testing, once this has been agreed with the waste receiving facility.

Assessment of the excavated material shall be carried out with regard to the following guidance and legislation:

- EU Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Directive 1999/31/EC (2002);
- Regulation (EC) No. 1272/2008: the classification, labelling and packaging of substances and mixtures (CLP);
- Environmental Protection Agency document entitled Waste Classification; List of waste and determining if waste is Hazardous or Non-Hazardous; and
- UK Environment Agency Technical Guidance WM3: Waste Classification - Guidance on the classification and assessment of waste.

Waste soil and material intended for off-site disposal, recycling or recovery shall not be removed from site prior to appropriate waste classification and receiving written confirmation of acceptance from the selected waste receiving facility.

While waste classification and acceptance at a waste facility is pending, excavated soil for disposal shall be stockpiled in an appropriate manner, as follows:

- A suitable temporary storage area shall be identified and designated;
- All stockpiles shall be assigned a stockpile number;
- Non-hazardous and hazardous soil shall be stockpiled only on hard-standing or high-grade polythene sheeting to prevent cross-contamination of the soil below;
- Soil stockpiles shall be covered with high-grade polythene sheeting to prevent run-off of rainwater and leaching of potential contaminants from the stockpiled material generation and/or the generation of dust; and
- When a stockpile has been sampled for classification purposes, it shall be considered to be complete and no more soil shall be added to that stockpile prior to disposal.

An excavation/stockpile register shall be maintained on site showing at least the following information:

- Stockpile number;
- Origin (i.e. location and depth of excavation);
- Approximate volume of stockpile;
- Date of creation;
- Description and Classification of material;
- Date sampled;
- Date removed from site;
- Disposal/recovery destination; and
- Photograph.

4.4 Impacts between the Proposed Scheme, the Undeveloped Site, and the Permitted Scheme

There will be a minimal increase in construction waste due to the number of units proposed. The type of waste to be produced is similar to that which was previously approved. The increase in waste will not have any impact on legal requirements, waste policies and best practice guidelines which will be complied with as per the previously approved plan. There will be no construction waste produced onsite if the site remains undeveloped.

4.5 Proposed Waste Management Options

Waste materials generated will be segregated on site, where it is practical. Where the on-site segregation of certain wastes types is not practical, off-site segregation will be carried out. There will be skips and receptacles provided to facilitate segregation at source where feasible. All waste receptacles leaving site will be covered or enclosed. The appointed waste contractor will collect and transfer the wastes as receptacles are filled. There are numerous waste contractors in the South Dublin region that provide this service. All waste arising's will be handled by an approved waste contractor holding a current waste collection permit. All waste arising's requiring disposal off-site will be reused, recycled, recovered or disposed of at a facility holding the appropriate registration, permit or licence, as required.

Some of the sub-contractors on site will generate waste in relatively low quantities. The transportation of non-hazardous waste by persons who are not directly involved with the waste business, at weights less than or equal to 2 tonnes, and in vehicles not designed for the carriage of waste, are exempt from the requirement to have a waste collection permit (Ref. Article 30 (1) (b) of the Waste Collection Permit Regulations 2007 as amended). Any sub-contractors engaged that do not generate more than 2 tonnes of waste at any one time can transport this waste offsite in their work vehicles (which are not design for the carriage of waste). However, they are required to ensure that the receiving facility has the appropriate COR / permit / licence.

Written records will be maintained by the contractor(s) detailing the waste arising throughout the C&D phases, the classification of each waste type, waste collection permits for all waste contactors who collect waste from the site and

COR/permit or licence for the receiving waste facility for all waste removed off site for appropriate reuse, recycling, recovery and/or disposal.

Dedicated bunded storage containers will be provided for hazardous wastes which may arise such as batteries, paints, oils, chemicals etc, if required. The management of the main waste streams is outlined as follows:

4.6 Waste Minimisation

The following waste minimisation measures will be implemented during the course of the construction works:

- Facilitate recycling and appropriate disposal by on site segregation of all waste materials generated during construction into appropriate categories, including:
 - Top-soil, subsoil, gravel hard-core
 - Concrete, bricks, tile, ceramics, plasterboard
 - Asphalt, tar and tar products
 - Metals
 - Dry Recyclables e.g. cardboard, plastic, timber
- All waste assessed by the Waste Manager as 'not suitable for reuse' will be stored in skips or other suitable receptacles in a designated area of the site, to prevent cross contamination between waste streams;
- Wherever possible, leftover materials (e.g. timber off cuts) and any suitable leftover materials will be reused on-site;
- Uncontaminated excavated material (top-soil, sub soil, etc.) will be segregated, stockpiled and re-used on site in preference to importation of clean fill, where possible; and
- Where possible, the Waste Manager will ensure that all waste leaving site will be recycled or recovered.

4.7 Waste Handling

4.7.1 Segregation and Storage

Wastes generated during works will be segregated and temporarily stored on site (pending collection or for re-use on site) in accordance with a pre-determined segregation and storage strategy (to be developed by the Principal Contractor as part of their SWMP).

The following minimum segregation and storage strategy requirements will be required:

- Waste streams will be individually segregated; and all segregation, storage & stockpiling locations will be clearly delineated on site drawings;
- Waste storage, fuel storage and stockpiling and movement are to be undertaken with a view to protecting any essential services (electricity, water etc.) and with a view to protecting existing surface water drains and groundwater quality boreholes (if applicable);
- Roles and responsibilities of those managing the segregation and storage areas will be identified;
- The waste storage area should contain suitably sized containers for each waste stream and will be agreed with the waste contractors in advance of the commencement of the project;
- All segregation and waste storage areas will be inspected regularly by the appointed Waste Manager;
- Waste will be stored on site, including metals, asphalt and soil stockpiles, in such a manner as to:
 - Prevent environmental pollution (bundled and/or covered storage, minimise noise generation and implement dust/odour control measures, as may be required);
 - Maximise waste segregation to minimise potential cross contamination of waste streams and facilitate subsequent re-use, recycling and recovery; and
 - Prevent hazards to site workers and the general public during construction phase (largely noise, vibration and dust).

4.8 Tracking and Documentation Procedures for Off-Site Waste

All waste will be documented prior to leaving the site. Waste will be weighed by the contractor, either by weighing mechanism on the truck or at the receiving facility. These waste records will be maintained on site by the nominated project Waste Manager.

All movement of waste and the use of waste contractors will be undertaken in accordance with the *Waste Management Acts 1996 – 2011*. This includes the requirement for all waste contractors to have a waste collection permit issued by the NWCPO. The nominated project waste manager will maintain a copy of all waste collection permits on-site.

If the waste is being transported to another site, a copy of the Local Authority waste COR/permit or EPA Waste/IED Licence for that site will be provided to the nominated project waste manager. If the waste is being shipped abroad, a copy of the Waste Transfer Form (WTF) notification document will be obtained from DCC (as the relevant authority on behalf of all local authorities in Ireland) and kept on-site along with details of the final destination (COR, permits, licences etc.). 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 recording system to be maintained on site.

5.0 WASTE IDENTIFICATION, CLASSIFICATION, QUANTIFICATION AND HANDLING

During the construction phase, there will be some building material and packaging waste generated. This will mainly include excess ready-mix concrete and mortar, timber off cuts, plastics, metal off cuts, cladding and tile offcuts, as well as plastic and cardboard waste from packaging and potential oversupply of materials. Where possible, individual waste arisings shall be identified, classified and quantified (volume, weight) as early in the project lifecycle as is possible but, inevitably, unanticipated waste arisings may occur as site work progresses, necessitating the need for a procedure to provide for waste classification as the site work proceeds.

It is anticipated that the majority of non-hazardous and inert waste generated will be suitable for reuse, recovery or recycling and will be segregated to facilitate the reuse, recovery and/or recycling, where possible. A non-exhaustive list of anticipated wastes from the construction phase and preliminary classification as either hazardous or non-hazardous is presented in Table 5.1

Hazardous Waste	Non-Hazardous Waste
<ul style="list-style-type: none"> • Excess Electrical & Electronic Components • Liquid Fuels • Batteries • Concrete (contaminated with dangerous substances) • Excavated Soil (contaminated with dangerous substances) • Other construction and demolition wastes containing dangerous substances 	<ul style="list-style-type: none"> • Asphalt • Metals (stainless steel, mild steel, copper, aluminium) • Wood (Clean), glass, plastic, paper and cardboard • Concrete (not contaminated with dangerous substances) • Excavated soil/fill (not contaminated with dangerous substances) • Municipal waste

Table 5.1 Potential Non-Hazardous and Hazardous Waste Classification

Wastes arising for the project will be segregated, identified and classified by the Principal Contractor in accordance with applicable waste regulations. Wastes shall not be removed from the site until properly classified, assigned a correct LoW code and all appropriate tracking and disposal documentation is in place. For each waste stream identified and classified, and for each waste stream that may arise during the course of the works, the following shall be identified and documented by the Principal Contractor in their SWMP :

- An appropriate waste classification and correct LoW code; Where a waste type is considered a mirror entry, the classification of materials as non-hazardous and/or hazardous waste will be determined based on the www.hazwasteonline.com web-based waste assessment system (as recognized by the Environmental Protection Agency) and using Waste Acceptance Criteria in accordance with the European Communities (EC) Council Decision 2003/33/EC, which establishes criteria for the acceptance of waste at landfills;

- A suitable Waste Collection Contractor in possession of a valid Waste Collection Permit for the collection of waste within the South Dublin County Council area;
- Appropriate waste recovery, recycling or disposal facilities, including any required transfer stations whereupon the said facilities shall be in possession of a valid Waste Facility Certificate of Registration, permit or Waste Licence, as appropriate;
- A recovery, recycling or disposal plan for the waste, where applicable. Where any material is being recovered onsite or offsite for reuse; the Principal Contractor will provide confirmation of any application to EPA under Article 276 or Article 287 to classify material as a by-product or as end of life waste respectively; and
- Final reconciled waste quantities generated, including details of waste disposal, reuse and recovery quantities.

6.0 ESTIMATED COST OF WASTE MANAGEMENT

An outline of the costs associated with different aspects of waste management is provided below. The total cost of C&D waste management will be measured and will take into account handling costs, storage costs, transportation costs, revenue from rebates and disposal costs.

6.1 Reuse

By reusing materials on site, there will be a reduction in the transport and recycle/recovery/disposal costs associated with the requirement for a waste contractor to take the material off-site. Clean and inert soils, gravel, stones etc. which cannot be reused on site may be used as capping material for landfill sites, or for the reinstatement of quarries etc. This material is often taken free of charge or a reduced fee for such purposes, reducing final waste disposal costs.

6.2 Recycling

Salvageable metals will earn a rebate which can be offset against the costs of collection and transportation of the skips. Clean uncontaminated cardboard and certain hard plastics can also be recycled. Waste contractors will charge considerably less to take segregated wastes, such as recyclable waste, from a site than mixed waste. Timber can be recycled as chipboard. Waste contractors will charge considerably less to take segregated wastes such as timber from a site than mixed waste.

6.3 Disposal

Landfill charges in the Leinster region are currently at around €130-150 per tonne which includes a €75 per tonne landfill levy specified in the *Waste Management (Landfill Levy) Regulations 2015*. In addition to disposal costs, waste contractors will also charge a collection fee for skips. Collection of segregated C&D waste usually costs less than municipal waste. Specific C&D waste contractors take the waste off-site to a licensed or permitted facility and, where possible, remove salvageable items from the waste stream before disposing of the remainder to landfill. Clean soil, rubble, etc. is also used as fill/capping material, wherever possible.

7.0 ROLES & RESPONSIBILITIES

All parties involved in the Project will have responsibility for waste management. Responsibility will vary at different stages of the project lifecycle. Key responsibilities are set out in Table 7.1.

Some responsibility assignments indicated in Table 7.1 may change, depending on the agreed project contractual arrangements and project design requirements.

The appointed Principal Contractor will be responsible for refining and implementing the findings of the outline CDWMP within their own over-arching Site Waste Management Plan (SWMP).

Responsible Party	Responsibility	Project Stage
Client	Appointment of competent Principal Contractor and Design Team Responsibility of waste management from 'cradle to grave', including documentation of same.	Project initiation and subsequent tendering phases All project stages
Principal Contractor	Construction & Demolition Waste Management Plan implementation Refinement and implementation of the outline CDWMP within their own over-arching Site Waste Management Plan (SWMP) Appoint competent and authorized waste management contractor(s) Appoint trained, competent Waste Manager	Project Implementation Project Implementation Project tendering phase Construction phase
Waste Manager	SWMP implementation Ensure that's the objectives of both the CDWMP and the contractors SWMP are put in place. Waste characterisation. Selection of techniques and design to minimise waste and to maximise recovery and recycling of waste during the project.	Project Implementation Construction stage Construction stage Project Design Phase and

	<p>Maintenance of Waste Documentation for 3 years.</p> <p>Completion of Final Waste Management Report</p> <p>Educate colleagues, site staff, external contractors and suppliers about alternatives to conventional construction waste disposal</p>	<p>during project implementation</p> <p>Post-construction stage</p> <p>Construction stage</p>
Design Team	<p>Identification of Key Waste Streams</p> <p>Design to minimise waste generation in lifecycle of completed construction.</p> <p>Design of Soil Excavation Plan</p> <p>Adequately provide for waste management in tender documents and declare all relevant information & data.</p>	<p>Project Design Phase</p> <p>Project Design Phase</p> <p>Project Design Phase</p> <p>Project Procurement Phase</p>
Subcontractors	<p>Comply with CDWMP and Contractors SWMP, where relevant</p>	<p>Project Implementation</p>

Table 7.1. Construction Stage Waste Management – Key Responsibilities

8.0 WASTE MANAGEMENT PLAN AWARENESS & TRAINING

Copies of the CDWMP and the Principal Contractor's Site Waste Management Plan will be made available to all personnel on site. All site personnel and sub-contractors will be instructed about the objectives of these plans and informed of the responsibilities which fall upon them as a consequence of its provisions. Where source segregation and selective material reuse techniques apply, each member of staff will be given instructions on how to comply with the CDWMP.

Posters will be designed to reinforce the key messages within the CDWMP and will be displayed prominently for the benefit of site staff. Specialist training as may be required (e.g., asbestos containing materials handling) will be assessed or provided as required.

9.0 RECORD KEEPING

A Waste Documentation System will be prepared by the Principal Contractor and included in their SWMP. The Principal Contractor will be responsible for implementation and auditing the Waste Documentation System on a regular basis.

The documentation to be maintained, as a minimum, shall be the following:

- The names of the agent(s) and transporter(s) of the wastes;
- The name(s) of the person(s) responsible for the ultimate recycling, recovery or disposal of the wastes;
- The ultimate destination(s) of the wastes;
- Written confirmation of the acceptance and recovery, recycling or disposal of any waste consignments;
- The tonnages and LoW code for all waste materials;
- Details of any rejected waste consignments;
- Waste Transfer Forms (WTF) for hazardous wastes transferred from site and associated appendices;
- Completed Transfrontier Shipment Forms (TFS) for hazardous wastes transferred abroad
- Written documentation of waste classifications, including any related analyses; and
- Certificates of Recycling, Recovery, Re-Use or Disposal for all wastes transferred from the site.

All waste records will be maintained for at least a period of 3 years and must be subject to verification and validation.

All waste documentation will be maintained by the Principal Contractor in a safe place, preferably on site, during the project implementation phase. Electronic records will be placed on a secure server that is backed up regularly.

Allowance of time and resources will be made to collate outstanding waste records once the project implementation phase has been completed.

10.0 OUTLINE WASTE AUDIT PROCEDURE

10.1 Responsibility for Waste Audit

The appointed Principal Contractor will be responsible for conducting a waste audit at the site during all phases of the development. This audit 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 demolition waste. The Principal Contractor will be responsible for undertaking regular waste auditing. The Design team may review the findings of the waste audits during the course of the construction stage.

10.2 Review of Records and Identification of Corrective Actions

A review of all the records for the waste generated and transported off-site should be undertaken mid-way through the project. 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. The waste records will be 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. Upon completion of the C & D phase, a final report will be prepared, summarising the outcomes of waste management processes adopted and the total recycling/reuse/recovery figures for the development.