CS CONSULTING

GROUP

DUBLIN | LONDON | LIMERICK

# Outline Construction and Demolition Waste Management Plan

## Proposed Mixed Use Development

## Edmondstown, Whitechurch Road, Co. Dublin

Client: BCDK Holdings and Coill Avon Ltd.

Job No. D077

March 2022

CS CONSULTING
GROUP

CS CONSULTING
GROUP

# OUTLINE CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT PLAN

## PROPOSED MIXED USE DEVELOPMENT
## EDMONDSTOWN, WHITECHURCH ROAD, CO. DUBLIN

CONTENTS





File Location: Job-D077\B_Documents\C_Civil\A_CS Reports\Planning Application\OCWMP

| | |
|---|---|
| **BS 1192 FIELD** | **EDM-CSC-ZZ-XX-RP-C-0104-P2** |

| Job Ref. | Author | Reviewed By | Authorised By | Issue Date | Rev. No. |
|---|---|---|---|---|---|
| D077 | LJ | GF | OS | 09.03.2022 | P2 |
| D077 | LJ | GF | OS | 23.02.2022 | P1 |

CS CONSULTING
GROUP

## 1.0 INTRODUCTION

Cronin & Sutton Consulting Engineers (CS Consulting) have been commissioned by BCDK Holdings and Coill Avon Ltd to prepare an Outline Construction and Demolition Waste Management Plan (OCDWMP) for a proposed residential development at Edmondstown, Whitechurch Road, Dublin.

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[1], *Protection of the Environment Act 2003* as amended [2], *Litter Pollution Act 1997* as amended [3] and the *Eastern-Midlands Region Waste Management Plan 2015 – 2021* [4]. 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 OCDWMP includes information on the legal and policy framework for C&D waste management in Ireland, estimates of the type and quantity of Construction waste to be generated by the proposed development and makes recommendations for management of different waste streams.

## 2.0 CONSTRUCTION WASTE MANAGEMENT PLAN

### 2.1 National Level

The Irish Government issued a policy statement in September 1998 known as *Changing Our Ways* [5], 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 construction and demolition 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* [6] concerning the development and implementation of a voluntary construction industry programme to meet the Government's objectives for the recovery of construction and demolition waste.

The most recent national policy document was published in July 2012, entitled *A Resource Opportunity - Waste Management Policy in Ireland* [7]. 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* [8] 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.

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

- New developments other than new residential development of 10 houses or more, including institutional, educational, health and other public facilities, with an aggregate floor area in excess of 1,250m$^2$.

These guidelines have been followed in the preparation of this document and include the following elements:

- Predicted construction and demolition wastes;
- Procedures to prevent and minimise wastes;
- Options for reuse/recycling/recovery/disposal of construction and demolition wastes;
- 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 proposed consultation with relevant bodies i.e. waste recycling companies, South Dublin County Council, etc.

Other guidelines followed in the preparation of this Report include *Construction and Demolition Waste Management – a handbook for Contractors and Site Managers* [9] published by FÁS and the Construction Industry Federation (CIF) in 2002. These guidance documents are considered to define best practice for construction and demolition projects in Ireland and describe how projects are to be undertaken such that environmental impacts and risks are minimised and maximum levels of waste recycling are achieved.

## 2.2 Regional Level

The proposed development is located in the Local Authority Area of South Dublin County Council

The *Eastern-Midlands Region Waste Management Plan 2015 – 2021* is the regional waste management plan for the area published in May 2015. This Plan replaces the previous Dublin region 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)* [10]. The Regional Plan, which is currently due for revision, set out the strategic targets for waste management in the region and also specified a mandatory target of 70% of C&D wastes to be prepared for reuse, recycling and material recovery (excluding soil and stones) by 2020 in line with the requirements of the Waste Directive.

The Plan's implementation is led by the Eastern-Midlands Regional Waste Office based in Dublin City Council.

At national level, Ireland achieved 84% material recovery of non-hazardous, non-soil & stones C&D wastes in 2019, and therefore surpassed the 2020 target. This represents an improvement on the recovery rate of 71% achieved in 2016 and 77% achieved in 2018. One of the primary objectives of the Plan is to achieve more sustainable waste management practices in the C&D sector. This requires the following actions:

- The development company must employ best practice at the design, planning and construction stage to ensure waste prevention and recycling opportunities are identified and implemented.
- Waste Collectors are required to introduce source-separation of recyclables and introduce graduated charges to incentivize better site practices.

Local Authorities will ensure the voluntary industry code is applied to development control, to regulate the collection and treatment of waste to meet the Plan objectives and will also work to develop markets for recycled materials.

## 2.3 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 2001 (No. 36 of 2001), 2003 (No. 27 of 2003) and 2011 (No 20 of 2011). Sub-ordinate and associated legislation include:
    - European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011) as amended 2011 (S.I. No. 323 of 2011)
    - Waste Management (Collection Permit) Regulations 2007 (S.I No. 820 of 2007) as amended 2008 (S.I. No. 87 of 2008) and 2016 (S.I. No. 24 of 2016)
    - Waste Management (Facility Permit and Registration) Regulations 2007 (S.I. No. 821 of 2007) as amended 2008 (S.I. No. 86 of 2008), 2014 (S.I. No. 310 and S.I. No. 546 of 2014) and 2015 (S.I. No. 198 of 2015)
    - Waste Management (Licensing) Regulations 2000 (S.I. No. 185 of 2000) as amended 2004 (S.I. No. 395 of 2004) and 2010 (S.I. No. 350 of 2010)
    - Waste Management (Packaging) Regulations 2014 (S.I. No. 282 of 2014)
    - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997)
    - Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015)

  - European Communities (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
  - Waste Management (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended 2014 (S.I. No. 349 of 2014) and 2015 (S.I. No. 347 of 2015)
  - Waste Management (Food Waste) Regulations 2009 (S.I. No. 508 of 2009) as amended 2015 (S.I. No. 190 of 2015)
  - European Union (Household Food Waste and Bio-waste) Regulations 2015 (S.I. No. 191 of 2015)
  - Waste Management (Hazardous Waste) Regulations 1998 (S.I. No. 163 of 1998) as amended 2000 (S.I. No. 73 of 2000)
  - Waste Management (Shipments of Waste) Regulations 2007 (S.I. No. 419 of 2007)
  - Waste Management (Movement of Hazardous Waste) Regulations 1998 (S.I. No. 147 of 1998)
  - The European Communities (Transfrontier Shipment of Hazardous Waste) Regulations 1988 (S.I. No. 248 of 1988)
  - European Communities (Shipments of Hazardous Waste exclusively within Ireland) Regulations 2011 (S.I. No. 324 of 2011)
  - European Union (Properties of Waste which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015)
- Planning and Development Act 2000 (S.I. No. 30 of 2000) as amended 2010 (S.I. No. 30 of 2010) and 2015 (S.I. No. 310 of 2015) [13]
- Environmental Protection Act 1992 (S.I. No. 7 of 1992) as amended by the Protection of the Environment Act 2003 (S.I. No. 27 and S.I. No. 413 of 2003) and amended by the Planning and Development Act 2000 (S.I. No. 30 of 2000) as amended

- Litter Pollution Act 1997 (S.I. No. 12 of 1997) as amended by the Protection of the Environment Act 2003 (S.I. No. 27 of 2003) as amended.

These Acts and subordinate Regulations enable the transposition of relevant European Union Policy and Directives into Irish law.

One of the guiding principles of European waste legislation, which has in turn been incorporated into the *Waste Management Acts 1996 - 2011* and associated 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 reuse, recycling, recovery or disposal (including its method of reuse, recycling, recovery or 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 project developer ensures that the waste contractors engaged by the Main Contractor are legally compliant with respect to waste transportation, reuse, recycling, recovery and disposal. This includes the requirement that a contactor handle, transport and reuse/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 permit granted by the relevant Local Authority under the *Waste Management (Facility Permit & Registration) Regulations 2007* as amended or a waste licence or Industrial Emissions (IED) Licence granted by the Environmental Protection Agency (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.

Should the initial assessment of the site indicate that material would have to be removed from site then the material will be classified in accordance with legislative requirements to demine if the material is classified as hazardous or non-hazardous. All material deemed to be non-hazardous will then be assessed under Waste Acceptance Criteria requirements for disposal to a licence landfill facility in accordance with 2002 European Landfill Directive [2003/33/EC]. Only material deemed through independent laboratory analysis to be either inert or non-hazardous can be disposed of at landfill facilities in the Republic of Ireland at present, hazardous material having to be taken abroad for disposal.

The assessment and removal of such material will require the main contractor to employ a suitably qualified environmental specialist to develop a soil management and removal plan and ensure full compliance with statutory requirements.

## 3.0 SITE LOCATION AND PROPOSED DEVELOPMENT

### 3.1 Site Location

The proposed development site comprises 2no. land parcels at Kilmashogue House and Coill Avon house, Whitechurch Road, Rathfarnham, Dublin 16. The site has a total area of 6.77ha and is located to the north of the M50 and to the west of Whitechurch Road, in the operational areas of South Dublin County Council (SDCC) and Dún Laoghaire-Rathdown County Council (DLRCC).

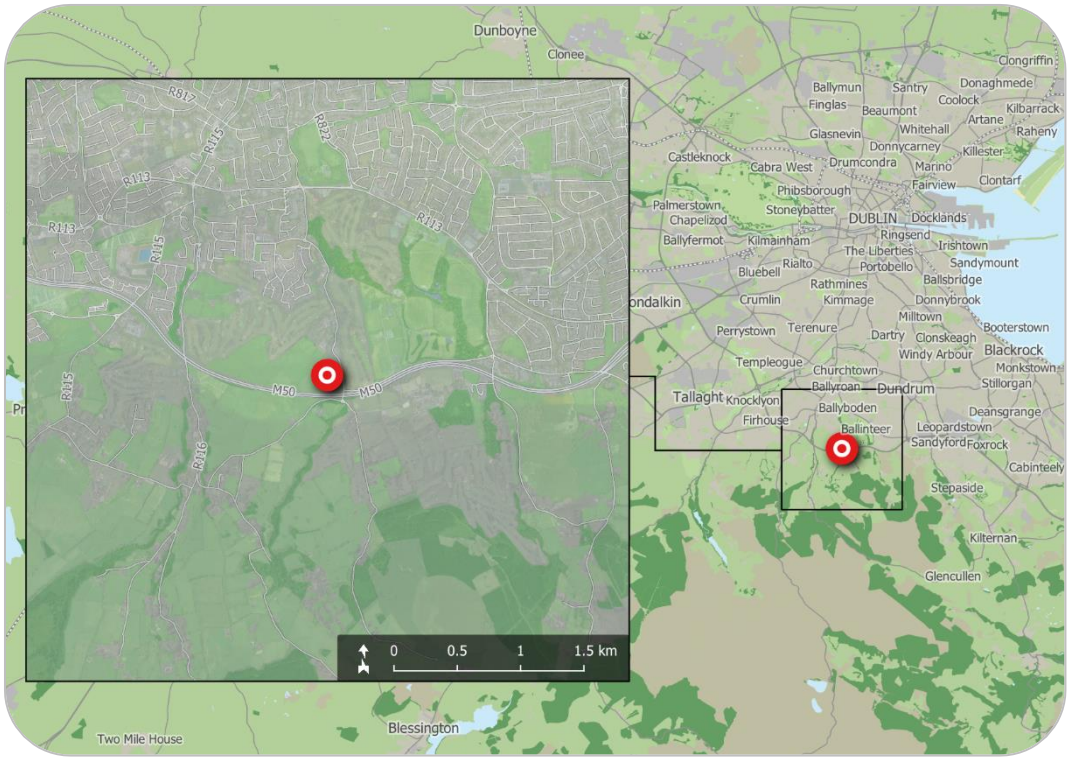


Figure 1 – Location of proposed development site
*(map data & imagery: EPA, OSM Contributors, Google)*

The location of the proposed development site is shown in Figure 1 above; the indicative extents of the development site, as well as relevant elements of the surrounding road network, are shown in more detail in Figure 2.

The site is bounded to the north by the Edmondstown Golf Club and existing residential units, to the east by Whitechurch Road, and to the south by the M50 motorway.


Figure 2 – Site extents and environs
*(map data & imagery: OSi, OSM Contributors, Google)*

## 3.2 Existing Land Use

The development site is greenfield in nature and falls from south to north. The Whitechurch Stream is located to the west of Whitechurch Road, flowing south to north through the subject site.

## 3.3 Proposed Development

The proposed development on a site that extends to 6.77 hectares includes the derelict Kilmashogue House (southern lands) and Coill Avon house (northern lands), adjacent roads in the control of South Dublin County and

Dun Laoghaire Rathdown County Councils and consists of the following developments: -

- Demolition of Kilmashogue House and outbuildings and demolition of Coill Avon house and outbuildings;
- The refurbishment and re-use of 2 no. stone outbuildings for community use, to be incorporated into an area of public open space on the southern lands;
- The construction of a mixed-use development comprising neighbourhood centre and 178 no. residential units comprising 72 no. houses, 38 no. apartments and 68 no. duplex apartments;
- The 72 no. houses will comprise 2, 2.5 and 3-storey detached, semi-detached and terraced units to include:-
    - 6 no. 2-bed houses;
    - 45 no. 3-bed houses;
    - 21 no. 4-bed houses;
- The 38 no. apartments and 68 no. duplex apartments are located across 7 no. buildings ranging in height from 3 to 5-storey consisting of 1 no. Block A/B, 1 no. Block C, 1 no. Block E, 1 no. Block S and 3 no. Blocks T-type as follows: -
    - Block A/B: 5-storey over basement and podium accommodating 10 no. 1-bed apartments, 16 no. 2-bed duplex apartments and 1 no. 3-bed duplex apartment with associated balconies/terraces;

- Block C: 5-storey over basement accommodating 4 no. 1-bed apartments and 8 no. 2-bed duplex apartments with associated balconies/terraces;
- Block E: 4-storey over basement accommodating 8 no. 1-bed apartments and 16 no. 2-bed duplex apartments with associated balconies/terraces;
- Block S: 3-storey accommodating 2 no. 2-bed duplex apartments and 1 no. 3-bed apartment and 1 No. 3-bed duplex apartments with associated balconies/terraces;
- Block T: 3no. 3-storey buildings accommodating 6 no. 1-bed apartments, 18 no. 2-bed duplex apartments, 9 no. 3-bed apartments and 6 no. 3-bed duplex apartments, all with associated balconies/terraces;

- Block A/B and Block C are arranged around a landscaped podium. The neighbourhood centre is located below this podium and accommodates a 2-level creche (313m²) at lower ground and ground floor level, and 3 no. retail/non-retail service/cafe units (470m2) at ground level;
- The basement below Block A/B and Block C accommodates 50 no. car parking spaces, bicycle parking, bin stores, plant and staff service area (80m2);
- The basement below Block E accommodates 35 no. car parking spaces, bicycle parking, bin store and plant;
- A section of link street with footpath and cycle path (approx. 438 linear metres) extending from the junction of Whitechurch Road and College Road on an alignment parallel to the M50, to provide

access to the southern development lands and incorporating a bus turning circle;

- Upgrade works to College Road including a new two-way cycle track and relocated footpath from the Whitechurch Road junction to provide connectivity to the Slang River pedestrian/cycle Greenway;
- A new signalised crossroads junction to connect the proposed link street with Whitechurch Road and College Road;
- Upgrade to the existing vehicular access at the entrance to Coill Avon house on Whitechurch Road;
- Foul sewer drainage works along Whitechurch Road from the Kilmashogue junction to the existing junction at Glinbury housing estate;
- All landscaping, surface car parking, boundary treatments, infrastructure works, ESB substation, and associated site works and services.

## 4.0 WASTE MANAGEMENT ORGANISATION

A suitably competent and experienced representative of either the Client or the lead Contractor will be nominated as Construction Waste Manager for the project. The function of the Construction Waste Manager is to communicate effectively the aims and objectives of the Waste Management programme for the project to all relevant parties and contractors involved in the project, for the duration of construction works on site.

The Construction Waste Manager will be assisted in this role by the external Safety Consultant. Site Inspections will be carried out on a weekly basis and will incorporate inspection and monitoring of the requirements of the Waste Management Plan.

## 5.0 DEMOLITION WASTE TO BE GENERATED

The proposed development entails the demolition of extant residential buildings on the subject site. Including outbuildings, the structures to be demolished have a total gross floor area of 608m$^2$.

Demolition waste to be generated during this phase of the development may include the following:

- Soil and stones;
- Concrete (including blocks);
- Timber;
- Glass;
- Mixed Metals;
- Gypsum based materials;
- Tiles / Ceramics;
- Insulation Materials (asbestos free);
- Waste electrical and electronic equipment;
- Fixtures and fittings etc

### 5.1 Estimated Waste Arisings

The EPA issued the European Waste Catalogue in January 2002 and this system was used to classify all wastes and hazardous wastes into a consistent waste classification system across the EU. The EWC for typical waste materials to be expected to be generated during the demolition of the existing buildings are as follows:

Table 1 - European Waste Catalogue

| Waste Material | EWC Code |
|---|---|
| ***Non-Hazardous*** | |
| Concrete, bricks, tiles, ceramics | 17 01 |
| Wood, glass and plastic | 17 02 |
| Bituminous mixtures, coal tar and tarred products | 17 03 |
| Metals (including their alloys) | 17 04 |
| Soil, stones and dredged spoil | 17 05 |
| Gypsum-based construction material | 17 08 |
| ***Hazardous*** | |
| Electrical and Electronic Components | 16 02 |
| Batteries | 16 06 |
| Wood Preservatives | 03 02 |
| Liquid Fuels | 13 07 |
| Soil and stones containing dangerous substances | 17 05 03 |
| Insulation materials containing asbestos | 17 06 01 |
| Other insulation materials consisting of or containing dangerous substances | 17 06 03 |
| Construction materials containing asbestos | 17 06 05 |
| Construction and demolition waste containing mercury | 17 09 01 |
| Construction and demolition waste containing PCBs | 17 09 02 |
| Other construction and demolition wastes containing dangerous substances | 17 09 03 |

## 5.2 Demolition Waste Estimates

It is proposed to demolish a total floor area of 608m$^2$. The BRE Waste Benchmark Data as of June 2012, given in Table 2, provides guidance on the demolition waste estimates based on the gross internal floor area.

Table 2 - BRE Waste Benchmark

| Project Type | Number of projects data relates to | Average Tonnes/100m² | Number of projects data relates to | Average Tonnes/€100k |
|---|---|---|---|---|
| Residential | 256 | 16.8 | 260 | 12.3 |
| Public Buildings | 23 | 22.4 | 24 | 11.2 |
| Leisure | 21 | 21.6 | 20 | 10.5 |
| Industrial Buildings | 23 | 12.6 | 24 | 5.7 |
| Healthcare | 22 | 12.0 | 22 | 9.9 |
| Education | 60 | 23.3 | 60 | 11.8 |
| Commercial Other | 4 | 7.0 | 2 | 3.6 |
| Commercial Offices | 14 | 23.8 | 11 | 6.3 |
| Commercial Retail | 48 | 27.5 | 47 | 11.6 |
| **Total number of projects** | **471** | | **470** | |

For a residential building area to be demolished of 608m² and an average of 16.8 tonnes per 100m² of floor area, the demolition waste generated translates to 102 tonnes.

Table 3 - Calculated Demolition Waste

| Building Type | Area to be Demolished (m²) | Waste (tonnes) |
|---|---|---|
| Residential | 608 | 102 |

The breakdown of demolition waste produced on a typical construction site is classified as follows:

Table 4 – Typical Breakdown of Demolition Waste

| Waste Type | Proportion of Total |
|---|---|
| Glass | 3% |
| Concrete, Bricks, Tiles, Ceramics | 64% |
| Plasterboard | 4% |
| Asphalt, Tar, and Tar Products | 6% |
| Metals | 2% |
| Slate | 8% |
| Timber | 13% |
| **Total** | **100%** |

### 5.3 Mitigation Measures

Construction of the proposed development will be under the control of a lead contractor, who will be appointed following a grant of planning permission. Upon appointment, once familiar with the site and having developed final detailed methodologies for demolition and construction, the lead contractor will expand upon the present OCDWMP and agree specific mitigation measures with South Dublin County Council (SDCC) prior to commencement of works. These measures will ensure effective waste management and recycling of waste generated at the site.

General mitigation measures proposed are summarised below:

- On-site segregation of all waste materials into appropriate categories including:
    - made ground, soil, subsoil, bedrock
    - concrete, bricks, tiles, ceramics, plasterboard metals
    - dry recyclables e.g. cardboard, plastic, timber

- All waste materials will be stored in skips or other suitable receptacles in a designated area of the site.
- An asbestos survey will be carried out in each extant structure on the development site, prior to its demolition.
- Wherever possible, left over materials (e.g. timber off cuts) and any suitable demolition materials shall be re-used on-site.
- Any potentially contaminated soil to be removed from site will be tested to confirm its contamination status and subsequent management requirements.
- All waste leaving site will be recycled, recovered or reused where possible, with the exception of those waste streams where appropriate facilities are currently not available.
- All waste leaving the site will be transported by suitable permitted contractors and taken to suitably licensed or permitted facilities.
- All waste shall be tracked to its destination and a log be drawn up on left on site. The log shall include the haulier employed, the respective driver, receiving gate receipts for all waste (both demolition and excavation material) etc.

These mitigation measures will ensure the waste arising from the demolition and construction of the development is dealt with in compliance with the provisions of the Waste Management Act 1996 (as amended), and associated Regulations, the Litter Act of 1997, and the Dublin Waste Management Plan (2005 - 2010), and achieve optimum levels of waste reduction, re-use and recycling.

## 6.0 CONSTRUCTION WASTE TO BE GENERATED

### 6.1 Construction Waste Classification

Waste generated during construction at a typical site includes the following:

- Concrete, bricks, tiles, and cement
- Wood
- Glass
- Plastics
- Bituminous mixtures, coal tar, and tarred products
- Metals (including their alloys)
- Soil and stones
- Insulation materials (possibly including asbestos-containing materials)
- Gypsum-based construction material
- Materials containing mercury
- PCB-containing materials (e.g. sealants, resin-based floorings, capacitors, etc.)
- Waste electrical and electronic equipment
- Oil wastes and waste of liquid fuels
- Batteries and accumulators
- Packaging (paper/cardboard, plastic, wood, metal, glass, textile, etc.)

As previously described in sub-section 5.1, the European Waste Catalogue (EWC) is used to classify all wastes and hazardous wastes according to a consistent EU-wide system. The EWC classification for typical waste materials to be expected to be generated during construction of the subject development is given in Table 1 (page 16).

## 6.2 Waste Management and Mitigation Measures

The following measures are proposed to ensure effective management of construction waste at the development site, to maximise recycling of construction waste, and to minimise the environmental impact of construction waste.

- On-site segregation of all waste materials into appropriate categories where practical and segregation off site if not practical, including:
    - top-soil, sub-soil, bedrock;
    - concrete, bricks, tiles, ceramics, plasterboard;
    - asphalt, tar, and tar products;
    - metals;
    - dry recyclables (e.g. cardboard, plastic, timber).
- All waste material will be stored in skips or other suitable receptacles in a designated waste storage area on the site.
- Wherever possible, left-over material (e.g. timber cut-offs) and any suitable demolition materials shall be reused on or off site.
- Uncontaminated excavated material (top-soil, sub-soil) will be reused on site.
- All waste leaving the site will be transported by a suitably licensed/permitted contractor and taken to a licensed/permitted facility.
- All waste leaving the site will be recorded and copies of relevant documentation will be maintained by the contractor detailing the waste arising during the construction phase, the classification of each waste type, the contact details and waste collection permit number of all waste contactors who collect waste from the site and the end destination details for all waste removed and disposed off-site.
- Dedicated storage containers will be provided for hazardous wastes which may arise such as batteries, paints, oils, chemicals etc., as

required. The containers used for storing hazardous liquids will be appropriately bunded or will be stored on suitably sized spill pallets.

These measures are intended to ensure that the waste arising from construction of the proposed development is dealt with in compliance with the provisions of the Waste Management Acts 1996 to 2013, the Litter Act of 1997, and the Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021, achieving optimum levels of waste reduction, re-use and recycling.

## 6.3 Primary Waste Streams

The management of the main waste streams from the construction phase are detailed as follows:

### 6.3.1 Bedrock

It is not anticipated that bedrock will be encountered during excavations and site clearance works at the site. In the event that bedrock is encountered and requires excavation, the material will be tested and its suitability for reuse on-site will be investigated. If the rock is to be reused on another site as a by-product (and not as a waste), this will need to be done so in accordance with Article 27 of the EC (Waste Directive) Regulations 2011.

### 6.3.2 Concrete Blocks, Bricks, Tiles & Ceramics

The majority of concrete blocks, bricks, tiles and ceramics generated as part of the constructon works are expected to be clean, inert material and should be recycled, where possible. Clean concrete can be crushed and reused as a sub base in road construction subject to performance testing.

6.3.3 Hard Plastic

Hard plastic is a highly recyclable material and all clean recyclable plastic will be segregated and removed form site for recycling, where possible.

6.3.4 Timber

Timber that is uncontaminated, i.e. free from paints, preservatives, glues etc., will be placed into a dedicated skip and recycled off-site. Clean timber is typically recycled as chipboard.

6.3.5 Metal

Metals will be segregated into mixed ferrous, stainless steel, copper and cabling etc. where practical and stored in skips. Metal is highly recyclable and there are numerous companies that will accept these materials.

6.3.6 Plasterboard

There are currently a number of recycling services for plasterboard in Ireland as detailed previously. Plasterboard from the C&D phases will be segregated from other materials where possible and stored in a separate skip, pending collection for recycling.

6.3.7 Glass

Any glass materials from windows to be removed or other fixtures will be segregated for recycling, where possible.

6.3.8 Waste Electrical and Electronic Equipment

WEEE will be stored in dedicated covered cages, receptacles or pallets pending collection for recycling off-site.

6.3.9 Other Recyclables

Where any other recyclable wastes such as cardboard and soft plastic are generated, these will be segregated at source into dedicated skips and removed off-site.

6.3.10 Non-Recyclable Waste

Construction waste which is not suitable for reuse or recycling, such as polystyrene, some plastics and some cardboards, will be placed in separate skips or other receptacles. Prior to removal from site, the non-recyclable waste skip/receptacle will be examined by a member of the waste team (see Section 5.0) to determine if recyclable materials have been placed in there by mistake. If this is the case, efforts will be made to determine the cause of the waste not being segregated correctly and recyclable waste will be removed and placed into the appropriate receptacle.

6.3.11 Other Hazardous Wastes

On-site storage of any hazardous wastes produced (i.e. chemicals, oils and/or waste fuels) will be kept to a minimum, with removal off-site organised on a regular basis. Storage of all hazardous wastes on-site will be undertaken so as to minimise exposure to on-site personnel and the public and to also minimise potential for environmental impacts. Hazardous wastes will be recovered, wherever possible, and failing this, disposed of appropriately.

It should be noted that a construction contractor has not yet been appointed and until the contractor is in place, it is not possible to provide information on the preferred destinations of each waste stream. Prior to commencement of site clearance, excavation and construction activities and removal of any waste off-site, details of the proposed end destination of each waste stream will be provided to the Local Authority.

## 6.4 Predicted Impacts of the Proposed Development

Waste materials will be generated during the demolition and construction of the proposed development, including the initial site clearance, demolition, and excavation. Careful management of these, including segregation at source, will help to ensure maximum recycling, reuse and recovery is achieved, in accordance with current local and national waste targets. It is expected, however, that a certain amount of waste will still need to be disposed of at landfill.

Given the provision of appropriate facilities, environmental impacts (e.g. litter, contamination of soil or water, etc.) arising from waste storage are expected to be minimal. Particular attention must be given to the appropriate management of any construction waste containing contaminated or hazardous materials. The use of suitably licensed waste contractors will ensure compliance with relevant legal requirements and appropriate off-site management of waste.

In summary, with a high level of due diligence carried out at the site, it is envisaged that the environmental impact of the construction phase of the proposed development will be of small scale and short duration, with respect to waste management.

## 7.0 RECORD KEEPING

Records will be kept for all waste material which leaves the site, either for reuse on another site, recycling, recovery or disposal. A recording system will be put in place to record the construction waste arisings on site. A copy of the Waste Collection Permits, CORs, Waste Facility Permits and Waste/IED Licences will be maintained on site at all times.

The Waste Manager or delegate will record the following;

- Waste taken for reuse off-site;
- Waste taken for recycling; and
- Waste taken for disposal.

For each movement of waste off-site, a signed docket will be obtained by the Waste Manager from the waste 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 removed from site.

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

## 8.0 TRAINING PROVISIONS

An individual from the main contractor's team will be appointed as the Waste Manager for the project to ensure commitment, operational efficiency and accountability during the excavation and construction phases of the project. The main contractor or project managers for the overall development should ensure that each contractor engaged throughout the project has a suitable person nominated as a point of contact for waste management.

### 8.1 Waste Manager Training and Responsibilities

The nominated 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 implemented on site. The Waste Manager will have overall responsibility to oversee, record and provide feedback to the Project Manager on everyday waste management at the site associated with project works. 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 material salvage.

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 waste management on site. The Waste Manager will also be trained in the best methods for segregation and storage of recyclable materials, have information on the materials that can be reused on site and be knowledgeable in how to implement this CWMP.

## 8.2 Site Crew Training

Training of the site crew is the responsibility of the Waste Manager and, as such, a site induction waste management brief will be organised. A basic awareness course will be held for all site crew to outline the CWMP and to detail the segregation methods of waste materials at source. This may be incorporated with other site training needs such as general site induction, health and safety awareness and manual handling.

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

## 9.0 CONSULTATION WITH RELEVANT BODIES

### 9.1 Local Authority

Once the main contractor has been appointed and prior to removal of any waste materials off-site, details of the proposed destination of each waste stream will be provided to the local authority for their approval.

South Dublin County Council will also be consulted, as required, throughout the construction phases in order to ensure that all available waste reduction, reuse and recycling opportunities are identified and utilised and that compliant waste management practices are carried out.

### 9.2 Recycling/Salvage Companies

Companies that specialise in construction waste management will be contacted to determine their suitability for engagement. Where waste contractor(s) are engaged, each company will be audited in order to ensure that relevant and up-to-date waste collection permits and facility COR/permits/licences are held. In addition, information regarding individual waste materials will be obtained where possible, including the feasibility of recycling each material, the costs of recycling/reclamation, the means by which the wastes will be collected and transported off-site and the recycling/reclamation process each material will undergo off site.

## 10.0 CONCLUSION

This document outlines the principles and measures by which the waste generated during the demolition and construction phases of the proposed development will be managed and disposed of in compliance with the provisions of the Waste Management Acts 1996 to 2013 and the Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021. It describes the measures by which optimum levels of waste reduction, re-use and recycling shall be achieved.

## 11.0 REFERENCES

1. Waste Management Act 1996 (No. 10 of 1996) as amended 2001 (No. 36 of 2001), 2003 (No. 27 of 2003) and 2011 (No. 20 of 2011). Sub-ordinate and associated legislation includes:
    - European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011) as amended 2011 (S.I. No. 323 of 2011)
    - Waste Management (Collection Permit) Regulations 2007 (S.I. No. 820 of 2007) as amended 2008 (S.I. No. 87 of 2008)
    - Waste Management (Facility Permit and Registration) Regulations 2007 (S.I. No.
    - 821 of 2007) as amended 2008 (S.I. No. 86 of 2008), 2014 (S.I. No. 310 and S.I. No. 546 of 2014) and 2015 (S.I. No. 198 of 2015)
    - Waste Management (Licensing) Regulations 2000 (S.I. No. 185 of 2000) as amended 2004 (S.I. No. 395 of 2004) and 2010 (S.I. No. 350 of 2010)
    - Waste Management (Packaging) Regulations 2014 (S.I. No. 282 of 2014)
    - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997)
    - Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015)
    - European Communities (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
    - Waste Management (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended 2014 (S.I. No. 349 of 2014) and 2015 (S.I. No. 347 of 2015)
    - Waste Management (Food Waste) Regulations 2009 (S.I. No. 508 of 2009) as amended 2015 (S.I. No. 190 of 2015)
    - European Union (Household Food Waste and Bio-waste) Regulations 2015 (S.I. No. 191 of 2015)

- Waste Management (Hazardous Waste) Regulations 1998 (S.I. No. 163 of 1998) as amended 2000 (S.I. No. 73 of 2000)
- Waste Management (Shipments of Waste) Regulations 2007 (S.I. No. 419 of 2007)
- Waste Management (Movement of Hazardous Waste) Regulations 1998 (S.I. No. 147 of 1998)
- The European Communities (Transfrontier Shipment of Hazardous Waste) Regulations 1988 (S.I. No. 248 of 1988)
- European Communities (Shipments of Hazardous Waste exclusively within Ireland) Regulations 2011 (S.I. No. 324 of 2011)
- European Union (Properties of Waste which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015)

2. Environmental Protection Act 1992 (S.I. No. 7 of 1992) as amended by the Protection of the Environment Act 2003 (S.I. No. 27 and S.I. No. 413 of 2003) and amended by the Planning and Development Act 2000 (S.I. No. 30 of 2000) as amended.

3. Litter Pollution Act 1997 (S.I. No. 12 of 1997) as amended by the Protection of the Environment Act 2003, as amended.

4. Eastern-Midlands Waste Region, Eastern-Midlands Region (EMR) Waste Management Plan 2015 – 2021 (2015).

5. Department of Environment and Local Government (DoELG), Waste Management – Changing Our Ways, A Policy Statement (1998).

6. Forum for the Construction Industry, Recycling of Construction and Demolition Waste.

7. Department of Environment, Communities and Local Government (DoECLG), A Resource Opportunity - Waste Management Policy in Ireland (2012).

8. Department of Environment, Heritage and Local Government (DoEHLG), Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (2006).

9. FÁS and the Construction Industry Federation (CIF), Construction and Demolition Waste Management – a handbook for Contractors and Site Managers (2002).

10. Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives.

11. Council Decision 2003/33/EC, establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.

12. Environmental Protection Agency (EPA), National Waste Database Reports 1998 – 2012.

13. EPA, Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous (2015).