

CS CONSULTING
GROUP

LIMERICK
LONDON
DUBLIN

Construction and Demolition Waste Management Plan

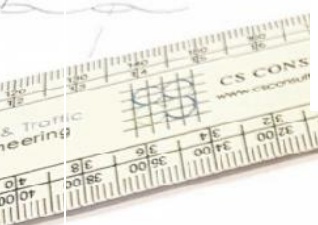
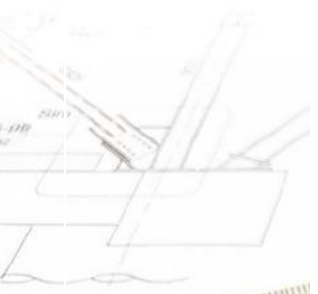
Proposed Residential Development

**31 & 31A Raven's Rock Road,
Sandyford Business Park, Dublin 18**

Client: Ravensbrook Limited

Job No. Q004

March 2022



CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT PLAN

PROPOSED RESIDENTIAL DEVELOPMENT

31 & 31A RAVEN'S ROCK ROAD, SANDYFORD BUSINESS PARK, DUBLIN 18

CONTENTS

1.0	INTRODUCTION _____	1
2.0	GOVERNMENTAL POLICY _____	2
3.0	SITE LOCATION AND PROPOSED DEVELOPMENT _____	7
4.0	WASTE MANAGEMENT ORGANISATION _____	10
5.0	DEMOLITION WASTE GENERATED BY THE PROPOSED DEVELOPMENT _____	11
6.0	CONSTRUCTION WASTE GENERATED BY THE PROPOSED DEVELOPMENT _____	16
7.0	RECORD KEEPING _____	19
8.0	TRAINING PROVISIONS _____	20
9.0	CONSULTATION WITH RELEVANT BODIES _____	22
10.0	CONCLUSION _____	23

This Report has been prepared by CS Consulting for the benefit of its Client only. The contents of this Report are shared with interested parties for information only and without any warranty or guarantee, express or implied, as to their accuracy, reliability or completeness. This Report cannot be relied on by any party other than the party who commissioned it.

File Location: Job-Q004\B_Documents\C_Civil\A_CS Reports\CDWMP

BS1152 Code | RR-CSC-ZZ-XX-RP-C-0006-CDWMP 20211103

Job Ref.	Author	Reviewed By	Authorised By	Issue Date	Rev. No.
Q004	PH	FB	NB	15.03.2022	P3
Q004	PH	FB	NB	03.11.2021	P2
Q004	PS	DS	NB	28.05.2021	P1
Q004	PS	DS	MMcE	05.05.2021	-

1.0 INTRODUCTION

Cronin & Sutton Consulting Engineers (CS Consulting) have been commissioned by Ravensbrook Limited to prepare a Construction and Demolition Waste Management Plan (C&DWMP) in support of a proposed residential development at 31 & 31A Raven's Rock Road, Sandyford Business Park, Dublin 18.

The purpose of this C&DWMP is to ensure that waste generated during the demolition and construction phases of the development will be managed and disposed of in a way that ensures the provisions of the Waste Management Acts 1996 to 2013 and the Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021 are complied with. It will also ensure that optimum levels of waste reduction, re-use and recycling are achieved.

2.0 GOVERNMENTAL POLICY

2.1 National Level

The publication, "Changing Our Ways", identifies objectives for the prevention, minimization, reuse, recycling, recovery and disposal of waste in Ireland, was issued by the Government in September 1998. The target for Construction and Demolition waste in this Strategy was to recycle at least 50% of C&D waste by 2003, with an increase to at least 85% by 2013.

The Forum for the Construction Industry, which represents the waste sector of the industry, released a report titled "Recycling of Construction and Demolition Waste" concerning the development and implementation of a voluntary construction industry programme to meet the governments objectives for the recovery of construction and demolition waste. The National Construction and Demolition Waste Council (NCDWC) was launched in June 2002 and subsequently produced "Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects" in July 2006. There are thresholds set out in the Guidelines to determine whether a C&D WMP is required. The development requires a C&DWMP for new residential developments of 10 houses or more and new developments, including institutional, educational, health and other public facilities, with an aggregate floor area exceeding 1,250m².

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. The guidelines include the following:

- predicted demolition & construction wastes and procedures to prevent, minimise, recycle and reuse wastes;
- waste disposal/recycling of C&D wastes at the site;
- list of sequence of demolition operations to be followed;
- provision of training for waste manager and site crew;

- details of proposed record keeping system;
- details of waste audit procedures and plan;
- details of consultation with relevant bodies, i.e. waste recycling companies, South Dublin County Council, etc.

In 2002, the Construction Industry Federation (CIF) issued “Construction and Demolition Waste Management – a handbook for Contractors and Site Managers”.

Annually the Environmental Protection Agency (EPA) issue a “National Waste (Database) Reports” detailing C&D waste generation and the level of recycling, recovery and disposal of this material, domestic and municipal waste rates, etc.

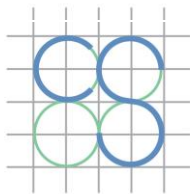
2.2 Regional Level

A Waste Management Plan for the Dublin Region (comprising Dublin City Council, Fingal County Council, South Dublin County Council & Dun Laoghaire-Rathdown County Council) was in place from 2005-2015, with periodic revisions. This was superseded by the Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021, which was launched in May 2015.

The Eastern-Midlands Region comprises Dublin City Council, Dún Laoghaire-Rathdown, Fingal, South Dublin, Kildare, Louth, Laois, Longford, Meath, Offaly, Westmeath and Wicklow County Councils. The Plan provides a framework for the prevention and management of waste in a sustainable manner in these 12 local authority areas.

The three overall performance targets of the Eastern-Midlands Region Waste Management Plan are as follows:

- 1% reduction per annum in the quantity of household waste generated per capita over the period of the plan.



- Achieve a recycling rate of 50% of managed municipal waste by 2020.
- Reduce to 0% the direct disposal of unprocessed municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices.

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

Ireland achieved 68% material recovery of non-hazardous, non-soil & stones C&D wastes in 2014. One of the primary objectives of the Plan is to achieve more sustainable waste management practices in the C&D sector. To achieve this target, 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 incentivise better site practices.

Local Authorities 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

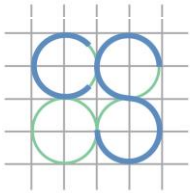
One of the guiding principles of European waste legislation, which has in turn been incorporated into the Waste Management Act 1996 (as amended by the Waste Management (Amendment) Act 2001) and subsequent Irish legislation, is the principle of 'Duty of Care'. This implies that the waste producer is responsible for waste from the time it is generated through to its 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 the incorrect management of waste produced, including the actions of any contractors engaged (e.g., for collection and transport of waste).

Waste contractors are typically engaged to transport waste off-site. Each contractor must comply with the provisions of the Waste Management Act 1996 and associated Regulations. This includes the requirement that a contractor handle, transport and 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 the relevant 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 waste permit granted by the local authority under the Waste Management (Facility Permit & Registration) Regulations 2007 or a waste license granted by the EPA. The permit/license held will specify the type and quantity of waste able to be received, stored, sorted, recycled 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 determine 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 is located in Sandyford, Dublin 18 and in the administrative jurisdiction of Dún Laoghaire-Rathdown County Council. The subject site has a total area of approximately 0.31ha.

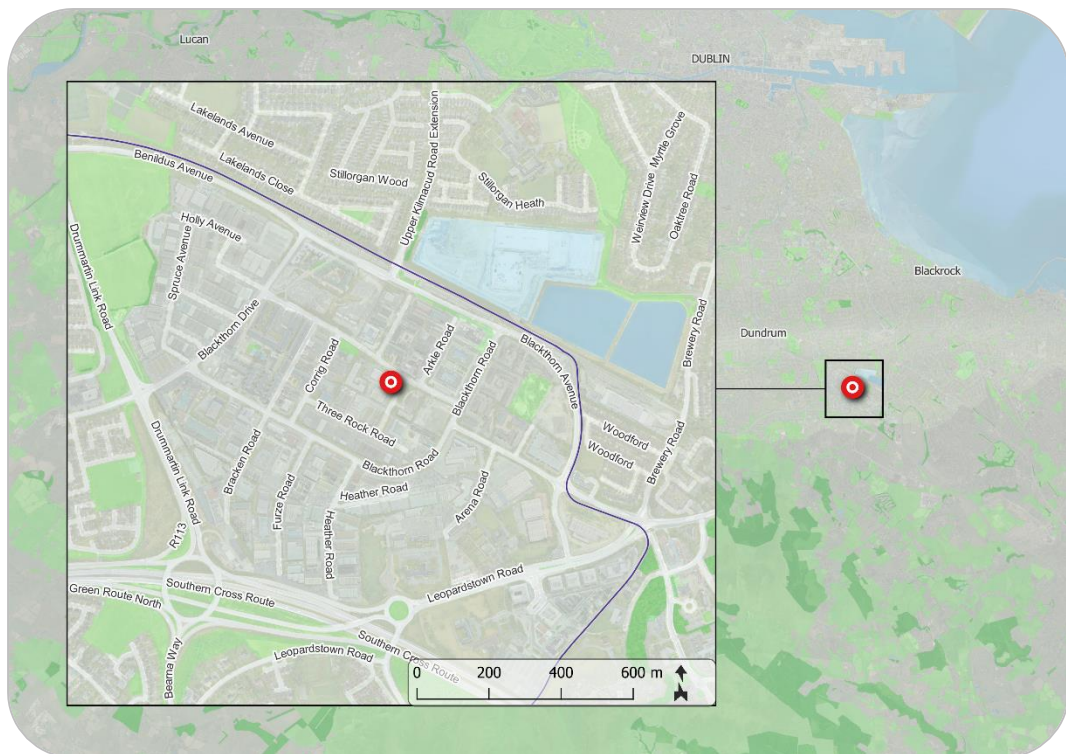


Figure 1 – Location of proposed development site
(map data: EPA, NTA, OSM Contributors, Google)

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



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

The site is bounded to the north by Carmanhall Road. To the east by Ravenrock Road & to the south and west by existing industrial units.

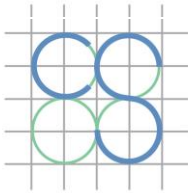
3.2 Existing Land use

The development site at present is occupied by industrial and commercial units.

3.3 Project Description

The development will consist of the demolition of the existing 2 no. storey building (c.717sqm) and hard surface parking area on the site and construction of a Build to Rent residential development comprising 101 no. residential apartments as follows:

- 101 no. build to rent apartments within a part 5, part 6 to part 11 no. storey building over partial basement comprising 65 no. 1 bedroom apartments and 36 no. 2 bedroom apartments (balconies on all elevations);
- 734 sqm of external communal amenity space provided in the form of a podium courtyard at first floor level and a series of rooftop terraces at fifth, sixth and tenth floor levels, c. 514sqm of public open space provided fronting Carmanhall Road;
- 511 sqm of resident support facilities/ services and amenities space provided at ground and first floor levels;
- Vehicular access to the development will be from the upgraded existing access from Ravens Rock Road;
- Provision of 10 no. car parking spaces [1 no. accessible] at surface level, 2 no. motorcycle spaces; and 234 no. cycle parking spaces;
- Provision of 4 no. Ø0.3m Microwave link dishes to be mounted on 2 No. steel support pole affixed to lift shaft overrun, all enclosed in radio friendly GRP shrouds, together with associated equipment at roof level;
- Provision of an ESB substation, switch room and plant room at ground floor level, hard and soft landscaped areas, public lighting, attenuation, service connections and all ancillary site development works.



4.0 WASTE MANAGEMENT ORGANISATION

4.1 Responsibility for Construction Phase Waste Management

A suitably competent and experienced representative of either the client or the lead contractor will be nominated as Construction & Demolition (C&D) waste manager for the project. The function of the C&D waste manager is to effectively communicate 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 demolition and construction works on site.

The C&D 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 GENERATED BY THE PROPOSED DEVELOPMENT

Demolition waste shall be generated during development. The management of spoil generated by demolition of the existing industrial building and excavation on site is described within the following section of this document.

The typical type of waste can be summarised as:

- 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:

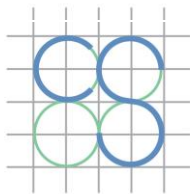


Table 1 - European Waste Catalogue

<u>Waste Material</u>	<u>EW C Code</u>
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 831m², which can be split into 296m² Commercial office space and 535m² Commercial other. 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 (please refer to the Construction and Environmental Management Plan (CEMP), produced by way of separate cover, as part of this planning application for reference to demolition construction traffic).

Table 2 - BRE Waste Benchmark

Project Type	Number of projects data relates to	Average Tonnes/100m ²	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	

Commercial offices have been shown to produce 23.8 tonnes of waste per 100m² of area, with 296m² of commercial office to be demolished there will be an expected 70.45 tonnes of waste. Commercial other is assumed to produce 7.0 tonnes of waste per 100m² of area, with 535m² of area to be demolished there will be an expected 37.45 tonnes of waste. In total the expected waste from the demolition will be 107.9 tonnes.

Table 3 - Calculated Demolition Waste (Approximate)

Building Type	Area to be Demolished (m ²)	Waste (tonnes)
Commercial Offices	296	70.45
Commercial Other	535	37.45
Total	831	107.9

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

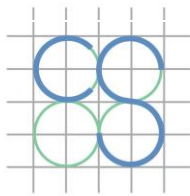
A site-specific Construction and Development Waste Management Plan (C&D WMP) for the demolition and construction of the development will be employed to ensure effective waste management and recycling of waste generated at the site.

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 has been completed in the demolished buildings.
- 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 2001), 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 GENERATED BY THE PROPOSED DEVELOPMENT

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.)

Classification of wastes will follow table 1 previously provided in Section 5.

6.2 Waste Management and Mitigation Measures

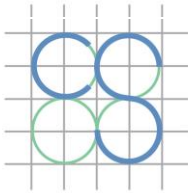
The following measures are proposed to ensure effective management of construction waste at the development site, to maximise recycling of construction waste, and to minimise the environmental impact of construction waste.

- On-site segregation of all waste materials into appropriate categories, 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 in preference to the importation of clean fill, as soil to be reused or removed from site must be tested to confirm its contamination status and subsequent management requirements.
- 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 retained.

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 Predicted Impacts of the Proposed Development

Waste materials will be generated during the construction of the proposed development, including the initial site clearance 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

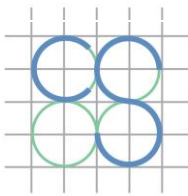
Records will be kept for all waste material which leaves the site, either for reuse on another site, recycling, recovery or disposal. A recording system will be put in place to record the C&D waste arisings on site. A copy of the Waste Collection Permits, CORs, Waste Facility Permits and Waste/IED Licences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

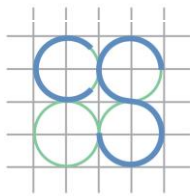
The Waste manager will be trained in how to set up and maintain a record keeping system, how to perform an audit and how to establish targets for waste management on site. The Waste manager will also be trained in the best methods for segregation and storage of recyclable materials, have information on the materials that can be reused on site and be knowledgeable in how to implement this C&DWMP.

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 C&DWMP 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.

Dún Laoghaire-Rathdown County Council (DLRCC) will 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 C&D waste management will be contacted to determine their suitability for engagement. Where waste contractor(s) are engaged, each company will be audited 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.