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Construction and Demolition Waste Management Plan

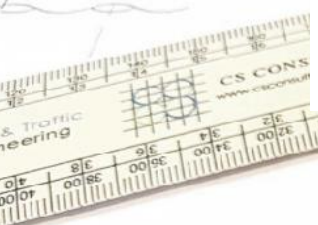
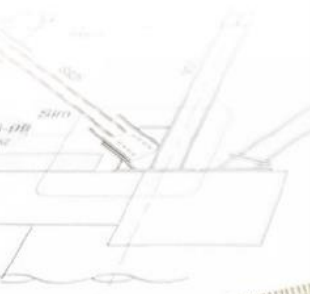
Strategic Housing Development

Frankfort Castle, Old Frankfort, Dundrum, Dublin 14

Client: Pembroke Partnership Limited

Job No. H081

August 2021



CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT PLAN

STRATEGIC HOUSING DEVELOPMENT

FRANKFORT CASTLE, OLD FRANKFORT, DUNDRUM, DUBLIN 14

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1.0 INTRODUCTION

Cronin & Sutton Consulting Engineers (CS Consulting) have been commissioned by Pembroke Partnership Limited to prepare a Construction and Demolition Waste Management Plan (C&DWMP) for a proposed strategic housing development at Frankfort Castle, Old Frankfort, Dundrum, Dublin 14.

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 POLICY AND GUIDELINES

2.1 National Level

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 these guidelines to determine whether a C&D WMP is required. The development requires a C&D WMP 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The above NCDWC guidelines shall shortly be superseded by updated guidelines in preparation by the Environmental Protection Agency (EPA). These new replacement guidelines, entitled 'Best Practice Guidelines for the Preparation of Resource Management Plans for Construction & Demolition Projects' were published in draft form by the EPA in April 2021 and are currently undergoing public consultation. The replacement guidelines reflect current waste legislation and policy including 'A Waste Action Plan for a Circular Economy Ireland's National Waste Policy 2020-2025' published in September 2020. Since the publication of the 2006 guidelines, waste management legislation and policy have evolved towards prioritising waste prevention and life-cycle thinking as follows:

- An increased emphasis on waste prevention through established principles such as designing out waste and the use of green procurement.
- The promotion of more circular design and construction principles in line with the EU Circular Economy Action Plan under the EU Green Deal.

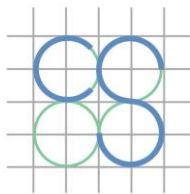
The existing and draft guidelines outline the issues that need to be addressed at the pre-planning stage of a development all the way through to its completion. The guidelines include the following:

- 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, Local Authorities, etc.

The EPA produces annual construction & demolition waste statistics for Ireland, the most recent of which concern the year 2018 and were published in September 2020. These indicate that just over 6.2 million tonnes C&D waste were generated in Ireland in 2018. This consisted primarily of soil and stones (77%); the remainder comprised concrete, bricks, tiles and gypsum waste (12%) and mixed C&D waste (7%). Only 3% of C&D waste was collected separately as single material streams (wood, glass, plastic or metal). The vast majority (96%) of C&D waste underwent final treatment in Ireland in 2018 and only 4% was exported abroad for final treatment. Most of the C&D waste undergoing final treatment in Ireland was recovered by backfilling (89%), while only 9% was recycled.

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. A new waste management plan for the Eastern-Midlands Region has entered a pre-



consultation draft phase as of the 31st March 2021. No information on the contents of this draft plan is currently available.

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 2015-2021 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% recovery 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. 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 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

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 site of the proposed development lies immediately west of Dundrum Road, approximately 750m to the north of Dundrum village centre in Dublin 14. The site has a total area of approximately 0.9ha and is located in the administrative jurisdiction of Dún Laoghaire-Rathdown County Council.

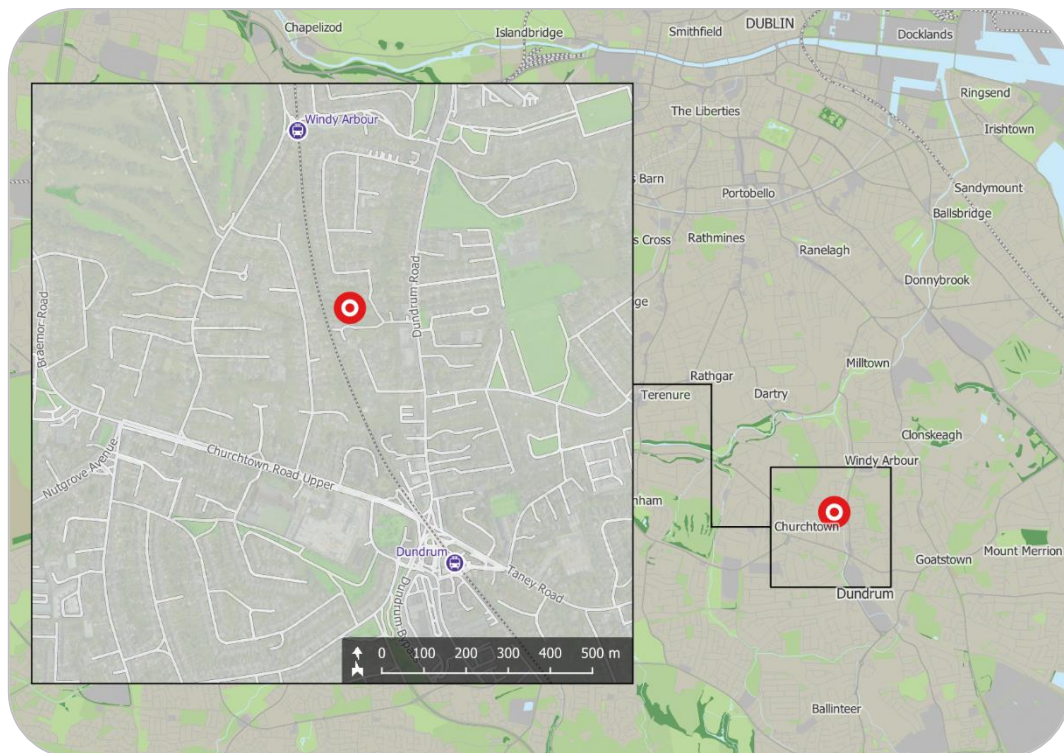


Figure 1 – Location of proposed development site
(map data: EPA, NTA, OSM Contributors)

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, south and east by existing residential properties, and to the west by the Luas Green Line. The site has extensive street

frontage on Frankfort at its eastern boundary, and on Frankfort Court at its southern boundary.



Figure 2 – Site extents and environs
(map data: EPA, NTA, OSM Contributors)

3.2 Existing Land use

The site of the proposed development is brownfield and comprises the existing properties of 97A Highfield Park, Dundrum, Dublin 14, D14 P710; 1 Frankfort Castle, Old Frankfort, Dublin 14, D14 HY03; 2 Frankfort Castle, Old Frankfort, Dublin 14, D14 DE72; and Frankfort Lodge, Old Frankfort, Dublin 14, D14 C9P2.

3.3 Project Description

The proposed development will consist of 115no. residential units comprising 45no. one-bed units and 70no. two-bed units. The proposed units will be accommodated in the partially retained Frankfort Castle building and in 3no. blocks with a maximum height of 5 storeys. The subject proposal also includes

for the demolition of the existing 97A Highfield Park residence (192.5sqm) and for the demolition of annexe buildings associated with Frankfort Castle including Frankfort Lodge (368sqm).

Additional works proposed include the provision of a childcare facility (80sqm), car and cycle parking at surface and basement level, hard and soft landscaping, surface water drainage infrastructure and attenuation tank, and all associated site development and infrastructure 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 560.5m². 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 enclosed 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 | |

For a residential building area to be demolished of 560.5m² and an average of 16.8 tonnes per 100m² of floor area, the demolition waste generated translates to 94 tonnes.

Table 3 - Calculated Demolition Waste

| Building Type | Area to be Demolished (m ²) | Waste (tonnes) |
|---------------|---|----------------|
| Residential | 560.5 | 94 |

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

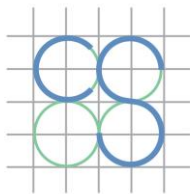
Construction of the proposed development will be under the control of a lead contractor, who will be appointed following a grant of planning permission. Upon appointment, once familiar with the site and having developed final detailed methodologies for demolition and construction, the lead contractor will expand upon the present C&DWMP and agree specific mitigation measures with Dún Laoghaire-Rathdown County Council (DLRCC) 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 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 Act 1996 (as amended), 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 will 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.

With a high level of due diligence carried out on site and with the implementation of the proposed mitigation measures, the proposed development's demolition and construction phases are not expected to have a significant environmental impact with respect to waste management. Any such environmental impact shall be limited to the period during which demolition and construction works take place on site.

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 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.

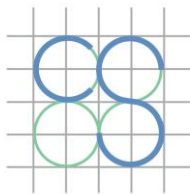
The Waste Manager will be trained in how to set up and maintain a record keeping system, how to perform an audit and how to establish targets for waste management on site. The Waste Manager will also be trained in the best methods for segregation and storage of recyclable materials, have information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

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 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 C&D 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 Act 1996 (as amended) 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.