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Outline Construction & Demolition Waste Management Plan

Strategic Housing Development (SHD)

Heuston South Quarter, St. John's Road West, Kilmainham, Dublin 8

Client: HPREF HSQ Investments Ltd.

Job No. H087

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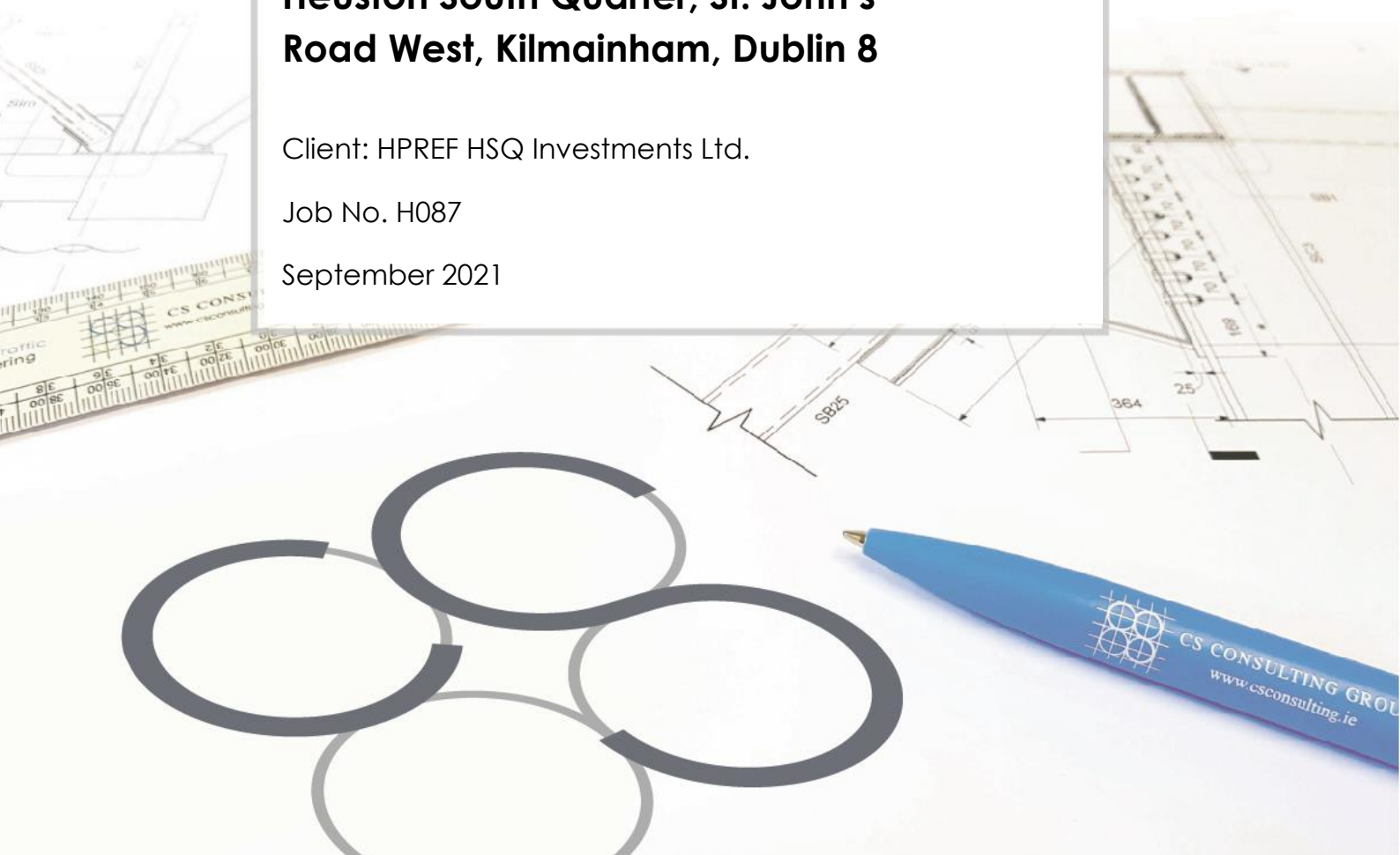

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OUTLINE CONSTRUCTION & DEMOLITION WASTE MANAGEMENT PLAN

STRATEGIC HOUSING DEVELOPMENT (SHD)

HEUSTON SOUTH QUARTER, ST. JOHN'S ROAD WEST, KILMAINHAM, DUBLIN 8

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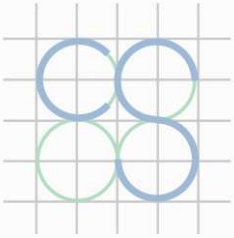

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1.0 INTRODUCTION

Cronin & Sutton Consulting Engineers (CS Consulting) have been commissioned by HPREF HSQ Investments Ltd to prepare an Outline Construction and Demolition Waste Management Plan in support of a strategic housing development at Heuston South Quarter, Dublin 8.

The purpose of this Waste Management Plan (WMP) 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*", which 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&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 1,250m^2. The EPA has published Draft Best Practice Guidelines for the Preparation of Resource Management Plans for Construction and Demolition Projects (April 2021) for public consultation and these draft guidelines have been reviewed and incorporated, however the report structure follows the "*Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects*" (2006).

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 waste.
- 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, Dublin City 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% 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 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

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 contactor 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 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 DESCRIPTION OF THE PROPOSED DEVELOPMENT

The proposed development site is located Heuston South Quarter, St. John's, Road West, Kilmainham, Dublin 8. The site has a total area of 1.08ha and is located in the administrative jurisdiction of Dublin City Council.

The development proposal looks to develop the site shown below which is currently vacant. Refer to the Planning Report for a more detailed description of the proposed development.

Figure 1 – Development site extents and environs
(*map data & imagery: NTA, DCC, OSi, OSM Contributors, Google*)

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 the removal of existing concrete and hardstanding on the 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

There are no extant buildings present on the subject site, but some reinforced concrete foundation structures are present, remaining from previous unfinished construction.

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. Removal of existing reinforced concrete and hardstanding on the subject site will generate non-hazardous construction waste classified under codes 17 01 (concrete), 17 03 (bituminous mixtures), and 17 05 (soil and stones). This has been concluded following site inspections by the relevant consultants.

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 estimated that approximately 2900 m^2 of existing structure will be removed from the subject site during preparatory/demolition works. Smaller quantities of bituminous hardstanding material and soil/stones will also be removed. These quantities are based on as-built surveys and preliminary structural designs for the interface of proposed and existing structures.

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 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 (m²)	Waste (tonnes)
Commercial Other	2900	20300

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. This "Outline Construction & Demolition Waste Management Plan" document will form the basis of the site-specific Construction and Development Waste Management Plan.

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.
- Wherever possible, the Contractor shall find a site-specific use for left-over materials (e.g. timber off cuts) and any suitable demolition materials. These methods will be detailed in the site-specific Construction & Demolition Waste Management Plan
- A 2016 site investigation noted localised areas of contaminated soil. A detailed site investigation including the RIALTA Suite of testing and Waste Acceptance Criteria testing will be carried out prior to any demolition works.
- 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 leaving the site will be recorded and copies of relevant documentation maintained.
- Where possible to reduce the overall scope of demolition, the existing structure is to be re-used and incorporated in the proposed design. This would include primarily reinforced concrete foundations and columns

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

The typical classifications of 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 referred to under sub-section 5.1 Table 1 the EPA issued the European Waste Catalogue (EWC) in January 2002 and this system 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.

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, the Contractor shall find a site-specific use for left-over materials (e.g. timber off cuts) and any suitable demolition materials. These methods will be detailed in the site-specific Construction & Demolition Waste Management Plan
- 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.
- As noted in sub-section 5.3, the existing structures foundations, columns and slabs are to be re-used and incorporated into the proposed structure where layouts permit.

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. A detailed site investigation will be carried out prior to construction and the Contractor will be required to commission a detailed asbestos survey of the existing structures to be demolished. 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 CONCLUSION

This document using the NCDWC "*Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects*" (July 2006) and the EPA "Draft Best Practice Guidelines for the Preparation of Resource Management Plans for Construction and Demolition Projects" (April 2021) outlines the principles and measures by which the waste generated during the demolition 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.