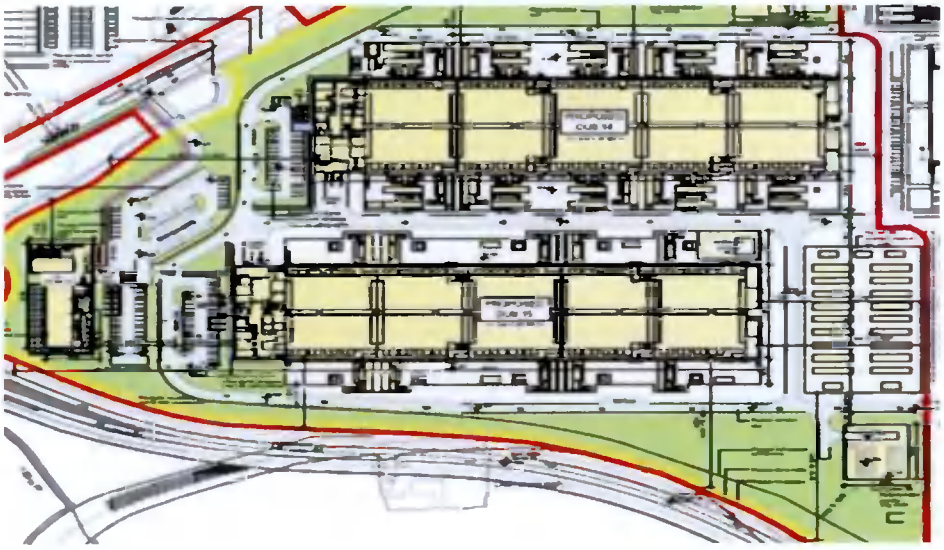
Project	**DUB 14/15**
Document Title	**Construction Demolition Waste Management plan**
Document Reference	**MSFT 14/15**



The Client	Microsoft	**Microsoft**
The Contractor/ PSCS	WINTHROP ENGINEERING EXCELLENCE	**Winthrop Engineering & Contracting Ltd.**
Project Scope	Construction works on the Project DUB 14/15 Data Centre, Grange Castle Business Park, Nangor Road, Clondalkin, Dublin 22 : The project entails: • Enabling and Demolition Works • Construction of a new data centre facility including structural steel portal frame and associated groundwork's, installation of the building façade and envelope, • The mechanical and electrical fit out of the data centres • Associated landscaping and soft finishes.	
Date	**17/06/2021**	Status **Rev 1**

CONTENTS

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Document title:	Demolition –DUB 14/15 Dublin		File reference: IF

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1. GENERAL

This document outlines the Execution Methodology and supporting systems / procedures that will be applied to deliver the DUB 14/15 project.

2. DEFINITIONS, TERMS, ACRONYMS

Documentation (quality control) - procedure and any form of quality reports, etc. contained herein.

Client – Microsoft

Engineer - means the representative of the Client

Contractor/ PSCS – Winthrop Engineering & Contracting (WEC)

Subcontractor – Winthrop appointed firm, contracted to perform any specialist works

Drawings - Client plans (schemes), BIM Models, profiles, typical cross sections, working drawings, standard drawings and additional drawings or copies that show the location, the nature, size and details of the work.

Site - where the work of the permanent construction is carried out.

Specifications Operating specifications included in the contract, any modification or addition made under the contract.

3. DESCRIPTION OF WORKS

PROPOSED DEVELOPMENT

The work scope for the DUB14/15 Data Centre project at Grangecastle Lucan, Co. Dublin includes the following;

Site A is the main development site which will contains the data centres, central administrative building and associated works. Site B will provide a temporary car parking for workers during the construction period of the project.

The western half of Site A borders the Griffeen River and is predominantly vacant land that also contains a hardstanding area and a temporary construction road associated with the construction of MS Data Centres DUB09, DUB10, DUB12 & DUB13 to the east and which is nearing completion.

South of the temporary road is the vacant dwelling and attendant areas which is to be removed.

Site B is located c.1.2km to the northeast of Site A and north of the main entrance to the Business Park. This site is flat, grassed and currently vacant. It lies east of the Business Park Attenuation Lake. To the north is the Grand Canal and Greenway. A buffer of trees and planting c.45m deep separates the site from the greenway.

Provision of a new temporary construction car park (with 802 car spaces, shuttle bus stop and shelter) on site north of the main entrance to the business park;

- Demolition of existing single storey vacant house, garage, and outhouse (total gross floor area (GFA) c.291.2 sq.m) and removal of existing temporary construction car park.

- Construction of a single 1- 4 storey Central Administration Building and 2 no. 2-storey (with mezzanine) data centres (DUB14 & DUB15) all to be located west of data centres DUB9, DUB10, DUB12 & DUB13 within the MS Campus.

- The Central Administration Building (c.6.03m to c.19.85m high) will comprise central office administration, with staff cafeteria, staff gym, and reception (GFA c.3,520 sq. m), with provision of PV panels on the roof.

- Each data centre (c.15.6m high to parapet height and c.18.65m to top of roof plant) will include data halls, admin blocks (comprising offices, canteen, loading dock, storage, and ancillary areas) and a variety of mechanical and electrical plant areas/structures including Modular Electrical Rooms (MERs), battery rooms, and transformer areas. GFA of DUB 14 is c. 28,072sq.m. and GFA of DUB 15 is c.28,173 sq.m (c.56,246 sq.m in total).

- DUB14 will also include 21 no. diesel generators and associated sub-stations (E-houses) and 11 no. mechanical flues (each c.30.75m high).

- Demolition of existing house

- Provision of a gas generator compound (to serve DUB15) containing 20 no. generators, 5 no. E- houses,

and 5 no. flues (c.25m maximum height).

- Provision of a Gas Networks Ireland gas skid including 3 no. kiosk buildings.

- 2 no. sprinkler tank and pump house areas, 1 no. additional rainwater harvesting plant.

- Provision of 168 no. permanent car parking spaces and 40 no. cycle parking spaces.

- Provision of additional western access to the existing campus (to serves the Central Administration Building) from the Business Park estate road, including bridge over the Griffeen River, with existing temporary access to be extinguished; Physical integration with the remainder of the existing MS campus (including internal access roads and landscaping) with associated modifications to the western boundary of the DUB09/DUB IO/DUB 12/DUB13 data centre development

Winthrop fully recognize the strict requirements for working within this environment and is fully conversant with the project constraints existing during contract execution.

4. LOCATION

The site is on the Grange Castle Business Park as identified in the below image areas A & B

5. BACKGROUND

Construction and demolition (C&D) waste is defined as waste which arises from construction, renovation and demolition activities, also included within the definition are surplus and damaged products and materials arising during construction work or used temporarily during the course of onsite activities.

A Construction & Demolition Waste Management Plan is required for a project of this nature.

This outline CDWMP has therefore been prepared with reference to, and taking account of, thefollowing legislation, plans and waste management guidance documents:

- The Waste Management Act 1996 – 2008, Amendments & Associated Regulations;
- CIRIA document 133 Waste Minimisation in Construction;
- The Litter Pollution Act 1997;
- The Waste Management Plan for the Southern Region 2015 – 2021; and
- Best Practice Guidelines on the Preparation of Waste Management Plans forConstruction and Demolition Projects (DoEHLG), June 2006.

6. OBJECTIVE

The objectives of the CDWMP are as follows:

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

The CDWMP outlines methods to achieve waste prevention, maximum recycling and recovery of waste and provides recommendations for the management of the various anticipated waste streams.The plan also provides guidance on collection and transport of waste to prevent issues associated with litter or more serious environmental pollution (e.g. contamination of soil or water resources).

The CDWMP describes the applicable legal and policy framework for C&D waste management inIreland (both nationally and regionally). The proposed development comprises the demolition of the a house in the south west corner of the site

It is anticipated that the majority of waste generated will be concrete from demolition works and fill and soil excavated during the course of the construction works. The schedule of construction works is expected to be as follows:

- Carefully demolish structures to be removed;
- Excavation of soil to formation level
- Excavation of foundation bases and services trenches
- Construct new buildings;
- Complete the development service connections;
- Complete landscaping.

Key construction project elements may be summarised as follows:

1. Demolition and enabling works, including setting up of a foul and storm water sewers and the setting up of a site compound.
2. Excavation of made ground and shallow soils as part of foundation, drainage lines and landscaped areas construction, including excavation of coarse gravel sub-base due to removal of the existing areas of hardstanding.
3. Construction of multi-storey buildings for data centre purposes
4. Construction of associated peripheral landscaping.

7. GENERAL WASTE MANAGEMENT REGULATORY AND POLICY REQUIREMENTS

Some specific points on waste management policy and regulatory requirements are set out asfollows:

- Construction and Demolition (C&D) waste can be defined as all waste that arises from construction, renovation and demolition activities and includes all waste, including hazardous and non-hazardous waste types;
- The EU Waste Framework Directive (2008/98/EC), enacted in Ireland under the Waste Directive Regulations, 2011 of the same title, requires Member States to take the necessary measures to achieve the minimum recycling/recovery target of 70% by weightfor non-hazardous C&D waste, excluding naturally occurring materials, by 2020. The Directive specifies that such a target should be achieved by preparing for reuse, recycling and other material recovery, including backfilling operations using waste to substitute other material;

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

- Waste Management Act 1996 (S.I. No. 10 of 1996) as amended by the Waste Management (Amendment) Act 2001. Sub-ordinate legislation to this Act includes:
  - European Communities (Waste Directive) Regulations 2011 (SI 126 of 2011) as amended 2011 (S.I. No. 323 of 2011)
  - Waste Management (Collection Permit) Regulations S.I No. 820 of 2007 as amended 2008 (S.I No 87 of 2008)
  - Waste Management (Facility Permit and Registration) Regulations, S.I No. 821 of 2007 as amended 2008 (S.I No. 86 of 2008)
  - Waste Management (Licensing) Regulations 2000 (S.I No. 185 of 2000) as

amended 2004 (S.I. No. 395 of 2004), 2010 and (S.I. No. 350 of 2010)

- Waste Management (Packaging) Regulations 2003 (S.I. No. 61 of 2003) as amended 2004 (S.I. No. 871 of 2004), 2006 (S.I. No. 308 of 2006) and 2007 (S.I. No. 798 of 2007)
- Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997)
- Waste Management (Landfill Levy) (Amendment) Regulations 2012 (S.I. No. 221 of 2012), as amended 2015 (S.I. No. 189 of 2015)
- European Communities (Waste Electrical and Electronic Equipment) Regulations 2011
- Waste Management (Registration of Brokers and Dealers) Regulations 2008 (S.I. 113 of 2008)
- Waste Management (Food Waste) Regulations 2009 (S.I. No. 508 of 2009), as amended 2015 (S.I. 190 of 2015)

- Protection of the Environment Act 2003 (S.I. No. 413 of 2003)
- Litter Pollution Act 1997 (S.I. No. 12 of 1997)

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

8. ROLES & RESPONSIBILITIES

All parties involved in the Project will have responsibility for waste management. Responsibility willvary at different stages of the project lifecycle. Key responsibilities are set out in **Table 1**.

Some responsibility assignments indicated in Table 1 may change, depending on the agreedproject contractual arrangements and project design requirements.

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

Table 1. Construction Stage Waste Management – Key Responsibilities

Responsible Party	Responsibility	Project Stage
Client	Appointment of competent Principal Contractor and Design Team	Project initiation and subsequent tendering phases
	Responsibility of waste management from 'cradle to grave', including documentation of same.	All project stages
Principal Contractor	Construction & Demolition Waste Management Planimplementation	Project Implementation
	Refinement and implementation of the outline CDWMP within their own over-arching Site Waste Management Plan (SWMP)	Project Implementation

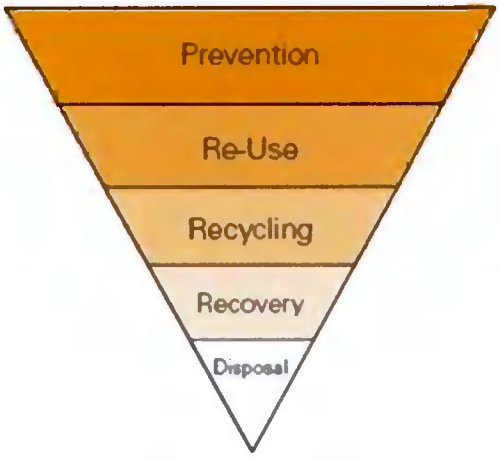
	Appoint competent and authorized waste management contractor(s)	Project tendering phase
Waste Manager	SWMP implementation	Project Implementation
	Ensure that's the objectives of both the CDWMP and thecontractors SWMP are put in place.	Construction stage
	Waste characterisation. Selection of techniques and designto minimize waste and to maximize recovery and recycling of waste during the project	Construction stage
	Maintenance of Waste Documentation for 3 years.	Project Design Phase and during project implementation
	Completion of Final Waste Management Report	Post-construction stage
	Educate colleagues, site staff, external contractors and suppliers about alternatives to conventional constructionwaste disposal	Construction stage
Design Team	Identification of Key Waste Streams	Project Design Phase
	Design to minimize waste generation in lifecycle ofcompleted construction.	Project Design Phase

	Design of Soil Excavation Plan	Project Design Phase
	Adequately provide for waste management in tender documents and declare all relevant information & data.	Project Procurement Phase
Subcontractors	Comply with CDWMP and Contractors SWMP, wherere relevant	Project Implementation

9. WASTE HIERARCHY

Besides the requirements that the off-site handling of waste generated by this project are subject to the required statutory authorisations under the Waste Management Act, there is also a necessity thatit conforms to the Waste Hierarchy. This hierarchy outlines that waste prevention and minimisationare the first priority in managing wastes, followed by waste reuse and recycling with disposal being considered as a last resort.

The EU Waste Directive (2008/98/EC) also mandates that hazardous waste generation should be avoided or at least minimised.



9.1.1 Figure 1. EU Waste Hierarchy

Definitions defined in the Waste Framework Directive of key terms indicated in Figure 1 are (in order of priority):

- **Prevention** includes measures taken before a substance, material or product has become waste, that reduce (a) the quantity of waste, including through the reuse of products or the extension of the lifespan of products, (b) the adverse impacts of thegenerated waste on the environment and human health or (c) the content of harmfulsubstances in materials and products.
- **Re-Use** is defined as any operation by which products or components that are not wasteare used again for the same purpose for which they were conceived.
- **Recycling** is any recovery operation by which waste materials are processed

into products, materials or substances whether for the original or other purposes. It includesthe reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations.

- **Recovery** is defined as any operation, the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or inthe wider economy.

The Waste Hierarchy only applies to material that is defined as "waste", so does not apply to theproportion of the spoil that is handled on-site in conformity with the statutory exclusions.

The Waste Management Hierarchy will be activated for any material which does not satisfy the exclusions; in this regard the contract documents for the detailed design/construction project will clearly set out the staged approach which the contractor will be required to adhere to through the useof the Waste Hierarchy.

10. WASTE MINIMISATION

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

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

11. WASTE IDENTIFICATION, CLASSIFICATION,QUANTIFICATION AND HANDLING

It is anticipated that the majority of waste generated will be concrete from demolition works and fill, soil, concrete and asphalt excavated during the course of the construction works. It is not currently anticipated that this material will be reused on site, however if and where required, clean soil and fillwill be retained on site and reused in areas for backfilling. A

record of the volumes and reuse requirements will be maintained by the Principal Contractor as part of their SWMP, see Section 6.

The SWMP will identify waste soils suitable for reuse on site, as well as suitable recycling and/orrecovery options if required, see Section 9 for further details.

During the course of excavation works additional sampling and analysis may be required to classifyexcavated material for waste disposal purposes and identify suitable disposal routes.

An asbestos demolition survey was conducted in six areas across the proposed redevelopment sitefor the purpose of identifying asbestos containing materials in premises planned for demolition, as well as assessing and identifying the risks these may pose to workers. Areas where ACM was identified are summarised in Table 3 below.

Table 1. Asbestos Containing Materials

1. RESIDENTIAL BUILDING NEAR BALLYBANE PITCH AND PUTT, NANGOR ROAD, CLONDALKIN, DUBLIN 22

The building at the above address is a domestic bungalow built circa 1980s. It features new technology concrete roof tiles; block and render external walls; block, timber and plasterboard internal walls; timberand concrete floors; plasterboard ceilings; polystyrene insulation within wall cavities; modern damp proof course; plastic wall vents; PVC and timber windows and doors; metal pipes and radiators; metal water tank; timber bath panels and ceramic cisterns; timber and PVC soffits and fascia; plastic guttering; block and marble fireplace; MMMF (man-made mineral fibre) insulation.

1.1.1 Asbestos was identified in the following:

Residential Building, Ballybane Pitch and Putt, Na						
Sample	**Floor**	**Location**	**Description**	**Asbestos**	**Extent / Amount**	**Recommended Action**
S2	Ground Floor	Lounge, 0-001	Ceiling - Textured Coating	Chrysotile	16 m²	Remove
S5	Ground Floor	Store, 0-006	Floor - Linoleum	Chrysotile	2 m²	Remove
S3	Ground Floor	Bedroom, 0-008	Ceiling - Textured Coating	Chrysotile	14 m²	Remove
S4	Ground Floor	Kitchen, 0-013	Ceiling - Textured Coating	Chrysotile	28 m²	Remove
S7	External	House roof, 99-001	Roof - Cement Slate	Chrysotile	35 lin m	Remove

Asbestos was Strongly Presumed in the following:

Residential Building, Ballybane Pitch and Putt,						
Sample	**Floor**	**Location**	**Description**	**Asbestos**	**Extent / Amount**	**Recommended Action**
XS2	Ground Floor	Living room, 0-002	Ceiling - Textured Coating	Chrysotile	22 m²	Remove
XS2	Ground Floor	Hallway, 0-003	Ceiling - Textured Coating	Chrysotile	20 m²	Remove

XS2	Ground Floor	Bedroom, 0-004	Ceiling - Textured Coating	Chrysotile	20 m²	Remove
XS2	Ground Floor	Entrance hall, 0-005	Ceiling - Textured Coating	Chrysotile	8 m²	Remove
XS2	Ground Floor	Store, 0-006	Ceiling - Textured Coating	Chrysotile	2 m²	Remove
XS2	Ground Floor	Tank room, 0-007	Ceiling - Textured Coating	Chrysotile	2 m²	Remove
XS5	Ground Floor	Tank room, 0-007	Floor - Linoleum	Chrysotile	2 m²	Remove
XS3	Ground Floor	Bedroom, 0-009	Ceiling - Textured Coating	Chrysotile	18 m²	Remove
XS3	Ground Floor	Toilet, 0-010	Ceiling - Textured Coating	Chrysotile	3 m²	Remove
XS3	Ground Floor	Bedroom, 0-011	Ceiling - Textured Coating	Chrysotile	22 m²	Remove
XS3	Ground Floor	Bathroom, 0-012	Ceiling - Textured Coating	Chrysotile	9 m²	Remove
XS4	Ground Floor	Kitchen external entrance hall, 0-014	Ceiling - Textured Coating	Chrysotile	5 m²	Remove
XS4	Ground Floor	Toilet, 0-015	Ceiling - Textured Coating	Chrysotile	5 m²	Remove
XS7	External	House walls, 99-002	Debris - Cement Slate	Chrysotile	0.5 m²	Remove
XS7	External	Shed roof, 99-005	Cement slate (undercloaking)	Chrysotile	14 lin m	Remove

The Asbestos will be removed by a licensed contractor prior to any demolition commencing.

During the construction phase, there will be some building material and packaging waste generated. This will mainly include excess ready-mix concrete and mortar, timber off cuts, plastics, metal off cuts,cladding and tile offcuts, as well as plastic and cardboard waste from packaging and potential over- supply of materials.

Where possible, individual waste arisings shall be identified, classified and quantified (volume, weight)as early in the project lifecycle as is possible but, inevitably, unanticipated waste arisings may occur as site work progresses, necessitating the need for a procedure to provide for waste classification as the site work proceeds.

It is anticipated that the majority of non-hazardous and inert waste generated will be suitable for reuse, recovery or recycling and will be segregated to facilitate the reuse, recovery and/or recycling,where possible.

A non-exhaustive list of anticipated wastes from the construction phase and preliminary classificationas either hazardous or non-hazardous is presented in Table 2.

Table 2. Potential Non Hazardous and Hazardous Waste Classification

Hazardous Waste	Non Hazardous Waste
Excess Electrical & Electronic Components	Asphalt
Liquid Fuels	Metals (stainless steel, mild steel, copper, aluminium)
Batteries	Wood (Clean), glass, plastic, paper and cardboard (contaminated with dangerous substances)
Concrete (contaminated with dangerous substances)	Other construction and demolition wastes containing dangerous substances
Excavated Soil	

Concrete (not contaminated with dangerous substances)	Excavated soil/fill (not contaminated withdangerous substances) Municipal waste

Wastes arising for the project will be segregated, identified and classified in accordance with applicable waste regulations.

Wastes shall not be removed from the site until properly classified, assigned a correct LoW code andall appropriate tracking and disposal documentation is in place.

For each waste stream identified and classified, and for each waste stream that may arise during thecourse of the works, the following shall be identified and documented in their SWMP:

- An appropriate waste classification and correct LoW code; Where a waste type is considered a mirror entry, the classification of materials as non-hazardous and/or hazardous waste will be determined based on the www.hazwasteonline.com web-based

  waste assessment system (as recognized by the Environmental Protection Agency) andusing Waste Acceptance Criteria in accordance with the European Communities (EC) Council Decision 2003/33/EC, which establishes criteria for the acceptance of waste at landfills;
- A suitable Waste Collection Contractor in possession of a valid Waste Collection Permitfor the collection of waste within the South Dublin City Council area;
- Appropriate waste recovery, recycling or disposal facilities, including any required transfer stations whereupon the said facilities shall be in possession of a valid Waste Facility Certificate of Registration, permit or Waste Licence, as appropriate;
- A recovery, recycling or disposal plan for the waste, where applicable. Where any material is being recovered onsite or offsite for reuse; the Principal Contractor will provide confirmation of any application to EPA under Article 27[6] or Article 28[7] to classifymaterial as a by-product or as end of life waste respectively; and
- Final reconciled waste quantities generated, including details of waste disposal, reuseand recovery quantities.

Site demolitions are estimated to give rise to a total of circa 15,000m^3 of wastes.

Reuse of materials on site will be encouraged where it meets the required regulatory and engineeringrequirements.

It is expected the bulk of all masonry/brick excavated will go offsite for disposal with none suitable expected for recovery.

The EPA have produced figures regarding the amount of waste generated by various developments,the split between individual construction and demolition categories is shown in Table 6.

Table 6.4 Breakdown of construction and demolition waste materials on a typical site

Waste Types	%
Soil and Stone	51
Concrete, Bricks, Tiles, Ceramics, Plasterboard	39

Asphalt, Tar and Tar Products	2
Metals	2
Others	6
Total Waste	100

Based on the volume of material expected to be generated from the proposed development, using thepercentages in Table 6, a preliminary breakdown of the types of materials expected to be encounteredcan be produced. The building volume information has been calculated based on the above ground elements of the buildings and as such, they are not expected to have a soil or stone element to their volume.
Table 7 shows this breakdown for each of the buildings proposed for demolition.

Table 5. Estimate of construction wastes composition arising

Building	Approximate volume m^3	Soil and stone m^3	Concrete, brick, tiles, ceramics, plasterboard m^3	Asphalt, tar, tar products m^3	Metals m^3	Other waste m^3
Existing house	1,500		~1200	~60	~60	~180
Sundry other (say)	1,000		~800	~40	~40	~120
Foundation excavation	12,500	12,500				

2. Waste Handling

2.1.1 Segregation and Storage

Wastes generated during works will be segregated and temporarily stored on site (pending collectionor for re-use on site).

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

- Waste streams will be individually segregated; and all segregation, storage & stockpilinglocations will be clearly delineated on site drawings;
- Waste storage, fuel storage and stockpiling and movement are to be undertaken with aview to protecting any essential services (electricity, water etc.) and with a view to protecting existing surface water drains and groundwater quality boreholes (if applicable);
- Roles and responsibilities of those managing the segregation and storage areas will be identified;
- The waste storage area should contain suitably sized containers for each waste streamand will be agreed with the waste contractors in advance of the commencement of the project;
- All segregation and waste storage areas will be inspected regularly by the appointedWaste Manager;

- Waste will be stored on site, including metals, asphalt and soil stockpiles, in such amanner as to:
  - Prevent environmental pollution (bunded and/or covered storage, minimise noisegeneration and implement dust/odour control measures, as may be required);
  - Maximise waste segregation to minimise potential cross contamination of wastestreams and facilitate subsequent re-use, recycling and recovery; and
  - Prevent hazards to site workers and the general public during construction phase(largely noise, vibration and dust).

2.1.2 Waste Permitting, Licences & Documentation

Under the Waste Management (Collection Permit) Regulations 2007, as amended, a collection permitto transport waste, which is issued by the National Waste Collection Permit Office (NWCPO), must beheld by each waste collection contractor.

Waste may only be treated or disposed of at facilities that are licensed or permitted to carry out thatspecific activity (e.g. chemical treatment, landfill, incineration, etc.) for a specific waste type.

Operators of such facilities cannot receive any waste, unless they are in possession of a Certificate ofRegistration (COR) or waste permit granted by the relevant Local Authority under the Waste Management (Facility Permit & Registration) Regulations 2007 and Amendments or a waste licence granted by the EPA. The COR/permit/licence held will specify the type and quantity of waste permittedto be received, stored, sorted, recycled, recovered and/or disposed of at the specified site.

Records of all waste movements and associated documentation should be held at the site. Recordsmanagement and maintenance will be the responsibility of the Principal Contractor.

3. SOIL MANAGEMENT

Project works will result in the excavation of soils as part of the site development.

The site has had an intrusive site investigation was conducted 2021. Results from that investigation indicate that no localised hotspots of contamination were identified that require removal during redevelopment. It is possible that other hotspots of contaminated materials may be encountered during the construction stage.

Taking the above into consideration, as part of their SWMP, the Soil Management Plan, will detail the following as a minimum:

- Detail in-situ (prior to excavation) and ex-situ (post excavation) methodologies to classify waste soil for appropriate disposal, in accordance with relevant Irish and EU legislation and guidance, see Section: Excavated Soil & Materials for more detail;
- Identify reuse requirements and soils suitable for reuse on site in consultation with thedesign team, including assessment methodology to determine which soils are suitablefor re-use onsite, see Section: Soil for Reuse on Site for more detail;
- Site management procedures, including waste minimisation, stockpile

management, temporary storage procedures, waste licence requirements, see Section: Soil for removalOff-site; and

- Waste Management documentation, including waste generation record keeping, wastetransfer notes and confirmation of appropriate disposal.

4. Excavated Soil & Materials

The SWMP details the relevant procedures, includingfurther environmental sampling, testing and assessment requirements, sampling protocols and sample density targets to supplement the existing ESA report.

Where any hotspots of potential contamination are encountered, and prior to excavation, further assessment will be undertaken by a suitably qualified environmental scientist to determine the natureand extent of remediation required.

4.1.1 Soil for Reuse on Site

Although it is not currently envisaged that excavated soils will be reused on site, where reuse is permitted in accordance with the relevant legislation and provided that the reuse meets the engineering requirements for material used within the works, the proposal for its management, documentation and reuse shall include:

- Delineation of areas where excavated soil is intended for disposal off-site as waste, andwhere it is intended for re-use on site based on the findings of the ESA;
- Identification and recording of the location from where the soil will be excavated and itsproposed re-use location and function;
- Engineering assessment to confirm its suitability for re-use;
- Any proposed treatment or processing required enabling its reuse, as well as anyassociated treatment permits or licences; and
- Determination of by-product or end-of-waste status with the EPA under Article 27 orArticle 28, where applicable (not anticipated).

4.1.2 Soil for Removal Off-site

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

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

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

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

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

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

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

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

5. HAZARDOUS MATERIALS WASTE MANAGEMENT

A minor volume of hazardous waste may be generated during the course of the construction stage,see Table 4 in Section 8 for anticipated material types.

Where hazardous waste is generated, the Principal Contractor will undertake the following:

- Immediate notification of the nature of the hazardous waste to the design team in writing.
- Submission of a revised SWMP detailing the nature and management of the hazardouswaste prior to off-site waste disposal.
- Asbestos containing materials have been identified in buildings scheduled for demolition,The Principal Contractor shall establish a specific procedure for the management of asbestos wastes that may arise during demolition works. The management of such wastes shall be co-ordinated with the client and design team in accordance with the Safety and Health Plan for the overall works, in order to ensure that personnel within the construction site and the local residents are protected against exposure to asbestos. Prior to commencement of any asbestos removal works, the Principal Contractor shall identify a suitable Waste Collection Contractor with a Waste Collection Permit for the transfer of asbestos wastes from the site.
- Although not considered likely on the basis of site investigation results, should asbestos-containing materials be encountered in fill and soil during excavation works, the PrincipalContractor shall establish a specific procedure for the management of asbestos wastes that may arise during excavation works. The management of such wastes shall be co- ordinated with the client and design team in accordance with the Safety and Health Plan for the overall works, in order to ensure that personnel within the construction site and the local residents are protected against exposure to asbestos. Prior to commencement of any asbestos removal works, the Principal Contractor shall identify a suitable Waste Collection Contractor with a Waste Collection Permit for the transfer of asbestos wastes from the site.

6. WASTE MANAGEMENT DOCUMENTATION

A Waste Documentation System is included in the SWMP.

The WasteDocumentation System will be audited on a regular basis,

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

- The names of the agent(s) and transporter(s) of the wastes;
- The name(s) of the person(s) responsible for the ultimate recycling, recovery or disposalof the wastes;
- The ultimate destination(s) of the wastes;
- Written confirmation of the acceptance and recovery, recycling or disposal of any waste consignments;
- The tonnages and LoW code for all waste materials;
- Details of any rejected waste consignments;
- Waste Transfer Forms (WTF) for hazardous wastes transferred from site and associated

- Completed Trans frontier Shipment Forms (TFS) for hazardous wastes transferred abroad
- Written documentation of waste classifications, including any related analyses; and
- Certificates of Recycling, Recovery, Re-Use or Disposal for all wastes transferred from the site.

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

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

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

7. Reuse/ Recovery

By reusing materials on site, there will be a reduction in the transport and disposal costs associated with the requirement for a waste contractor to take the material away to landfill. Clean and inert soils, gravel, stones etc. which cannot be reused on site may be classified as a by-product (under Article 27of the 2011 Waste Directive Regulations), used as capping material for landfill sites, or for the reinstatement of quarries etc. subject to approvals by EPA. This material is often taken free of chargefor such purposes, or when used as capping in landfills will not attract the landfill tax levy, thereby reducing final waste disposal costs.

8. Recycling

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

9. Disposal

Landfill charges are currently at approximately €160/tonne (includes a €75 per tonne landfill levyintroduced under the Waste Management (Landfill Levy) (Amendment) Regulations 2012) for non-hazardous waste and €25/tonne for inert waste.

In addition to disposal costs, waste contractors will also charge a collection fee for skips. Collection ofsegregated C&D waste usually costs less than municipal waste. Specific C&D waste contractors takethe waste off-site to a licensed or permitted facility and, where possible, remove salvageable items from the waste stream before disposing of the remainder to landfill. Clean soil, rubble, etc. is also used as fill/capping material wherever possible.

10. WASTE AUDITS

Details of the inputs of materials to the project site and the outputs of wastage arising from the Projectwill be investigated and recorded in a Waste Audit undertaken by the Principal Contractor.

This audit will identify the amount, nature and composition of the waste generated on the site. The Waste Audit will examine the manner in which the waste is produced and will provide a commentaryhighlighting how management policies and practices may inherently contribute to the production of demolition waste.

The Principal Contractor will be responsible for undertaking regular waste auditing. The Design teammay review the findings of the waste audits during the course of the construction stage.

11. WASTE MANAGEMENT PLAN AWARENESS& TRAINING

Copies of the CDWMP and the Site Waste Management Plan will be made available to all personnel on site.

All site personnel and sub-contractors will be instructed about the objectives of these plans and informed of the responsibilities which fall upon them as a consequence of its provisions. Where source segregation and selective material reuse techniques apply, each member of staff will be giveninstructions on how to comply with the CDWMP.

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

12. DUST CONTROL AND AIR QUALITY

The following measures are to be implemented on site to minimise dust emissions:

- Where soil stripping occurs the resulting soil fraction should be separated into topsoil and subsoil stockpiles
- The temporary storage of spoil is to be managed in terms of spoil height and location to prevent release of windblown dust
- All construction trafficked areas are to be dampened down by water spraying etc
- A wheel wash will be installed. This will be used during wet weather to prevent the drag of material on the under carriage of vehicles
- Local roads used by construction traffic will be continuously monitored, cleaned and maintained as appropriate to ensure that any excess material carried off site is removed immediately
- Any unsurfaced roads within the site will be restricted to essential site traffic only
- A site speed limit of 15 kph will be in place on site. Adherence to this speed limit will prevent the unnecessary generation of fugitive dust emissions.

- Bowsers or mist generators shall be used during dry weather or other periods at potential dust sources

The potential for dust to be emitted depends on the type of construction activity being carried out in conjunction with environmental factors including levels of rainfall, wind speeds and wind direction. The potential for impact from dust depends on the distance to potentially sensitive locations and whether the wind can carry the dust to these locations. The majority of dust produced will be deposited close to the generated source.

In order to ensure that no dust nuisance occurs, a series of measures will be implemented.

- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads will be restricted to essential site traffic only;

- If required, any area/road that has the potential to give rise to fugitive dust will be regularly watered, as appropriate, during dry and/or windy conditions;

- Vehicles using site roads will have their speed restricted, and this speed restriction will be enforced rigidly. Indeed, on any un-surfaced site road, this will be 15-20 kph, and on hard surfaced roads as site management dictates;

- In dry conditions vehicles delivering material with dust potential (soil, aggregates) will be enclosed or covered with tarpaulin at all times to restrict the escape of dust;

- Wheel washing facilities will be provided for vehicles exiting the site in order to ensure that mud and other wastes are not tracked onto public roads;

- Public roads outside the site will be regularly inspected for cleanliness, and cleaned as necessary;

- At all times, these procedures will be strictly monitored and assessed. In the event of dust emissions occurring outside the site boundary, movements of materials likely to raise dust would be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations.

The greatest potential impact on air quality during the construction phase of the proposed development is from construction dust emissions and the potential for nuisance dust. While construction dust tends to be deposited within 200m of a construction site, the majority of the deposition occurs within the first 50m. Itis expected that climatic emissions from truck movements and the operation of generators and machinerywill not be significant

In order to ensure that no dust nuisance occurs, a series of measures will be implemented. In summary,the measures which will be implemented will include:

- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic.
- Any road that has the potential to give rise to fugitive dust must be regularly watered, as appropriate, during dry and/or windy conditions.
- Vehicles using site roads will have their speed restricted, and this speed restriction must be enforced rigidly. On any un-surfaced site road, this will be 20 kph, and on hard surfaced roads as site management dictates.
- Vehicles delivering material with dust potential (soil, aggregates) will be enclosed or covered with tarpaulin at all times to restrict the escape of dust.
- Public roads outside the site will be regularly inspected for cleanliness, and cleaned as necessary.
- Material handling systems and site stockpiling of materials will be designed and laid out to minimiseexposure to wind. Water misting or sprays will be used as required if particularly dusty activities arenecessary during dry or windy periods.
- During movement of materials both on and off-site, trucks carrying potentially dusty material will be stringently covered with tarpaulin at all times. Before entrance onto public roads, trucks will beadequately inspected to ensure no potential for dust emissions.
- At all times, these procedures will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust would be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations.

- Construction vehicles, generators etc., may give rise to some CO_2 and N_2O emissions. However, due to short-term and temporary nature of these works the impact on climate will not be significant.