



Project Title: Proposed Strategic Housing Development
at Dolcain House, Clondalkin, Dublin 22

Report Title: Outline Construction and Demolition
Waste Management Plan

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Contents:

1.0 Introduction:.....	1
2.0 Construction & Demolition Waste Management in Ireland.....	2
2.1 National Level.....	2
2.2 Regional Level.....	3
2.3 Legislative Requirements.....	4
3.0 Description of the Project:.....	5
3.1 Location, Size and Scale of Development.....	5
3.2 Details of Non-Hazardous Waste to be produced:.....	6
3.3 Details of Hazardous Waste Arising:.....	7
3.4 Main C&D Waste Categories.....	8
4.0 Waste Management.....	9
4.1 Demolition Waste Generation.....	9
4.2 Construction Waste Generation.....	9
4.3 Proposed Waste Management Options.....	10
5.0 Estimated Cost of Waste Management.....	14
5.1 Reuse.....	14
5.2 Recycling.....	14
5.3 Disposal.....	14
6.0 Training Provisions.....	14
6.1 Waste Manager Training and Responsibilities.....	14
6.2 Site Crew Training.....	15
7.0 Record Keeping.....	15
8.0 Outline Waste Audit Procedure.....	16
8.1 Responsibility for Waste Audit.....	16
8.2 Review of Records and Identification of Corrective Actions.....	16
9.0 Consultation with Relevant Bodies.....	16
9.1 Local Authority.....	16
9.2 Recycling/Salvage Companies.....	16
10.0 References.....	17

1.0 Introduction:

Lohan and Donnelly Consulting Engineers have been commissioned by Randelswood Holdings Ltd. to prepare this Outline Construction & Demolition Waste Management Plan (C&DWMP) for a proposed SHD residential development at Dolcain House, Monastery Road, Clondalkin, Co Dublin. The plan presented herein is outline in nature as it has been prepared at a stage when exact quantities and volumes of waste material have not yet been determined. This document is considered to be live and is to be updated by the contractor as works progress.

The site is located at Dolcain House, Monastery Road, Clondalkin, Dublin 22, approximately 0.7km southeast of Clondalkin Village, and approximately 1.0km southwest of Park West and Cherry Orchard. Monastery Road is located to the North of the site with a number of residential properties across from the development. To the West of the site is a carpark and to the South is a GAA clubhouse and pitch. The site is also bounded by a rock quarry to the East. The proposed development is located in the Local Authority area of South Dublin County Council (SDCC).

The project consists of the change from office use to residential along with modifications to the three existing blocks, A, B, and C, and the atrium which connects blocks A and B by adding an extra floor to each respectively. An extension is also proposed for the northern end of block A. The project also includes an entirely new build to the east of the existing structures, block D. Car parking for the development is currently provided on both the lower and upper ground floor levels. A total of 130 residential units will be provided. The site boundary and proposed layout of the development is shown below in Figure 1



Figure 1: Proposed Site Layout

This C&DWMP has been prepared to ensure that waste arisings during the construction phase of the project will be managed and disposed of in a way that ensures the provisions of the *Waste Management Act 1996 – 2008 and Amendments*¹, associated Regulations¹, the *Litter Pollution Act 1997* as amended² and the *Eastern-Midlands Region (EMR) Waste Management Plan 2015 – 2021*³ are complied with. It will also ensure that optimum levels of waste reduction, reuse and recycling are achieved. In particular, this C&DWMP aims to ensure waste prevention, maximum recycling and recovery of waste with diversion from landfill, wherever possible. It also seeks to provide guidance on the appropriate 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 purpose of the construction and demolition plan is to provide necessary information to ensure the management of the site and associated works from are undertaken with current legal and industry standards.

2.0 Construction & Demolition Waste Management in Ireland

2.1 National Level

The Irish Government issued a policy statement in September 1998 known as *Changing Our Ways*⁴, which identified objectives for the prevention, minimisation, reuse, recycling, recovery and disposal of waste in Ireland. The target for C&D waste in this report was to recycle at least 50% of C&D waste within a five year period (by 2003), with a progressive increase to at least 85% over fifteen years (i.e. 2013).

In response to the *Changing Our Ways* report, a task force (Task Force B4) representing the waste sector of the already established Forum for the Construction Industry, released a report entitled *Recycling of Construction and Demolition Waste*⁵ concerning the development and implementation of a voluntary construction industry programme to meet the Government's objectives for the recovery of construction and demolition waste.

The most recent national policy document was published in July 2012, entitled *A Resource Opportunity - Waste Management Policy in Ireland*⁶. This document stresses the environmental and economic benefits of better waste management, particularly in relation to waste prevention. The document sets out a number of actions in relation to C&D waste and commits to undertake a review of specific producer responsibility requirements for C&D projects over a certain threshold.

The National Construction and Demolition Waste Council (NCDWC) was launched in June 2002, as one of the recommendations of the Forum for the Construction Industry, in the Task Force B4 final report. The NCDWC subsequently produced *Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects*⁷ in July 2006 in conjunction with the then Department of the Environment, Heritage and Local Government (DoEHLG). The guidelines outline the issues that need to be addressed at the pre-planning stage of a development all the way through to its completion. These guidelines have been followed in the preparation of this document and include the following elements:

- Predicted C&D wastes and procedures to prevent, minimise, recycle and reuse wastes;
- Waste disposal/recycling of C&D wastes at the site;

- Provision of training for waste manager and site crew;
- Details of proposed record keeping system;
- Details of waste audit procedures and plan; and
- Details of consultation with relevant bodies i.e. waste recycling companies, South Dublin County Council etc.

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

- Demolition/renovation/refurbishment projects generating in excess of 100m³ in volume, of C&D waste .

Other guidelines followed in the preparation of this report include *Construction and Demolition Waste Management – a handbook for Contractors and Site Managers* ⁸ published by FÁS and the Construction Industry Federation (CIF) in 2002.

These guidance documents are considered to define best practice for C&D projects in Ireland and describe how C&D projects are to be undertaken such that environmental impacts and risks are minimised and maximum levels of waste recycling are achieved.

2.2 Regional Level

The proposed development is located in the Local Authority area of South Dublin County Council (SDCC). The *EMR Waste Management Plan 2015 – 2021* is the regional waste management plan for the SDCC area, published in May 2015. This plan replaces the previous Dublin region plan due to changing National policy as set out in *A Resource Opportunity: Waste Management Policy in Ireland* and changes being enacted by the *Waste Framework Directive (WFD) (2008/98/EC)* ⁹. The WFD sets Member States a target of ‘70% preparing for reuse, recycling and other recovery of construction and demolition waste’ (excluding natural soils and stones and hazardous wastes) to be achieved by 2020.

The regional plan sets out the following strategic overall targets for waste management in the region:

- A 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; and
- Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices.

The *South Dublin County Development Plan 2016 – 2022* ⁰¹ identifies facilitation of the development of recycling in order to minimise the use of landfill as the main objective of the County Council. The development plan also outlines a number of policies and objectives, the most relevant of which in the context in C&D waste are:

Policies:

- *IE5 Objective 1: To support the implementation of the Eastern–Midlands Region Waste Management Plan 2015-2021 by adhering to overarching performance targets, policies and policy actions.*

- *IE5 Objective 3: To encourage the transition from a waste management economy to a green circular economy to enhance employment and increase the value recovery and recirculation of resources.*
- *IE5 Objective 6: To seek the provision of adequately sized public recycling facilities in association with new commercial developments and in tandem with significant change of use/extensions of existing commercial developments where appropriate.*
- *IE5 Objective 8: To secure appropriate provision for the sustainable management of waste within developments, including the provision of facilities for the storage, separation and collection of such waste*

2.3 Legislative Requirements

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

- Waste Management Act 1996 (No. 10 of 1996) as amended 2001 (No. 36 of 2001), 2003 (No. 27 of 2003) and 2011 (No 20 of 2011). Sub-ordinate and associated legislation includes:
 - European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011) as amended 2011 (S.I. No. 323 of 2011)
 - Waste Management (Collection Permit) Regulations 2007 (S.I. No. 820 of 2007) as amended 2008 (S.I. No. 87 of 2008) and 2016 (S.I. No. 24 of 2016)
 - Waste Management (Facility Permit and Registration) Regulations 2007 (S.I. No. 821 of 2007) as amended 2008 (S.I. No. 86 of 2008), 2014 (S.I. No. 310 and S.I. No. 546 of 2014) and 2015 (S.I. No. 198 of 2015)
 - Waste Management (Licensing) Regulations 2000 (S.I. No. 185 of 2000) as amended 2004 (S.I. No. 395 of 2004) and 2010 (S.I. No. 350 of 2010)
 - Waste Management (Packaging) Regulations 2014 (S.I. No. 282 of 2014)
 - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997)
 - Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015)
 - European Communities (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
 - Waste Management (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended 2014 (S.I. No. 349 of 2014) and 2015 (S.I. No. 347 of 2015)
 - Waste Management (Food Waste) Regulations 2009 (S.I. No. 508 of 2009) as amended 2015 (S.I. No. 190 of 2015)
 - European Union (Household Food Waste and Bio-waste) Regulations 2015 (S.I. No. 191 of 2015)
 - Waste Management (Hazardous Waste) Regulations 1998 (S.I. No. 163 of 1998) as amended 2000 (S.I. No. 73 of 2000)
 - Waste Management (Shipments of Waste) Regulations 2007 (S.I. No. 419 of 2007) as amended by European Communities (Shipments of Hazardous Waste exclusively within Ireland) Regulations 2011 (S.I. No. 324 of 2011)
 - The European Communities (Transfrontier Shipment of Hazardous Waste) Regulations 1988 (S.I. No. 248 of 1988)
 - European Union (Properties of Waste which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015)
- Planning and Development Act 2000 (Act No. 30 of 2000) as amended 2010 (Act No. 30 of 2010) and 2015 (S.I. No. 264 and 310 of 2015)

- Environmental Protection Act 1992 (Act No. 7 of 1992) as amended by the Protection of the Environment Act 2003 (Act No. 27 and S.I. No. 413 of 2003) and amended by the Planning and Development Act 2000 (Act No. 30 of 2000) as amended.
- Litter Pollution Act 1997 (S.I. No. 12 of 1997) as amended by the Litter Pollution Regulations 1999 (S.I. No. 359 of 1999) and Protection of the Environment Act 2003, as amended.

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

One of the guiding principles of European waste legislation, which has in turn been incorporated into the *Waste Management Act 1996 - 2008* 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 until its legal reuse, recycling, recovery and/or disposal (including its method of reuse, recycling, recovery and/or disposal). As it is not practical in most cases for the waste producer to physically transfer all waste from where it is produced to its final destination, waste contractors will be employed to physically transport waste to the final waste reuse, recycling, recovery or disposal site. Following on from this is the concept of “*Polluter Pays*” whereby the waste producer is liable to be prosecuted for pollution incidents, which may arise from the incorrect management of waste produced, including the actions of any contractors engaged (e.g. for transportation and disposal/recovery/recycling of waste).

It is therefore imperative that the project developer ensures that the waste contractors engaged by demolition and construction contractors are legally compliant with respect to waste transportation, recovery and disposal. 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 each waste contractor which is issued by the National Waste Collection Permit Office (NWCPO). Waste receiving facilities must also be appropriately permitted or licensed. Operators of such facilities cannot receive any waste, unless in possession of a Certificate of Registration (COR), waste permit granted by the relevant Local Authority under the *Waste Management (Facility Permit & Registration) Regulations 2007 and Amendments* or a waste/IED licence granted by the EPA. The COR/permit/licence held will specify the type and quantity of waste able to be received, stored, sorted, recycled, recovered and/or disposed of at the specified site.

3.0 Description of the Project:

3.1 Location, Size and Scale of Development

The site is located at Dolcain House, Monastery Road, Clondalkin, Dublin 22, approximately 0.7km southeast of Clondalkin Village, and approximately 1.0km southwest of Park West and Cherry Orchard. Monastery Road is located to the North of the site with a number of residential properties across from the development. To the West of the site is a carpark and to the South is a GAA clubhouse and pitch. The site is also bounded by a rock quarry to the East. The proposed development is located in the Local Authority area of South Dublin County Council (SDCC).

The proposed development is made up of the following elements:

- Removal and upgrading of the existing external fabric of blocks A, B, and C and atrium
- Modifications and internal works to accommodate the new residential units
- Extension to the north end of block A
- Demolition of current roof and existing 4th floors of block A
- Demolition of current roofs of blocks B and C
- Construction of 1 additional floor on every block
- Construction of an additional floor in the atrium unit
- Construction of a new 6-storey block, block D.
- Construction of an Attenuation Tank

The initial demolition phase will require the removal of the existing building roofs, external fabrics and interior. The construction phase of the project will comprise of excavating the area where the attenuation tank will be placed. The 4th floor of block A will then be replaced to allow for the construction of a 5th floor above along with the extension at the north end of A. Block B will then have a 4th floor constructed along with a 4th floor addition to the atrium which connects blocks A and B. Block C will also have a 5th floor added to it making it a 6-storey build like block A. The final part of the construction phase will involve the building of block D from ground floor up. Block D will also be a 6-storey block to match blocks A and C. The proposed new exteriors for the existing blocks will be predominately Steel and Glass. Block D will be made from predominately reinforced concrete, Steel, and Glass.

3.2 Details of Non-Hazardous Waste to be produced:

The roof and external fabric of the current buildings are to be demolished as part of the project. The demolition of the exterior and interior will involve stripping the internal fixtures & fittings, glass windows, lintels, blockwork, and brickwork. This work will mostly generate masonry, concrete, plasterboard, timber, metal and insulation waste but will also generate metal waste such as copper wiring. Segregation of demolition waste material is anticipated to be more difficult than construction waste (e.g reinforced steel in concrete, plasterboard partitions etc.)

The demolition of the roofs of the buildings on the site will involve stripping the roof covering and membranes then taking down the existing trusses (where present). This work will mostly generate steel, metal decking, timber, tiling and various roof covering waste but it will also generate electrical waste (WEEE) from the existing lights.

During the construction phase there will be a surplus of materials, such as off-cuts from timber, concrete blocks, tiles and bricks. Waste from packaging and oversupply of materials will also be generated. There may also be excess concrete delivered to site during construction which will need to be disposed of. The contractor(s) will be required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximized.

It is expected that the majority of the surplus soil waste generated from the excavation works will be clean, inert material and should be re-used, recycled, or sent for recovery if possible. Some of this material may be suitable for reuse across the site, however, it is anticipated that the majority of the soil excavated will be removed from the site as there is limited suitable options for onsite reuse.

3.3 Details of Hazardous Waste Arising:

Contaminated Soil

Site investigations are set to be carried out prior to the demolition works to determine the classification of the soil to be excavated in accordance with the *European Communities (EC) Council Decision 2003/33/EC*¹¹ which establishes the criteria for disposal of waste at landfill. It is recommended that soil samples are taken during the site investigations for analysis against Waste Acceptance Criteria (WAC).

Excavation works should be carefully monitored by a suitably qualified person to ensure potentially contaminated soil is identified and segregated, if encountered. In the unlikely event that any potentially contaminated material is encountered, it will need to be segregated from clean/inert material, tested and classified as non-hazardous or hazardous using the HazWasteOnline application (or other similar application) and then classified as clean, inert, non-hazardous or hazardous in accordance with the *EC Council Decision 2003/33/EC*.

Asbestos:

Prior to commencement of demolition works, a Demolition Asbestos Survey will be carried out which will involve a full intrusive survey of all the buildings intended to be demolished and involve destructive inspection. The survey is to be carried out by a competent person to confirm whether or not the site contains Asbestos Containing Materials (ACMs). If the results find any ACMs they must be removed prior to commencement of demolition works.

All ACMs identified by the Demolition Asbestos Survey will be required to be removed by a suitably trained and competent person prior to commencement of demolition works. ACMs will only be removed from site by a suitably permitted waste haulier and will be brought to a suitably licenced facility. Where required, the HSA should be contacted in relation to the handling of asbestos and material should be dealt with in accordance with the *Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006*, as amended and associated approved Codes of Practice. The contractor will also be required to refer to the *Construction & Demolition Management Plan* in relation to asbestos identification and removal.

Fuel/Oils

As fuels and oils are classed as hazardous materials, any on-site storage of fuel/oil, all storage tanks and all draw-off points will be bunded and located in a dedicated, secure area of the site. Provided that these requirements are adhered to and site crew are trained in the appropriate refuelling techniques, it is not expected that there will be any fuel/oil wastage at the site.

Other known Hazardous Substances

Paints, glues, adhesives and other known hazardous substances will be stored in designated areas. They will generally be present in small volumes only and associated waste volumes generated will be kept to a minimum.

3.4 Main C&D Waste Categories

The main non-hazardous and hazardous waste streams that could be generated by the C&D activities at a typical site are shown in Table 3.1. The List of Waste (LoW) code (also referred to as European Waste Code or EWC) for each waste stream is also shown.

Waste Material	List of Waste Code
Soil and stones	17 05
Concrete, bricks, tiles, ceramics	17 01
Wood, glass and plastic	17 02
Bituminous mixtures*	17 03 01/02
Metals (including their alloys)	17 04
Gypsum-based construction material	17 08
Paper and cardboard	20 01 01
Mixed construction and demolition waste	17 09 04
Electrical and electronic components	20 01 35
Biodegradable Kitchen Waste and Canteen Waste	20 01 08
Green waste	20 02 01
Sewage Sludge	20 03 04/06
Batteries and accumulators*	20 01 33-34
Wood preservatives*	03 02
Liquid fuels*	13 07
Chemicals (solvents, pesticides, paints, adhesives, detergents etc.)*	20 01 13-19, 27-30
Soil and stones containing dangerous substances (if encountered)*	17 05 03
Insulation materials and asbestos-containing construction materials*	17 06
Other construction and demolition wastes containing dangerous substances*	17 09 03

*Table 3.1 Typical waste types generated and LoW codes
(* individual waste type may contain hazardous materials)*

4.0 Waste Management

4.1 Demolition Waste Generation

The waste produced from the demolition of the roofs and external fabrics will be segregated by type and estimates have also been made for indicative reuse (onsite and/or offsite), recycling and disposal targets. This breakdown is shown in Table 4.1.

Waste Type	Tonnes	Reuse/Recovery		Recycle		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Glass	154.5	0.0	0.0	0.9	131.3	0.2	23.2
Concrete, Brick, tiles, Ceramics	1067.6	0.2	160.1	0.8	800.7	0.1	106.8
Plasterboard	39.5	0.0	0.0	0.9	33.6	0.2	5.9
Metals	41.5	0.1	4.2	0.9	35.3	0.1	2.1
Timber	2.0	0.1	0.2	0.6	1.2	0.3	0.6
Total	1305.1		164.5		1002.1		138.5

Table 4.1 Predicted on and off-site reuse, recycle and disposal rates for demolition waste

It is estimated that approximately 1305.1 tonnes of waste will be generated from the demolition phase of the project, of which it is targeted to reuse/recover 3164.5 tonnes, recycle 1002.1 tonnes and dispose of no more than 138.5 tonnes. This target is compliant with that specified in the *Eastern-Midlands Region Waste Management Plan* where recycling/reuse of at least 70% of C&D waste is required.

All waste arisings during the demolition phase will be transported off-site by an approved waste contractor holding a current waste collection permit. All waste arisings requiring reuse, recycling, recovery or disposal off-site will be brought to facilities holding the appropriate COR, licence or permit, as required.

4.2 Construction Waste Generation

Table 4.2 shows the breakdown of C&D waste types produced on a typical site based on data from the *EPA National Waste Reports* ¹².

Waste Types	%
Soil & Stones	83
Concrete, Bricks, Tiles, Ceramics	11
Asphalt, Tar and Tar Products	1
Metals	1
Other	4
Total	100

Table 4.2 Waste materials generated on a typical Irish construction site

Table 4.3 shows the predicted construction waste generation for the proposed development based on the information available to date along with the targets for management of the waste streams. The predicted waste amounts are based on an average large scale development waste generation rate per m², using the waste breakdown rates shown in Table 4.2

Waste Type	Tonnes	Reuse/Recovery		Recycle		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Concrete, Bricks, Tiles, Ceramics and Plasterboard	285.5	40	114.19	50	142.7	10	28.55
Metals	8.8	5	0.44	90	7.9	5	0.44
Other	12.7	10	1.27	40	5.1	50	6.34
Total	285.5	40	114.19	50	142.7	10	28.55

Table 4.3 Predicted on and off-site reuse, recycle and disposal rates for construction waste

It should be noted that until final materials and methods of construction have been decided, it is not possible to predict with a high level of accuracy the construction waste that will be generated. The anticipated reuse/recycle/disposal breakdown of excavated soil and stones is also an estimate and is subject to change pending the outcome of the site investigations.

All waste arisings during the excavation and construction phase will be transported off-site by an approved waste contractor holding a current waste collection permit. All waste arisings requiring reuse, recycling, recovery or disposal off-site will be brought to facilities holding the appropriate COR, licence or permit, as required.

4.3 Proposed Waste Management Options

Waste materials generated will be segregated on site, where it is practical. Where the on-site segregation of certain wastes types is not practical, off-site segregation will be carried out. There will be skips and receptacles provided to facilitate segregation at source. All waste receptacles leaving site will be covered or enclosed. The appointed waste contractor will collect and transfer the wastes as receptacles are filled. There are numerous waste contractors in the Dublin Region that provide this service.

All waste arisings will be handled by an approved waste contractor holding a current waste collection permit. All waste arisings requiring disposal off-site will be disposed of at a facility holding the appropriate COR, licence or permit, as required.

Written records will be maintained by the contractor(s) detailing the waste arising throughout the demolition and construction phases, the classification of each waste type, the contact details and waste collection permit number of all waste contactors who collect waste from the site and the end destination details for all waste removed and disposed off-site.

Dedicated banded storage containers will be provided for hazardous wastes which may arise such as batteries, paints, oils, chemicals etc., if required.

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

Soil & Made Ground:

It is anticipated that the majority of excavated soil will be removed from the site as there are limited options for it to be reused on-site. Where this material is removed off-site for reuse as a by-product (and not as a waste), it will be done in accordance with Article 27 of the *European*

Communities (Waste Directive) Regulations 2011. Article 27 requires that certain conditions are met and that by-product decisions are made to the EPA via their online notification form.

The Waste Management Hierarchy states that the preferred option for waste management is prevention and minimisation of waste, followed by preparing for reuse and recycling/recovery, energy recovery (i.e. incineration) and, least favoured of all, disposal. The excavations are required to facilitate construction works so the preferred option (prevention and minimisation) cannot be accommodated for the bulk excavation phase.

The next option (beneficial reuse) may be appropriate for the excavated material pending environmental testing to classify the material as hazardous or non-hazardous in accordance with the EPA *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* ¹³ publication. Clean material may be used as fill material in other construction projects or engineering fill for waste licensed sites. Beneficial reuse of surplus excavation material as engineering fill may be subject to further testing to determine if materials meet the specific engineering standards for their proposed end-use.

Any nearby sites requiring clean fill/capping material will be contacted to investigate reuse opportunities for clean and inert material. If any of the material is to be reused on another site as a by-product (and not as a waste), this will be done in accordance with Article 27. Similarly, if any soils/stones are imported onto the site from another construction site as a by-product, this will also be done in accordance with Article 27.

If the material is deemed to be a waste, then removal and reuse/recycling/ recovery/disposal of the material will be carried out in accordance with the *Waste Management Acts 1996 – 2011* as amended, the *Waste Management (Collection Permit) Regulations 2007* as amended and the *Waste Management (Facility Permit & Registration) Regulations 2007* as amended. The volume of waste removed will dictate whether a COR, permit or licence is required by the receiving facility. Once all available beneficial reuse options have been exhausted, the options of recycling and recovery at waste permitted and licensed sites will be considered.

In the event that contaminated material is encountered and subsequently classified as hazardous, this material will be stored separately to any non-hazardous material. It will require off-site treatment at a suitable facility or disposal abroad via Transfrontier Shipment of Wastes (TFS).

Bedrock

The depth of bedrock is known to be less than 1m depth in areas across the site. It is anticipated that intact bedrock will be encountered during the excavation works for the attenuation tank. Like with soil and made ground, if the material is deemed to be a waste, then removal and reuse/recycling/ recovery/disposal of the material will be carried out in accordance with the *Waste Management Acts 1996 – 2011* as amended, the *Waste Management (Collection Permit) Regulations 2007* as amended and the *Waste Management (Facility Permit & Registration) Regulations 2007* as amended.

Tarmacadam

It is anticipated that the tarmacadam to be excavated at the site contains bitumen based materials and will be non-hazardous, however, historically (typically pre early 1980's) tar was manufactured using coal-tar pitch which is considered hazardous. Waste facilities may accept the waste tarmacadam without testing where the waste producer can confirm the age of the tar.

However, if this is unclear, then coal-tar analysis may be required to confirm the presence/absence of hazardous substances. If the presence of coal-tar is confirmed, then the tarmac will require disposal as a hazardous waste.

Concrete Blocks, Bricks, Tiles & Ceramics

The majority of concrete blocks, bricks, tiles and ceramics generated as part of the construction works are expected to be clean, inert material and should be recycled, where possible.

Hard Plastic

As hard plastic is a highly recyclable material, much of the plastic generated will be primarily from material off-cuts. All recyclable plastic will be segregated and recycled, where possible.

Timber

Timber that is uncontaminated, i.e. free from paints, preservatives, glues etc., will be disposed of in a separate skip and recycled off-site.

Metal

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

Plasterboard

There are currently a number of recycling services for plasterboard in Ireland. Plasterboard from the construction phase will be stored in a separate skip, pending collection for recycling. The site manager and project engineers will ensure that oversupply of new plasterboard is carefully monitored to minimise waste.

Glass

Glass materials will be segregated for recycling, where possible.

Waste Electrical and Electronic Equipment (WEEE)

Any WEEE that does not contain hazardous components will be stored in dedicated covered cages/receptacles/pallets pending collection for recycling.

Other Recyclables

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

Non-Recyclable Waste

Construction waste which is not suitable for reuse or recovery, such as polystyrene, some plastics and some cardboards, will be placed in separate skips or other receptacles. Prior to removal from site, the non-recyclable waste skip/receptacle will be examined by a member of the waste team

(see Section 6.0) to determine if recyclable materials have been placed in there by mistake. If this is the case, efforts will be made to determine the cause of the waste not being segregated correctly and recyclable waste will be removed and placed into the appropriate receptacle.

Hazardous Wastes

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

It should be noted that until a construction contractor is appointed it is not possible to provide information on the specific destinations of each waste stream. Prior to commencement of development and removal of any waste offsite, details of the proposed destination of each waste stream will be provided to SDCC.

4.4 Tracking and Documentation Procedures for Off-Site Waste

All waste will be documented prior to leaving the site. Waste will be weighed by the contractor, either by weighing mechanism on the truck or at the receiving facility. These waste records will be maintained on site by the project contractor.

All movement of waste and the use of waste contractors will be undertaken in accordance with the *Waste Management Acts 1996 - 2008, Waste Management (Collection Permit) Regulations 2007 and Amendments* and *Waste Management (Facility Permit & Registration) Regulations 2007 and Amendments*. This includes the requirement for all waste contractors to have a waste collection permit issued by the NWCPO. The nominated project Waste Manager (see Section 6.0) will maintain a copy of all waste collection permits on-site.

If the waste is being transported to another site, a copy of the Local Authority COR, waste permit or EPA Waste Licence for that site will be provided to the nominated project Waste Manager.

If the waste is being shipped abroad, a copy of the Transfrontier Shipping (TFS) document will be obtained from Dublin City Council (as the relevant authority on behalf of all local authorities in Ireland) and kept on-site along with details of the final destination (permits, licences etc.). A receipt from the final destination of the material will be kept as part of the on-site waste management records.

All information will be entered in a waste management recording system to be maintained on site.

5.0 Estimated Cost of Waste Management

An outline of the costs associated with different aspects of waste management is provided below. The total cost of C&D waste management will be measured and will take into account handling costs, storage costs, transportation costs, revenue from rebates and disposal costs.

5.1 Reuse

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.

5.2 Recycling

Salvageable metals will earn a rebate which can be offset against the costs of collection and transportation of the skips.

Clean uncontaminated cardboard and certain hard plastics can also 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 than mixed waste.

5.3 Disposal

Landfill charges in the Leinster region are currently at around €185/tonne (which includes a €75 per tonne landfill levy introduced under the *Waste Management (Landfill Levy) (Amendment) Regulations 2012*). In addition to disposal costs, waste contractors will also charge a collection fee for skips.

Collection of segregated C&D waste usually costs less than municipal waste. Specific C&D waste contractors take the 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.

6.0 Training Provisions

A member of the construction team will be appointed as the waste manager to ensure commitment, operational efficiency and accountability during the construction and demolition phases of the project.

6.1 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 client on everyday waste management at the site. Authority will be given to the waste manager to delegate responsibility

to sub-contractors, where necessary, and to coordinate with suppliers, service providers and sub-contractors to prioritise waste prevention and material salvage.

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

6.2 Site Crew Training

Training of site crew is the responsibility of the waste manager and, as such, a waste training program should be organised. A basic awareness course will be held for all site crew to outline the C&DWMP and to detail the segregation 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 (WSAs). A sub-section on hazardous wastes will be incorporated into the training program and the particular dangers of each hazardous waste will be explained.

7.0 Record Keeping

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

The waste manager or delegate will record the following;

1. Waste taken for reuse off-site;
2. Waste taken for recycling;
3. Waste taken for disposal; and
4. Reclaimed waste materials brought on-site for reuse.

For each movement of waste on or off-site, a signed docket will be obtained by the Waste Manager from the 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. This system will also be linked with the delivery records. In this way, the percentage of construction waste generated for each material can be determined.

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

8.0 Outline Waste Audit Procedure

8.1 Responsibility for Waste Audit

The appointed Waste Manager will be responsible for conducting a waste audit at the site during the construction phase of the development

8.2 Review of Records and Identification of Corrective Actions

A review of all the records for the waste generated and transported on or off-site should be undertaken mid-way through the project. If waste movements are not accounted for, the reasons for this should be established in order to see if and why the record keeping system has not been maintained. The waste records will be compared with the established recovery/reuse/recycling targets for the site.

Each material type will be examined, in order to see where the largest percentage waste generation is occurring. The waste management methods for each material type will be reviewed in order to highlight how the targets can be achieved. Waste management costs will also be reviewed.

Upon completion of the construction phase, a final report will be prepared, summarising the outcomes of waste management processes adopted and the total recycling/reuse/recovery figures for the development.

9.0 Consultation with Relevant Bodies

9.1 Local Authority

Once a construction contractor has been appointed and prior to removal of any waste materials offsite, details of the proposed destination of each waste stream will be provided to SDCC. SDCC will also be consulted, as required, throughout the excavation and 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 a waste contractor is 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 construction materials will be obtained, including the feasibility of recycling each material, the costs of recycling/reclamation and the means by which the wastes will be collected and transported off-site, and the recycling/reclamation process each material will undergo off site.



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Director

Date: 17th January 2022

For Lohan & Donnelly Civil & Structural Consulting Engineers

10.0 References

1. Waste Management Act 1996 (No. 10 of 1996) as amended 2001 (No. 36 of 2001), 2003 (No. 27 of 2003) and 2011 (No. 20 of 2011). Subordinate and associated legislation includes:
 - European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011) as amended 2011 (S.I. No. 323 of 2011)
 - Waste Management (Collection Permit) Regulations 2007 (S.I. No. 820 of 2007) as amended 2008 (S.I. No. 87 of 2008) and 2016 (S.I. No. 24 of 2016)
 - Waste Management (Facility Permit and Registration) Regulations 2007 (S.I. No. 821 of 2007) as amended 2008 (S.I. No. 86 of 2008), 2014 (S.I. No. 310 and S.I. No. 546 of 2014) and 2015 (S.I. No. 198 of 2015)
 - Waste Management (Licensing) Regulations 2000 (S.I. No. 185 of 2000) as amended 2004 (S.I. No. 395 of 2004) and 2010 (S.I. No. 350 of 2010)
 - Waste Management (Packaging) Regulations 2014 (S.I. No. 282 of 2014)
 - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997)
 - Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015)
 - European Communities (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
 - Waste Management (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended 2014 (S.I. No. 349 of 2014) and 2015 (S.I. No. 347 of 2015)
 - Waste Management (Food Waste) Regulations 2009 (S.I. No. 508 of 2009) as amended 2015 (S.I. No. 190 of 2015)
 - European Union (Household Food Waste and Bio-waste) Regulations 2015 (S.I. No. 191 of 2015)
 - Waste Management (Hazardous Waste) Regulations 1998 (S.I. No. 163 of 1998) as amended 2000 (S.I. No. 73 of 2000)
 - Waste Management (Shipments of Waste) Regulations 2007 (S.I. No. 419 of 2007) as amended by European Communities (Shipments of Hazardous Waste exclusively within Ireland) Regulations 2011 (S.I. No. 324 of 2011)
 - The European Communities (Transfrontier Shipment of Hazardous Waste) Regulations 1988 (S.I. No. 248 of 1988)
 - European Union (Properties of Waste which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015)
2. Litter Pollution Act 1997 (S.I. No. 12 of 1997).
3. Eastern-Midlands Waste Region, *Eastern-Midlands Region (EMR) Waste Management Plan 2015 – 2021* (2015).
4. Department of Environment and Local Government (DoELG) *Waste Management – Changing Our Ways, A Policy Statement* (1998).
5. Forum for the Construction Industry, *Recycling of Construction and Demolition Waste*.
6. Department of Environment, Communities and Local Government (DoECLG), *A Resource Opportunity - Waste Management Policy in Ireland* (2012).
7. Department of Environment, Heritage and Local Government (DoEHLG), *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects* (2006).
8. FÁS and the Construction Industry Federation (CIF), *Construction and Demolition Waste Management – a handbook for Contractors and Site Managers* (2002).
9. Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives.
10. South Dublin County Council (SDCC), *South Dublin County Council Development Plan 2016-2022* (2016).

11. Council Decision 2003/33/EC, establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.
12. Environmental Protection Agency (EPA), *National Waste Database Reports 1998 – 2012*.
13. EPA, *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* (2015).