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CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT PLAN

TAYLOR'S LANE, BALLYBODEN, DUBLIN 16

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1. INTRODUCTION

Panther Environmental Solutions Ltd. was commissioned by Luxcare Ltd to compile a detailed Construction and Demolition Waste Management Plan (C&D WMP) for the proposed construction of a 111-bedroom nursing home over 3 floors with all associated site and landscaping works at Taylor's Lane, Ballyboden, Dublin 16.

The purpose of the C&D WMP is to outline the manner in which construction and demolition waste will be managed throughout the construction phase of the proposed development, to ensure compliance with the relevant waste legislation and to ensure waste management activities from the site will not have an adverse impact upon the environment.

The C&D WMP details the types and estimated quantities of the wastes that will be generated, the waste management methods proposed for the site and waste storage details, in addition to outlining how waste will be managed in accordance with the waste hierarchy (Section 21A of the Waste Management Act 1996, as amended).

The C&D WMP will cover the following range of works associated with the construction phase of the project:

- Ground preparation works;
- Development of site infrastructure;
- Construction of buildings and hardstanding areas;
- Landscaping of entire site including open soft landscaped areas.

This plan also includes information on the legislative framework and policy framework for construction and demolition waste management in Ireland.

It should be noted that quantities of materials present in this report are estimated and subject to detailed design and therefore should not be taken as definitive.

This document has been prepared taking cognisance of the "*Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects*", published in 2006 by the Department of Environment, Heritage and Local Government (DoEHLG).

1.1 REQUIREMENT FOR THE PLAN

A Construction and Demolition Waste Management Plan should be prepared for proposed projects which meet or exceed the thresholds set out in the DoEHLG publication, "*Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects*", as outlined below:

- New residential development of 10 houses or more;
- New developments other than (1) above, including institutional, educational, health and other public facilities, with an aggregate floor area in excess of 1,250m^2;

- Demolition/renovation/refurbishment projects generating in excess of $100m^3$ in volume, of C&D waste;
- Civil Engineering projects producing in excess of $500m^3$ of waste, excluding waste materials used for development works on the site.

1.2 LIVE DOCUMENT

The C&D WMP is a "live" document and will be reviewed and updated as necessary throughout the construction phase.

2. LEGISLATIVE FRAMEWORK AND PLANNING POLICY

2.1 LEGISLATIVE CONTEXT

The main legislation pertaining to waste management in Ireland and of potential relevance to the proposed development includes the following:

EU Legislation:

- Council Directive 1999/31/EC on the Landfilling of Waste;
- Waste Framework Directive 2008/98/EC;
- European List of Waste, Commission Decision 2000/532/EC;
- Council Directive 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;
- WEEE Directive 2012/19/EU.

Irish Legislation:

- Waste Management Act 1996 as amended;
- Waste Management (Facility Permit and Registration) Regulations 2007 (S.I. 821 of 2007) and (Amendment) Regulations (S.I. 86 of 2008, S.I. 320 of 2014, S.I. 198 of 2015);
- Waste Management (Licensing) Regulations 2000 (S.I. 185 of 2000) , 2004 (S.I. 395 of 2004), (Amendment) Regulations 2010 (S.I. 350 of 2010);
- Waste Management (Planning) Regulations 1997 (S.I. 137 of 1997);
- Waste Management (Collection Permit) Regulations 2007 (S.I. 820 of 2007) and (Amendment) Regulations 2008 to 2016;
- Waste Management (Hazardous Waste) Regulations 1998 (S.I. 163 of 1998) and Waste Management (Hazardous Waste) (Amendment) Regulations 2000 (S.I. 73 of 2000);

- Waste Management (Food Waste) Regulations 2009 (S.I. 508 of 2009), European Union (Household Food Waste and Bio-waste) Regulations 2013 (S.I. 71 of 2013) and European Union (Household Food Waste and Bio-waste) Regulations 2015 (190 of 2015);
- European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (WEEE) (S.I. 149 of 2014);
- European Union (Batteries and Accumulators) Regulations 2014 (S.I. 283 of 2014) and (Amendment) Regulations (S.I. 349 of 2014, S.I. 347 of 2015);
- Waste Management (Shipments of Waste) Regulations 2007 (S.I. 419 of 2007);
- European Communities (Shipments of Hazardous Waste Exclusively within Ireland) Regulations 2011 (S.I. 324 of 2011);
- Litter Pollution Act 1997, Litter Pollution Regulations 1999 (S.I. 359 of 1999) and Litter Pollution (Increased Notice Payment) Order 2007 (S.I. 558 of 2007);
- Waste Management (Landfill Levy) Regulations 2015 (S.I. 189 of 2015);
- Waste Management (Prohibition of Waste Disposal by Burning) Regulations 2009 (S.I. 286 of 2009) and (Amendment) Regulations (S.I. 504 of 2013, S.I. 538 of 2015, S.I. 599 of 2017);
- European Communities (Waste Directive) Regulations 2011 (S.I. 126 of 2011), (Amendment) Regulations 2016 (S.I. 315 of 2016), and European Union (Properties of Waste which Render it Hazardous) Regulations 2015 (S.I. 223 of 2015), European Union (Waste Directive) (Recovery Operations) Regulations 2016 (S.I. 372 of 2016);
- Local Government Act and associated regulations.

2.2 Planning Policies, Plans and Other Guidance

Policies, plans and guidance documents pertaining to waste management and of potential relevance to the proposed development include the following:

- European Waste Catalogue and Hazardous Waste List (2002), Environmental Protection Agency;
- National Waste Prevention Programme Annual Report for 2019, Environmental Protection Agency;
- Eastern Region Waste Management Plan 2015-2021 and Associated Reports;
- South County Dublin Development Plan 2016 - 2022
- Draft South County Dublin Development Plan 2022-2028
- Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (2006), Department of Environment, Heritage and Local Government.

Eastern Region Waste Management Plan 2015-2021

The proposed development site is located within South Dublin and is therefore within the area covered by the Eastern Region Waste Management Plan 2015-2021. This plan covers the twelve local authority areas of Dublin City Council; Dún Laoghaire-Rathdown County Council; Fingal County Council; South Dublin County Council; Kildare County Council; Louth County Council; Laois County Council; Longford County Council; Meath County Council; Offaly County Council; Westmeath County Council; Wicklow County Council. The vision of the waste management plan is as follows:

"*The strategic vision of the regional waste plan is to rethink our approach to managing waste, by viewing our waste streams as valuable material resources. Making better use of our resources and reducing the leakage of materials, as wastes, from our economies will deliver benefits economically and environmentally to the region.*".

The plan sets out a number of waste management policies for the region, in accordance with the main strategic principals of the plan including waste management hierarchy, source segregation, opportunity, self-sufficiency and proximity, protection, co-operation, balanced and sustainable infrastructure and the polluter pays principle.

Targets of the Eastern Region Waste Management Plan include a 60% reuse / recycling rate of municipal waste by 2020 and to increase the reuse / recycling / material recovery rate of construction and demolition waste (excluding soil and stones) by 2020.

South County Dublin Development Plan 2016 – 2022

South County Dublin Development Plan 2016 - 2022 outlines eight waste management objectives for the county, with the relevant objectives to the proposed development outlined in the table below.

Table 2.1: CDP Waste Management Objectives Relevant to the Proposed Development

POLICY REFERENCE	POLICY
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 2	To support waste prevention through behavioural change activities to de-couple economic growth and resource use
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 4	To provide, promote and facilitate high quality sustainable waste recovery and disposal infrastructure/ technology in keeping with the EU waste hierarchy and to adequately cater for a growing residential population and business sector
IE5 Objective 5	To provide for and maintain the network of bring infrastructure (e.g. civic amenity facilities, bring banks) in the County to facilitate the recycling and recovery of hazardous and non-hazardous municipal wastes.
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.

POLICY REFERENCE	POLICY
IE5 Objective 7	To develop a countywide network of green waste centres in suitable locations to expand the collection system for compostable waste.
IE5 Objective 8	To develop a countywide network of green waste centres in suitable locations to expand the collection system for compostable waste.

Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (2006)

These guidelines outline the manner in which construction and demolition waste should be managed throughout the construction phase of a project.

The guidelines outline the aspects which should be addressed in a Construction and Demolition Waste Management Plan, including waste arising, specific waste management objectives, methods proposed for prevention, reuse and recycling and material handling procedures.

3. DESCRIPTION OF THE PROJECT

3.1 LOCATION, DESIGN AND SCALE OF THE DEVELOPMENT

The proposed development site is located on Taylor's Lane, Ballyboden, Dublin 16, as shown in Figure 3.1 below. Access to the site is via Taylor's Lane (R113) along the north boundary. Access to the M50 motorway is approximately 2.3km west of the site. The land use of the surrounding area is a mixture of housing and commercial buildings. See Appendix A for site boundary.

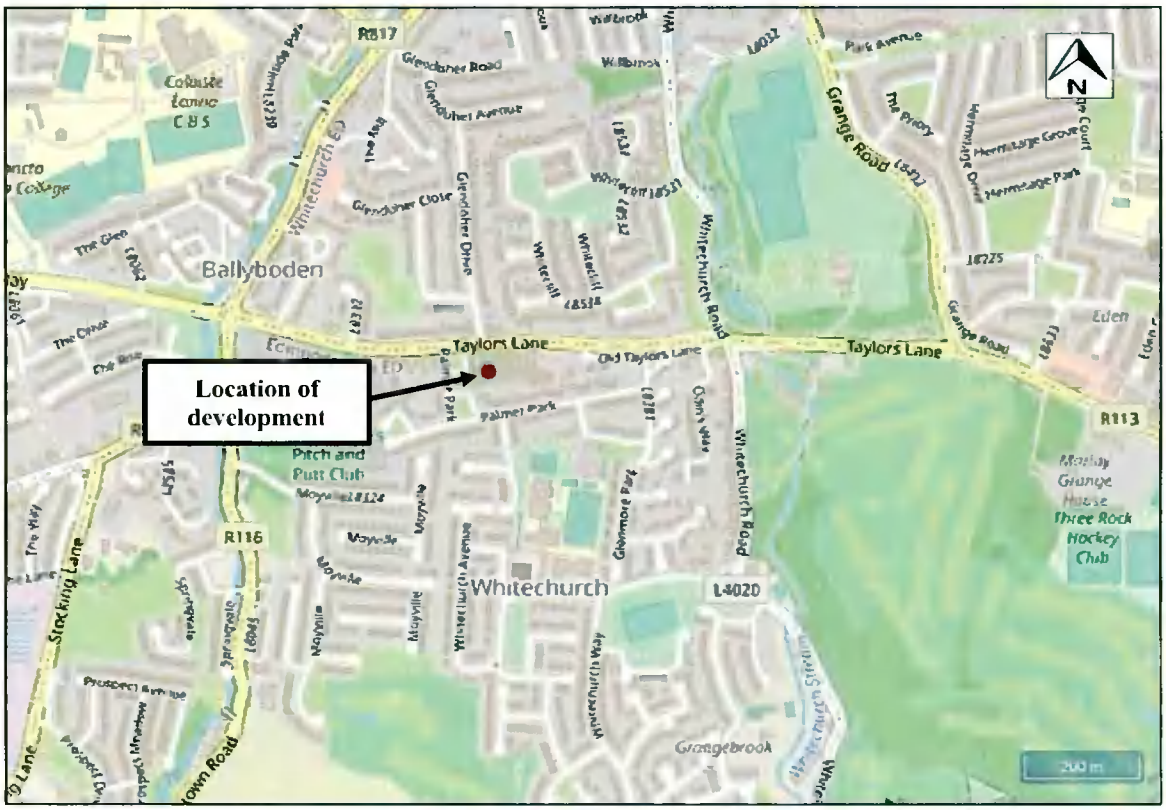

Figure 3.1: Location of Proposed Development at Taylor's Lane, Ballyboden, Dublin 16

The majority of the site is comprised of building and artificial surfaces and was previously in use as a builder's providers with Newbrook House in residential use. The site has a history of commercial activity. The proposed development would require clearance of scrub and recolonising vegetation. Demolition will occur for all outbuildings and disused sheds with Newbrook House to remain intact as it is a protected structure. A watercourse is located within the site boundary and will be moved/redirected southwards and included in the landscape design.

Figure 3.2: Site boundary and vegetation cover (Source; Google Earth 2020)

The proposed development of the site will be the construction of 111-bedroom nursing home over 3 floors. This will include dayrooms, offices, reception, meeting rooms, cinema, laundry, kitchen, dining rooms, staff rooms, various bathrooms, hair salon, and ancillary accommodation. All floors will contain bedrooms, staff facilities, service rooms and recreational rooms measuring a total of 5133m^2. In addition, Newbrook House will be refurbished and there will be separate 5 townhouses located in the south east corner of the site. There will be 18 car parking spaces and a landscaped garden along the south boundary with boardwalks and outdoor seating.

The proposed development will also include the construction and upgrade of surface water and foul sewer drainage systems and all ancillary development works including the provision of outdoor artificial lighting and secure access.

The expected construction timeframe will be approximately 12-15 months, with hours of operation from 8am to 6pm, Monday to Friday and 8am to 2pm on Saturday. All the above works to be undertaken on site.

A temporary site compound will be established within the boundary of the proposed development site, which will house the waste receptacles for the project.

Table 3.1: Proposed Development Footprint

FLOOR	TOTAL AREA
Ground Floor	1,380m^2
1st Floor	1,488m^2
2nd Floor	1,477m^2
3rd Floor	788 m^2

The proposed footprint for the nursing home is 1,380m^2.

3.2 DETAILS OF WASTES TO BE GENERATED

During the project, construction and demolition waste ("C&D waste") will be generated at the site, with the main likely waste streams outlined in the table below.

Table 3.1: Predicted Main Construction Waste Streams

WASTE TYPE	EWC CODE	ORIGIN
Concrete	17 01 01	Waste concrete may arise due to surplus concrete from pouring activities.
Bricks	17 01 02	Damaged / defected brick waste may arise during the construction of the residential dwellings.
Tiles and Ceramics	17 01 03	Waste tiles / ceramics may arise during the construction of residential dwellings.
Mixture of Concrete, Bricks, Tiles and Ceramics	17 01 07	As detailed in 17 01 01, 17 01 02 and 17 01 03 above.
Wood	17 02 01	Wood waste may arise during the construction of the dwellings and shuttering works, due to damaged / defected wood, off-cuts and surplus wood.
Glass	17 02 02	Glass waste may arise due to damaged / defected glass and accidental breakages.
Plastic	17 02 03	Plastic waste may arise due to damaged / defected products.
Metals (including alloys)	17 04 01 - 07	Waste metal may arise due to damaged / defected metal, off-cuts and surplus metal.
Soils and Stones	17 05 04	Excavated soils and stones waste will arise during site excavations and earth-moving activities.
Insulation Materials	17 06 04	Waste may arise due to damaged / defected insulation panels and off-cuts.
Gypsum-based Construction Material	17 08 02	Waste may arise due to damaged / defected product.
Bituminous mixtures, coal tar	17 03	Waste may arise due to surplus material and removal of previous building material.

Waste Type	EWC Code	Origin
and tarred products		
Biodegradable waste	20 02 01	Green waste will arise during site clearance works, with the removal of any vegetation at the site.

The temporary site compound, which will house the site offices and staff welfare facilities such as a break area, will generate limited amounts of waste, including the following:

- Paper and cardboard – EWC 15 01 01 and EWC 20 01 01;
- Biodegradable / food waste – EWC 20 01 08;
- Plastics – EWC 15 01 02 and EWC 20 01 39;
- Metals – EWC 20 01 40;
- Mixed municipal waste – EWC 20 03 01;
- Sanitary waste – EWC 20 03 04.

Other waste materials which may arise during construction works in small volumes include:

- Waste Oils and Liquid Fuels – EWC 13 02 and EWC 13 07;
- Waste from Electrical and Electronic Equipment – EWC 16 02;
- Cables – EWC 17 04 11;
- Paints – EWC 20 01 28;
- Wood Preservatives – EWC 03 02;
- Batteries – EWC 16 06;
- Gypsum – EWC 17 08 02.

Wastes from EWC fractions EWC 03 02, EWC 13 02, EWC 13 07, EWC 16 02 and EWC 16 06 may be hazardous.

The Environmental Protection Agency (EPA) has published data on the typical breakdown of C&D waste in Ireland using 2018 as the reference year. The percentage breakdown of each waste type in a typical C&D waste stream is provided in the figure below.

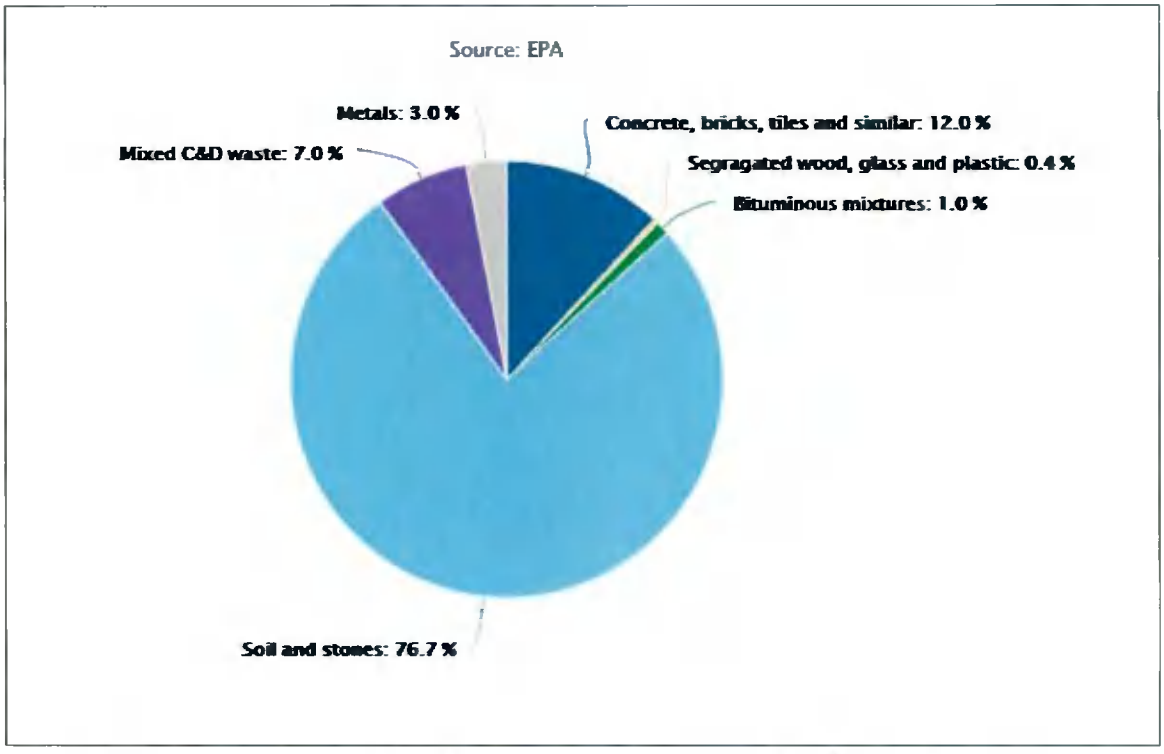

Figure 3.3: C&D Waste Material Streams in Reference to Total %, 2018 (Source: http://www.epa.ie/nationalwastestatistics/constructiondemolition/)

Any soil arising from excavations onsite will be used in the reinstatement and any landscaping process where possible. Any excess excavated soil will be removed offsite to a licenced waste facility.

The BRE Waste Benchmark Data, published in June 2012, provides guidance on the construction waste estimates based on the gross internal floor area. This guidance relates to "new build" construction projects only. Table 3.2 below details the typical construction industry waste generation per 100m^2 floor area.

Table 3.2: BRE Waste Benchmark

PROJECT TYPE	NUMBER OF PROJECTS DATA RELATES TO	AVERAGE TONNES/100M^2
Residential	**256**	**16.8**
Public Buildings	23	22.4
Leisure	21	21.6
Industrial Buildings	23	12.6
Healthcare	22	12.0
Education	60	23.3
Commercial Other	4	7.0
Commercial Offices	14	23.8
Commercial Retail	48	27.5
Total number of projects	**471**	-

For the 111-bedroom nursing home with a total footprint of 1,380 m^2 (as discussed in Section 2.4) and an average of 12.0 tonnes of waste per 100m^2 of floor area, the construction waste generated translates to approximately 165.6 tonnes.

Table 3.3 below outlines the typical breakdown of construction and demolition waste type expected to be generated from a typical site such as this, based on the EPA Waste Data, *Construction & Demolition Waste Statistics For Ireland* (2018). The table also gives an estimate of the construction waste (breakdown) which might be generated based on information currently available. It should be noted that the figures below are estimates, and therefore, are for indicative purposes only. During the detailed design stage of the project, the construction works contractor would review the estimated volume of wastes to be generated.

Table 3.3: Construction Waste Materials Generated and Estimated Quantities

Waste Types	Percentage (EPA Figures)	Waste Tonnes Estimate
Soils and stones	76.7%	127.02
Mixed C&D waste	7.0%	11.59
Concrete, bricks, tiles and similar	12.0%	19.87
Metals	3.0%	4.94
Bituminous mixtures	1.0%	1.66
Segregated wood, glass, plastic	0.4%	0.66
Total	**100.1**	**165.74**

The total generation of waste during the project, excluding excavated soils, has been estimated at 38.72 tonnes. This has been calculated based upon the estimated number of skips which will be required during the project and the estimated weight of C&D waste based upon volume. Conversion factors used for calculations were taken from the Draft 16 UK Waste Classification Scheme. While an estimate for soils and stones is provided from the table above, it should be noted that this figure is very much an estimate, and does not take into consideration the topography of the site, or associated works with the nursing home development (for example internal roadways and pathways and laying of pipelines).

The following table outlines the estimated volumes of wastes to be generated during the project, in addition to the proposed project targets. It should be noted that the figures below are best estimates, and therefore, are for indicative purposes.

Table 3.2: EPA Final Treatment of C&D Waste Streams (2018) Estimated Volumes of Wastes Generated and Targets

Waste Type	Tonnes	Reuse / Recovery		Recycling		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D waste	11.59	25	2.90	6.98	1.745	7	0.72
Concrete, bricks, tiles and similar	19.87	77	15.30	23	17.71	0	0
Metal	4.94	0	0	100	0	0	0
Bituminous mixtures	1.66	67	1.11	33	22.11	0	0
Segregated wood, glass, plastic	0.66	15	0.10	85	12.75	0	0
TOTAL	34.33	-	19.41	-	11.43	-	0.81

4. WASTE ARISING

4.1 Waste Hierarchy

Throughout the construction phase, wastes generated will be managed by the client in order of priority in accordance with Section 21A of the Waste Management Act 1996, as amended, as per the waste hierarchy below.

Figure 4.1: The Waste Hierarchy

Wastes will be segregated as much as possible in order to avoid cross contamination. Where practical, the client will reduce the generation of wastes at source through measures such as

the efficient ordering and purchasing of materials to reduce surplus materials, the correct storage and handling of materials to minimise the generation of damaged materials, the return of uncured concrete to the batching plant where possible and the re-using of shutters for concrete works.

Where it is not possible to avoid the generation of wastes, wastes will be sent for recycling or recovery as a priority. The reuse of materials onsite, such as excavated soils and damaged bricks / blocks, will reduce the requirement for imported material to the site. The generation of waste for disposal will be minimised as much as is practical.

4.2 WASTE HANDLING

Waste Contractors

The collection of wastes from the site would be undertaken by suitably authorised waste hauliers and would only be recycled / recovered or disposed of at suitably licenced waste facilities.

The construction works contractor would appoint a waste contractor(s) for the construction phase. The waste contractor(s) appointed for the project would have experience in construction waste management and would be appropriately licenced, holding the relevant waste collection permit and/or waste licences for the types of waste anticipated to be generated during construction works.

The waste contractor(s) would be appropriately licenced in compliance with the following regulations:

- Waste Management (Collection Permit) Regulations 2007 (S.I. No. 820 of 2007);
- Waste Management (Collection Permit) Amendment Regulations 2008 (S.I. No. 87 of 2008);
- Waste Management (Facility Permit and Registration) Regulations 2007 (S.I. No. 821 of 2007);
- Waste Management (Facility Permit and Regulations) Amendment Regulations 2008 (S.I. No. 86 of 2008).

Waste Storage Area

The site compound will be the designated location for waste receptacles onsite. Waste will be segregated onsite where possible and placed within the recycling and waste receptacles provided by the waste contractor. The number and size of waste receptacles will be determined following the appointment of the waste contractor. Waste receptacles will be appropriately labelled. Where waste fuels and oils are generated, they will be stored within a bunded container in a designated area of the site compound.

Waste Minimisation

Waste minimisation and prevention would be the responsibilities of the construction works contractor, who would ensure the following:

- The efficient ordering and purchasing of materials to reduce surplus materials;
- Materials would be ordered in appropriate sequence to minimise materials stored on site;
- The correct storage of materials to minimise the generation of damaged materials, for example keeping materials packaged until they are ready to be used and storing materials which are vulnerable to water damage via precipitation under cover and raised above the ground;
- The handling of materials with care, to avoid undue damage;
- The return of uncured concrete to the batching plant where possible;
- The re-use of shutters for concrete works;
- Where practical and where permitted, certain waste streams would be used during infill works (if required);
- Where possible, excavated subsoil and topsoil would be reused for the reinstatement and landscaping of the development site.

The construction works contractor would reuse materials onsite where possible. In particular, soils and stones (EWC 17 05 04) would be used for site levelling and landscaping purposes. Where generated and where applicable, inert wastes (such as concrete (EWC 17 01 01), bricks (EWC 17 01 02) and soils and stones (EWC 17 05 04)) would be used for infilling activities (should infilling activities be required).

The reuse of materials onsite would reduce the requirement for imported material to the site, which would have the following positive environmental impacts to the construction phase:

- Reduction in imported materials to the site;
- Reduction in the requirement for virgin aggregate materials from quarries;
- Reduction in energy required to extract, process and / or transport virgin materials / aggregates;
- Reduced HGV movements associated with the delivery of imported materials to the site;
- Reduced noise levels associated with reduced HGV movements;
- Reduction in the amount of landfill space required to accept C&D waste.

Management of Waste Streams

Excavated Soils and Stones:

Soils and stones arising from excavations would be reused in the reinstatement (for example as cut and fill activities and engineering fill) and landscaping processes where possible. This would be investigated by the construction works contractor and would be subject to appropriate testing to ensure the material is suitable for its proposed end use. The construction works contractor has estimated there will be minimal amount of topsoil generated and would be reused at the development site.

Any excess soils would be collected by a licenced waste contractor and either reused for reinstatement / landscaping activities at other sites if suitable or disposed of as appropriate. Alternatively, the construction works contractor would investigate if excavated soils can be classified as a by-product under Article 27 of the Waste Directive Regulations, 2011. If a local use for the material is identified, and if the proposed end use meets the requirements of the Article 27 regulations, there would be no requirement to send this material to a waste facility.

In the unlikely event of any evidence of soil contamination being found during work on site, the appropriate remediation measures would be employed. Areas of potentially contaminated soil would be isolated and tested for contamination in accordance with the 2002 Landfill Directive (2003/33/EC). Any work of this nature would be carried out in consultation with, and with the approval of, the EPA and the Environmental Department of South Dublin County Council. Pending the results of laboratory testing, this material would be excavated and exported off-site, by an appropriately Permitted Waste Contractor holding an appropriate Waste Collection permit and that this hazardous material be sent for appropriate treatment / disposal to an appropriately Permitted / Licenced Waste Facility.

Concrete, Bricks, Tiles and Ceramics:
Surplus concrete would be returned to the batching plant where possible. An impermeable concrete washout area (separate to vehicle wheel wash) would be installed by the construction works contractor, if required. Excess concrete and washings from ready mix trucks would be deposited in the designated contained area only. The main contractor would arrange for removal from site of concrete at regular intervals. Where concrete, blocks and bricks, tiles and ceramics arise from construction activities, they would be crushed and used for ground-fill material where deemed suitable (should infill activities be required). Where these materials cannot be reused onsite, they would be diverted for recycling if possible.

Wood:
Waste wood would be reused for shuttering where suitable. Wood that is uncontaminated (free from preservatives and paints) would be segregated and recycled. Any wood not deemed suitable for recycling would be disposed of as appropriate.

Metal:
Metal is highly recyclable and has a considerable rebate value. Where metal cannot be reused onsite, the majority would be recycled.

Glass:
Small volumes of waste glass may be generated during the construction phase. As glass can contaminate other segregated waste streams, it would be collected separately where possible. The majority of glass would be recycled.

Other Recyclables:
These include plastic, cardboard and office waste such as paper. Where possible, the different recyclables would be segregated onsite and sent for recycling. With regards packaging waste, the construction works contractor would investigate the possibility of returning the packaging to the supplier.

Food Waste:
Food waste on site would arise from food consumption by construction staff. Suitable food waste bins would be provided by the contractor in the construction compound and the contractor would ensure that these are regularly removed and emptied. Food waste would be sent for composting or anaerobic digestion.

Mixed Municipal Waste and Other Non-Recyclable Waste:
Wastes not suitable for reuse or recycling would be stored in separate waste receptacles. Prior to removal from site, the EHS Officer / Waste Manager or delegate would inspect the receptacles to ensure they contain no recyclable material or materials which can be reused.

Green Waste:
Green waste may be sent for composting if not possible to reuse onsite during landscaping / re-instatement activities, or for disposal as deemed appropriate by the waste contractor.

Sanitary Waste:
Sanitary waste from the port-a-loo toilets / holding tank located within the temporary site compound would be collected by a licenced waste contractor on a regular basis.

Hazardous Materials:
Hazardous waste would be managed in accordance with the Waste Management (Hazardous Waste) Regulations 1998 and 2000. Small quantities of hazardous waste may be generated onsite. Examples of potentially hazardous wastes include fuels and oils, batteries, paints, adhesives and sealants. Hazardous waste would be stored separately from non-hazardous waste, would be appropriately labelled and would be stored upon bunds where appropriate. The construction works contractor would ensure that the appointed waste contractor is licenced to transport / accept hazardous waste prior to the waste leaving the site. Depending on the type of hazardous material, the waste may be recovered, recycled or disposed of appropriately.

Waste Electrical and Electronic Equipment (WEEE):
This waste, if generated, would be stored separately from other waste streams and would be covered pending collection. WEEE can contain hazardous components such as batteries and mercury containing fluorescent tubes. All hazardous wastes would be stored in appropriate secure bunded containers prior to removal from site. Some hazardous wastes may not be stored with other wastes. This would be determined by the contractor and appropriate precautions taken.

5. ESTIMATED COST OF WASTE MANAGEMENT

An outline of the costs associated with waste management during the project is provided below. The total cost of waste management during the project will be measured and will take into account the handling costs, storage costs, transportation costs, the revenue generated from recycling rebates and disposal costs including the landfill tax.

5.1 REUSE

Where materials are reused onsite, savings will be made in transportation costs and the associated recycling / recovery / disposal costs. Where materials cannot be reused onsite but may be reused elsewhere, for example topsoil, this material will often be taken from the site for a nominal fee or free of charge.

5.2 RECYCLING

Waste contractor recycling fees are considerably less than disposal costs. Where recycling streams are segregated, the associated fee may be further reduced. For some waste streams, for example metals, waste contractors will provide a rebate, which can be offset against the costs of collection and transportation. See Ballymount recycling centre for non-commercial waste pricing and accepted materials. See local commercial licenced waste contractors for accepted materials for pricing and accepted materials.

5.3 DISPOSAL

Disposal rates in the South Dublin County Council will include the landfill levy cost of €75 per tonne, as specified in the Waste Management (Landfill Levy) Regulations 2015 (S.I. 189 of 2015). Waste contractors will also impose a charge for the collection of the waste skips. Where C&D waste is segregated from other wastes, waste contractors may charge less, as they may be able to salvage items from the waste, such as clean rubble for fill material, prior to disposal. See EPA for licenced waste facilities and the materials taken in.

6. DEMOLITION PLAN

The principle objective of a Demolition Plan is to ensure that in projects where a building or structure requires demolition, the sequence of operations to be followed is predetermined and documented, thereby ensuring that an appropriately selective dismantling / demolition methodology is employed.

6.1 MEASURES DURING DEMOLITION PHASE

Measures to be taken during the demolition phase should include the following;

The contractor should consider:

- During demolition works dust netting shall be placed around the site boundary;
- High Power water misting / spraying plant shall be used during the demolition activities to suppress and control dust emissions.
- The age of the structure;
- Its previous use;
- Nearby buildings or structures;
- The weight of removed material or machinery on floors above ground level;
- The type of construction;
- Materials must be removed from the site in a timely manner and not stocked piled for long periods of time;
- Hazardous materials must be disposed of properly at a licence waste facility;
- The demolition plan should identify the sequence required to prevent accidental collapse of the structure;
- Deliberate controlled collapse with safe zones and restricted access;
- Installing protective cladding and lining along exposed surfaces to weatherproof if required;
- Cognisance would be taken of the National Roads Authority's "*Guidelines for the Treatment of Noise and Vibration in National Road Schemes*", the British Standard 5228: Part 1 "*Code of practice for Noise Control on Construction and Open Sites*" and the CIRIA 2015 "*Environmental Good Practice on Site*";

6.2 Site Clearance and Hazardous Materials

Small quantities of hazardous waste may be generated onsite, for example waste fuels and oils, batteries, paints and preservatives. Hazardous waste will be stored separately from non-hazardous waste, will be appropriately labelled and will be bunded where required. Hazardous waste will be managed in accordance with the Waste Management (Hazardous Waste) Regulations 1998 and 2000. The client will ensure that the waste contractor is licenced to transport / accept hazardous waste prior to the waste leaving the site. Depending on the type of hazardous material, the waste may be recovered, recycled or disposed of appropriately. Dublin City Council, National TFS Office is the sole authority for the administration of hazardous waste movements within Ireland and requires a Waste Transfer Form (WTF). This Waste Transfer Form administration system requires consignors to purchase and fill in forms online at Dublin City Council website.

All contractors working on the site should always remain vigilant to the possibility that concealed asbestos containing materials may be present on site. If any suspect asbestos containing materials are uncovered during the course of the work, works must stop in that area and the suspect material should be sampled and analysed immediately for the presence of asbestos. All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare.

The risk associated with exposure to asbestos relates to the possibility that the fibres within the asbestos containing material (ACM) can become released into the air and are then inhaled. Breathing in air containing asbestos fibres can lead to asbestos-related diseases. Inhaled asbestos fibres contribute to increased risk of lung cancer, asbestosis and mesothelioma. Asbestos cement products, floor tiles and bitumen felt tiles are considered a low risk asbestos containing material. This is due to the products being considered low risk of asbestos being released from these materials during normal circumstances

All material containing asbestos should be sent a to licenced waste facility for correct disposal and treatment. Laboratory test results should be submitted with the waste material to enable the waste facility to follow best management and disposal procedures.

7. ROLES, RESPONSIBILITIES AND TRAINING

7.1 ROLES AND RESPONSIBILITIES

Project Manager

The Project Manager will be responsible for the overall implementation of the Construction and Demolition Waste Management Plan. The Project Manager will ensure that there are sufficient resources available to support the implementation of this C&D WMP.

Waste Manager

The client will appoint a Waste Manager from the construction team. This will most likely be the EHS Officer for the site. The Waste Manager will be suitably trained in waste management, in how to maintain a waste record keeping system and how to perform waste audits for the site.

The Waste Manager will have overall responsibility for waste management at the site, and, in addition to the Project Manager, will be responsible for the implementation of the C&D WMP. The role of the Waste Manager will ensure that the opportunity is taken to educate all colleagues, site staff, including external contractors and suppliers, about alternatives to conventional construction waste disposal. The Waste Manager will liaise with the Project Manager on a regular basis with regards the implementation of the C&D WMP.

Site Staff

All site personnel will be responsible for the effective implementation of the C&D WMP and will be trained on waste management by the Waste Manager.

7.2 TRAINING

Training of site personnel, sub-contractors and any other relevant personnel will be the responsibility of the Waste Manager. A waste training programme will be organised and will be included as part of induction training and also via toolbox talks where required. The training programme will communicate the contents of the C&D WMP, discuss the waste

hierarchy and detail the segregation of waste materials at source and storage methods. The training programme will also include a section on hazardous wastes, and the dangers of hazardous waste explained.

The waste training programme will aim to train site personnel so that they are in a position to:

- Distinguish reusable materials from materials suitable for recycling;
- Ensure maximum segregation at source;
- Co-operate with site manager on the best location's for stockpiling reusable materials;
- Separate materials for recovery;
- Identify and liaise with operators of waste collection and waste management operators.

8. RECORD KEEPING

The client will develop a record keeping system that will ensure that details of all waste types generated at the site, in addition to movement and treatment, are recorded. All materials being transferred from the site, whether for recycling or disposal, will be subject to a documented tracking system which can be verified and validated.

The Waste Manager will record the following:

- Waste removed for reuse offsite;
- Waste removed for recycling;
- Waste removed for disposal;
- Reclaimed waste materials brought on-site for reuse.

The Waste Manager will maintain copies of the waste contractors' relevant waste collection permits and waste licences.

For each movement of waste and for each type of waste, the client will obtain a signed waste docket from the waste contractor, detailing the weight, type of material, source and destination of material. Where possible, this system will be linked to the delivery records for the site, which will allow the percentage of C&D waste generated per material to be determined.

9. WASTE AUDITING PROCEDURE

Waste auditing during the construction phase of the project will be the responsibility of the Waste Manager.

The Waste audit will cover the following elements:

- A systematic study of all waste management practices which have been adopted onsite;
- Special attention should be dedicated to obvious opportunities for waste reduction, but all areas and stages within the project should be reviewed;
- Details of raw material inputs and the quantity, type and composition of all waste from the site should be identified
- The audit findings should highlight corrective actions that may be taken in relation to management policies or site practices in order to bring about further waste reductions
- A tracking system shall be stipulated to determine the success or failure of corrective actions

The Waste Manager will review all records for the waste generated onsite, in addition to records for waste transferred offsite. This will be undertaken on a quarterly basis as a minimum. The Waste Manager will check that a signed waste docket is available for each movement of waste and for each type of waste. Should waste movements not be accounted for, the reasons should be investigated to determine why the record keeping system, as discussed in Section 8 above, has not been maintained.

Each waste type will be examined, in order to determine where the largest percentage of waste generation occurred. This will allow the client to prioritise and address specific waste streams and will assist in setting targets.

Waste management costs will also be reviewed as part of the Waste Audit.

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

Ongoing consultation with the waste contractor(s) and South Dublin County Council will be undertaken to ensure that the best practicable option is being followed for waste management at the site.

10. CONSULTATION WITH RELEVANT BODIES

Upon planning approval, the client will begin the process of engaging with waste contractors for the proposed development. The waste contractor(s) will have experience in C&D waste management and will be appropriately licenced, holding the relevant waste collection permit and / or waste licences for the types of waste anticipated to be generated during construction works. Where required, upon appointment of the waste contractor(s) for the project, details of the proposed destination of each waste stream will be provided to South Dublin County Council.

11. REFERENCES

Department of Environment, Heritage and Local Government (2006) *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects*.

Eastern-Midlands Region Waste Management Plan 2015 – 2021 Available at: http://emwr.ie/emwr-plan/

Environmental Protection Agency (2002) *European Waste Catalogue and Hazardous Waste List*.

South County Dublin County Council (2021) *www.sdcc.ie/en/services/environment/recycling-and-waste/recycling-centres/*

South County Dublin County Council (2016) *South County Dublin Development Plan 2016 - 2022*. Available at: County Development Plan 2016-2022 | Dún Laoghaire-Rathdown County Council (dlrcoco.ie)

APPENDIX A

PROPOSED DEVELOPMENT LAYOUT


TAYLOR SLADE