Jackie Greene Construction Ltd (JGC Ltd)

Resource Waste Management Plan

Residential Development Known As:
Honora Hall, Hayden's Lane, Lucan, Co. Dublin

Planning Authority: South Dublin County Council
Planning Register Reference Number: SD21A/0359
An Bord Pleanála Board Order: ABP-314272-22

Description		Prepared by	
Revision	**Reason for Revision**	**Initials**	**Date**
000	Draft Issue	NG	20.05.24
001	Condition 6 Compliance	NG	16.10.24

Contents

1.0 Introduction

Granted Planning: Residential development comprising three, three to five storey blocks of 65 units (20 one-bed, 38 two-bed and 4 three bed apartments, 3 Duplex units).

Jackie Greene Construction Ltd. has prepared this Resource and Waste Management Plan (RWMP), providing information necessary to ensure that the management of C&D waste at the site is undertaken in accordance with the current legal and industry standards including the following:

The EU Waste Framework Directive (Directive 2008/98/EC) sets the basic concepts and definitions related to waste management, such as definitions of waste, recycling and recovery. The Directive, enacted in Ireland under the Waste Directive Regulations 2011 (S.I. No. 126 of 2011), requires the following undertakings:

- Apply the waste hierarchy in waste management legislation and policy.
- Take measures, as appropriate, to promote the reuse of products and preparing-for reuse activities, notably by encouraging the establishment and support of reuse and repair networks, the use of economic instruments, procurement criteria, quantitative objectives or other measures.
- Establish waste management plans.
- Promote the high-quality recycling of waste materials as part of the overall aim to make the EU a 'recycling society'; and
- Ensure that the preparation for reuse, recycling and other material recovery of non-hazardous construction and demolition waste (excluding naturally occurring material defined in List of Waste category 17 05 04) is a minimum of 70% by weight by 2020. The Directive specifies that this target should be achieved by preparing for reuse, recycling and other material recovery, including backfilling operations using waste to substitute other material.

The revised legislative framework on waste (Directive (EU) 2018/851) entered into force in July 2018 and sets clear targets for reduction of waste and establishes an ambitious and credible long-term path for waste prevention and waste treatment. This Directive has been transposed into Irish legislation through the European Union (Waste Directive) Regulations 2020 (S.I. No. 323 of 2020).

The 2018 Directive states that by the 31 December 2024, the Commission shall consider the setting of preparing for reuse and recycling targets for C&D waste and its material-specific fractions. In this regard, the 2011 target is subject to change throughout the lifetime of these

guidelines and practitioners and regulators should consult the relevant legislative portals for changes to obligations and/or targets.

In Ireland, the primary waste legislation is the Waste Management Act 1996, as amended, and Section 32 of the Act places a general obligation on the holder of waste to comply with legislation and ensure all wastes are managed within the requirements of the Act. In short, the obligation to manage waste legally lies with the holder of waste, which means the waste producer, or the person who is in possession of the waste. At a construction site, the mandatory obligation to appropriately manage waste generated at a construction site lies with the Client and the Contractor.

Under Section 3(1) of the Act the requirements do not apply to the following materials, which hence are not considered 'waste':

- Land (in-situ) including unexcavated contaminated soil and buildings permanently connected with land – relates to land and buildings prior to any construction or demolition where material remains untouched. Once it has been excavated or otherwise removed, the material may enter into the control regime set down by the Waste Management Acts.
- Uncontaminated soil and other naturally occurring material excavated in the course of construction activities where it is certain that the material will be used for the purposes of construction in its natural state on the site from which it was excavated.

In addition, there are two important provisions within the European Union (Waste Directive) Regulations 2011–2020 that are of relevance to the Construction sector and the prevention of waste, and these allow for the classification of resources out of the Waste regime as follows:

- Article 27 allows for the notification of a material as a by-product rather than a waste where certain criteria can be demonstrated by the legal person (i.e. further use is certain, no need for further processing, produced as part of a process and further use is lawful).

- Article 28 sets out the grounds by which a material, which is recovered or recycled from waste, can be deemed to be no longer a waste and complies with a set of end-of-waste criteria (substance/object to be used for specific purposes, a market or demand exists, fulfils technical requirements and no overall adverse impact to human health or the environment).

2.0 Project Description

2.1 Location, Size and Scale of the Development:

Planning Authority:	**South Dublin County Council**
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An Bord Pleanála Board Order:	**ABP-314272-22**

Proposed Development: Construction of a residential development comprising three, three to five storey blocks or 74 apartments (20 one-bed, 48 two-bed and six three-bed) all with associated private balconies/terraces to the north/south/east/west elevations; vehicular and pedestrian access from Hayden's Lane to the north-west of the site and closure of the second vehicular entrance at south west of site; pedestrian access from Griffeen Park to the south east of the site; provision of car and cycle parking, public and communal spaces bin stores and all associated site development and clearance works, landscaping, boundary treatments and other servicing works at Hayden's Lane, Adamstown, Lucan Co. Dublin.

Granted Planning: Residential development comprising three, three to five storey blocks of 65 units (20 one-bed, 38 two-bed and 4 three bed apartments, 3 Duplex units).

The works are expected to have a 18 month duration and will be conducted in 1 Phase.

The proposed site comprises a vacant plot of land on the eastern side of Hayden's Lane, between the established built-up areas of Lucan and Adamstown, in south County Dublin. The property comprises mainly hardstand area and is overgrown with dense vegetation. The vegetation takes the form of mature trees, hedges and shrubs, which are particularly prevalent along the site boundaries. The site has an overall site area of approximately 1.09ha.

The site is bounded to the west by Hayden's Lane, existing residential development to the northeast, north and west, respectively. Griffeen Valley Park is directly to the south and east. The property previously accommodated a light industrial/goods manufacturing factory, with an overall floorspace of c. 2,750sqm. It included extensive surface car parking situated at the centre, northern and western parts of the site. The structure has since been demolished with only the concrete floor slab remaining.

There is a metal palisade fence running the length of the western site boundary. Two existing vehicular access points are situated at the northwestern and southwestern corners of the site, respectively. The entrances are closed over and locked and the site is not accessible to the public. There is extensive on-street car parking on western side of the laneway, which is likely associated with the existing housing on the far side of the street.

Fig 01: Google Maps Image of Site Location

Fig 02: Proposed Site Layout

2.2 Details of Non Hazardous Waste to be Produced:

There will be soil, stones, clay and made ground excavated to facilitate construction of new foundations, underground services, and the installation of the proposed road layouts. The project quantity surveys have estimated 12,100m^3 of material will need to be excavated. It is currently envisaged that 10,285m^3 (85%) of the excavated material, will need to be removed offsite due to the limited opportunities for reuse on site. This will be taken for appropriate offsite reuse, recovery, recycling and/or disposal.

During the construction phase there may be a surplus of building materials, such as timber off-cuts, broken concrete blocks, cladding, plastics, metals and tiles generated. There may also be excess concrete during construction which will need to be disposed of. Plastic and cardboard waste from packaging and supply of materials will also be generated. The Contractor will be required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximized.

Waste will also be generated from construction workers e.g. organic/food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided on site during the construction phase. Waste printer/toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently from site offices.

2.3 Potential Hazardous Waste:

Assessment, effective measures, monitoring

Contaminated Soils;

Site investigations and environmental soil testing were undertaken in June 2021 by Ground Investigations Ireland (GII). Samples were selected from the exploratory holes for a range of Geotechnical and Environmental testing to assist in the classification of soils and to provide information for the proposed design.

Environmental & Chemical testing as required by the specification, including the Rilta Suite pH and sulphate testing was carried out by Element Materials Technology Laboratory in the UK. The Rilta suite testing includes both Solid Waste and Leachate Waste Acceptance Criteria.

The suite also allows for the assessment of the sampled material in terms of suitabilityfor

placement at licenced landfills (inert, stable non-reactive, hazardous etc.). The parameter list for the suite includes analysis of the solid samples for arsenic, barium, cadmium, chromium, copper, cyanide, lead, nickel, mercury, zinc, speciated aliphatic and aromatic petroleum hydrocarbons, pH, sulphate, sulphide, moisture content, soil organic matter and an asbestos screen.

If any potentially contaminated material is encountered, it will need to be segregated from clean/inert material, tested and classified as either non-hazardous or hazardous in accordance with the EPA publication entitled *'Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous'* using the *HazWasteOnline* application (or similar approved classification method). The material will then need to be classified as clean, inert, non-hazardous or hazardous in accordance with the *EC Council Decision 2003/33/EC*, which establishes the criteria for the acceptance of waste at landfills.

No asbestos was detected in the samples taken; however, should Asbestos containing materials (ACMs) be found, the removal will only be carried out by a suitably permitted waste contractor, in accordance with *S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010.* All asbestos will be taken to a suitably licensed or permitted facility.

Should hazardous soil, or historically deposited waste be encountered during the construction phase, the Contractor will notify South Dublin County Council and provide a Hazardous/Contaminated Soil Management Plan, to include estimated tonnages, description of location, any relevant mitigation, destination for disposal/treatment, in addition to information on the authorised waste collector(s).

Fuels & Oils:

Fuels and oils are classed as hazardous materials. On-site storage of fuel/oil, and 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 the site crew are trained in the appropriate refuelling techniques, it is not expected that there will be any fuel/oil waste generated at the site.

Invasive Plant Species:

Site invasive species Surveys were undertaken in April 2021. This included a site walkover survey of the entire site, and along part of the outside perimeter to search for any Schedule 3 invasive species. There was no indication of any invasive plants growing in the immediate vicinity.

Asbestos:

It is not envisaged that Asbestos will be encountered on these works, as surveys have found no presence of any Asbestos.

If Asbestos is encountered, its removal will be carried out by a suitably qualified Contractor and ACMs will only be removed from site by a suitably permitted / licenced Waste Contractor, in accordance with *S.I. No. 589 of 2010 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010.* All material will be taken to a suitably licensed or permitted facility.

Other Hazardous Materials:

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. Wastes will be stored in appropriate receptacles pending collection by an authorized Waste Contractor.

In addition, WEEE (containing hazardous components), printer toner/cartridges, batteries (Lead, Ni-Cd or Mercury) and/or fluorescent tubes and other mercury containing waste may be generated from during C&D activities or temporary site offices. These wastes, if generated, will be stored in appropriate receptacles in designated areas of the site pending collection by an authorised Waste Contractor.

Main Construction & Demolition Waste Categories:

The main non-hazardous and hazardous waste streams that could be generated by the construction activities on the site is shown on separate table. The List of Waste (LoW) code (as effected from 1 June 2015) (also referred to as the European Waste Code or EWC) for each waste stream is also shown.

3.0 Roles & Responsibilities

3.1 Resource Manager (RM):

The *Best Practice Guidelines on the Preparation of Resource Waste Management Plans for Construction and Demolition Projects* promotes that a Resource Manager should be appointed. The RM may be performed by number of different individuals over the life-cycle of the Project, however it is intended to be a reliable person chosen from within the Planning/Design/Contracting Team, who is technically competent and appropriately trained, who takes the responsibility to ensure that the

objectives and measures within the Project RWMP are complied with. The RM is assigned the requisite authority to meet the objective and obligations of the RWMP. The role will include the important activities of conducting waste checks/audits and adopting construction and demolition methodology that is designed to facilitate maximum reuse and/or recycling of waste.

The Appointed RM for the initial stages of the works is Shane Herbert.

3.2 Overview Design Team

DESIGN TEAM DETAILS					
NAME	**Role**	**COMPANY**	**ADDRESS**		**Email**
Stephen Oppermann	Assisgned Certifier / Architect	Oppermann Associates	Unit D1 the Steelworks Foley Stret Dublin 1 D01 R8P3	(01) 889 9800	stephen.oppermann.ie
Paul Manning	Architect	Oppermann Associates	Unit D1 the Steelworks Foley Stret Dublin 1 D01 R8P3	(01) 889 9800	paul.manning@oppermann.ie
Declan Coakley	M&E Consutant (Lead)	MandE	Unit 4, Oak Close, Western Business Park D12 D12 R8C6	(01) 450 8485 / 087 784 2250	declan@mande.ie
Marek Szmagara	M&E Consultant	MandE	Unit 4, Oak Close, Western Business Park D12 D12 R8C6	(01) 450 8485	marek@mande.ie
Keith Phelan	M&E Consultant	MandE	Unit 4, Oak Close, Western Business Park D12 D12 R8C6	(01) 450 84 85	keith@mande.ie
Roger Mullarkey	Engineering Consultant	R. Mullarkey & Associates	Duncrevan Kilcock Co. Kildare	(01) 610 3755 / 087 232 4917	info@rmullarkey.ie
Niall Garvin	Civil Engineers **PSCS**	Rowlands Civil & Construction Services Lt	Unit B3 Dunshaughlin Business Park Co. Meath A85 TK35	(01) 825 8133 / 086 818 7975	niall.garvin@rowlandscivil.ie
Alastair Ferrar	Landscape Architect	CSR (Cunnane Stratton Reynolds)	Gainsboro House, 24 Suffolk St. Dublin 2 D02 KF65	(01) 825 8133 / 086 818 7975	aferrar@csrlandplan.ie
Luke Fegan	DAC/Fire Consultant	Maurice Johnson & Partners	The Anchorage, Ringsent, Dublin 4 D04 X6C5	(01) 661 8086 /	lfegan@mj.ie
Tony Carolan	H&S On-Site Consultant	Safety Solutions	2 Lyncon Court Snugborough B&T Park Blancardstown D15 NP49	(01) 835 4084 / 086 777 8136	tony@safetysolutions.ie
Edel McGoey	PSDP Rep	Safety Solutions	2 Lyncon Court Snugborough B&T Park Blanchardstown D15 NP49	(01) 835 4084	edel@safetysolutions.ie

Table 01: Design Team Details

Client Details:

NAME	Role	COMPANY	ADDRESS		Email
Jackie Greene Construction Ltd. (JGC)			Verdant House, Fortfield Square College Drive Terenure D6W AK27	(01) 490 2436	info@jgreeneconst.ie
Stephen Brennan	On-Site Project Manager	Jackie Greene Construction Ltd.		086 888 0814	stephenbrennan@jgreeneconst.ie
Paul Gray	On-Site Foreman	Jackie Greene Construction Ltd.		087 268 9287	paulgray@jgreeneconst.ie
Carlos Chinaglia	On-site Engineer	Jackie Greene Construction Ltd.		087 109 8245	carloschinaglia@jgreeneconst.ie
Brian Greene	Developer / Main Contractor			086 252 5247	briangreene@jgreenceconst.ie
Gareth Nolan				087 686 8225	garethnolan@jgreenconst.ie
Susan Kennedy				087 813 4859	susankennedy@jgreeneconst.ie
Mary McCabe				(01) 490 2436	accounts@jgreeneconst.ie

Table 02: Client Details

3.3 Role of the Client: Jackie Greene Construction Ltd.

The Client is the body establishing the aims and the performance targets for the project.

The Client has commissioned the preparation and submission of a preliminary RWMP as part of the design and planning submission.

The Client has commissioned the preparation and submission of an updated RWMP as part of the construction tendering process.

The Client has undertaken to ensure that the RWMP is submitted to South Dublin County Council, and agreed, prior to commencement of works on site.

The Client will request the end-of-project RWMP from the Contractor.

3.4 Role of the Client Advisory Team

The Client Advisory Team or Design Team is formed of Architects, Consultants, Quantity Surveyors and Engineers and is responsible inter alia for:

Appointing a RM to track and document the design process, inform the Design Team and prepare the RWMP including details and estimated quantities of all projected waste streams with the support of environmental consultants/scientists. This should also include data on waste types (e.g. waste characterization data, contaminated land assessments, site investigation information) and prevention mechanisms (such as by-products) to illustrate the positive circular economy principles applied by the Design Team;

Managing and valuing any demolition work with the support of Quantity Surveyors.

Handing over of the RWMP to the selected Contractor upon commencement of construction of the development, in a similar fashion to how the safety file is handed over to the Contractor;
Working with the Contractor as required to meet the performance targets for the project

3.5 Future Role of the Contractor

The Construction Contractors have not yet been decided upon for this RWMP. However, once selected they will have major roles to fill with responsibility for:

Preparing, implementing and reviewing the (including the Pre-Demolition) RWMP throughout the demolition and construction phases (including the management of all suppliers and sub-contractors) as per the requirements of these guidelines;

- Identifying a designated and suitably qualified RM who will be responsible for implementing the RWMP;
- Identifying all hauliers to be engaged to transport each of the resources / wastes off-site;
- Implementing waste management policies whereby waste materials generated on site are to be segregated as far as practicable;
- Renting and operating a mobile-crusher to crush concrete for temporary reuse onsite during construction and reduce the amount of HGV loads required to remove material from site;
- Applying for the appropriate waste permit to crush concrete onsite;
- Identifying all destinations for resources taken off-site. As above, any resource that is legally classified as a 'waste' must only be transported to an authorized waste facility;
- End-of-waste and by-product notifications addressed with the EPA where required;
- Clarification of any other statutory waste management obligations, which could include on-site processing;
- Full records of all resources (both wastes and other resources) will be maintained for the duration of the project; and will be available at the site office for inspection.

Preparing a RWMP Implementation Review Report at project handover.

4.0 Design Approach

The client and the design team have integrated the '*Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects'* guidelines into the design workshops, to help review processes, identify and evaluate resource reduction measures and investigate the impact on cost, time, quality, buildability, second life and management post demolition and construction. Further details on these design principals can be found within the aforementioned guidance document.

The design team have undertaken the design process in line with the international best practice principles to firstly prevent wastes, reuse where possible and thereafter sustainably reduce and recover materials. The below sections have been the focal point of the design process and material selections and will continued to be analyzed and investigated throughout the design process and when selecting material.

The approaches presented are based on international principles of optimizing resources and reducing waste on construction projects through:

- Prevention;
- Reuse;
- Recycling;
- Green Procurement Principles;
- Off-Site Construction;
- Materials Optimisation; and
- Flexibility and Deconstruction.

4.1 Designing for Prevention, Reuse & Recycling:

Undertaken at the outset and during project feasibility and evaluation the Client and Design Team considered:

- Establishing the potential for any reusable site assets (buildings, structures, equipment, materials, soils, etc.);

- Assessing any existing buildings on the site that can be refurbished either in part or wholly to meet the Client requirements; and

- Enabling the optimum recovery of assets on site.

4.2 Designing for Green Procurement:

Waste prevention and minimization pre-procurement have been discussed and will be further discussed in this section. The Design Team will discuss proposed design solutions, encourage innovation in tenders and incentivise competitions to recognise sustainable approaches. They should also discuss options for packaging reduction with the main Contractor and subcontractors/suppliers using measures such as 'Just-in-Time' delivery and use ordering procedures that avoid excessive waste. The Green procurement extends from the planning stage into the detailed design and tender stage and will be an ongoing part of the long-term design and selection process for this development.

4.3 Designing for Off Site Construction:

Use of off-site manufacturing has been shown to reduce residual wastes by up to 90% (volumetric building versus traditional). The decision to use offsite construction is typically cost led but there aresignificant benefits for resource management. Some further considerations for procurement which are being investigated as part of the planning stage design process are listed as follows, and the below is planned to be incorporated into this proposed development:

- Use of pre-cast structural concrete panels which can reduce the residual volumes of concrete blocks, mortars, plasters, etc.;
- The use of prefabricated composite panels for walls and roofing to reduce residual volumes of insulation and plasterboards;
- Using pre-cast hollow-core flooring instead of in-situ ready mix flooring or timber flooring to reduce the residual volumes of concrete/formwork and wood/packaging, respectively; and
- Designing for the preferential use of offsite modular units.

4.4 Designing for Material Optimization During Construction

To ensure manufacturers and construction companies adopt lean production models, including maximizing the reuse of materials onsite. This helps to reduce the environmental impacts associated with transportation of materials and from waste management activities. This includes investigating the use of standardized sizes for certain materials to help reduce the amount of offcuts produced on site, focusing on promotion and development of off-site manufacture.

4.5 Designing for Flexibility and Deconstruction

Design flexibility has and will be investigated throughout the design process to ensure that where possible, products (including buildings) only contain materials that can be recycled and are designed to be easily disassembled. Material efficiency is being considered for the duration and end of life of a building project to produce; flexible, adaptable spaces that enable a resource-efficient, low-waste future change of use; durability of materials and how they can be recovered effectively when maintenance and refurbishment are undertaken and during disassembly/deconstruction.

5.0 Key Materials, Quantities

5.1 Project Resource Targets:

Project specific resource and waste management targets for the site have not yet been set and this information will be updated for these targets once these targets have been confirmed by the client. However, it is expected for projects of this nature that a minimum of 70% of waste is fully re-used, recycled or recovered. Target setting will inform the setting of project-specific benchmarks to track target progress. Typical Key Performance Indicators (KPIs) that may be used to set targets include (as per guidelines):

- Weight (tonnes) or Volume (m3) of waste generated per construction value;
- Weight (tonnes) or Volume (m3) of waste generated per construction floor area (m2);
- Fraction of resource reused on site;

- Fraction of resource notified as by-product;
- Fraction of waste segregated at source before being sent off-site for recycling/recovery; and
- Fraction of waste recovered, fraction of waste recycled, or fraction of waste disposed.

5.2 Main Construction & Demolition Waste Categories:

The main non-hazardous and hazardous waste streams that could be generated by the construction activities at a typical site are shown in Table 3.0. The List of Waste (LoW) code (applicable as of 1 June 2015) (also referred to as the European Waste Code (EWC)) for each waste stream is also shown.

Waste Material	LoW/EWC Code
Concrete, bricks, tiles, ceramics	17 01 01-03 & 07
Wood, glass and plastic	17 02 01-03
Treated wood, glass, plastic, containing hazardous substances	17-02-04*
Bituminous mixtures, coal tar and tarred products	17 03 01*, 02 & 03*
Metals (including their alloys) and cable	17 04 01-11
Soil and stones	17 05 03* & 04
Gypsum-based construction material	17 08 01* & 02
Paper and cardboard	20 01 01
Mixed C&D waste	17 09 04
Green waste	20 02 01
Electrical and electronic components	20 01 35 & 36
Batteries and accumulators	20 01 33 & 34
Liquid fuels	13 07 01-10
Chemicals (solvents, pesticides, paints, adhesives, detergents etc.)	20 01 13, 19, 27-30
Insulation materials	17 06 04
Organic (food) waste	20 01 08
Mixed Municipal Waste	20 03 01

Table 03: Design Team Details List of Waste (LoW) code

6.0 Waste Management

6.1 Construction Waste Generation

The below Table 04 shows the breakdown of C&D waste types produced on a typical site based on data from the EPA National Waste Reports 14

Waste Types	%
Mixed C&D	33
Timber	28
Plasterboard	10
Metals	8
Concrete	6
Other	15
Total	**100**

Table 04: EPA Typical Site Based Data

The Table 05 below shows the estimated construction waste generation for the development based on the gross floor area of construction and other information available to date, along with indicative targets for management of the waste streams. The estimated waste amounts for the main waste types (with the exception of soils and stones) are based on an average large-scale development waste generation rate per m2, using the waste breakdown rates shown in Table 04. These have been calculated from the schedule of development areas provided by the Architect.

Waste Type	Tonnes	Reuse		Recycle/Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	204.1	10	20.41	80	163.28	10	20.41
Timber	173.17	40	69.268	55	95.24	5	8.65
Plasterboard	61.85	30	18.555	60	37.11	10	6.18
Metals	49.47	5	2.4735	90	44.52	5	2.47
Concrete	37.1	30	11.13	65	24.11	5	1.85
Other	92.77	20	18.554	60	55.66	20	18.55
TOTALS	**618.46**		**140.39**		**419.92**		**58.11**

Table 05: Predicted on and off site reuse, recycle and disposal rates for construction waste

In addition to the information in Table 05, there will be a 12,100m3 of soil, stones, clay and made ground excavated to facilitate construction of new foundations, underground services, and the installation of the proposed road infrastructure works. Any suitable excavated material will be temporarily stockpiled for reuse as fill, where possible, but reuse on site is expected to be limited and

all of the excavated material except for 1815m3 (15%) is expected to be removed offsite for appropriate reuse, recovery and/or disposal.

It should be noted that until final materials and detailed construction methodologies have been confirmed, it is difficult to predict with a high level of accuracy the construction waste that will be generated from the proposed works as the exact materials and quantities may be subject to some degree of change and variation during the construction process.

6.2 Proposed Resource and 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 where feasible. 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 reused, recycled, recovered or disposed of at a facility holding the appropriate registration, permit or licence, as required.

Written records will be maintained by the contractor(s) detailing the waste arising throughout the C&D phases, the classification of each waste type, waste collection permits for all waste contactors who collect waste from the site and COR/permit or licence for the receiving waste facility for all waste removed off site for appropriate reuse, recycling, recovery and/or disposal.

Dedicated bunded storage containers will be provided for hazardous wastes which may arise such as batteries, paints, oils, chemicals etc, if required. The anticipated management of the main waste streams is outlined as follows: Soil, Stone, Gravel and Clay. The waste 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 excavation phase.

When material is removed off-site it could be reused as a by-product (and not as a waste). If this is done, it will be done in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011, which requires that certain conditions are met and that by-product notifications are made to the EPA via their online notification form. Excavated

material should not be removed from site until approval from the EPA has been received. The potential to reuse material as a by-product will be confirmed during the course of the excavation works, with the objective of eliminating any unnecessary disposal of material.

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 publication. Clean inert 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. Article 27 will be investigated to see if the material can be imported onto this site for beneficial reuse instead of using virgin materials.

If the material is deemed to be a waste, then removal and reuse / recovery / disposal of the material will be carried out in accordance with the Waste Management Act 1996 as amended, the Waste Management (Collection Permit) Regulations 2007 as amended and the Waste Management (Facility Permit & Registration) Regulations 2007 as amended. 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

While it is not envisaged that bedrock will be encountered, if bedrock is encountered, it is anticipated that it will not be crushed on site. Any excavated rock is expected to be removed offsite for appropriate reuse, recovery and/or disposal. If bedrock is to be crushed onsite the appropriate mobile waste facility permit will be obtained from South Dublin County Council.

Silt & Sludge
During the construction phase, silt and petrochemical interception should be carried out on runoff and pumped water from site works, where required. Sludge and silt will then be collected by a suitably licensed contractor and removed offsite.

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. If concrete is to be crushed onsite the appropriate mobile waste facility permit will be obtained from DCC.

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 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 phases will be stored in a separate skip, pending collection for recycling. The Site Manager 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 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 off-site.

Non-Recyclable Waste
C&D 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 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.
Asbestos Containing Materials

If any asbestos or ACM found onsite should be removed by a suitably competent contractor and disposed of as asbestos waste before the demolition works begin. All asbestos removal work or encapsulation work must be carried out in accordance with
S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010.

Other Hazardous Wastes
On-site storage of any hazardous wastes produced (i.e. contaminated soil if encountered and/or waste fuels) 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.

Onsite Crushing
It is currently not envisaged that the crushing of waste materials will occur onsite, however if the crushing of material is to be undertaken a mobile waste facility permit will first be obtained from SDCC and the destination of the excepting waste facility will be supplied to the South Dublin County Council waste unit.

6.3 Tracking and Documentation Procedures for Off Site Works:

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 nominated project RM.

All movement of waste and the use of waste contractors will be undertaken in accordance with the Waste Management Acts 1996 - 2011, Waste Management (Collection Permit) Regulations 2007 as amended and Waste Management (Facility Permit & Registration) Regulations 2007 and amended. This includes the requirement for all waste contractors to have a waste collection permit issued by the NWCPO. The nominated project RM 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 waste COR/permit or EPA Waste/IE Licence for that site will be provided to the nominated project RM . If the waste is being

shipped abroad, a copy of the Transfrontier Shipping (TFS) notification document will be obtained from SDCC (as the relevant authority on behalf of all local authorities in Ireland) and kept on-site along with details of the final destination (COR, 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.

7.0 Estimated Cost of Waste Management

An outline of the costs associated with different aspects of waste management is outlined 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.

7.1 Reuse:

By reusing materials on site, there will be a reduction in the transport and recycle/recovery/disposal costs associated with the requirement for a waste contractor to take the material off-site.

Clean and inert soils, gravel, stones etc. which cannot be reused on site may be used as access roads or capping material for landfill sites etc. This material is often taken free of charge or a reduced fee for such purposes, reducing final waste disposal costs.

7.2 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.

7.3 Disposal:

Landfill charges are currently at around €150 - €190 per tonne which includes a €75 per tonne landfill levy specified in the Waste Management (Landfill Levy) Regulations 2015. 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.

8.0 Training Provisions:

A member of the construction team will be appointed as the project RM to ensure commitment, operational efficiency and accountability during the C&D phases of the project.

8.1 Resource Manager Training & Responsibilities

The nominated RM will be given responsibility and authority to select a waste team if required, i.e. members of the site crew that will aid them in the organisation, operation and recording of the waste management system implemented on site. The RM 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 RM 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 RM 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 RM 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 RWMP.

8.2 Site Crew Training

Training of site crew is the responsibility of the RM and, as such, a waste training program should be organised. A basic awareness course will be held for all site crew to outline the RWMP 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 and tool box talks.

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.

9.0 Tracking & Tracing / Record Keeping:

Records should 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 waste arisings on site.

A waste tracking log should be used to track each waste movement from the site. On exit from the site the waste collection vehicle driver should stop at the site office and sign out as a visitor and

provide the security personnel or RM with a waste docket (or WTF for hazardous waste) for the waste load collected. At this time, the security personnel should complete and sign the Waste Tracking Register with the following information:

- Date
- Time
- Waste Contractor
- Company waste contractor appointed by e.g. Contractor or subcontractor name
- Collection Permit No.
- Vehicle Reg.
- Driver Name
- Docket No.
- Waste Type
- EWC/LoW

The waste vehicle will be checked by security personal or the RM to ensure it has the waste collection permit no. displayed and a copy of the waste collection permit in the vehicle before they are allowed to remove the waste from the site. The waste transfer dockets will be transferred to the RM on a weekly basis and can be placed in the Waste Tracking Log file. This information will be forwarded onto the SDCC Waste Regulation Unit when requested.

Each subcontractor that has engaged their own waste contractor will be required to maintain a similar waste tracking log with the waste dockets / WTF maintained on file and available for inspection on site by the main contractor as required. These subcontractor logs will be merged with the main waste log.

Waste receipts from the receiving waste facility will also be obtained by the site contractor(s) and retained. A copy of the Waste Collection Permits, CORs, Waste Facility Permits and Waste Licences will be maintained on site at all times and will be periodically reviewed by the RM. Subcontractors who have engaged their own waste contractors, should provide the main contractor with a copy of the waste collection permits and COR / permit / licence for the receiving waste facilities and maintain a copy on file, available for inspection on site as required.

10.0 Outline Waste Audit Procedures:

10.1 Responsibility for Waste Audit:

The appointed RM will be responsible for conducting a waste audit at the site during the C&D phase of the development. Contact details for the nominated RM will be provided to the SDCC Waste Regulation Unit after the main contractor is appointed and prior to any material being removed from site.

10.2 Review of Records and Identification of Corrective Actions:

A review of all waste management costs and the records for the waste generated and transported 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.

Upon completion of the C&D 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.

11.0 Consultation with Relevant Bodies:

11.1 Local Authority (South Dublin County Council):

Once construction contractors have been appointed, have appointed waste contractors and prior to removal of any C&D waste materials offsite, details of the proposed destination of each waste stream will be provided to the SDCC Waste Regulation Unit.

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.

11.2 Recycling / Salvage Companies:

The appointed waste contractor for the main waste streams managed by the construction contractors will be audited in order to ensure that relevant and up-to- date waste collection permits and facility registrations/permits/licences are held. In addition, information will be obtained regarding the feasibility of recycling each material, the costs of recycling/reclamation, the means by which the wastes will be collected and transported off-site, and the recycling/reclamation process each material will undergo off site.

12.0 References:

1. EPA's Best Practice Guidelines for the Preparation of Resource amd Waste Management Plans for Construction and Demolition Projects (2021)
2. Waste Management Act 1996 (No. 10 of 1996) as amended.
3. Protection of the Environment Act 2003, (No. 27 of 2003) as amended.
4. Litter Pollution Act 1997 (S.I. No. 12 of 1997) as amended
5. Eastern-Midlands Region Waste Management Plan 2015 – 2021 (2015)
6. Department of Environment and Local Government (DoELG) Waste Management – Changing Our Ways, A Policy Statement (1998)
7. Forum for the Construction Industry – Recycling of Construction and Demolition Waste
8. Department of Communications, Climate Action and Environment (DCCAE), Waste Action Plan for the Circular Economy - Ireland's National Waste Policy 2020-2025 (2020)
9. DCCAE, Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less' (2021)
10. Department of Environment, Heritage and Local Government, Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (2006)
11. FÁS and the Construction Industry Federation (CIF), Construction and Demolition Waste Management – a handbook for Contractors and Site Managers (2002)
12. South Dublin Co. Council Development Plan 2022-2028
13. Planning and Development Act 2000 (S.I. No. 30 of 2000) as amended
14. EPA, Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous (2015)
15. 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.
16. Environmental Protection Agency (EPA), National Waste Database Reports 1998 – 2012.