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South Dublin County Council

DOCUMENT LEAD SHEET

CONSTRUCTION & DEMOLITION WASTE MANAGEMENT PLAN

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PROJECT: SILVER GRANITE, PALMERSTOWN

STATUS: PLANNING PERMISSION

CLIENT: HOLLYVILLE INVESTMENTS LTD

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Where this document has been revised it is recorded as indicated below. Please replace all superseded pages of this document with current version.

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1.0 INTRODUCTION

This Construction and Demolition Waste Management Plan has been prepared by GDCL Consulting Engineers, on behalf of Hollyville Investments Ltd. to support a Planning Permission Application to South Dublin County Council for development of the proposed mixed-use development Silver Granite public house, Kennelsfort Road Upper, Johnstown, Dublin 20. The proposed mixed-use development will comprise of 50 no. apartments, as well as an internal basement, Gastropub, Retail Unit, Pharmacy and Off-License. The purpose of this plan is to provide information necessary to ensure that the management of construction and demolition waste at the site is undertaken in accordance with current legal and industry standards including the Waste Management Acts 1996 - 2011 and associated Regulations, Protection of the Environment Act 2003 as amended, Litter Pollution Act 1997 as amended and the Eastern-Midlands Region Waste Management Plan 2015 – 2021. In particular, this Plan aims to ensure maximum recycling, reuse and recovery of waste with diversion from landfill, wherever possible. It also seeks to provide guidance on the appropriate collection and transport of waste from the site to prevent issues associated with litter or more serious environmental pollution (e.g. contamination of soil and/or water).

This Construction and Demolition Waste Management Plan also includes information on the legal and policy framework for construction and demolition waste management in Ireland, estimates of the type and quantity of construction and demolition waste to be generated by the proposed development and makes recommendations for management of different waste streams.
This Construction and Demolition Waste Management Plan includes a description of the proposed works and how these works will be managed for the duration of the demolition and construction works on site.

Whilst it is normal for these details to be agreed with the appointed Contractor for the works following a planning decision, this plan includes preliminary proposed details for access arrangements for labour, plant and materials and indicates the locations of construction parking/plant and machine compounds. However, it should be recognised that such details are normally best dealt with when details of construction programme and phasing have been confirmed.

When the demolition contractor is appointed to demolish the existing buildings on the site, they will prepare a detailed method statement having regard to their own operating procedures, the agreed construction programme, site conditions, and any relevant planning conditions.
Any works on the public road (e.g. for services connections) will require an application for a Road Opening Licence and will be submitted by the contractor to the Local Authority which will include a full detailed Construction Traffic Management Plan prepared in accordance with Chapter 8 of the Traffic Signs Manual for pre-approval by the Local Authority. This CTMP Report should be considered Preliminary in these terms.

2.0 CONSTRUCTION & DEMOLITION WASTE MANAGEMENT IN IRELAND

2.1 National Level

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

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

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

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

- Predicted construction and demolition waste and procedures to prevent, minimise, recycle and reuse wastes
- Waste disposal/recycling of construction and demolition wastes at the site
- Provision of training for waste manager and site crew
- Details of proposed record keeping system
- Details of waste audit procedures and plan
- Details of consultation with relevant bodies i.e. waste recycling companies, South Dublin County Council etc.

Section 3 of the Guidelines identifies thresholds above which there is a requirement for the preparation of a Construction and Demolition Waste Management Plan for developments. This development requires a Construction and Demolition Waste Management Plan under the following criterion:

- Demolition/renovation/refurbishment projects generating in excess of 100m3 in volume, of waste; and

- Civil engineering projects producing in excess of 500m2 of waste materials used for development works on site.

Other guidelines followed in the preparation of this report include 'Construction and Demolition Waste Management - a handbook for Contractors and Site Managers' 9 published by FAS and the Construction Industry Federation in 2002.

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

2.2 Regional Level

The proposed development is located in the Local Authority area of South Dublin County Council (SDCC).

The Eastern-Midlands Region Waste Management Plan 2015 - 2021 is the regional waste management plan for the SDCC area published in May 2015.

The Regional Plan sets out the strategic targets for waste management in the region and sets a specific target for construction and demolition waste of "70% preparing for reuse, recycling and other recovery of construction and demolition waste" (excluding natural soils and stones and hazardous wastes) to be achieved by 2020.

Municipal landfill charges in Ireland are based on the weight of waste disposed. In the Leinster Region, charges are approximately €130 - €150 per tonne of waste which includes a €75 per tonne landfill levy introduced under the Waste Management (Landfill Levy) (Amendment) Regulations 2012.

The South Dublin County Development Plan 2016 - 2022 set out a number of policies and objectives in line with the objectives of the regional waste management plan. The plan identifies the development of recycling in order to minimise the use of landfill as the main objective of the City Council.

2.3 Legislative Requirements

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

- Waste Management Act 1996 (No. 10 of 1996) as amended. Sub-ordinate legislation includes:
  i. European Communities (Waste Directive) Regulations 2011 (SI 126 of 2011) as amended
  ii. Waste Management (Collection Permit) Regulations (S.I No. 820 of 2007) as amended
  iii. Waste Management (Facility Permit and Registration) Regulations 2007, (S.I No. 821 of 2007) as amended
  iv. Waste Management (Licensing) Regulations 2004 (S.I. No. 395 of 2004) as amended
  v. Waste Management (Packaging) Regulations 2014 (S.I. 282 of 2014) as amended
  vi. Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997)
  vii. Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015)

viii. European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
ix. European Union (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended
x. Waste Management (Food Waste) Regulations 2009 (S.1. 508 of 2009), as amended
xi. European Union (Household Food Waste and Bio-waste) Regulation 2015 (S.I. No. 191 of 2015)
xii. Waste Management (Hazardous Waste) Regulations, 1998 (S.I. No. 163 of 1998) as amended
xiii. Waste Management (Shipments of Waste) Regulations, 2007 (S.I. No. 419 of 2007) as amended
xiv. Waste Management (Movement of Hazardous Waste) Regulations, 1998 (S.I. No. 147 of 1998)
xv. European Communities (Trans frontier Shipment of Waste) Regulations 1994 (SI 121 of 1994)
xvi. European Union (Properties of Waste which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015) as amended
xvii. Environmental Protection Act 1992 (No. 7 of 1992) as amended.
xviii. Litter Pollution Act 1997 (No. 12 of 1997) as amended.
xix. Planning and Development Act 2000 (No. 30 of 2000) as amended 11

One of the guiding principles of European waste legislation, which has in tum been incorporated into the Waste Management Act 1996 - 2001 and subsequent Irish legislation, is the principle of "Duty of Care". This implies that the waste producer is responsible for waste from the time it is generated through until its legal recycling, recovery or disposal (including its method of disposal). As it is not practical in most cases for the waste producer to physically transfer all waste from where it is produced to the final destination, waste contractors will be employed to physically transport waste to the final destination. Following on from this is the concept of "Polluter Pays" whereby the waste producer is liable to be prosecuted for pollution incidents, which may arise from the incorrect management of waste produced, including the actions of any contractors engaged (e.g. for transportation and disposal/recovery/recycling of waste).

It is therefore imperative that the client ensures that the waste contractors engaged by demolition and construction contractors are legally compliant with respect to waste transportation, recycling, recovery and disposal. This includes the requirement that a contractor handle, transport and recycle/recover/dispose of waste in a manner that ensures that no adverse environmental Impacts occur as a result of any of these activities.

A collection permit to transport waste must be held by each waste contractor which is issued by the National Waste Collection Permit Office (NWCPO). Waste receiving facilities must also be appropriately permitted or licensed. Operators of such facilities cannot receive any waste, unless in possession of a Certificate of Registration (COR) or waste permit granted by the relevant Local Authority under the Waste Management (Facility Permit & Registration) Regulations 2007 and Amendments or a waste or IE licence granted by the EPA. The COR/permit/licence held will specify the type and quantity of waste able to be received, stored, sorted, recycled, recovered and/or disposed of at the specified site.

3.0 DESCRIPTION OF THE PROJECT

3.1 Location, Size and Scale of the Development

The proposed development will involve the demolition of the existing two storey building and infill of the existing basement and the construction of a multistorey mixed-use development consisting of:

- 50 no. apartments, comprising of 25 no. one-bed apartments and 25 no. two-bed apartments;
- Internal Basement, Gastropub, Retail Unit, Pharmacy and Off-License at Ground Floor Level;
- Commercial parking fronting the development
- Resident parking located within the existing adjacent shopping centre carpark

The schedule of areas breakdown for the commercial units are as follows:

Table 1 - Schedule of Commercial Areas

	Floor Area (m^2)
Gastropub	558
Spar	226
Pharmacy	157
Bar/Off License	147
Total	1088

The proposed development will include upgrading of the existing public parking, landscaping and footpaths currently adjoining the existing building.

3.2 Off-Site / Pre-Engineered Construction

Particular attention will be given to the proposed methodology of construction within the constraints of an existing residential scheme and it is therefore proposed to make as much use as is practicable and possible of off-site pre-engineered construction to minimise on-site construction activities and associated potential impacts such as disruption, site traffic etc. This preliminary version of a Construction and Demolition Waste Management Plan, particularly will provide details of the intended construction practice for the development, proposed hours of working, noise management measures, and also demonstrates how impacts are to be minimised during the construction phase of the development.

3.3 Scope of Demolition/Construction Works

The engineers' and architect's drawings describe in detail the extent of proposed construction works.

The proposed structural scheme may be summarised as follows:

- Demolition of existing building located on the subject site
- Construction of a multistorey building, including an internal basement

3.4 Justification for Partial Demolition of existing

(i) Local Demand for High Quality Residential Accommodation:
Section 16.1.11 Sustainable Urban Form set out in the South Dublin County Development Plan 2016- 2022 states: 'To minimise the waste of embodied energy in existing structures, the re-use of existing buildings should always be considered as a first option in preference to demolition and new-build'. The development site is located in Dublin 20. The proposed demolition, and additional development will provide additional high quality, well-regulated residential and commercial units which are considered much needed and significant in terms of consolidating and facilitating the development of the Dublin 20 area, reinforcing, strengthening and protecting its civic design character and dignity of the city centre and the existing urban settlement.

(ii) Demolition / Enabling Works:
The demolition works are required as part of the fundamental 'enabling works', to allow for the construction of a multistorey building.

3.5 Proposed Demolition Methodology

This outline demolition methodology herein is provided for Planning Permission purposes only. The Contractor must develop a Demolition Method Statement in accordance with the *"Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects"* (Department of Environment, Heritage and Local Government, 2006).

The Contractor must ensure that all demolition material is managed, stored and disposed of in an appropriate manner in accordance with all relevant waste legislation. Work shall be carried out in accordance with BS EN 6187: 2011 Code of Practice for Full and Partial Demolition.
The following provides a 'high-level' summary of what would be a considered as a typical acceptable demolition methodology:

- Establish a site set-up and welfare facilities
- Erect any necessary hoarding around the perimeter of the site
- Carry out an intrusive asbestos survey to identify the presence of any carcinogenic materials.
- Carry out a detailed services survey of the site to identify all building services
- Carry out any necessary de-energisation of services, diversions and decommissioning works
- Carry out a soft strip of the building to remove free-standing units, furniture, floor finishes, ceiling tiles, windows, partitions, doors and door frames, ceiling bulkheads, M&E services, heaters, light fittings, fixtures and fittings, first fix joinery

etc.

- Demolish existing third floor penthouse structure in a safe and well-planned manner, based on detailed risk assessments and method statements (RAMS) and in accordance with good practice and Health & Safety and environmental legislation.

Proximity to Public Roads

Partial and limited demolition is proposed which will not occur in close proximity to the adjoining public roads. There will however be a requirement for movement of debris and demolition materials off site which will require construction site traffic management in consultation with SDCC. Prior to commencement of the works, the appointed contractor will be required to develop a final Construction Management Plan need which will include proposed Construction Traffic arrangements in accordance with regulatory requirements and good practice, with reference to the DTO publications *"Traffic Management Guidelines"* manual and the *"Traffic Signs Manual"*.

3.6 Details of the Non-Hazardous Wastes to be produced

There will be waste materials generated from the demolition of the existing buildings, hardstanding areas, as well as from the excavation and removal of the building foundations. The volume of waste generated from demolition will be more difficult to segregate than waste generated from the construction phase, as many of the building materials will be bonded together or integrated (e.g. plasterboard on timber ceiling joists).
No excavation or site clearance will be required.

During the construction phase there may be a surplus of building materials, such as timber off-cuts, plastics, metals and tiles generated. Plastic and cardboard waste from packaging and oversupply of materials will also be generated.

Waste will also be generated from construction workers e.g. organic/food waste, dry mixed recyclables (wastepaper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided onsite 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.

3.7 Potentially Hazardous Wastes to be produced

3.7.1 Fuel/Oils

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

3.7.2 Asbestos

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

3.7.4 Other known Hazardous Substances

Paints, glues, adhesives and other known hazardous substances will be stored in designated areas; typically, in small waste volumes generated will be kept to a minimum. Wastes will be stored in appropriate receptacles pending collection by an authorised 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 construction and demolition activities or temporary site offices. These wastes (if encountered) will be stored in appropriate receptacles in designated areas of the site pending collection by an authorised waste contractor.

3.7.5 Main Construction and Demolition Waste Categories

The main non-hazardous and hazardous waste streams that could be generated by the construction and demolition activities at a typical site are shown in Table 3.1.

Waste Material	LoW/EVVC Code
Concrete, brick s, tiles, ceramics	17 01 01-03 & 07
Wood, glass and plastic	17 02 01-03
Irrigated 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
K3ypsum - based construction material	17 08 01- & 02
Paper and cardboard	20 01 01
Mixed Construction and Demolition 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
Insulation containing asbestos and asbestos-containing construction materials and other insulation containing hazardous substances	17-06-01*,03• & 05•
Organic (food) waste	20 01 08
Mixed Municipal Waste	20 03 01

Table 3.1 - Typical waste types generated and EWCs (Individual waste types may contain hazardous substances)

4.0 WASTE MANAGEMENT

4.1 Demolition Waste Generation

Demolition works at the site will involve the demolition of the existing structures and hard standing areas on site. Demolition figures published by the EPA in the 'National Waste Reports' 14 and data from previous projects have been used to estimate the approximate break-down for indicative re-use (offsite), recycling and disposal targets of demolition waste. This breakdown is shown in Table 4.1.

Waste Type	Tonnes	Reuse/Recovery		Recycle		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Glass	0.25	0	0	85	0.21	15	0.04
Concrete, Bricks, Tiles, Ceramics	15	30	4.5	65	9.75	5	0.75
Plasterboard	2	0	0	80	1.6	20	0.4
Asphalts	0.5	0	0	25	0.125	75	0.375
Metal	1.5	5	0.075	80	1.2	15	0.225
Slate	2	0	0	25	0.5	15	0.3
Timber	1	20	0.2	40	0.4	50	0.5
Total	**22.25**		**4.775**		**13.785**		**2.59**

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

The appointed demolition contractor will be required to prepare a detailed demolition management plan prior to work commencing which should refine the above estimated waste figures.

4.2 Construction Waste Generation

Table 4.2 shows the breakdown of construction and demolition waste types produced on a typical site based on data from the EPA National Waste Reports, the GMIT 15 and other research reports.

Waste Types	%
Mixed Construction and Demolition	33
Timber	31
Plasterboard	15
Metals	1
Concrete	5
Other	15
Total	100

Table 4.2 Waste materials generated on a typical Irish construction site

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

Waste Type	Tonnes	Reuse		Recycle/Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed Construction & Demolition	5	10	0.5	80	4	10	0.5
Timber	2	40	0.8	55	1.1	5	0.1
Plasterbard	5	30	1.5	60	3	10	0.5
Metals	1	5	0.05	90	0.9	5	0.05
Concrete	25	30	7.5	65	16.25	5	1.25
Other	16	20	3.2	60	9.6	20	3.2
Total	54		13.55		34.85		5.6

Table 4.3 Estimated Off-Site reuse, recycle and disposal rates for construction waste

4.3 Proposed Waste Management Options

Waste materials generated will be segregated on site, where it is practical. Where the on-site segregation of certain wastes types is not practical, off-site segregation will be carried out. Due to space restrictions onsite, it is expected that most segregation will occur offsite at the waste contractors licensed waste facilities. 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 arising's will be handled by an approved waste contractor holding a current waste collection permit All waste arising's requiring disposal off-site will be reused, recycled, recovered or disposed of at a facility holding the appropriate registration, permit or licence, as required.
Some of the sub-contractors on site will generate waste in relatively low quantities. The transportation of non-hazardous waste by persons who are not directly involved with the waste business, at weights less than or equal to 2 tonnes, and in vehicles not designed for the carriage of waste, are exempt from the requirement to have a waste collection permit (Ref. Article 30 (1) (b) of the Waste Collection Permit Regulations 2007 as amended). Any sub-contractors engaged that do not generate more than 2 tonnes of waste at any one time can transport this waste offsite in their work vehicles (which are not designed for the carriage of waste). However, they are required to ensure that the receiving facility has the appropriate COR /permit/ licence.

Written records will be maintained by the contractor(s) detailing the waste arising throughout the construction and demolition phases, the classification of each waste type, waste collection permits

for all waste contactors who collect waste from the site and CCR/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 management of the main waste streams is outlined as follows:

1) Concrete Blocks. Bricks. Tiles & Ceramics

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

2) 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.

3) 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.

4) Metal

Metal will be segregated and stored in skips. Metal is highly recyclable and there are numerous companies that will accept these materials.

5) Plasterboard

There are currently a number of recycling services for plasterboard in Ireland. Plasterboard from the demolition and 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.

6) Glass

Glass materials will be segregated for recycling, where possible.

7) Waste Electrical and Electronic Equipment (WEEE)

Any WEEE will be stored in dedicated covered cages/receptacles/pallets pending collection for recycling.

8) Other Recyclables

Where any other recyclable wastes such as cardboard and soft plasticware generated, these will be segregated at source into dedicated skips and removed off-site.

9) Non-Recyclable Waste

Construction and demolition waste which is not suitable for reuse or recovery, such as polystyrene, some plastics and some cardboards, will be placed in separate skips or other receptacles. Prior to removal from site, the non-recyclable waste skip/receptacle will be examined by a member of the waste team (see Section 7.0) to determine if recyclable materials have been placed in there by mistake. If this is the case, efforts will be made to determine the cause of the waste not being

segregated correctly and recyclable waste will be removed and placed into the appropriate receptacle.

10) Asbestos Containing Materials

Any asbestos or ACM 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./. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006- 2010.

11) 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.

4.4 Tracking and Documentation Procedures for Off-Site Waste

All waste will be documented prior to leaving the site. Waste will be weighed by the contractor, either by weighing mechanism on the truck or at the receiving facility. These waste records will be maintained on site by the nominated project Waste Manager (see Section 7.0).

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 waste manager (see Section 7.0) will maintain a copy of all waste collection permits on-site.

If the waste is being transported to another site, a copy of the Local Authority waste COR/permit or EPA Waste/IE Licence for that site will be provided to the nominated project waste manager (see Section 7.0). 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.

5.0 ESTIMATED COST OF WASTE MANAGEMENT

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

The total cost of construction and demolition waste management will be measured and will take into account handling costs, storage costs, transportation costs, revenue from rebates and disposal costs.

5.1 Reuse

By reusing materials on site, there will be a reduction in the transport and 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.

5.2 Recycling

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

Clean uncontaminated cardboard and certain hard plastics can also be recycled. Waste contractors will charge considerably less to take segregated wastes, such as recyclable waste, from a site than mixed waste.

Timber can be recycled as chipboard. Again, waste contractors will charge considerably less to take segregated wastes such as timber from a site than mixed waste.

5.3 Disposal

Landfill charges in the Leinster region are currently at around €130 - €150 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 construction and demolition waste usually costs less than municipal waste. Specific construction and demolition waste contractors take the waste off-site to a licensed or permitted facility and, where possible, remove salvageable items from the waste stream before disposing of the remainder to landfill. Clean soil, rubble, etc. is also used as fill/capping material, wherever possible.

6.0 DEMOLITION PROCEDURES

The demolition stage will involve the removal of the existing structures and hard standing areas. A formal demolition plan should be prepared for the site; however, in general, the following sequence of works should be followed during the demolition stage.

6.1 Check for Hazards

Prior to commencing works, buildings and structures to be demolished will be checked for any likely hazards including asbestos, ACMs, electric power lines or cables, gas reticulation systems, telecommunications, unsafe structures and fire and explosion hazards, e.g. combustible dust, chemical hazards, oil, fuels and contamination.

6.2 Removal of Components

All hazardous materials will be removed first. All components from within the buildings that can be salvaged will be removed next. This will primarily include metal however may also include timbers, doors, windows, wiring and metal ducting, etc.

6.3 Removal of Roofing

Steel roof supports, beams etc. will be dismantled and taken away for recycling/salvage.

6.4 Excavation of Services, Demolition of Walls and Concrete

Services will be removed from the ground and the breakdown of walls will be carried out once all salvageable or reusable materials have been taken from the buildings. Finally, any existing foundations and hard standing areas will be excavated.

7.0 TRAINING PROVISIONS

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

7.1 Waste Manager Training and Responsibilities

The nominated waste manager will be given responsibility and authority to select a waste team if required, i.e. members of the site crew that will aid them in the organisation, operation and recording of the waste management system implemented on site. The waste manager will have overall responsibility to oversee, record and provide feedback to the client on everyday waste management at the site. Authority will be given to the waste manager to delegate responsibility to sub-contractors, where necessary, and to coordinate with suppliers, service providers and sub- contractors to prioritise waste prevention and material salvage. The waste manager will be trained in how to set up and maintain a record keeping system, how to perform an audit and how to establish targets for waste management on site. The waste manager will also be trained in the best methods for segregation and storage of recyclable materials, have information on the materials that can be reused on site and be knowledgeable in how to implement this Construction and Demolition Waste Management Plan.

7.2 Site Crew Training

Training of site crew is the responsibility of the waste manager and, as such, a waste training program should be organised. A basic awareness course will be held for all site crew to outline the Construction and Demolition Waste Management Plan and to detail the segregation of waste materials at source. This may be Incorporated with other site training needs such as general site induction, health and safety awareness and manual handling.
This basic course will describe the materials to be segregated, the storage methods and the location of the Waste Storage Areas (WSAs). A sub-section on hazardous wastes will be incorporated into the training program and the particular dangers of each hazardous waste will be explained.

8.0 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 arising's 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 waste manager 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 transfer dockets will be transferred to the site waste manager 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 on a monthly basis.

Alternatively, 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.

A copy of the Waste Collection Permits, CORs, Waste Facility Permits and Waste Licences will be maintained on site at all times. Subcontractors who have engaged their own waste contractors, should provide the main contractor with a copy of the waste collection permits and CCR/permit/licence for the receiving waste facilities and maintain a copy on file available for inspection on site as required.

9.0 OUTLINE WASTE AUDIT PROCEDURE

9.1 Responsibility for Waste Audit

The appointed waste manager will be responsible for conducting a waste audit at the site during the construction and demolition phase of the development.

Contact details for the nominated Waste Manager will be provided to the SDCC Waste Regulation Unit after the main contractor is appointed and prior to any material being removed from site.

9.2 Review of Records and Identification of Corrective Actions

A review of all 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.

Waste management costs will also be reviewed.
Upon completion of the construction and demolition 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.

10.0 CONSULTATION WITH RELEVANT BODIES

10.1 Local Authority

Once demolition and construction contractors have been appointed and prior to removal of any construction and demolition 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 demolition, 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.

10.2 Recycling/Salvage Companies

Companies that specialise in construction and demolition waste management will be contacted to determine their suitability for engagement. Where a waste contractor is engaged, each company will be audited in order to ensure that relevant and up-to-date waste collection permits and facility CCR/permits/licences are held. These permit details will be sent to the SDCC Waste Regulation Unit.

11.0 CONSTRUCTION TRAFFIC AND SITE ACCESS

11.1 Impact on Public Roads

It is proposed that the primary Construction Access for the development, subject to agreement with South Dublin County Council, will be via Kennelsfort Road Upper, accessing the construction compound located within the area reserved for this purpose. The construction of the compound facility is to be provided under exempted development provisions of Classes 16 & 17, Schedule 2, Part 1 of the Planning and Development Regulations 2000 (as amended). Construction traffic will be managed in a controlled manner on a daily basis throughout the project life and a 'flagman' system will be put in place to ensure close supervision of traffic entering and leaving the site. Site access will be secured for the duration of the development and safety signage placed on all fencing and gates.

As described earlier, off-site manufacture of pre-engineered construction elements will be utilised as much as is possible to minimise the daily frequency of site traffic. In addition, in order to reduce the impact of vehicles on the existing properties in the area, the Contractor will provide management of all site traffic movements and parking throughout the duration of the works. It is envisaged that as much as is practicable, large construction vehicles will only be permitted to access site during off-peak hours. While not anticipated, other than for localised lifting of modular elements, movements of large or abnormal loads will be addressed in advance with South Dublin County Council and An Garda Síochána. Also, if required for limited periods, Temporary Road Closures will be agreed in advance with the Authorities.

During the construction vehicle washdown facilities will be provided as required, and all vehicles will be washed down prior to exiting onto the public road. All roads and footpaths adjacent to the site where dust, debris or spillage occurs will be cleaned on a regular basis. All vehicles carrying open loads (e.g. skips) will ensure the loads are properly covered to ensure no spillage of waste material occurs. Delivery vehicles will, insofar as it is possible to enforce, be required to leave the site 'not empty', but rather, through adoption of a 'take- back' policy, all return vehicles will be encouraged to take "associated waste/packaging" off site with them.

All pedestrian routes will be clearly defined utilising temporary fencing and pedestrian route signage where necessary. All site operatives will be given a specific site induction, and briefed with reference to the use of designated pedestrian access ways and crossover points.

11.2 Site Access

The site is currently accessed from Kennelsfort Road Upper. The first stage of the development will be to secure the entire boundary and establish the site compound and welfare facilities, followed by site clearance and demolition of the existing buildings, which is addressed separately. It is proposed that the new goods access will be used for all subsequent stages once the site has been secured. Following on from site establishment and demolition, and for the duration of construction, all traffic will enter and leave via a new access point in Kennelsfort Road Upper. The temporary parking of delivery vehicles or construction staff vehicles will not be permitted on public roads and a dedicated storage and visitor parking area will be constructed as part of the early works to accommodate construction vehicles and visitor parking as necessary. No staff parking on site is anticipated and if necessary, any staff parking requirement can be

accommodated within existing city centre public car parks. Unfettered and unobstructed access will be maintained at all times to neighbouring properties adjacent the site and no inappropriate parking on public roads by Construction Staff of Vehicles will be allowed.

The gated access to the site will be controlled and a Flagman/Banksman (person in a high-visibility jacket) will be designated to assist construction vehicles to enter/exit the site at busy times to avoid conflict between pedestrian movements, main road traffic on Kennelsfort Road Upper etc, and construction activities.

All construction traffic will be required to use the primary roads in the vicinity of the site, with larger vehicles clearly avoiding those with a specific height or weight limit.
The route for HGVs will depend on the location from where concrete & other materials will be sourced and the end destination for surplus demolition and excavation materials not reused on site. The locations of selected concrete batching plants and suitable waste recovery/waste disposal facilities have yet to be determined and will be identified when the contractor is appointed and when more detail on the material to be handled becomes available.
Although none are envisaged at this stage, the routes for any oversized construction vehicles required will be agreed with the Local Authority and the Traffic Department before commencement of works on site.

11.3 Construction Parking

No Parking Spaces are being provided within the construction site to cater for staff and is envisioned that a small number of dedicated allocated visitor parking spaces will be provided.

11.4 Vehicle Movement During Construction

Excavated/demolished material will be removed off-site for recovery at an authorised facility in accordance with the waste hierarchy and relevant waste legislation. Transportation of the material will be by licensed hauliers. There will be minimal impact on the local roads.
It is anticipated that there will not be any significant concentration of large vehicle movements as no very significant long duration concrete pour works or similar are envisaged.

11.5 Mitigation Measures

Construction vehicle movements would be minimised through:

- Consolidation of delivery loads to/from the site and managing larger deliveries to occur outside peak traffic periods,
- Use of precast/prefabricated materials where possible,
- Adequate storage space on site will be provided with no impact on public streets or areas,

The Contractor will adhere to best practice mobility management measures for the site staff to encourage access to the site by means other than the private car. This will be considered by the appointed Contractor prior to works commencing on site.

11.6 On-Site Accommodation

On site accommodation will consist of:

- Staff welfare facilities
- Visitor parking
- Adequate materials drop-off and storage area located within the site
- The site offices will have integrated welfare facilities including toilet and kitchen facilities for staff.

12.0 SITE LOGISTICS

12.1 General Principles

Set out below are the general principles of the site logistics, these will be developed in greater detail at the construction stage

12.2 Site Establishment and Security

The first stage of the construction programme will be to establish the area as a construction site

- The working areas will be secure and the general public will be separated from the works by the use of solid hoarding and/or well-maintained open mesh fencing
- All site facilities will be contained within the site area
- All gates will be maintained by security guards
- Task lighting for construction activities in areas adjacent to sensitive receptors (i.e. nearby properties) will generally be limited to the agreed working hours
- Site lighting will be kept to a minimum taking into account the needs of site health, safety and security.

12.3 Material Storage and Handling

As described earlier, off-site manufacture of construction elements will be utilised as much as is possible to minimise the requirement for storage of materials on site. Contractors and their subcontractors will be expected to maintain a tidy site and to operate a 'just in time' policy for the delivery and supply of materials for the works, particularly the final phase of the works when on site storage will be at a minimum. No unloading on or over the public road or internal access roads will occur.

In general;

- Tanks and drums of liquid chemicals and fuels would be stored in bunded compounds
- Packaging would be returned, where possible.

12.4 Site Accommodation and Welfare Facilities

A relatively small site workforce is envisaged and site accommodation and welfare facilities will be within the construction compound laid out in a regular manner and decorated in uniform colour. No overnight or living accommodation will be provided/located within the construction site.

The principal site welfare accommodation will comprise mess room, locker room, toilets, canteens and showers, all of which will be prefabricated as far as possible with final assembly taking place on site. Preventative pest control measures will also be put in place, i.e. appropriate storage and regular collection/handling and disposal of waste. Regular inspections will be carried out to ensure that good housekeeping measures are maintained at all times. Existing piped and/or Portable chemical toilets will service the construction site. The chemical toilets will be proprietary systems and a licensed contractor will empty these on a regular basis and dispose of the waste to a suitably licensed facility. All cleaning and washing operations will be carried out in designated areas. Siting of temporary site accommodation will be located to facilitate ease of access and

construction, to minimise potential disturbance to surrounding properties, and reduce any environmental impact.

In considering site layout, the following will apply:

- Storage sites, fixed plant and machinery, equipment and temporary buildings etc, will be located to limit adverse environmental effects.
- Fuel storage and filing to be bunded
- All reasonable precautions will be taken for the operation of plant and equipment, to avoid nuisance and excess noise impact on the surrounding residents
- Emergency Response Plans will be developed; and
- The standard of fencing/screening during construction will be selected in order to maintain effective site security and achieve appropriate noise attenuation and visual effect in consideration of neighbouring interests
- Control of pests will be carried out using a professional pest control company.

12.5 Site Security

- It is intended to provide a fully enclosed site utilising perimeter fencing / hoarding
- If sections of the perimeter fencing/hoarding are required to be removed to allow works to progress, then Heras type fencing will be used to maintain a secure perimeter and a designated person will be responsible for the day-to-day maintenance of the perimeter
- It is proposed that 24-hour security will be provided for the duration of the Development

13.0 AIR QUALITY

Construction works will be carried out in such a way as to limit the emissions to air of pollutants (particularly dust and fine particles (PM10)), employing Best Practicable Means. The site will be managed in accordance with the CWMP to minimise the potential effects on air quality from construction. Monitoring will be undertaken throughout the construction period to enable proactive management of dust and PM10 levels. Wind speed and direction will be included in the monitoring.

13.1 Effective Material Storage and Handling

The storage and handling of construction materials can be a significant dust emission source. The adoption of appropriate dust control measures will greatly reduce dust emissions from these sources and ensure that any adverse effects are reduced or eliminated.

Handling and storage areas will be sited as far away as is reasonably and practically possible from public/residential areas. Handling and storage areas will be actively managed and fine, dry material will be stored inside enclosed shield/coverings or within a central storage area. Any storage areas that are not enclosed will be covered/sheeted. Prolonged storage of debris on site will be avoided. Vehicles carrying dusty materials into or out of the site shall be sheeted down to prevent any escape of materials.

13.2 Construction Plant

Construction plant can be a significant source of emissions although control measures can be implemented to minimise any adverse impacts. The following measures will be employed:

- Site plant and equipment will be kept in good repair and maintained in accordance with the manufacturers' specifications. Allowing for economic constraints, the plant will be selected on the basis of which has the least potential for dust and other emissions;
- Plant will not be left running when not in use (i.e. no idling);
- Plant with dust arrestment equipment will be used where practical;
- Where practical, cleaner fuels will be employed for construction plant; and
- Enclosures will be erected around major construction plant items as appropriate and where practical.
- A relatively small self-erecting crane is envisaged which will be used as required

13.3 Vehicle Movements

Vehicle movements may result in dust emissions (by re-suspending dust from the road or from spilling dusty loads) and exhaust emissions. However, a number of control measures can be adopted to eliminate or minimise such emissions:

- Wheel washing facilities close to the site entrance to prevent mud from construction operations being transported on to adjacent public roads;
- Any spillages from vehicles leaving the site will be promptly removed;
- Damping down of site haul roads by water bowser during prolonged dry periods;

- Regular cleaning of hard-surfaced site entrance roads;
- Ensuring that dusty materials are transported appropriately (e.g. sheeting of vehicles carrying spoil and other dusty materials);
- Confinement of vehicles to designated haul routes within the site;
- Restricting vehicle speeds on haul roads and other unsurfaced areas on the site;
- All vehicles will be maintained to minimise exhaust emissions;
- Hoarding and gates to prevent dust breakout; and
- Appropriate dust site monitoring will be included within the site management practices to inform site management of the success of dust control measures used.

13.4 Dust

Dust control will be best achieved at sources, and if possible, activities will be carried out in a manner so as to preclude dust generation. Dust levels will be controlled and the development operated in a way which is not detrimental to the amenity of local residents.

If dust is generated, steps will initially be taken to protect workers in the vicinity who shall, as a minimum, be issued with dust masks. Dust will, if possible, be contained in the location in which it is generated, and be controlled and managed therein. Dust suppression measures will be carried out to ensure that dust nuisance affecting neighbouring properties is minimised.
The following control measures and good management practices, will be employed:

- Site operations will be planned to take into account local topography, prevailing wind patterns and local sensitive receptors (e.g. schools, residences)
- Burning of materials on site will be prohibited
- Loading and unloading will only be permitted in designated hard standing areas
- Provision of water sprays and wind/dust fences where possible, particularly in dust sensitive locations
- Stockpiles of soil, arising or other granular material will be sheeted, covered and/or treated to prevent dust raising that may cause risk to health or nuisance to the public
- Hoarding will be erected around construction activities to minimise dust blow from site
- An appointed person will oversee/control activities and handle complaint

14.0 NOISE AND VIBRATION

Noise and vibration levels will be controlled as set out below to ensure that the Development is operated in a way that minimises detrimental impact to the amenities of local residents.

14.1 Construction Noise

Infrastructure works, excavations, and foundation construction will be among the most significant activities. Although concreting operations will also give rise to noise, the levels generated would not be considered to be significant.

In order to minimise the noise impact further on the nearby properties it is proposed that heavy equipment and machinery including pneumatic drills, construction vehicles and generators only work between the hours shown below. In addition, no deliveries and/or removal of materials will occur outside of these hours. All plant and equipment will be maintained in good working order in accordance with BS.5228 in order to minimise air and noise emissions.

Normal working hours will be maintained in accordance with South Dublin County Council's requirements.

On occasions it may prove necessary to carry out noisy activities outside of normal working hours. In such instances prior consultation will be carried out with South Dublin County Council and local residents outlining the nature and reason for the works and their likely duration.

During construction, the measures summarised below, are to be employed:

- Details of construction activities, prediction levels/assessments will be discussed with the relevant authority, both prior to construction and during construction. Detailed construction programmes will be available in advance of work starting on site;
- Where work outside of agreed hours or likely to exceed specified noise limits, is necessary, then this shall only proceed subject to notification to South Dublin County Council Environmental Health Officer and local residents, and approval given.
- Except for emergency situations, notification will be in advance of any requirement for out of hours/noisy working.
- Where the potential for noise exists, 'Best Practicable Means' will be used to reduce noise to achieve compliance consistent with the recommendations of BS 5228, and may include:
    i. Careful selection of plant items, construction methods, programming, and implementing a 'noise and vibration protocol', which outlines monitoring frequency and action levels etc;
    ii. Design and use of site hoarding and screens/noise barriers, to provide acoustic screening at the earliest opportunity;
    iii. Vehicles and machinery will not be left running when not in use (i.e. no idling); and
    iv. Choice of routes and programming for the transport of construction materials.

14.2 Noise Limits

Noise Limits to be applied for the duration of construction works are as set out in the National Roads Authority (TII) *'Guidelines for Treatment of Noise and Vibration in National Roads Schemes'* and *'BS 5228-1:2009+A1:2014 (Code of Practice for Noise Control on Construction and Open Sites)'*.

BS 5228 applies a noise limit of 70 dBA between 07:00 am and 19:00 pm outside the nearest window of the occupied room closest to the site boundary in suburban areas away from main road traffic and industrial noise. For the duration of construction works, a daytime noise limit (07:00 am to 19:00 pm) of 70 dBA shall apply (in accordance with the requirements of BS 5228 and generally in agreement with the TII guidelines).

15.0 REFERENCES

1. Waste Management Act 1996 {No. 10 of 1996) as amended. Sub-ordinate and associated legislation include:
   - European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011) as amended.
   - Waste Management {Collection Permit) Regulations 2007 (S.I. No. 820 of 2007) as amended.
   - Waste Management (Facility Permit and Registration) Regulations 2007 (S.I No. 821 of 2007) as amended.
   - Waste Management (Licensing) Regulations 2000 (S.I No. 185 of 2000) as amended.
   - European Union (Packaging) Regulations 2014 (S.I. No. 282 of 2014) as amended.
   - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997) as amended.
   - Waste Management {Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015)
   - European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
   - European Union (Batteries and Accumulators} Regulations 2014 (S.I. No. 283 of 2014) as amended.
   - Waste Management {Food Waste) Regulations 2009 (S.1. No. 508 of 2009) as amended.
   - European Union (Household Food Waste and Bio-waste) Regulations 2015 (S.I. No. 191 of 2015)
   - Waste Management (Hazardous Waste) Regulations 1998 (S.I. No. 163 of 1998) as amended.
   - Waste Management {Shipments of Waste} Regulations 2007 (S.I. No. 419 of 2007} as amended.
   - The European Communities (Transfrontier Shipment of Hazardous Waste) Regulations 1988 (S.1. No. 248 of 1988)
   - European Communities {Shipments of Hazardous Waste exclusively within
   - Ireland) Regulations 2011 (S.I. No. 324 of 2011)
   - European Union (Properties of Waste which Render it Hazardous} Regulations 2015 {S.I. No. 233 of 2015} as amended
2. Protection of the Environment Act 2003, (No. 27 of 2003) as amended.
3. Litter Pollution Act 1997 (S.I. No. 12 of 1997) as amended
4. Eastern-Midlands Region Waste Management Plan 2015 - 2021 (2015).
5. Department of Environment and Local Government (DoEHLG) Waste Management - Changing Our Ways, A Policy Statement (1998).
6. Forum for the Construction Industry - Recycling of Construction and Demolition Waste.
7. Department of Environment, Communities and Local Government (DoECLG), A
8. Resource Opportunity- Waste Management Policy in Ireland (2012).
9. Department of Environment, Heritage and Local Government, Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (2006).
10. FAS and the Construction Industry Federation (CIF}, Construction and Demolition Waste Management - a handbook for Contractors and Site Managers (2002).
11. South Dublin County Council (SDCC), South Dublin County Development plan 2016-2022
12. Planning and Development Act 2000 (S.I. No. 30 of 2000) as amended

13. EPA, Waste Classification - List of Waste & Determining if Waste is Hazardous or Non-Hazardous (2015)
14. 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.
15. Environmental Protection Agency (EPA), National Waste Database Reports 1998 - 2012.
16. EPA and Galway-Mayo Institute of Technology (GMIT), EPA Research Report 146- A Review of Design and Construction Waste Management Practices in Selected Case Studies - Lessons Learned