

DOCUMENT LEAD SHEET

**DRAFT CONSTRUCTION, DEMOLITION AND
OPERATIONAL WASTE MANAGEMENT PLAN**

PROJECT: COOKSTOWN PHASE 1

STATUS: SHD PLANNING PERMISSION (ABP)

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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 Please replace all superseded pages of this document with current version.

Rev	Date	Description	By	Checked	Approvals	
P	04 Feb 2019	ABP Planning Permission	GD	PH		
<input checked="" type="checkbox"/>	Entire Document Issued this Revision					

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1. INTRODUCTION

This Construction and Demolition Waste Management Plan has been prepared by GDCL Consulting Engineers on behalf of our client, Pymont Property Developments Ltd., to accompany a planning application to An Bord Pleanála for a proposed Strategic Housing Development at Units 5A-C Second Avenue, Cookstown Industrial Estate, Tallaght, Dublin 24.

More specifically, the proposed Strategic Housing Development comprises the demolition of an existing 2,590 sq.m industrial unit and the construction of a 'build-to-rent' housing development, comprising 4 no. blocks accommodating 196 no. residential apartments, 1 no. commercial unit, 1 no. office unit, a creche, a gym and 7 no. communal amenity spaces.

Please note that this document is a 'draft' for planning submission purposes which is intended to set a clear path and philosophy for the future nominated contractor in drawing up their own final strategy for Construction and Demolition Waste Management Plan.

2. PURPOSE OF CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT PLAN

The purpose of the Construction and Demolition Waste Management Plan is to provide information necessary to ensure that the management of waste produced by the site is carried out in accordance with all current legal and industrial standards including;

- Waste Management Act 1996 and associated regulations
- Litter Act 1997
- Packaging Regulations 2003
- Waste Management Plan for Dublin Region 2005 - 2010.

One priority of the plan shall be to promote recycling, reuse and recovery of waste and diversion from land fill where ever possible. Guidance will also be given to ensure an appropriate method of transportation of waste is used to prevent littering or other serious environmental pollution.

In preparation of the Construction and Demolition Waste Management Plan, the following publications have been used as references;

- Best Practice Guidelines on the preparation of waste management plans for construction and demolition projects, Department of the Environment and local Government June 2006.
- Construction and Demolition waste management - A hand book for contractors and site managers, FAS and the construction industry federation 2002.

In tandem with the launch of the National Construction and Demolition waste council, the Department of the Environment, Heritage and Local Government published the "Guidelines for preparation of waste management plans for construction and demolition projects".

These guidelines cover issues to be addressed at the preplanning stage right through to completion. These include:

- Predicted construction and demolition wastes; Waste disposal/recycling of construction and demolition wastes at the site;

- List of sequence of operations to be followed; Provision of training for waste managers and site crew;
- Details of proposed record keeping system;
- Details of waste audit procedures and plans; Details of consultation with relevant stakeholders.

Section 3 of the guidelines outline the threshold to which the plans are prepared to. This particular development falls into threshold Category 3.1.2:

“New development other than (1) above including, institutional, educational, health and other public facilities with an aggregate floor area in excess of 1250m2.”

3. NATIONAL, REGIONAL AND LEGISLATION REQUIREMENTS

LEGISLATION, POLICIES AND REGIONAL GUIDANCE

Directive 2006/12/EC (repealed with effect from 12 December 2010) of the European parliament and of the council of 5th April 2006 on waste and directive 2008/98/EC on waste and repealing of certain directives. The European council of ministers has adopted the revised waste framework directive, a decision that means member states will now be expected to reach a 70% recycling rate for non-hazardous construction and demolition by 2020. Directive 2008/98/EC on waste and repealing certain directives, came into force on 12th December 2008, and Ireland has two years from this date to implement it into law. The directive lays down the five step hierarchy of waste management options, with waste prevention as the preferred option, followed by re-use, recycling, recovery and safe disposal, in descending order. In addition, the directive also deals with the issue of “end of waste” and “by- products” and clarifies the definitions of recovery, disposal and by-product.

LEGISLATIVE REQUIREMENTS

Waste Management Acts, 1998 to 2008 and regulations made under the acts

The Waste Management Act, 1996 was enacted in May 1996 and sets out the responsibilities and functions of various persons in relation to waste. This was amended by a number of subsequent acts including the waste management (amendment) act 2011 and the protection of the environment act 2003. The act:

- Prohibits any person from holding, transporting, recovering or disposing of waste in a manner which causes or is likely to cause environmental pollution.
- Requires any person who carries out activities of an agricultural, commercial or industrial nature to take all such reasonable steps as are necessary to prevent or minimise the production of waste.
- Prohibits the transfer of waste to any person other than an authorised person (i.e. a holder of a waste collection permit or a local authority.)

- Requires the environmental protection agency (EPA) to make a national plan in relation to hazardous waste.
- Requires local authorities to make waste management plans in relation to non-hazardous waste.
- Imposes certain obligations on local authorities to ensure that a service is provided for collection of household waste and to provide facilities for the recovery and disposal of such waste; Enables the minister of the environment and local government to make regulations for various purposes to promote better waste management and provides for substantial penalties for offences including fines, imprisonment and/or liability for clean-up measures.

Waste Management (Collection Permit) Regulations, 2007 as amended

Waste from the proposed development may only be collected by the holder of a waste collection permit or a local authority. Waste collection permits are granted in accordance with the waste management (collection permit) regulations, 2007 as amended. Waste storage and collection areas on site should be designed to prevent environmental pollution.

Waste Management (Shipments of Waste) Regulations 2007 SI 419

Where waste from the proposed development is exported outside of Ireland for recovery or disposal the the National TransFrontier Shipments (TFS) office at Dublin City Council (which is the national competent authority for the implementation and enforcement of the TFS Regulations since 12thJuly 2007) must be notified. Certain financial guarantees must be in place and certified issued by the national TFS officer prior to the waste movement taking place.

POLICIES AND GUIDANCE

DoEHLG – Waste Management Changing Our Ways (September 1998)

The October 1998 policy statement on waste management – “changing our ways” – outlines the government’s policy objectives in relation to waste management and suggests some key issues and considerations that must be addressed in order to achieve these objectives. In particular, it focuses on the need to give clear and particle expression to the requirements of the hierarchy, by developing and pursuing integrated solutions, which combine progressive policies with a suitable and cost effective waste infrastructure. Changing our ways set the following ambitions targets for achievement over a fifteen year time scale.

- A diversion of 50% of overall household waste away from landfill
- A minimum 65% reduction in biodegradable municipal wastes consigned to landfill
- The development of composing and other feasible biological treatment facilities capable of treating up to 300,000 tonnes of organic waste annually.
- Materials recycling of 35% of municipal waste.
- Recovery of at least 50% of construction and demolition waste within a five-year period, with a progressive increase to at least 85% over fifteen years.

- Rationalisation of municipal waste landfills with progressive and sustained reductions in numbers, leading to an integrated network of some 20 or so state of the art facilities incorporating energy recovery and high standards of environmental protection.

DoEHLG – Preventing and Recycling Waste – Delivering Change – A Policy Statement

The government added to the messages presented in waste management “changing our ways”, with the publication of preventing and recycling waste – delivering change 2002. In addition to setting objectives, the policy statement set out how these might be achieved through investment from the national development plan in waste infrastructure. Key objectives of the policy statement are:

- The setting up of a market development group focusing on markets for recyclables.
- Formulating a national strategy on biodegradable waste policy.
- Expansion of the network of civic amenity sites and materials recycling facilities.

DoEHLG – Waste Management – Taking Stock and Moving Forward

Waste management – taking stock and moving forward reviews progress of implementation key policies including the national waste prevention to 2004. It sets up a frame work for implementing key policies including the national waste prevention programme and the setting up of a market development group. It also sets an objective date of 1 January 2005 for implementation st of user based sharing for waste collection.

DoEHLG – National Strategy on Biodegradable Waste (2006)

The national strategy on biodegradable municipal waste published by the DoEHLG in 2006 sets out measures to progressively divert biodegradable municipal waste from landfill in accordance with the agreed targets in EU Directive 1999/31/EC on the landfill of waste (landfill Directive). By 2016, in the region of 1.8 million tonnes of biodegradable municipal waste will need to be diverted annually in order to meet the directives targets. The strategy is based on the integrated waste management approach established as government policy since the publication of “change our ways” in 1998. The preferred options for dealing with biodegradable municipal waste (BMW) are:

- Prevention and minimisation – avoiding generating waste.
- Recycling – mainly of paper and cardboard but also of textiles.
- Biological treatment – mainly of kitchen and garden waste including composting
- Residual treatments – thermal treatment with energy recovery of by way of mechanical biological treatment.

Waste Management Plan for Dublin 2005 - 2010

The Dublin Waste Management Plan 2005-2010 aims towards achieving 59% recycling, 25% incineration and 16% landfill. The 2011 annual progress report shows waste management rates are improving year on year. The household recycling rate is up 3% to 44%, municipal

waste recovery is up 1% to 47% and landfilling has decreased by 1% to 53%. The region remains overly reliant on landfill with 49% of commercial waste sent for disposal. There remains a need to develop recovery alternatives for residual waste.

4. **PROJECT DESCRIPTION**

In summary, the development will involve demolition of existing buildings on site and construction of apartments in accordance with the scheme as outlined in the drawings prepared by C+W O'Brien Architects and planning reports by Hughes Planning and Development Consultants, which this submission accompanies.

5. **DEMOLITION WASTE**

In summary, the existing structures, which typically are single or two storeys will be demolished.

Demolition of the above will generate significant volumes of waste. The buildings and associated infrastructure are likely to be constructed of steelwork and concrete construction. These materials are expected to form part of the dominant waste streams.

Demolition waste that cannot be reused on site will be removed by licensed contractors under the Waste Management Act 1996, the Waste Management (Permit) Regulations of 1998 and the Waste Management (Collection Permit) Regulations of 2001 and disposed of appropriately at fully licensed waste facilities.

The following table is a preliminary estimate of the demolition waste which might be generated:

Demolition Quantity Estimate:

Waste Types	Waste Tonnes
Concrete, Bricks, Tiles, Plastics etc.	5419
Asphalt Tar/Tar Products	5
Metals	56.6
Total	5480.6

The following table then shows the target values for the management of that waste at the site:

Predicted Demolition Waste Targets for the Proposed Development:

Waste Types	Waste Tonnes	Recycle		Disposal	
		%	Tonnes	%	Tonnes
Concrete, Bricks, Tiles, Plastics etc.	5419	70	3793.3	30	1625.7
Asphalt Tar, Tar Products	5	25	1.25	75	3.75
Metals	56.6	92.5	52.36	7.5	4.24

Total	5480.6		3846.9		1633.7
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These figures are preliminary estimates and are to be confirmed by the appointed contractor who will confirm this data by their own survey of the existing structure.

6. CONSTRUCTION PHASE WASTE

During actual construction activities, waste will be produced from surplus materials such as broken or off-cuts of timber, plasterboard, concrete tiles, glass etc. Some packing waste is also expected to be produced. Surplus soil / gravel is expected to be produced due to cut / fill activities. Waste from packaging and oversupply of materials is also expected. The bulk of waste material generated is from the excavation of subsoil to accommodate the construction of the basement structures for the development.

7. CATEGORIES OF CONSTRUCTION WASTE GENERATED

The European Waste Catalogue (EWC) classifies waste materials and categories them according to what they are and how they are produced. It is referred to in a number of European Union directives and commission decisions regarding waste management. In 1994, the first European waste catalogue and hazardous waste list was published as two separate documents. The lists were used by the environment protection agency for the compilation of waste data from 1995 and were adopted into Irish legislation by the Waste Management Act 1996. In 1996 the Environmental Protection Agency (EPA) published a single list incorporated both the European Waste Catalogue and the Hazardous waste list. The European Waste Catalogue and the hazardous waste list are used for the classification of all wastes and hazardous wastes and are designed to form a consistent waste classification system across the EU. They form the basis of all national and international waste reporting obligations, such as those associated with waste licences and permits, the national waste database and the transport of waste.

The EPA has also published a more concise guide of these in January 2002. The European four digit waste codes (EWC) for the typical waste materials expected to be generated for this site are tabulated below as follows:

Waste Material	EWC
Non - Hazardous	
Concrete, bricks, tiles, ceramics	17 01
Wood, glass and plastic	17 02
Bituminous mixtures, coal tar and tarred products	17 03
Metals (including their alloys)	17 04
Soil, stones and dredged spoil	17 05
Gypsum-based construction material	17 08
Hazardous	
Electrical and Electronic Components	16 02
Batteries	16 06
Wood Preservatives	03 02
Liquid Fuels	13 07

Soil and stones containing dangerous substances	17 05 03
Insulation materials containing asbestos	17 06 01
Other insulation materials containing of or containing dangerous substances	17 06 03
Construction materials containing asbestos	17 06 05
Construction and demolition waste containing mercury	17 09 01
Construction and demolition waste containing PCBs	17 09 02
Other construction and demolition wastes containing dangerous substances	17 09 03

8. ANTICIPATED HAZARDOUS WASTE

Fuels used during construction for site machinery etc., will be classed as hazardous and will be stored in suitable tanks with the draw-off points banded. Where this is the case it is not expected that there will be any fuel wastage. Waste mixtures contain dangerous substances classified as hazardous waste. This will not be used as fill on the site and only disposed of in a licensed hazardous waste facility.

9. ESTIMATED WASTE GENERATED

Taken from the Irish EPA figures, below is the breakdown of Construction and demolition waste type expected to be generated from a typical site such as this per m.

Waste Types	%
Soils and Stones	77.8
Concrete	19.9
Asphalt Tar, Tar Products	0.1
Metals	0.2
Other	2.0
Total	100

The development will include the excavation of approximately 489m³ soil/subsoil for foundation construction. The following table is a preliminary estimate of the construction waste which might be generated based on information currently available:

Waste Types	Waste (Tonnes)
Soils and Stones	21145
Concrete, Bricks, Tiles, Plastics etc.	5419
Asphalt Tar, Tar Products	5.0
Metals	56.6
Other	543.4
Total	27169

Category	Qualifying Criteria
Category 1	Inert Material, suitable for disposal at a waste permitted site in Ireland
Category 2	Inert Material, suitable for disposal at inert

	waste landfill in Ireland (Murphy Environmental acceptance criteria, Hollywood facility)
Category 3	Non-hazardous material, suitable for disposal at a landfill facility in Ireland or for disposal/recovery in continental Europe
Category 4	Hazardous material as defined by the application of the 'Hazardous Waste Classification Tool' suitable for disposal/recovery Continental Europe.

In the absence of general national guidelines for the acceptance of material at waste permitted sites in Ireland, the Austrian guidelines for excavated- soil landfills will be applied to classify this material. Prior to the transfer of material from the site to a specific waste permitted site the available data should be submitted to the permit holder to confirm the suitability of the material for the transfer of the material to the facility.

Category	Qualifying Criteria	%	Cubic Metres
Category 1	Inert Material, suitable for disposal at a waste permitted site in Ireland	13.3	151
Category 2	Inert Material, suitable for disposal at inert waste landfill in Ireland	38.5	437
Category 3	Non-hazardous material, suitable for disposal at a landfill facility in Ireland or for disposal/recovery in continental Europe	48.2	547
Category 4	Hazardous material as defined by the application of the 'Hazardous Waste Classification Tool' suitable for disposal/recovery Continental Europe.	0	0

The following table then shows the target values for the management of that waste at the site:

Waste Types	Waste Tonnes	Reuse/Recover		Recycle		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Soil and Stones	21145	85	17973	-	-	15	3172
Concrete, Bricks, Tiles, Plastics etc.	5419	-	-	70	3793.3	30	1625.7
Asphalt	5	-	-	25	1.25	75	3.75

Tar, Tar Products							
Metals	56.6	5	2.83	80	45.28	15	8.49
Other	543.4	10	54.34	40	217.36	50	271.7
Total	27169		18030.17		4057.19		5081.64

Any contaminated material encountered will be classified and disposed of to Council Decision 2003/33EC for acceptance criteria at landfill sites.

Again the above figures are preliminary and will be confirmed by the building contractor on appointment.

10. PROPOSED WASTE MANAGEMENT OPERATION

Waste is to be segregated on site to the above table. The site waste storage area will have skips and recycling receptacles for all recyclable wastes. Collections for these will be as usage required. Non-hazardous recyclable waste will be transferred by suitable means to landfill. All materials for recycling will be segregated into suitable containers which have adequate access for collection vehicles.

SOIL / SUBSOIL / BEDROCK

This inert soil and subsoil will be excavated and reused where possible. As there will be an excess of non-hazardous overburden that is not used for landscaping, this material will be disposed of off-site. Soil disposal will be by contractors licensed under the Waste Management Act 1996, the Waste Management (Permit) Regulations of 1998 and the Waste Management (Collection Permit) Regulations of 2001. All soil will be classified in accordance with Council Decision 2003/33/EC and disposed of in accordance with its hazard category in fully EPA /local authority licensed disposal facilities. Permits issued under the Waste Management (collection permits) regulations 2007 allow the contractor to reuse this for landscaping etc. subject to its terms.

PLASTICS / TIMBER / CARDBOARD / SCRAP METALS / PLASTER / GLASS

These highly reusable and/or recyclable materials, if uncontaminated, will be cleaned, segregated and stored in suitable covered skip for collection by licensed contractor. Every effort will be made in the management of the site to minimize the oversupply of these materials.

HAZARDOUS MATERIALS

A specialist contractor will be employed to carry out environmental clean-up to remove traces of contaminated materials from the site. These should be licensed under Waste Management (Collection Permit) regulations 2007. This will be disposed of in a facility licensed under the Waste Management Act 1996 and waste management (Facility Permit) regulations of 2007.

11. DOCUMENTATION

All waste will be weighed and documented prior to leaving site. Records will be kept at the site and at the relevant waste facility. Movement of waste will be in accordance with relevant guidelines. Construction and Demolition of municipal waste will be separated and stored wherever possible and monitored/inspected by the site foreperson prior to removal to ensure that site protocol for recycling is being adhered to.

12. ROLES & TRAINING FOR WASTE MANAGEMENT AND SITE CREW

WASTE MANAGER

A dedicated waste manager will be appointed to ensure commitment, efficiency and site protocols upheld during construction stage.

The role of the waste manager will be to record, oversee and manage everyday handling of waste on the site.

Their training will cover the setup and maintenance of record keeping systems and how to produce an audit to ensure waste management targets are being met.

They shall also be trained in the best methods for segregation and storage of recyclables. They will also be familiar with the suitability of material reuse and know how to implement the Construction and Demolition Waste Management Plan.

SITE CREW

This shall be responsibility of waste manager and a training programme will be organised, incorporated into typical onsite inductions to give an awareness of waste segregation on the site.

This will outline the types and treatment that should be given to different materials and hazardous materials.

13. RECORD KEEPING

Records shall be kept for each material leaving the site for all types of use or disposal.

This shall take the following basic outline form:

- Waste taken for reuse off site
- Waste taken for recycling
- Waste taken for disposal
- Reclaimed waste materials brought to site for reuse.

For any movement of waste a docket shall be signed and recorded by waste manager, detailing type and weight of material and source or destination.

This will be readily comparable with all delivery records to site, so a waste generation percentage for each material can be determined.

This will allow ease of comparison of figures with targets established for the recovery, reuse and recycling of Construction waste. It will also highlight the source of failure in meeting these targets.

14. OPERATIONAL WASTE

TYPICAL WASTE CATEGORIES

Typical municipal waste streams are expected to be produced during operation of the proposed aparthotel development include;

- Food wastes
- Cardboard and paper
- Plastics (including bottles and other containers)
- Glass (including green, brown, clear)
- Metals (including aluminium cans and tin cans)

Periodic maintenance and repair activities will generate small quantities of waste such as green waste, inert building materials (e.g. textiles) and certain chemicals (cleaning products, paints, pesticides etc)

ESTIMATED OPERATIONAL WASTE ARISING

A Waste Generation Model has been used to predict waste types, weights and volumes arising from operations within the proposed development. The model incorporates building area and use and combines these with other data including Irish and US EPA waste generation rates.

Approximate estimates of waste generation volumes for the apartments, crèche, and gym use areas have been determined based on the predicted occupancy of the spaces. The following are considered for the calculation of generated waste volumes for this particular development.

Waste Type	Apartments (no. 197) (m³/week)	Crèche (m³/week)
Organic	0.431	0.0267
Cardboard/Paper	2.526	0.875
Plastic	2.586	0.521
Glass	0.0616	0.0067
Metals	0.369	0.0134
Textiles	0.246	0.0134
Mixed non-recyclables	0.431	0.107
Total	6.65 m³/wk	1.563 m³/wk

Waste Type	Gym (m ³ /week)
MDR	0.383
Residual	0.383
Total	0.766 m³/wk

Therefore, the total waste produced on site generated by the apartments, crèche, and gym is **8.98m³/wk**.

WASTE STORAGE AND COLLECTION

This section provides information on how waste is to be stored within the three blocks and also how the waste will be collected from the development. This has been prepared with due consideration of the proposed building layout as well as best practice standards, local and national waste management requirements including those of South Dublin City Council (DCC). In particular, consideration has been given to the following documents:

- BS 5906:2005 Waste Management in Buildings – Code of Practice;
- EMR Waste Management Plan 2015 – 2021; and
- South Dublin City Council, Bye-Laws for the Storage, Presentation and Collection of Household and Commercial Waste (2013).

Using the previously calculated waste generation model, waste receptacle requirements and the minimum areas required for waste storage have been established for the development in the table below.

Area/Use	Bins Required				Min. WSA Area Required
	MDR	NMR	Organic	Glass	
Apartment Complex	7 x 1100L	1 x 1100L	2 x 240L	1 x 120L	7m x 6m

Waste storage receptacles required above will vary in size, design and colour dependent on the appointed waste contractor. All waste receptacles used will comply with the IS EN 840 2012 standard for performance requirements of mobile waste containers, where appropriate.

The proposed location of waste management facilities is shown on the architect's drawings and is accessible to the public road.

15. MITIGATION OPERATION PHASE

Mitigation measures proposed to manage the impacts arising from the site generated during operation of the proposed development are summarised below: On-site segregation of all waste materials into appropriate categories including:

- Organic wastes
- Cardboard and paper

- Plastics
- Glass materials
- Mixed non-recyclables.
- All waste materials will be stored in skips or other suitable recyclables in a designated waste storage area on the site.
- All waste leaving the site will be recycled, with the exception of these waste management streams where appropriate recycling facilities are not currently available.
- All waste leaving the site will be transported by a suitably licenced/permited contractor and taken to a licenced/permited facility.
- All waste leaving the site will be recorded and copies of relevant documentation retained.

16. ESTIMATED COST OF WASTE MANAGEMENT

Without the appointment of a contractor for the project where more information will be available on the definite methods of collection, storage and transportation are known it is difficult to estimate at this stage.

Waste Management costs have also been changing significantly over the past decade.

However, below we outline the approximate current cost of landfill and recycling. The total cost of Construction and Demolition waste management shall be measured and also allow for purchase cost of materials, handling cost, storage cost, transport cost, revenue from sale of material and disposal costs etc.

The re-use of materials on site will reduce the transportation and disposal costs for waste being taken to landfill sites. Where soil/stones cannot be re-used on the site, they may be reused as capping material for landfill sites, or reinstatement of quarries for example. For this purpose, this waste may be taken free of charge thus reducing overall Waste Management Cost.

Re-cycling in Dublin for cardboard and clean plastic could be in the range €135 per tonne for disposal as municipal waste, however a net rebate in the range of €35 - €65 could be given if recycled.

Salvageable metals can generally be deposited free of charge at salvage yards, thus only incurring cost for transport.

Timber can be recycled as chip board etc. However, the cost of clean segregate waste is cheaper to dispose of compared to mixed waste.

Plasterboard, as is no longer considered inert but can now be recycled also giving a net reduction in disposal costs. Disposal sites in Dublin region are currently charging approximately €135 per tonne. Fees may also be incurred for waste contractor use of compactors, skips etc.

Segregate waste will generally cost less than mixed municipal waste. As noted above, the disposal of waste to landfill can be reduced by consistently re-assessing the re-use, recovery or recycling of waste materials generated.

17. WASTE PROCEDURE AUDIT

The waste manager shall perform audits at the site during the entire construction phase of the works.

This shall ensure that all records are being maintained for all movements of all materials.

Records shall also be readily available for comparison with the sites targets. At completion of the Construction phase a final report will be prepared outlining the results of the Waste Management process and the total reuse, recycling and recovery figures for the site.

18. PREDICTED IMPACTS OF THE PROPOSED DEVELOPMENT

Assuming all the proposed mitigation measures are implemented, the following impacts are expected to arise as a result of the proposed development.

CONSTRUCTION PHASE

Significant volumes of waste materials will be generated during the construction of the proposed development, including demolition of the existing buildings to the rear of the site. However careful management of these, including segregation at source, will help to ensure maximum recycling, reuse and recovery is achieved, in accordance with current local national waste targets. It is expected however that a certain amount of waste will still need to be disposed of to landfill. Assuming appropriate facilities are provided, environmental impacts (e.g. litter, contamination of soil or water etc.) arising from waste storage are expected to be minimal. Particular attention must be given to the appropriate management of demolition (and construction) waste containing contaminated or hazardous materials. The use of suitably licenced waste contractors will ensure compliance with relevant legal requirements and appropriate off site management of waste.

In summary, if the Construction and Demolition Waste Management Plan is implemented and a high level of due diligence is carried out at the site, it is envisaged that the environmental impact of the construction phase of the proposed development will be short term and slight, with respect to waste management.

OPERATION PHASE

As with the construction phase, waste materials will be generated during the operational phase of the proposed development. Again, careful management of these, including segregation at source, will help ensure acceptable local and national waste targets are met. It is expected that some waste (e.g. mixed non-recyclables) will still be required to be disposed of to landfill. Assuming appropriate on-site storage is provided, environmental impacts (e.g. litter and to a lesser extent contamination of soil and water etc.) arising from waste storage are expected to be minimal. Bin stores will be located in the basement level. The use of suitable licenced waste contractors will ensure compliance with the relevant legal requirements and appropriate off-site managements of waste.

In summary, if the operational phase management plan is implemented and a high level of due diligence is carried out at the site, it is envisaged that the environmental impact of the

operation phase of the proposed development will be long term and slight, with respect to waste management.

19. CONSULTATION WITH RELEVANT BODIES

South Dublin City Council will be consulted throughout the Construction phase to ensure that all available waste reduction, reuse and recycling options are being explored and utilised and that compliant Waste Management is being carried out at the site.

Specialist companies, where required, will be contacted to determine their suitability and each company's record reviewed to ensure relevant current collection permits / licenses are held.

Companies will also be contacted to gather information regarding treatment of hazardous materials, if required (although not anticipated for this site), costs of handling and the best methods of transportation for recycling or reuse when hauling off site.