

15 MATERIAL ASSETS (WASTE)

15.1 Introduction

This section of the EIAR was prepared by Dr Bill Bates BEng (Hons) MSc PhD CEng MIEI MICE, who has over 25 years' experience in civil engineering and the construction industry.

This section of the EIAR considers the impact on the management of waste arising from the subject development. As outlined previously, the subject development includes the proposed construction of 1034no. housing units together with 6km of access road and associated infrastructure. Further textual detail is provided in Chapter 3: Description of Proposed Development of this EIAR. This section should be read in conjunction with the preliminary design drawings and reports which accompany this planning application.

15.2 Assessment Methodology

This section sets out the methodology followed in carrying out this resource and waste impact assessment. This resource and waste management assessment considers the following aspects: -

- The legislative context;
- The construction phase, including excavation; and
- The operational phase.

A review was undertaken which included the following tasks: -

- Review of relevant policy and legislation which creates the legal framework for resource and waste management in Ireland, including the Eastern-Midlands Regional Waste Management Plan 2015-2021;
- Description of waste generation during the construction and operational phases; and
- The project was systematically reviewed to identify ameliorative, remedial and reductive to move waste management up the waste hierarchy through implementation of best practice.

15.2.1 Data Sources

This chapter of the EIS describes the potential for waste to be generated during the excavation, construction and operation of the subject site. Mitigation measures are proposed to reduce the impact of the waste generated by the project in the excavation, construction and operational phases.

The principal objective of sustainable resource and waste management is to use material resources more efficiently, where the value of products, materials and resources are maintained in the economy for as long as possible and the generation of waste minimised. To achieve resource efficiency there is a need to move from a traditional linear economy to a circular economy.

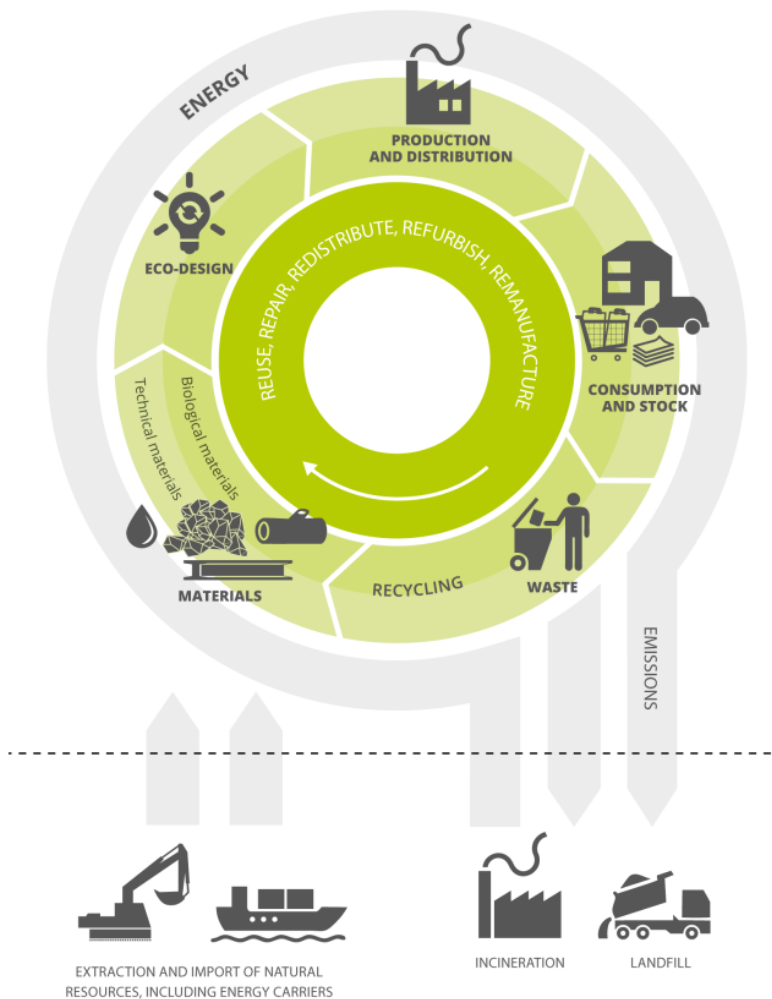


Table 15.1 Circular Economy (courtesy of EPA.ie)

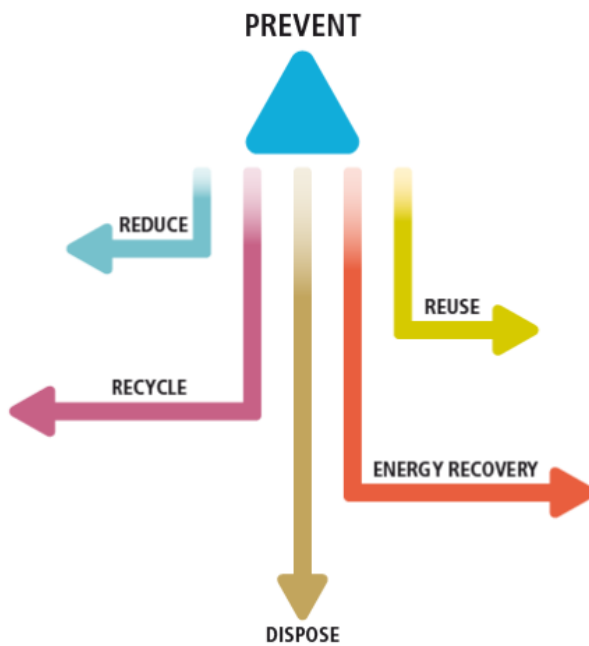


Table 15.2 Waste Hierarchy (courtesy of EPA.ie)

However, where residual waste is generated, it should be dealt with in a way that follows the waste hierarchy and actively contributes to the economic, social and environmental goals of sustainable development.

This chapter of the environmental impact assessment report examines the potential environmental effects of the generation and management of solid waste streams arising from the proposed scheme, in the context of the existing local and national resource and waste management environment.

15.2.2 Guidance and Legislation

Resource and waste management takes place in a policy and legislative framework. A review of relevant legislation, policy and best practice guidance was undertaken to inform the impact assessment and recommended mitigation.

The key components of EU, national and local policy, legislation and guidance relevant to the Proposed Project are summarised as follows: -

- Prevention of waste is the preferred option such that the value of products, materials and resources are maintained in the economy for as long as possible and the generation of waste minimised;
- Where construction waste is generated it should be source separated to facilitate reuse, recycling and maximise diversion of waste from landfill;
- Where waste may not be prevented, reused or recycled it should be transported and disposed of in accordance with applicable legislation and without causing environmental pollution;
- Waste may only be transferred from the subject site by a waste collection permit holder and delivered to an authorised waste facility (a facility which holds a certificate of registration, waste facility permits or waste licence); and
- Businesses must keep footpaths, pavements and gutters adjacent to premises litter free.

The following Legislation, Policy and Guidance documents were used: -

European Legislation

Directive 2008/98/EC of the European Parliament and the Council of 19 November 2008 on waste and repealing certain Directives.

Directive 2008/98/EC came into force on 12th December 2008 and Ireland has two years from this date to implement it into national 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 clarifies the definitions of recovery, disposal and by-product. The directive states that, "The recovery of waste and the use of recovered material as raw materials should be encouraged in order to conserve natural resources."

National Legislation

Waste Management Acts, 1996-2008 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 subsequently amended by a number of subsequent acts including the Waste Management (Amendment) Act 2001 and the Protection of the Environment Act 2003. As of the 2nd April 2018, The Waste Management Acts 1996- 2011 is now a collective group of Acts included in this collective citation to be construed together as one (Environment (Miscellaneous Provisions) Act 2011 (20/2011), s. 1(3)). The acts included in this group are as follows;

- Waste Management Act 1996 (10/1996);
- Waste Management (Amendment) Act 2001 (36/2001), other than s. 14;
- Protection of the Environment Act 2003 (27/2003), Part 3;
- Waste Management (Electrical and Electronic Equipment) Regulations 2005 (S.I. No. 290 of 2005), Part 5;
- Waste Management (Environmental Levy) (Plastic Bag) Order 2007 (S.I. No. 62 of 2007);
- Waste Management (Registration of Brokers and Dealers) Regulations 2008 (S.I. No. 113 of 2008);
- Waste Management (Landfill Levy) Order 2008 (S.I. No. 168 of 2008); and
- Environment (Miscellaneous Provisions) Act 2011 20/2011), Part 4.

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 on activities of an agricultural, commercial or industrial nature to take all such reasonable steps as are necessary to prevent or minimize the production of waste;
- Prohibits the transfer of waste to any person other than an authorized 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 for Housing, Planning 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, S.I. No. 419

Where waste from the proposed development is exported outside of Ireland for recovery or disposal the National Transfrontier Shipment (TFS) Office within Dublin City Council must be notified. Certain financial guarantees must be in place and a certificate issued by the National TFS Office prior to the waste movement taking place.

SI 126 of 2011 – European Communities (Waste Directive) Regulations 2011

These regulations which were adopted in 2011 significantly changed the provisions of the Waste Management Acts, 1996 to 2011. The regulations detail “waste disposal” and “waste recovery” as well as setting out tests which must be complied with in order for material to be described as a “by-product” or achieve “end of waste” status.

The regulations formally set out the following waste hierarchy which shall apply as a priority order in waste prevention and management legislation and policy;

- a) Prevention;
- b) Preparation for re-use;
- c) Recycling;
- d) Other recovery (including energy recovery); and
- e) Disposal.

The regulations require that all waste management plans and hazardous waste management plans in existence at the commencement of the Regulations shall be evaluated by 31st December 2012 and where appropriate be revised to be brought into line with Directive 2006/12/EC on waste.

The regulations also require the Environment Agency to establish a waste prevention Programme by December 2013.

European Policy

The following documents have been viewed as part of the European Policy side for waste management;

- European 2020 Strategy, European Commission (EC) (2010);
- Roadmap to a Resource Efficient Europe, EC (2011); and
- EC Circular Economy Strategy (2015).

National Policy

The first national waste policy statement was published by the Department of Environment and Local Government in 1998. A number of statements have been published since, each of which builds on the objectives of the previous plans to improve how waste is managed in Ireland, move waste away from landfill and towards a more sustainable option. The statements published to date include:

- Department of the Environment and Local Government (1998). ‘Waste Management – Changing Our Ways’ – A Policy Statement.
- Department of the Environment and Local Government (2002). Preventing and Recycling Waste – Delivering Change – A Policy Statement.
- Department of the Environment, Heritage and Local Government (2004). Waste Management - Taking Stock and Moving Forward.
- Department of the Environment, Heritage and Local Government (2006). National Strategy on Biodegradable Waste Management.
- Department of the Environment, Heritage and Local Government (2012). A Resource Opportunity- Waste Management Policy in Ireland.

From 2012 a number of policy documents and reports have been published which are named below;

- Department of the Environment, Heritage and Local Government (2012). A Resource Opportunity – Waste Management Policy in Ireland;
- EPA (2013 and 2014) National Waste Reports 2011 and 2012;
- EPA (2014) National Municipal Waste Recovery Capacity. An Assessment for the Department of the Environment, Community and Local Government; and
- Environmental Protection Agency (2014). National Hazardous Waste Management Plans, 2014-2020.

Regional & Local Policy

The Eastern Midlands Region Waste Management Plan 2015-2021

For the purposes of waste management planning, Ireland is now divided into three regions: The Eastern and Midlands Regional Assembly, The Southern Regional Assembly and the Northern and Western Regional Assembly. The Eastern and Midlands Region includes the South Dublin County Council area.

The Eastern Midlands Region Waste Management Plan 2015-2021 was launched in 2015. The strategic approach of the plan places a stronger emphasis on preventing wastes and material reuse activities. Three strategic targets have been set in the plan which include;

- Achieve a recycle rate of 50% of managed municipal waste by 2020; and
- Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill in favour of higher value pre-treatment processes and indigenous recovery practices.

This plan looks to 2030 and includes a goal of reaching a recycling rate of 60%.

Guidance

- European Waste Catalogue (EWC) and Hazardous Waste List (EPA, 2002);
- Best Practice Guidelines on the Preparation of Waste Management Plans for Construction & Demolition Projects (Department of the Environment, Heritage and Local Government (DoEHLG), 2006);
- Construction and Demolition Waste Management – A Handbook for Contractors & Site Managers (FÁS and The Construction Industry Federation, 2002);
- A Resource Opportunity – Waste Management Policy in Ireland (Department of the Environment, Community and Local Government, 2012); and
- Guidelines for the Management of Waste from National Road Schemes (TII, 2008).

15.2.3 Impact Assessment Methodology

Impacts significance and rating is as set out in the EIAR guidance documents described elsewhere in the EIAR.

15.3 Receiving Environment

15.3.1 Proposed Development

15.3.1.1 Baseline Environment– Construction Waste

The subject site, which is currently greenfield, is approximately 11km south west of Dublin City Centre, as the crow flies, within the operational jurisdiction of South Dublin County Council. It is bounded to the west by Grange Castle Road (R136) and to the south by the Old Nangor Road (L5254). The site is also bounded by residential development to the north and east, Corkagh Park to the south, and Grange Castle Golf Club to the West. It is also noted to be approximately 1.5km north east of Casement Aerodrome.

In order to establish a baseline and review capacity in relation to construction wastes a review of published data and statistics was undertaken. The most recent figures published by the Environmental Protection Agency relating to construction and demolition (C&D) waste are for the year 2014 which were released on the 22nd March 2018 by the EPA (Table 15.1). In 2014, 3,314 ktonnes of construction & demolition waste were finally treated (recovered or disposed). Soil and stones accounted for 74% of the total quantity. Mineral waste (concrete, bricks, gypsum) accounted for 12% of the total quantity.

The quantity of C& D waste managed in Ireland is indicative of economic activity. At the peak of the economic and construction boom in 2007, approx. 17.8million tonnes of C & D waste was collected for treatment. This fell to 3 million tonnes in 2011. From viewing the 2014 data, an increase in construction and demolition waste generation since 2011, mostly likely as a result of economic growth. 3.31 million tonnes of construction and demolition waste was generated in 2014 according to EPA data.

Under the Waste Framework Directive (2008/98/EC) there is a target for Member States to achieve 70 per cent material recovery of non-hazardous, non-soil & stones C&D wastes by 2020. Ireland achieved 68 per cent recovery in 2014. The Waste Framework Directive target only applies to a portion of all C&D wastes generated, as hazardous wastes and soil & stones wastes are excluded from the calculation.

An indicative breakdown of the composition of construction and demolition waste is set out in the table below. These figures should be considered as a guide only- as construction and demolition waste can vary depending on the nature of the development and waste can vary significantly from one project to another, depending on the nature of the development and the waste management practices employed on-site.

Material from C&D Sources	Quantity (tonnes)	% of Material Stream in Reference to Total
Metal waste	173,810	5.24%
Glass waste	2,904	0.09%
Paper and cardboard waste	211	0.01%
Plastic waste	348	0.01%
Wood waste	52,155	1.57%
Waste containing PCBs	2	0.00%
Mixed waste	2,504	0.08%
Mineral waste	401,409	12.11%
Asbestos waste	6,246	0.19%
Soil and stones	2,463,749	74.35%
Residue from treatment of mixed waste	210,520	6.35%
Total	3,313,858	100.00%

Table 15.1 Material Categories of C & D Waste Treated.

The construction sector also generates hazardous waste such as lead-acid batteries, waste electrical and electronic equipment, asbestos, solvent-based paints and varnishes, pesticides and waste oils which can be seen in the above Table.

15.3.1.2 Baseline Environment – Operational Wastes

Wastes generated during the operational phase typically comprise municipal waste. The typical non-hazardous and hazardous wastes that will be generated at the proposed development will include the following: -

- Dry Mixed Recyclables (DMR) - includes waste paper (including newspapers, magazines, brochures, catalogues, leaflets), cardboard and plastic packaging, metal cans, plastic bottles, aluminium cans, tins and Tetra Pak cartons;
- Organic waste – food waste and green waste generated from plants/flowers;
- Glass; and
- Mixed Non-Recyclable (MNR)/General Waste.

In addition to the typical waste materials that will be generated at the development on a daily basis, there will be some additional waste types generated in small quantities which will need to be managed separately including:

- Green waste may be generated from internal plants and external landscaping;
- Batteries (both hazardous and non-hazardous);
- Waste electrical and electronic equipment (WEEE) (both hazardous and non-hazardous);
- Printer cartridges/toners;
- Chemicals (paints, adhesives, resins, detergents, etc.);
- Fluorescent tubes and other mercury containing waste;
- Textiles (rags);
- Waste cooking oil (if any generated by the residents, creche tenants or retail tenant(s));
- Furniture (and from time to time other bulky wastes); and
- Abandoned bicycles. Multiple bicycle parking areas are planned for the development. As happens in other developments, residents and tenants sometimes abandon faulty or unused bicycles and it can be difficult to determine their ownership. However, it is proposed that these bicycles could be donated to charity so they don't become a waste.

Wastes should be segregated into the above waste types to ensure compliance with waste legislation and guidance while maximising the re-use, recycling and recovery of waste with diversion from landfill wherever possible.

In 1994, the European Waste Catalogue 16 and Hazardous Waste List 17 were published by the European Commission. In 2002, the EPA published a document titled the European Waste Catalogue and Hazardous Waste List 18, which was a condensed version of the original two documents and their subsequent amendments. This document has recently been replaced by the EPA 'Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous' 19 which became valid from the 1st June 2015. This waste classification system applies across the EU and is the basis for all national and international waste reporting, such as those associated with waste collection permits, COR's, permits and licences and EPA National Waste Database.

Under the classification system, different types of wastes are fully defined by a code. The List of Waste (LoW) code (also referred to as European Waste Code or EWC) for typical waste materials expected to be generated during the operation of the proposed development are provided below.

Waste Material	LoW/EWC Code
Paper and Cardboard	20 01 01
Plastics	20 01 39
Metals	20 01 40
Mixed Non-Recyclable Waste	20 03 01
Glass	20 01 02
Biodegradable Kitchen Waste	20 01 08
Oils and Fats	20 01 25/26*
Textiles	20 01 11
Batteries and Accumulators	20 01 33* - 34
Printer Toner/Cartridges	20 01 27* - 28
Green Waste	20 02 01
WEEE	20 01 35*-36
Chemicals (solvents, pesticides, paints & adhesives, detergents, etc.)	20 01 13*/19*/27*/28/29*30
Fluorescent tubes and other mercury containing waste	20 01 21*
Bulky Wastes	20 03 07
Total	100.00%

Table 15.2 Typical Waste Types Generated and LoW Codes.

15.4 Characteristics of the Proposed Development

15.4.1 Proposed Development

The subject development seeks planning permission for the following principal components (Additional detail is provided in Chapter 3: Description of Proposed development of this EIAR): -

- Construction of 1034no. residential units made up of a mixture of individual housing units and apartments, together with a community building, and two creche facilities.
- On site vehicle circulating roads and streets with associated car parking provision.
- A mix of independent pedestrian and cyclist infrastructure together with shared street spaces.
- Drainage and water supply infrastructure to accommodate the residential status of the site.
- Lighting, power and communications infrastructure to accommodate the residential status of the site.

15.4.1.1 Construction Stage

During the construction stage the site will be stripped of topsoil and then subsoil and bedrock will be excavated to reduce the levels to formation for the construction of residential housing and access roads. The site will be further reduced in level to allow for the installation of the surface water drainage, foul water drainage and water supply networks. The quantum of materials removed and replaced is detailed in Chapter 7: Land, Soils & Geology of this EIAR. It is clearly indicated that there is no intention for excavated materials to be removed from the site as waste.

The roads, drainage and utility networks will be constructed using industry standard products with the required industry marking and datasheets. Products include bituminous road pavements, in situ and precast concrete kerbs, prefabricated drainage pipes, ducting, manholes and access chambers. These products will be supplied by approved and licensed sources.

Buildings will be constructed on completion of the enabling civil engineering activities outlined above. These will be constructed using traditional building materials including brick, concrete block, timber, etc. These products will be supplied by approved and licensed sources.

15.4.1.2 Operational Stage

It is expected that the completed development will be taken in charge and hence wastes produced in operation will be typical municipal waste material.

A waste generation model (WGM) developed by AWN Consulting, has been used to predict waste types, weights and volumes arising from operations within the proposed development. The WGM incorporates building area and use and combines these with other data including Irish and US EPA waste generation rates.

The estimated quantum/volume of waste that will be generated from the residential units has been determined based on the predicted occupancy of the units. The waste generation for the crèches and the retail space is based on waste generation rates per m² floor area for the proposed area uses.

The estimated waste generation for the development for the main waste types is presented below.

Waste Type	Residential	Creche	Retail	Community Building
	m ³ /week	m ³ /week	m ³ /week	m ³ /week
Organic Waste	18.62	0.13	0.08	0.04
Mixed Dry Recyclables	139.85	5.19	1.22	1.55
Glass	3.6	0.02	0.01	0.01
Mixed Municipal Wats	61.5	2.3	0.62	0.69
Total	223.58	7.64	1.922.28	

Table 15.1 Estimated waste generation for the main waste types

Further detail is provided in the Operational Waste Management Plan prepared by AWN Consulting Engineers.

15.5 Potential Impact of the Proposed Development

15.5.1 Proposed Development

15.5.1.1 Construction Stage

Construction works, site offices and temporary works facilities will generate construction waste. Construction waste is defined as waste which arises from construction and renovation activities. Also included within the definition are surplus and damaged products and materials arising in the course of construction work or used temporarily during the course of on-site activities.

Construction waste can vary significantly from site to site but typically would include the following non-hazardous fractions: -

- Soil and stone;
- Concrete, brick, tiles and ceramics;
- Asphalt/tar;
- Metals
- Wood; and
- Other.

The hazardous waste streams which could also arise from construction activities may include the following: -

- Waste electrical and electronic components;
- Batteries;
- Asbestos;
- Wood preservatives;
- Liquid fuels; and
- Contaminated soil.

In the case of the proposed project it is anticipated that all excavated materials will be re-used within the site. Therefore, the mostly likely type of construction waste will be surplus unusable or damaged construction materials. The predicted impact of construction waste prior to implementation of Ameliorative, Remedial or Reductive Measures is expected to be slight, negative and short-term.

15.5.1.2 Operational Stage

Wastes generated from maintenance and operation of the proposed development will generally be municipal wastes and will be removed and managed by local authority staff or private licensed waste management contractors. The predicted impact of operational and maintenance waste prior to implementation of Ameliorative, Remedial or Reductive Measures is expected to be slight, negative and short-term.

15.5.1.3 Do-Nothing Impact

The proposed site is located in an area zoned under the current County Development Plan 2016-2022 for the provision of new residential communities in accordance with approved area plans

If this particular development was not to proceed, it is likely that a similar development would be developed at the site. Therefore, the resulting waste would be similar to that anticipated here

Were no development to proceed at the proposed location, despite zoning for residential development, the land use would remain unused or agricultural, and there would be no increase in construction waste. However, given the findings of recent site investigations at the site it would appear that the current lack of development has resulted in the area being used for fly tipping. Development of the site would reduce this impact

15.6 Ameliorative, Remedial or Reductive Measures

15.6.1 Proposed Development

Ameliorative, Remedial or Reductive measures are set out in the sections below to minimise the effect of the this scheme on the environment, reduce the quantity of waste sent for final disposal and to promote sustainable waste management practices.

Waste from the scheme will be managed in accordance with the principles of the waste hierarchy presented earlier i.e. prevent, reduce, re-use, re-cycling, energy recovery and disposal.

The contractor undertaking the works will minimise waste disposal so far as is reasonably practicable.

15.6.1.1 Construction Stage

In order to minimise the potential impacts from the development of the subject site during construction, the following ameliorative, remedial or reductive measures will be implemented.

- Construction and Demolition Waste Management Plan (CDWMP): Preparation of a Construction and Demolition Waste Management Plan which meets the requirements of the DoEHLG Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (DoEHLG, 2006a) is recommended.
- Where waste generation cannot be avoided this will maximise the quantity and quality of waste delivered for recycling and facilitate its movement up the waste hierarchy away from landfill disposal and reduce its environmental impact.
- As part of the CDWMP a soil resource plan will be developed to ensure that all excavated materials are excavated, stored and re-used in accordance with the design proposals. It is anticipated, based on the findings of the site investigation, that the majority of excavated material will be re-used as fill within the subject site or in landscaping works and will be fully considered following appropriate progressive testing to ensure material is suitable for its proposed end use. Where excavated material may not be re-used within the proposed works the Contractor will endeavour to send material for recovery or recycling so far as is reasonably practicable. The Contractor will ensure that any off-site interim storage facilities for excavated material have the appropriate waste licenses or waste facility permits in place.
- Source Segregation: Waste produced will be segregated. Where possible metal, timber, glass and other recyclable material will be segregated during the works and removed off site to a permitted/licensed facility for recycling. Waste stream colour coding and photographs will be used to facilitate segregation.
- Material Management: 'Just-in-time' delivery will be used so far as is reasonably practicable to minimize material wastage.
- Supply Chain Partners: The Contractor will engage with the supply chain to supply products and materials that use minimal packaging, and segregate packaging for reuse.
- Waste Auditing: The Contractor will record the quantity in tonnes and types of waste and materials leaving the development site during the construction phase. The name, address and authorization details of all facilities and locations to which waste and materials from the construction phase are delivered will be recorded along with the quantity of waste in tonnes delivered to each facility. Records will show material which is recovered and disposed of.

15.6.1.2 Operational Stage

All wastes emanating post development and during operation will typically be domestic waste and will be managed through the municipal waste management programme. Periodic residential waste collections will allow for the majority of domestic waste to be disposed of without significant impact. This will include management of food waste and common recyclable products aimed at minimising disposal to landfill or the need for specialist attention. Residual waste such as batteries, WEEE, printer cartridges.

Sufficient at source waste storage and residual waste management facilities will be provided in accordance with the Operational Waste Management Plan developed for the site by AWN Consulting (submitted with the SHD Planning Application).

15.7 Residual Impact of the Proposed Development

15.7.1 Proposed Development

15.7.1.1 Construction Stage

The resulting residual impacts of excavation waste will be neutral, slight and short term.

The resulting residual impact of construction and demolition waste will be slight, neutral and short term.

15.7.1.2 Operational Stage

Based on the residential nature of the scheme the residual impact of operational waste will be long term and slight.

There is likely to be significant available capacity within existing Irish waste management infrastructure to manage the excavation, construction and operational waste from the proposed residential development.

15.7.1.3 Worst Case Impact

The majority of the Ameliorative, Remedial or Reductive measures outlined or directed previously are solutions that will be managed through the design and construction process and enforced as part of an agreed development plan with South Dublin County Council.

Notwithstanding the above, the likely worst-case effects that may arise during construction with regard to waste management will be mixing of waste materials and incorrect disposal. However, the industry is closely scrutinised, and the likelihood of this risk is unlikely.

15.8 Monitoring

15.8.1 Proposed Development

15.8.1.1 Construction Stage

As noted previously, wastes arising from the site will be managed in accordance with the Construction and Demolition Waste Management Plan (C&D WMP). As part of this plan several key personnel will be allocated responsibility for waste management within the site. This in turn will be monitored by the design team and local authority on a periodic basis.

Nominated C&D Waste Manager

A technically competent and appropriately trained C&D Waste Manager will be appointed by the Contractor. The nominated person will be responsible for all aspects of waste management throughout the different stages of the project including waste assessment and characterisation, implementation of the C&D WMP (and associated target recycling rates), and effective communication of the objectives with all operatives associated with the project (including site staff, external contractors and suppliers). A key objective of the nominated person will be the maintenance of accurate records on the quantities of waste / surplus materials generated and the real cost (including purchasing) associated with waste generation and management.

Site Personnel

All personnel on site will be responsible for the effective implementation of the plan and associated procedures. All staff will receive training on waste prevention, segregation and best practice guidelines.

Where source segregation, selective demolition and material re-use techniques apply, each member of staff will be given instructions on how to comply with the Project C&D Waste Management Plan. Posters will be designed to reinforce the key messages within the Project C&D Waste Management Plan and will be displayed prominently for the benefit of site staff.

Record Keeping

The C&D Waste Manager shall develop a system whereby details of ALL arisings, movement and treatment of C&D waste will be recorded throughout the Construction Stage of the Project. Where practicable, a computerised monitoring tool will be employed. This system will enable the Contractor to measure and record the quantity of waste generated and identify wastage more readily. Hence, EACH consignment of C&D waste taken from the site will be subject to documentation. Verifiable and validated tracking and authorisation documentation will be maintained for all wastes destined for re-use, recovery, recycling or disposal. Justification will also be provided where a disposal option has been employed.

In addition, a record will be kept of all materials as they arrive on site detailing the assignment of specific uses within the works. This will enable the monitoring of the quantity and type of waste produced at various stages throughout the project.

Waste Authorisations

All waste material will be managed in accordance with the Waste Management Acts 1996 – 2008, e.g. all hauliers will hold collection permits for the specified EWC issued by South Dublin County Council and the appropriate local authority at the final destination. Waste will only be sent to facilities authorised to accept, treat / dispose of the material. Copies of all waste permits and licences relevant to the waste treatment / collection will be retained with other waste records. In the case of hazardous waste the C&D Waste Manager will ensure that all drivers hold valid ADR training certificates, as required under the Carriage of Dangerous Goods Regulations, 2007 (Reference Section 6.1.8).

Waste Auditing

The effectiveness of the Waste Management Plan (WMP), and its implementation, will be subject to regular audits by the C&D Waste Manager throughout the duration of the project in accordance with an Audit Plan (to be developed by the Contractor). This Audit Plan should be clearly defined in the Project C&D WMP. The regular audits will focus on material inputs to the project and the waste outputs for each operation identifying additional opportunities for waste reduction, re-use and recycling. The audits will also investigate the operational factors and management policies that contribute to the generation of waste and identify appropriate corrective actions, where necessary. Performance targets will be developed, (e.g. an 83% overall recycling target) successes and failures will be recorded and Action Plans will be developed to address any issues which arise. Inspections of the waste storage areas will be undertaken on a weekly basis, issues relating to housekeeping, inappropriate storage and / or segregation will be actioned at the earliest practicable opportunity.

The Contractor will record the findings of the audits, including waste types identified, quantities of waste arising, final treatment method and cost, in a Waste Audit Report to be submitted to South Dublin County Council at three monthly intervals.

Details of the inputs of materials to the construction site and the outputs of wastage arising from the Project will be investigated and recorded in a Final Waste Audit, which will identify the amount, nature and composition of the waste generated on the site. The Final Waste Audit will examine the manner in which the waste is produced and will provide a commentary highlighting how management policies and practices may inherently contribute to the production of construction and demolition waste.

The measured waste quantities will be used to quantify the costs of management and disposal in a Waste Audit Report, which will also record lessons learned from these experiences, which can be applied to future projects.

Final details of the quantities and types of C&D Waste arising from the Project will be collated in a Summary Audit Report and be forwarded to the Environmental Protection Agency, the local authority and National Construction and Demolition Waste Council (NCDWC).

15.8.1.2 Operational Stage

All recycling facilities and public waste storage areas will be designed to maximise correct use. These areas will be monitored on a regular basis using CCTV. Smart technologies may also be utilised to gather evidence of fly tipping or inappropriate waste disposal for further direction to or investigation of users. Procedures for management of same will be agreed with the local authority.

15.9 Difficulties Encountered

No difficulties were experienced during the process in regard to waste management.

15.10 Accidents and Disasters

The incorrect disposal of wastes arising from construction can have significant impact on the environment. Strict legislation and close monitoring should ensure that the risk of accidents or disasters is negligible.

15.11 Impact on Human Health

There are number of historical and modern products that can have an impact on human health.

Example historical products include asbestos, lead, heavy metals, tar etc. Intrusive site investigations and chemical analysis of samples taken did not uncover any materials of this nature and as such the impact at the subject site are considered negligible.

Modern products include solvents, oils, scrap metals, etc. The management and monitoring of these materials during the course of the works will ensure that the impact on human health will be negligible both at the subject site and the receiving disposal site.

As noted in Section 15.10, mismanagement of waste arisings can lead to contamination of receiving water bodies which has the potential for contamination of the potable water supply. This risk is considered in Section 15.10 and was shown to be negligible.