15 Material Assets – Waste Management

15.1 Introduction

No revisions were necessary to this EIAR chapter in responding to Dun Laoghaire - Rathdown County Council (DLR CC) decision to request Further Information dated 25th March 2026 in respect of LRD26A/0051/WEB.

This chapter evaluates the likely impacts, if any, which the proposed development may have on Material Assets (related to waste management) as defined in the EIA Directive (Directive 2011/92/EU as amended by Directive 2014/52/EU) and the Environmental Protection Agency (EPA) Guidelines on the information to be contained in Environmental Impact Assessment Reports (2022).

This chapter has also been prepared to address the issues associated with material assets (waste management) during the construction and operational phases of the proposed development as described in Chapter 2 (Site and Description of Development).

A site-specific Resource Waste Management Plan (RWMP) has been prepared by AWN Consulting Ltd to deal with waste generation during the excavation and construction phases of the proposed development and has been included as Appendix 15.1. The RWMP was prepared in accordance with the Environmental Protection Agency's (EPA) document Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects (2021).

A separate Operational Waste Management Plan (OWMP) has been prepared for the operational phase of the proposed Development and is included as Appendix 15.1 of this Chapter.

This Chapter has been prepared in accordance with European Commissions Guidelines, Guidance on the preparation of the Environmental Impact Assessment Report (2017) and the EPA Guidelines on the Information to be contained in EIAR (2022).

These documents will ensure the management of wastes arising at the development site in accordance with legislative requirements and best practice standards. It should be read in conjunction with Chapter 2 (Site and Description of Development), Chapter 7 (Land, Soils, Geology and Hydrogeology), and Chapter 19 (Interactions) of the EIAR.

15.1.1 Quality Assurance and Competency of Experts

This Chapter has been approved by Chonaill Bradley (Bsc ENV,PG Dip Circ Econ, AssocCIWM) of AWN Consulting. Chonaill is an Associate in the Environment Team at AWN. He holds a BSc in Environmental Science from Griffith University, Australia and a Postgraduate Diploma in Circular Economy Leadership for the Built Environment from the Atlantic Technological University, Galway. He is an Associate Member of the Institute of Waste Management (AssocCIWM). Chonaill has over ten years' experience in the environmental consultancy sector and specialises in waste management.

Chonaill has prepared Material Assets – Waste Management Chapters, Resource & Waste Management Plan and Operational Waste Management Plan as part of EIARs for residential developments including Adamstown Boulevard Phase 2 (DZ25A/0013W) Woodbrook, Shankill (Planning Application Ref. ABP30584419) and SHD Ratoath (Planning Application Ref. SH305196).

15.2 Study Methodology

The assessment of the impacts of the Proposed Development, arising from the consumption of resources and the generation of waste materials, was carried out taking into account the methodology specified in relevant guidance documents, along with an extensive document

review to assist in identifying current and future requirements for waste management; including national and regional waste policy, waste strategies, management plans, legislative requirements and relevant reports.

This chapter is based on the Proposed Development, as described in Chapter 2 (Site and Description of Development) and considers the following aspects:

- Legislative context;
- Construction phase (including site demolition and excavation); and
- Operational phase.

A desktop study was carried out which included the following:

- Review of applicable policy and legislation which creates the legal framework for resource and waste management in Ireland;
- Description of the typical waste materials that will be generated during the Construction and Operational phases; and
- Identification of mitigation measures to prevent waste generation and promote management of waste in accordance with the waste hierarchy.

Estimates of waste generation during the construction and operational phases of the Proposed Development have been calculated and are included in Section 15.4 of this chapter. The waste types and estimated quantities are based on published data by the EPA in the National Waste Reports and National Waste Statistics, data recorded from similar previous developments, Irish and US EPA waste generation research as well as other available research sources.

Mitigation measures are proposed to minimise the effect of the Proposed Development on the environment during the construction and operational phases, to promote efficient waste segregation and to reduce the quantity of waste requiring disposal. This information is presented in Section 15.8.

A detailed review of the existing ground conditions on a regional, local and site-specific scale is presented in Chapter 5 of this EIAR (Land, Soils & Geology). Chapter 5 also discusses the environmental quality of any soils which will have to be excavated to facilitate construction of the Proposed Development.

15.2.1 Legislative and Policy Framework

Waste management in Ireland is subject to EU and national waste legislation and control, which defines how waste materials must be managed, transported and treated. The overarching EU legislation is the Waste Framework Directive (2008/98/EC) which is transposed into national legislation in Ireland. The cornerstone of Irish waste legislation is the Waste Management Acts 1996-2021. European and national waste management policy is based on the concept of the 'waste hierarchy', which sets out an order of preference for managing waste (prevention > preparing for reuse > recycling > recovery > disposal) (Figure 15-1).

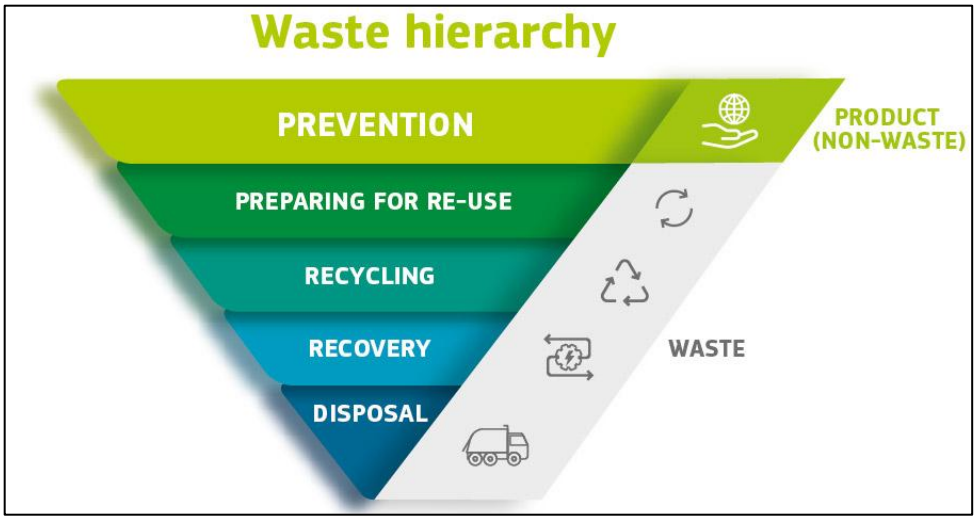

Figure 15.1 - Waste Hierarchy (Source: European Commission, 2018)

EU and Irish National waste policy also aims to contribute to the circular economy by extracting high-quality resources from waste as much as possible. Circular Economy (CE) is a sustainable alternative to the traditional linear (take-make-dispose) economic model, reducing waste to a minimum by reusing, repairing, refurbishing and recycling existing materials and products. (Figure 15-2).

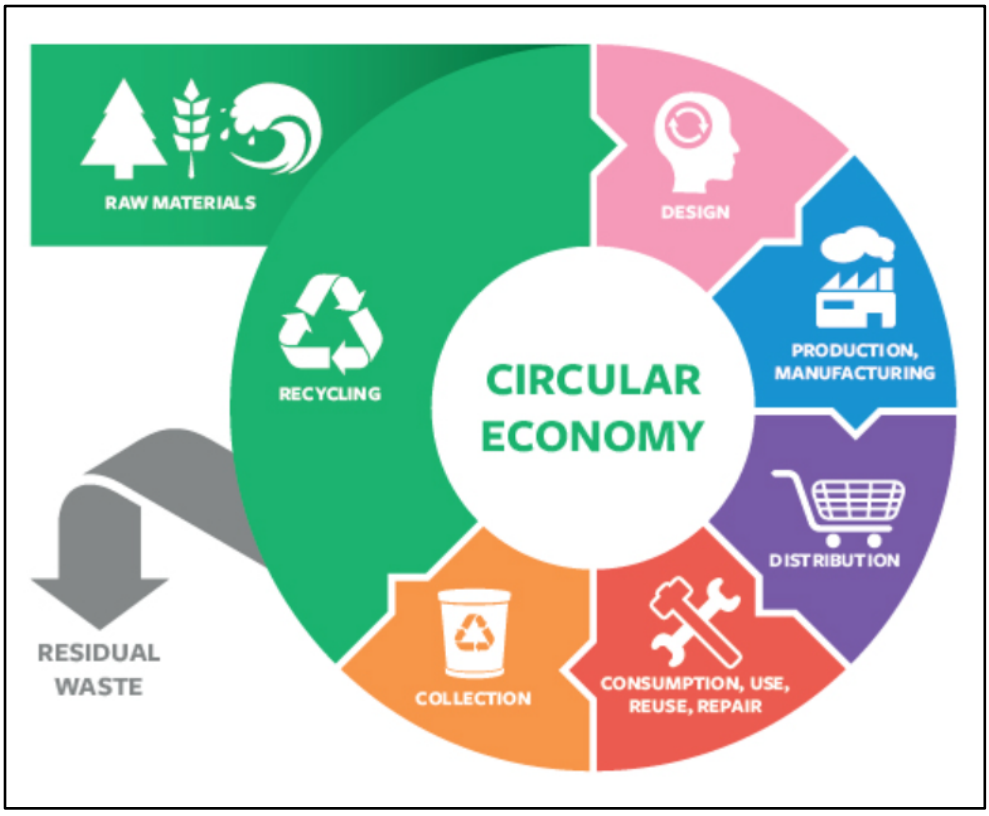

Figure 15.2 - Circular Economy (Source: Repak, 2021)

The Irish government issues policy documents which outline measures to improve waste management practices in Ireland and help the country to achieve EU targets in respect of recycling and disposal of waste. The most recent policy document, *Waste Action Plan for a Circular Economy (WAPCE) – Waste Management Policy in Ireland*, was published in 2020 and shifts focus away from waste disposal and moves it back up the production chain. The move away from targeting national

waste targets is due to the Irish and international waste context changing in the years since the launch of the previous waste management plan, A Resource Opportunity, in 2012.

One of the first actions to be taken from the WAPCE was the development of the *Whole of Government Circular Economy Strategy 2022-2023 'Living More, using Less' (2021)* to set a course for Ireland to transition across all sectors and at all levels of Government toward circularity and was issued in December 2021.

The Circular Economy and Miscellaneous Provisions Act 2022 was signed into law in July 2022. The Act underpins Ireland's shift from a "take-make-waste" linear model to a more sustainable pattern of production and consumption, that retains the value of resources in our economy for as long as possible and that will work to significantly reduce our greenhouse gas emissions. The Act defines Circular Economy for the first time in Irish law, incentivises the use of recycled and reusable alternatives to wasteful, single-use disposable packaging, introduces a mandatory segregation and incentivised charging regime for commercial waste, streamlines the national processes for End-of-Waste and By-Products decisions.

The strategy for the management of waste from the construction phase is in line with the requirements of the EPA's *'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021)*. The following guidance document was also consulted in the preparation of this assessment:

- *Construction and Demolition Waste Management: A Handbook for Contractors and Site Managers* (FÁS & Construction Industry Federation, 2002).

There are currently no Irish guidelines on the assessment of operational waste generation, and guidance is taken from industry guidelines, plans and reports including:

- The *National Waste Management Plan for a Circular Economy 2024 - 2030 (NWMPCE)* (2024);
- *BS 5906:2005 Waste Management in Buildings – Code of Practice*;
- The Dún Laoghaire Rathdown County Council (DLRCC) "Dún Laoghaire-Rathdown County Council (Storage, Presentation and Segregation of Household and Commercial Waste) Bye-Laws (2019);
- DLRCC Guidance Notes for Waste Management Planning for Residential and Commercial Developments (2022).
- The *EPA National Waste Database Reports 1998 – 2020*;
- The *Circular Economy and National Waste Database Report 2021-2023* (2025); and
- *EPA National Waste Statistics Web Resource.*

Regulation 27 of the European Communities (Waste Directive) Regulations 2011 (SI No.126 2011) will be utilised as part of this development. Regulation 27 sets out the conditions for production residue to be classified as a by-product rather than a waste, the four conditions of being a by-product as defined under Article 27 are required to be met. These four conditions are:

- The further use of the substance or object is certain; (Article 27(1)(a));
- The substance or object can be used directly without any further processing other than normal industrial practice; (Article 27(1)(b));
- The substance or object is produced as an integral part of a production process; (Article 27(1)(c)); and
- The further use is lawful in that the substance or object fulfils all relevant product, environmental and health protection requirements for the specific use and will not lead to overall adverse environmental or human health impacts (Article 27(1)(d)).

15.2.1.1 Terminology

Note that the terminology used herein is generally consistent with the definitions set out in Article 3 of the Waste Framework Directive. Key terms are defined as follows:

Waste - Any substance or object which the holder discards or intends or is required to discard.

Prevention - Measures taken before a substance, material or product has become waste, that reduce:

a) the quantity of waste, including through the re-use of products or the extension of the life span of products;
b) the adverse impacts of the generated waste on the environment and human health; or
c) the content of harmful substances in materials and products.

Reuse - Any operation by which products or components that are not waste are used again for the same purpose for which they were conceived.

Preparing for Reuse - Checking, cleaning or repairing recovery operations, by which products or components of products that have become waste are prepared so that they can be re-used without any other pre-processing.

Treatment - Recovery or disposal operations, including preparation prior to recovery or disposal.

Recovery - Any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy. Annex II of the Waste Framework Directive sets out a non-exhaustive list of recovery operations.

Recycling - Any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations.

Disposal - Any operation which is not recovery even where the operation has as a secondary consequence the reclamation of substances or energy. Annex I of the Waste Framework Directive sets out a non-exhaustive list of disposal operations.

15.3 The Existing Receiving Environment (Baseline)

In terms of waste management, the receiving environment is largely defined by DLRCC a as the local authority responsible for setting and administering waste management activities in the area. This is governed by the requirements set out in the *NWMPCE 2024 – 2030* and the *Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland*.

The waste management plans set out the following targets for waste management in the region:

- *Achieve a recycling rate of 55% of managed municipal waste by 2025; and*
- *Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices.*

The Regional Waste Management Planning Offices have issued a National Waste Management Plan for a Circular Economy 2024 - 2030 in March 2024, which supersedes the Eastern midlands regional (EMR) waste management plan and the two other regional waste management plans.

The NWMPCE does not however dissolve the three regional waste areas. The NWCPCE sets the ambition of the plan to have a 0% total waste growth per person over the life of the Plan with an emphasis on non-household wastes including waste from commercial activities and the construction and demolition sector.

The Dún Laoghaire-Rathdown County Development Plan 2022 – 2028 sets out the policy objectives for the DLRCC area which reflect those sets out in the regional waste management plan.

In terms of physical waste infrastructure, DLRCC no longer operates any municipal waste landfill in the area. There are a number of waste permitted and licensed facilities located in the EMR Waste Region for management of waste from the construction industry as well as municipal sources. These include soil recovery facilities, inert C&D waste facilities, municipal waste landfills, material recovery facilities and waste transfer stations.

However, these sites may not be available for use when required or may be limited by the waste contractor selected to service the development in the appropriate phase. In addition, there is potential for more suitably placed waste facilities or recovery facilities to become operational in the future which will be more beneficial from an environmental perspective.

The ultimate selection of waste contractors and waste facilities would be subject to appropriate selection criteria proximity, competency, capacity and serviceability.

15.4 Characteristics of the Proposed Development

Chapter 2 of this EIAR includes a detailed description of the Proposed Development. The proposed site layout is also detailed in Appendix 1-1.

Demolition Stage

The demolition stage will involve the demolition of all ancillary buildings and extensions (buildings vary from 1-3 storeys) associated with 'St. Teresa's House' and 'St. Teresa's Lodge'; and (b) a single storey returns on lands at The Alzheimer's Society of Ireland adjoining 'Building 1' and hardstanding areas onsite, as well as from the further excavation of the building foundations.

Further detail on the estimated quantities of these waste streams is provided in the project-specific RWMP in Appendix 15.1. The RWMP includes predicted tonnages based on the demolition area and material densities, and applies reuse, recycling/recovery, and disposal rates derived from EPA National Waste Reports and industry benchmarks. A summary of these estimates is presented in Table 15-1 below.

Waste Type	Tonnes	Reuse		Recycle/Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Glass	22.4	0	0.0	85	19.0	15	3.4
Concrete, Bricks, Tiles, Ceramics	126.7	30	38.0	65	82.3	5	6.3
Plasterboard	9.9	30	3.0	60	6.0	10	1.0
Asphalts	2.5	0	0.0	25	0.6	75	1.9
Metals	37.3	5	1.9	80	29.8	15	5.6
Slate	19.9	0	0.0	85	16.9	15	3.0
Timber	29.8	10	3.0	60	17.9	30	8.9
Asbestos	1.0	0	0.0	0	0.0	100	1.0
Total	**249.4**		**45.8**		**172.5**		**31.1**

Table 15.1 - Predicted On and Off-Site Reuse, Recycle and Disposal Rates for Demolition Waste

Construction Stage

During the construction phase, waste will be produced from surplus materials such as broken or off-cuts of timber, plasterboard, concrete, tiles, bricks, etc. Waste from packaging (cardboard, plastic, timber) and oversupply of materials may also be generated. The appointed Contractor will be contractually required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximised.

There will be topsoil and subsoil excavated to facilitate construction of new foundations and underground services. The project engineers (JJ Cambell & Associates Engineers) have estimated that 45,000 m^3 of material will need to be excavated to do so. It is currently envisaged that 1,500m^3 of top soil material will be reused on site due to the limited opportunities for reuse on site, meaning the remaining volume will need to be removed offsite for appropriate offsite reuse, recovery, recycling and / or disposal.

All material requiring removal from the site is deemed to be a waste, removal and reuse / recycling / recovery / disposal of the material will be carried out in accordance with the *Waste Management Act 1996 (as amended), the Waste Management (Collection Permit) Regulations 2007 (as amended) and the Waste Management (Facility Permit & Registration) Regulations 2007 (as amended).* The volume of waste requiring recovery / disposal will dictate whether a Certificate of Registration (COR), permit or licence is required for the receiving facility. Alternatively, the material may be classed as by-product under *Regulation 27 (By-products), as amended, of S.I. No. 323/2020 - European Union (Waste Directive) Regulations 2011-2020, (previously Article 27 of the European Communities (Waste Directive))*. For more information in relation to the envisaged management of by-products, refer to the RWMP (Appendix 15.1).

In order to establish the appropriate reuse, recovery and / or disposal route for the soils and stones to be removed off-site, it will first need to be classified. Waste material will initially need to be classified as hazardous or non-hazardous in accordance with the EPA publication *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous (2018)*. Environmental soil analysis will be carried out prior to removal of the material on a number of the soil samples in accordance with the requirements for acceptance of waste at landfills *(Council Decision 2003/33/EC Waste Acceptance Criteria).* This legislation sets limit values on landfills for acceptance of waste material based on properties of the waste, including potential pollutant concentrations and leachability. It is anticipated that the surplus material will be suitable for

acceptance at either inert or non-hazardous soil recovery facilities / landfills in Ireland or, in the unlikely event of hazardous material being encountered, be transported for treatment / recovery or exported abroad for disposal in suitable facilities.

Waste will also be generated from construction phase 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 on-site during the Construction phase. Waste printer / toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated in small volumes from site offices.

Further detail on the waste materials likely to be generated during the excavation and construction works are presented in the project-specific RWMP (Appendix 15.1). The RWMP provides an estimate (of the main waste types likely to be generated during the Construction phase of the proposed development. These are summarised in Table 15-2.

Waste Type	Tonnes	Reuse		Recycle/Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Glass	811.6	10	81.2	80	649.2	10	81.2
Concrete, Bricks, Tiles, Ceramics	688.6	40	275.4	55	378.7	5	34.4
Plasterboard	245.9	30	73.8	60	147.6	10	24.6
Asphalts	196.7	5	9.8	90	177.1	5	9.8
Metals	73.8	30	22.1	65	48.0	5	3.7
Slate	368.9	20	73.8	60	221.3	20	73.8
Total	**2385.5**		**536.1**		**1621.9**		**227.5**

Table 15.2 - Predicted On and Off-Site Reuse, Recycle and Disposal Rates for Construction Waste

Operational Stage

As noted in Section 15.1, an OWMP has been prepared for the Proposed Development and is included as Appendix 15.2. The OWMP provides a strategy for segregation (at source), storage and collection of all wastes generated within the proposed development during the operational phase. This includes waste generated from the residential units, amenity areas, creche and cafe and includes the main waste streams, Mixed Non-Recyclable Waste (MNR), Dry Mixed Recyclables (DMR), Organic Waste, Glass, as well as a strategy for managing additional waste types such as batteries, WEEE, printer/toner cartridges, chemicals, textiles, waste cooking oil, and furniture.

The total estimated waste generation for the Proposed Development for the main waste types based on the AWN waste generation model is presented in Table 15-3 below and is based on the uses and areas as advised by the project architects (O'Mahony Pike). Further breakdowns can be found with in Appendix 15.2 OWMP.

Waste Type	Waste Volume (m3 / week)		
	Residential	Commercial	Amenity

Organic Waste	6.38	0.11	0.03
DMR	45.21	1.62	0.57
Glass	1.23	0.02	0.02
MNR	23.78	0.99	0.24
Total	**76.60**	**2.73**	**0.85**

Table 15.3 - Estimated Waste Generation During Operational Phase Main Waste Types

The residents, commercial tenants and facilities management will be required to provide and maintain appropriate waste receptacles within their units to facilitate segregation at source of these waste types. As required, the residents will need to bring these segregated wastes from their units to their allocated Waste Storage Area (WSA). All WSA's can be viewed on the plans submitted with the application and in the OWMP (Appendix 15.2).

The OWMP seeks to ensure the development contributes to the targets outlined in the NWMPCE and the DLRCC waste Bye-laws.

15.5 Potential Impact of the Proposed Development

Construction Stage

The Proposed Development will generate a range of non-hazardous and hazardous waste materials during site demolition, excavation and construction (see Appendix 15.1 for further detail). General housekeeping and packaging will also generate waste materials, as well as typical municipal waste generated by demolition and construction employees, including food waste. Waste materials will be required to be temporarily stored in the construction site compound or adjacent to it, on-site, pending collection by a waste contractor. If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the site and in adjacent areas. The indirect effect of litter issues is the presence of vermin in areas affected. In the absence of mitigation, the effect on the local and regional environment is likely to be **indirect**, **short-term, significant** and **negative**.

The use of non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste, resulting in indirect negative environmental impacts, including pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. In the absence of mitigation, the effect on the local and regional environment is likely to be **indirect long-term, significant** and **negative.**

Wastes arising will need to be taken to suitably registered / permitted / licensed waste facilities for processing and segregation, reuse, recycling, recovery, and / or disposal, as appropriate. There are numerous licensed waste facilities in the EMR which can accept hazardous and non-hazardous waste materials, and acceptance of waste from the Development Site would be in line with daily activities at these facilities. At present, there is sufficient capacity for the acceptance of the likely C&D waste arisings at facilities in the region. The majority of construction materials are either recyclable or recoverable. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **indirect short-term, significant** and **negative**.

There is a quantity of topsoil and subsoil will need to be excavated to facilitate the Proposed Development. A detailed review of the existing ground conditions on a regional, local site-specific scale is presented in Chapter 7. Excavated material that cannot be reused onsite will need to be removed off-site. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will

not impact negatively on workers as well as on water and soil environments, both on and off-site. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **indirect, short-term, significant** and **negative**.

Operational Stage

The potential impacts on the environment from improper, or inadequate waste management during the operational phase would represent a diversion from the waste hierarchy, resulting in small volumes of waste being unnecessarily sent to landfill. In the absence of mitigation, the effect on the local and regional environment is likely to be **indirect**, **long-term, significant** and **negative**.

The nature of the Proposed Development means the generation of waste materials during the operational phase is unavoidable. Established networks of waste collection, treatment, recovery and disposal infrastructure are in place in the region to manage waste from this type of development efficiently. Waste unsuitable for recycling is typically sent for energy recovery. There are also facilities in the region for segregation of municipal recyclables which is typically exported for conversion in recycled products (e.g. paper mills and glass recycling).

If waste material is not managed and stored correctly, it could lead to litter or pollution issues on-site and in adjacent areas, with associated risks such as vermin infestation. Similarly, the use of non-permitted waste contractors or unauthorized facilities could result in inappropriate waste handling and negative environmental impacts. It is essential that all waste materials are managed in accordance with regional and national legislation and that adequate resources are dedicated to implementing efficient waste management practices. In the absence of mitigation, the effect on the local and regional environment is likely to be **indirect, long-term, significant** and **negative**.

15.6 Potential Cumulative Impacts

This section assesses the potential cumulative effects of the Proposed Development in combination with other permitted or under-construction projects within the vicinity of the proposed. A list of relevant planning permissions from the surrounding area over the past five years is provided in Appendix 2.1 and has been considered in this assessment. The analysis focuses on cumulative impacts relating to waste arisings, segregation, reuse/recycling opportunities, and disposal routes during both the construction and operational phases.

Construction Stage

Given the scale and nature of this development, there is potential for overlapping construction phases with other developments, which could result in cumulative impacts on construction waste generation, material sourcing, and disposal capacity. These impacts primarily relate to increased volumes of demolition debris, packaging waste, and surplus construction materials requiring recovery or recycling. However, due to the high number of permitted waste contractors operating within Dublin region, as listed in Appendix A of the RWMP (Appendix 15.1 of the EIAR) and registered with the National Waste Collection Permit Office (NWCPO) and Environmental Protection Agency (EPA), there is sufficient capacity to manage waste generated from multiple sites simultaneously, if required. It is anticipated that similar waste streams (e.g. excavated soils, concrete, timber, metals and packaging materials) would be generated across these developments, allowing for consistent segregation and recycling practices.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans, which will help mitigate against any potential cumulative effects associated with waste generation and waste management. As such the cumulative effect will be **short-term, not significant** and **neutral.**

Operational Stage

During operation, cumulative impacts may arise from increased volumes of residential and commercial waste streams within the DLRCC area, including mixed recyclables, organic waste, glass. The concentration of residential developments in the area may place additional demand on permitted waste collection contractors and recycling infrastructure.

A list of relevant planning permissions for developments within the vicinity of the Proposed Development over the past five years is provided in Appendix 2.1. This assessment considers the combined effect of the Proposed Development alongside these permitted developments, with respect to waste arisings, segregation, reuse/recycling opportunities, and disposal routes. While specific disposal routes will be confirmed by the appointed waste contractor during operation, the availability of licensed municipal and recycling facilities in the Dublin region (refer to Appendix A of the OWMP and Appendix 15.2 of the EIAR) ensures that appropriate routes and destinations are accessible for all waste streams.

The implementation of the OWMP for the Proposed Development, in conjunction with compliance with the DLRCC Waste Bye-Laws and the *National Waste Management Plan for a Circular Economy* (*NWMPCE*), will minimise cumulative impacts and promote high levels of recycling and recovery. All developments, including the Proposed Development, will be required to comply with relevant waste legislation and ensure segregation, reuse, and recycling of materials wherever possible. As such the cumulative effect will be **long-term, imperceptible** and **neutral.**

15.7 Do Nothing Scenario

If the proposed development was not to go ahead (i.e. in the Do-Nothing scenario) there would be no demolition, excavation or construction at this site. There would continue to be operational waste generated from the proposed site that is already being generated. There would, therefore, be a neutral effect on the environment in terms of waste.

The site is zoned for development, and it is likely that in the absence of this subject proposal that a development of a similar nature would be progressed on the site that accords with national and regional policies, which can be found in appendix 15.1 and appendix 15.2, and therefore the likely significant effects would be similar to this proposal.

15.8 Mitigation Measures

This section outlines the measures that will be implemented to reduce waste generation, manage waste responsibly and minimise environmental effects. All mitigation measures are guided by the principles of the 'Waste Hierarchy' and 'Circular Economy'. The waste hierarchy sets out waste management options in order of preference, from most to least preferred, based on environmental impact and compliance with EU and national policy: prevention and minimisation of waste, followed by preparing for reuse and recycling / recovery, energy recovery (i.e. incineration) and, as a last resort, disposal. The circular economy principle aims to keep materials, components, and products in-use for as long as possible, designing systems that create and retain value. Both principles have been applied and will further be applied during the detailed design, construction and operational phases.

The waste management objectives for the Proposed Development are as follows. These measures will facilitate material reuse and recycling, where possible, and seek to divert waste from landfill:

- Prevention (Construction Phase): The Main Contractor will prevent and minimise waste generation where possible by ensuring large surpluses of construction materials are not delivered to the site through coordination with the suppliers, operating a 'just-in-time'

delivery scheme and ensuring sub-contractors conform to the Contractor(s) RWMP. The RWMP submitted with this application (under separate cover) outlines the overarching principles, and a more detailed, site-specific version will be prepared by the Main Contractor prior to the commencement of the works;

- Reuse (Construction and Operational Phases): Reuse of waste and surplus materials will be prioritised during construction, with efforts made to repurpose materials in high value applications. During the operational phase, reuse will be encouraged through appropriate waste segregation and management practices within the Proposed Development;
- Recycle (Construction and Operational Phases): Recycling will be implemented during construction, including the potential use of on-site crushers to produce waste-derived aggregates, subject to testing and approvals. During operation, recycling facilities will be provided to support waste segregation in line with DLRCC requirements and national waste policy.; and
- Disposal (Construction and Operational Phases): Where waste disposal is unavoidable, it will be carried out in accordance with the Waste Management Act 1996, as amended, and relevant guidance. This applies to both construction waste and operational waste streams, with licensed waste contractors used for all disposal activities.

Construction Stage

The primary waste management objective during construction will be to prevent waste from arising in the first place and to reuse, recycle or recover waste materials, where possible. The following mitigation measures will be implemented during the construction phase of the Proposed Development:

Waste Management (WM)_1:
As previously stated, a project specific RWMP has been prepared in line with the requirements of the EPA's *Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects*' (2021) and is included as Appendix 15.1. The mitigation measures outlined in the RWMP will be implemented in full and form part of the mitigation strategy for the site. The mitigation measures presented in the RWMP will ensure effective waste management through minimisation, reuse, recycling, recovery and disposal of waste material generated during the demolition, excavation and construction stages of the Proposed Development.

- Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP (Appendix 15.1) in agreement with DLRCC and in compliance with any planning conditions, or submit an addendum to the RWMP to DLRCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream; and

- The Contractor will implement the RWMP throughout the duration of the proposed demolition, excavation and construction stages in the construction phase.

Additionally, the following mitigation measures will be implemented:

WM_2:

- A quantity of topsoil and sub soil will need to be excavated to facilitate the Proposed Development. All excavated material will be removed off-site. Proper classification and segregation of the excavated material will be required to ensure that any potentially contaminated materials are identified and management in a manner that prevents negative impacts on workers and on water and soil environments, both on and off-site.

WM_3:

- Building materials will be chosen to 'design out waste', in line with circular economy principles and green procurement strategies outlined in the RWMP.

WM_4:

- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated:

    - Concrete rubble (including ceramics, tiles and bricks);
    - Soil and stones;
    - Concrete, bricks, tiles and ceramics;
    - Wood, glass and plastics;
    - Metals;
    - Gypsum-based construction material;
    - Paper and cardboard;
    - Mixed construction and demolition (C&D) waste; and
    - Chemicals (solvents, paints, adhesives, detergents etc.).

WM_5:

- Leftover materials (e.g. timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible (alternatively, the waste will be sorted for recycling, recovery or disposal).

WM_6:

- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site.

WM_7:

- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required).

WM_8:

- A Resource Manager (RM) will be appointed by the main Contractor(s) to ensure effective management of waste during the demolition, excavation and construction works.

WM_9:

- All construction staff will receive training in site-specific waste management procedures as part of the induction process.

WM_10:

- All waste leaving the site will be reused, recycled or recovered where possible, to avoid material designated for disposal.

WM_11:

- All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licensed facilities.

WM_12:

- All waste leaving the site will be recorded and copies of relevant documentation maintained.

WM_13:

- Nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, if required. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with *Regulation 27 (By-products),* as amended, *European Union (Waste Directive) Regulations 2011-2020*. EPA approval will be obtained prior to moving material as a by-product.

These mitigation measures will ensure that the waste arising from the construction stage of the Proposed Development is dealt with in compliance with the provisions of the *Waste Management Act 1996, as amended*, associated Regulations and the *Litter Pollution Act 1997* and the *NWCPE*. They will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources.

Operational Stage

The primary waste management objective during the operational phase will be to ensure that all waste generated within the Proposed Development is managed in accordance with the *Waste Management Act 1996, as amended*, associated Regulations and the *Litter Pollution Act 1997* and the *NWCPE*. Measures will focus on segregation, reuse, recycling, and recovery, with disposal as a last resort, in line with the waste hierarchy and circular economy principles.

The following mitigation measures will be implemented during the operational phase of the Proposed Development:

WM_14:

- All waste materials will be segregated into appropriate categories and will be temporarily stored in appropriate bins or other suitable receptacles in a designated, easily accessible areas of the site.

WM_15:

- As previously stated, a project specific OWMP has been prepared and is included as Appendix 15.2. The mitigation measures outlined in the OWMP will be implemented in full and form part of the mitigation strategy for the site. Implementation of this OWMP will ensure a high level of recycling, reuse and recovery at the development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus achieving the targets set out in the NWMPCE , Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland and the DLRCC waste bye-laws.
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- The facilities management team of the site during the operational stage will be responsible for ensuring the ongoing implementation of this OWMP and the abiding of DLRCC waste bye-laws, ensuring a high level of recycling, reuse and recovery at the site of the Proposed Development.

WM_16:

- On-site segregation of all waste materials into appropriate categories including (but not limited to):
  - Organic waste;
  - Dry Mixed Recyclables;
  - Mixed Non-Recyclable Waste;
  - Glass;
  - Deposit return scheme;
  - Waste electrical and electronic equipment (WEEE);
  - Batteries (non-hazardous and hazardous);

- Cooking oil;
- Light bulbs;
- Cleaning chemicals (pesticides, paints, adhesives, resins, detergents, etc.);
- Furniture (and from time-to-time other bulky waste); and
- Abandoned bicycles.

WM_17:

- The facilities management team will ensure that all waste materials will be stored in colour-coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials.

WM_18:

- The facilities management team will ensure that all waste collected from the site of the Proposed Development will be reused, recycled or recovered, where possible, with the exception of those waste streams where appropriate facilities are currently not available.

WM_19:

- The facilities management team will ensure that all waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities.

These mitigation measures will ensure the waste arising from the development is dealt with in compliance with the provisions of the *Waste Management Act 1996*, as amended, associated Regulations, the *Litter Pollution Act 1997*, *The NWMPCE* and the DLRCC waste bye-laws. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

15.9 Residual Impacts

Construction Stage

A carefully planned approach to waste management as set out in Section 15.8.1 and adherence to the RWMP (which includes mitigation) (Appendix 15.1) during the construction phase will promote resource efficiency and waste minimisation. When the mitigation measures are implemented and a high rate of prevention reuse, recycling and recovery is achieved, the predicted impact of the construction phase on the environment will be short-term, imperceptible and neutral.

Operational Stage

During the operational phase, a structured approach to waste management as set out in Section 15.8.2 and adherence to the OWMP (which includes mitigation) (Appendix 15.2) will promote resource efficiency and waste minimisation. When the mitigation measures are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted impact of the operational phase on the environment will be **long-term, imperceptible** and **neutral**.

15.10 Monitoring

The management of waste during the construction phase will be monitored by the Contactor's appointed RM to ensure compliance with the above-listed mitigation measures, and relevant waste management legislation and local authority requirements, including maintenance of waste documentation. Monitoring proposals for the construction phase are summarised in Table 15.4.

The management of waste during the operational phase will be monitored by the facilities management team to ensure effective implementation of the OWMP internally and by the

nominated waste contractor(s). Monitoring proposals for the operational phase are summarised in Table 15.5.

Likely Significant Effect	Monitoring Proposals
Litter Pollution	The Contractor will review and maintain waste records and site audits.
Unlicensed Waste Collection (Illegal Dumping)	A register will be maintained and reviewed. A copy of all waste collection permits will be maintained.
Insufficient Waste Facilities	A register will be maintained and reviewed. A copy of all waste collection permits will be maintained.
Lack of Waste Classification	An appointed RM will monitor all on-site waste segregation and classification.

Table 15.4 – Monitoring Proposals Construction

Likely Significant Effect	Monitoring Proposals
Litter Pollution	Waste storage areas will be monitored by the facilities management team.
Unlicensed Waste Collection (Illegal Dumping)	The facilities management team will maintain waste receipts on-site for a period of 7 years and make available to DLRCC as requested.
Poor Waste Segregation	Waste generation volumes and cross contamination will be monitored by the facilities management team and their selected waste management company.
Litter Pollution	Waste storage areas will be monitored by the facilities management team.

Table 15.5 – Monitoring Proposals Operational

Construction Stage

The objective of setting targets for waste management can only achieved if the actual waste generation volumes are calculated and compared. This is particularly important during the demolition, excavation and construction works, where there is a potential for waste management objectives to become secondary to other priorities, such as progress and meeting construction schedule targets. The mitigation measures in the RWMP specify the need for an RM to be appointed, who will have responsibility for monitoring the actual waste volumes being generated and ensuring that contractors and sub-contractors are segregating waste as required. Where targets are not met, the RM will identify the reasons for this and work to resolve any issues. Recording waste generation during the construction phase of the Proposed Development will enable better management of waste contractor requirements and identify trends. The data should be maintained to inform future developments.

Operational Stage

During the operational phase, waste generation volumes will be monitored by the facilities management team against the predicted waste volumes outlined in the OWMP. Monitoring will apply to all functional areas of the Proposed Development, including residential blocks, amenity areas and the commercial units to ensure compliance with the segregation and storage requirements. There may be opportunities to reduce the number of bins and equipment required, where estimates have been too conservative. Reductions in bin and equipment requirements will improve efficiency and reduce waste contractor costs.

15.11 Reinstatement

In the event that the Proposed Development is discontinued, there is not likely to be any significant impacts on waste management at the site.
The Proposed Development may be decommissioned at some stage in the future. At that time, a demolition or refurbishment plan will be formulated for the decommissioning phase of the Proposed Development to ensure no waste nuisance occurs at nearby sensitive receptors.

15.12 Interactions

15.12.1 Population and Human Health

Waste management practices have the potential to affect human health through exposure to improperly handled waste during construction and / or operation, which could result in littering and presence of vermin, with associated risks to human health. A carefully planned approach to waste management, adherence to the project specific RWMP and OWMP, along with the mitigation measures in Chapter 5 (Human Health & Population) and this chapter, will minimise risks associated with odour, pests, and contamination, thereby protecting the health and well-being of workers at the Proposed Development and the local population. Potential effects on population and human health are addressed in Chapter 5. Following mitigation, the effects are expected to be **long-term, imperceptible and neutral**.

15.12.2 Lands, Soils, Geology & Hydrogeology

During the construction phase, there will be soil, stones and clay excavated to facilitate site clearance, construction of new building foundations and installation of services. The project engineers (CS Consulting Group) have estimated that 10,800 m^3 of material will need to be excavated to do so. It is currently envisaged that none of this excavated material will be reused on site due to the limited opportunities for reuse on site, meaning the full volume will need to be removed offsite for appropriate offsite reuse, recovery, recycling and / or disposal.

The management of contaminated soil, if encountered, will be undertaken in accordance with the Land and Soils chapter and the RWMP. Proper classification and handling of soil waste will prevent degradation of land quality and avoid cross-contamination with clean materials. Potential effects on land and soils are addressed in Chapter 7. Adherence to the mitigation measures in Chapter 7 (Land, Soils, Geology & Hydrogeology), this chapter, and the requirements of the RWMP (Appendix 15.1), will ensure the effect is **long-term, imperceptible** and **neutral**.

No significant soil-related waste is expected during the operational phase.

15.12.3 Hydrology

Improper storage or disposal of waste, particularly hazardous substances, has the potential to impact surface water and groundwater quality during the construction phase. The RWMP includes provisions for bunded storage of hazardous materials and protocols for managing contaminated soil. These measures will mitigate the risk of leachate or runoff entering watercourses and protect the hydrological environment. During the operational phase, the OWMP will ensure that liquid and cleaning chemicals are stored and disposed of in compliance with best practice to avoid water contamination. Potential effects on hydrology and hydrogeology are addressed in Chapter 8 and,

following the implementation of mitigation measures, are expected to be **short-term, imperceptible** and **neutral**.

15.12.4 Biodiversity

Potential impacts on biodiversity associated with waste generation during the construction and operational phases arise primarily from the improper management of waste, which could lead to littering, pollution, or the attraction of vermin within affected areas. During operation, waste will be managed at the point of generation through appropriate segregation and stored in covered facilities to prevent litter dispersion and pest attraction. Adherence to the mitigation measures set out in this chapter, and in Chapter 6 (Biodiversity) will ensure the associated effect is **long-term, imperceptible** and **neutral**.

15.12.5 Climate

Waste management contributes to greenhouse gas (GHG) emissions, particularly through landfill disposal and transport. The RWMP prioritises reuse, recycling, and recovery of materials, which will reduce the volume of waste sent to landfill and associated emissions. Similarly, the OWMP will promote recycling and minimise residual waste during operation, reducing indirect emissions from waste transport and disposal. The direct and indirect effects of the Proposed Development on climate, such as GHG are addressed in Chapter 11, and following implementation of mitigation measures, are expected to be **long-term, imperceptible** and **neutral**.

15.12.6 Traffic and Transport

Local traffic and transport will be impacted by the additional vehicle movements generated by removal of waste from the site during the construction and operational phases of the Proposed Development. The increase in vehicle movements as a result of waste generated during the construction phase will be temporary in duration. There will be an increase in vehicle movements in the area as a result of waste collections during the operational phase, but these movements will be imperceptible in the context of the overall traffic and transportation increase. Traffic-related impacts during the construction and operational phases are addressed in Chapter 14 (Material Assets: Traffic & Transport). Provided the mitigation measures detailed in Chapter 14 and this chapter are adhered to, the predicted effects are **short to long-term**, **imperceptible** and **neutral**.

15.13 Difficulties Encountered

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

While it is possible to initially select a licensed waste facility for soil disposal, there is potential to encounter contaminated material or material with naturally occurring variations in minerals and chemicals that necessitates sending it to a different suitably licensed facility. The sampling and testing carried out in the Site Investigation (SI) (included within the application documentation) process provides spot samples, and further testing may be required during the excavation process, as the true condition of all excavated materials cannot be ascertained with certainty until this is undertaken.

There is a number of licensed, permitted and registered waste facilities in the Dublin region, in the surrounding counties, the eastern midlands waste region and in Ireland and Northern Ireland. However, these sites may not be available for use when required or may be limited by the waste contractor selected to service the development in the appropriate phase. In addition, there is potential for more suitably placed waste facilities or recovery facilities to become operational in the future which may be more beneficial from an environmental perspective.

Licensed waste facilities have annual limitations on material that they can import as part of their license agreements. Because of this it would not make it possible to commit to a singular specific receiving facility as it is not available throughout the excavation phase. It would not be viable to cease a development and wait until a receiving facilities annual receiving quotas are reset. In a normal development waste facilities would switch between facilities with available capacity.

There are large number of available waste facilities for this project to utilise. The materials generated during the construction phase of this project will be standard construction materials and it is envisaged that there will be capacity to receive any waste materials generated by the development during the construction phase.

The ultimate selection of waste contractors and waste facilities would be subject to appropriate selection criteria proximity, competency, capacity, serviceability, and cost.

15.14 References

- Waste Management Act 1996 as amended.
- Environmental Protection Agency Act 1992 as amended.
- Litter Pollution Act 1997 as amended.
- Regional Waste Management Planning Offices, The National Waste Management Plan for a Circular Economy 2024 - 2030 (2024).
- Forum for the Construction Industry – Recycling of Construction and Demolition Waste.
- Department of Communications, Climate Action and Environment (DCCAE), Waste Action Plan for the Circular Economy - Ireland's National Waste Policy 2020-2025 (Sept 2020).
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- Circular Economy and Miscellaneous Provisions Act 2022, as amended.
- Environmental Protection Agency (EPA) 'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021).
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- (DLRCC) "Dún Laoghaire-Rathdown County Council *(Storage, Presentation and Segregation of Household and Commercial Waste) Bye-Laws (2019)*.
- DLRCC Guidance Notes for Waste Management Planning for Residential and Commercial Developments (2022).
- DLRCC - Guidance Notes for Environmental Design and Management of Construction Projects (2022)
- Planning and Development Act 2000 (S.I. No. 30 of 2000) as amended.
- EPA, Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous (2018).
- European Waste Catalogue - Council Decision 94/3/EC (as per Council Directive 75/442/EC).
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- 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.
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