

14.0 MATERIAL ASSETS – WASTE MANAGEMENT

14.1 Introduction

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 potential issues associated with material assets - waste management during the construction and operational phases of the proposed development as described in Chapter 2.

This chapter was completed by Chonaill Bradley (Bsc ENV, PG Dip Circ Econ, AssocCIWM) of AWN Consulting. Chonaill Bradley 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 10 years' experience in the environmental consultancy sector and specialises in sustainability, resource and waste management.

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 14.1. 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 14.2 of this Chapter.

The Chapter has been prepared in accordance with European Commissions Guidelines, Guidance on the preparation of the Environmental Impact Assessment Report (2017), the EPA Guidelines on the Information to be contained in EIAR (2022) and the EU Commission Notice on changes and extensions to projects, 2021.

These documents will ensure the management of wastes arising at the development site in accordance with legislative requirements and best practice standards.

14.2 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 (Description of the Proposed Development) and considers the following aspects:

- Legislative context;
- Construction phase (including preparation, excavation and levelling); and
- Operational phase.

A desk 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 demolition, 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 demolition, construction and operational phases of the proposed development have been calculated. 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, other available research sources and waste collection data from existing developments.

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 14.6.

A detailed review of the existing ground conditions on a regional, local site-specific scale are presented in Chapter 10 Land, Soil and Geology. Chapter 10 of the EIAR also discusses the environmental quality of any soils which will have to be excavated to facilitate construction of the proposed development.

14.2.1 Legislation and Guidance

Waste management in Ireland is subject to EU, national and regional 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 Act 1996 (as amended). European and national waste management policy is based on the concept of 'waste hierarchy', which sets out an order of preference for managing waste (prevention > preparing for reuse > recycling > recovery > disposal) (Figure 14.1).



Figure 14.1: Waste Hierarchy

(Source: European Commission)

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 14.2).

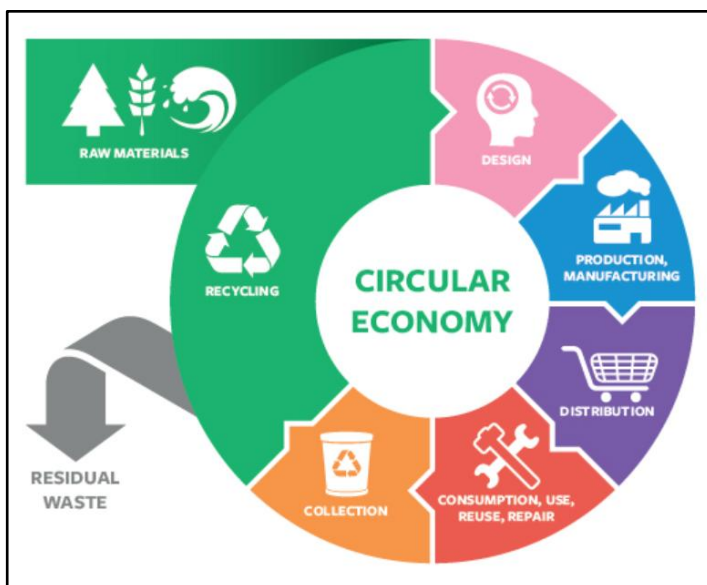


Figure 14.2: Circular Economy

(Source: Repak)

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 policy document, Waste Action Plan for a Circular

Economy – 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 guidance documents, Best Practice Guidelines for the Preparation of Waste Management Plans for Construction (2006) and Demolition Projects and Construction and Demolition Waste Management: A Handbook for Contractors and Site Managers (FÁS & Construction Industry Federation, 2002), were also consulted in the preparation of this assessment.

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 (NWPCE) (2024),
- BS 5906:2005 Waste Management in Buildings – Code of Practice,
- Dublin City Council (DCC) Waste Management (Storage, Presentation and Segregation of Household and Commercial Waste) Bye-Laws 2018),
- EPA National Waste Database Reports (NWDR) 1998 – 2020,
- The Circular Economy and National Waste Database Report 2021-2023 (2025) and the EPA National Waste Statistics Web Resource. This supersedes the NWDR.

14.2.2 Terminology

Note that the terminology used herein is 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.

14.3 The Existing Receiving Environment (Baseline Scenario)

In terms of waste management, the receiving environment is largely defined by DCC 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 National Waste Management Plan for a Circular Economy 2024 - 2030 (NWMPCE), which was issued by the Regional Waste Management Planning Offices in March 2024 and supersedes the Eastern Midlands Regional (EMR) Waste Management Plan 2015-2021 and the two other regional waste management plans.

The NWMPCE does not however dissolve the three regional waste areas. The NWMPCE 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.

In terms of physical waste infrastructure, DCC 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.

14.4 Characteristics of the Proposed Development

A full description of the development can be found in Chapter 3. The characteristics of the development that are relevant in terms of waste management are summarised below.

14.4.1 Demolition Phase

There will be a quantity of waste materials generated from the demolition of some of the existing buildings and hardstanding areas on site, as well as from the excavation of the building foundations.

Further detail on the waste materials likely to be generated during the demolition works are presented in the project-specific *RWMP* in Appendix 14.1. The *RWMP* provides an estimate of the main waste types likely to be generated during the Construction & Demolition (C&D) phase of the proposed development. The reuse, recycling/recovery and disposal rates have been estimated using the EPA National Waste Reports and these are summarised in Table 14.1.

Waste Type	Tonnes	Reuse		Recycle/Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Glass	261.8	0	0.0	85	222.5	15	39.3
Concrete, Bricks, Tiles, Ceramics	1483.3	30	445.0	65	964.2	5	74.2
Plasterboard	116.3	30	34.9	60	69.8	10	11.6
Asphalts	29.1	0	0.0	25	7.3	75	21.8
Metal	436.3	5	21.8	80	349.0	15	65.4
Slate	232.7	0	0.0	85	197.8	15	34.9
Timber	349.0	10	34.9	60	209.4	30	104.7
Asbestos	1.0	0	0.0	0	0.0	100	1.0
Total	2909.5		536.6		2020.0		352.9

Table 14.1: Estimated off-site reuse, recycle and disposal rates for demolition waste

14.4.2 Construction Phase

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 construction contractor will be required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximised.

In addition, soil & stone will require excavation to facilitate the basement and construction of foundations, along with the installation of underground services. The project engineers have estimated that between c.74,000 m³ and c. 80,000 m³ of material will require excavation. It is envisaged that most of this material will be removed offsite site with c. 10,000 m³ of material expected to be kept for onsite reuse. Table 14.2 shows the proposed foundation options and the associated estimated excavation and removal quantities of material. The proposed variation in quantities of excavated material from the proposed foundation strategy options will have an imperceptible effect between the options. The below estimates will be refined prior to commencement of construction. If the material that requires removal from 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)) subject to meeting certain criteria.

Foundation Option	Quantum of Soil Excavated	Quantum of Soil to be Removed
Standard Pad & Strip Foundations to All Blocks incl. Basement	80,000m ³	70,000m ³
Pads & Strips to All Blocks except Bored Piles to Block D & F	74,000m ³	64,000m ³
Pads & Strips to All Blocks except Ground Improvement to Block E	80,000m ³	70,000m ³

Table 14.2: Estimated quantum of site soil generation for the different foundation options

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 (2019). 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. Any surplus excavated material will be suitable for acceptance at either inert or non-hazardous soil recovery facilities / landfills in Ireland or, in the 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 workers e.g. organic/food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided onsite during the construction phase. Waste printer/toner

cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently from site offices.

Further detail on the waste materials likely to be generated during the excavation and construction works are presented in the project-specific *RWMP* enclosed as Appendix 14.1. The *RWMP* provides an estimate of the main waste types likely to be generated during the C&D phase of the proposed development and these are summarised in Table 14.3.

Waste Type	Tonnes	Reuse		Recycle/Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	1037.7	10	103.8	80	830.1	10	103.8
Timber	880.4	40	352.2	55	484.2	5	44.0
Plasterboard	314.4	30	94.3	60	188.7	10	31.4
Metals	251.6	5	12.6	90	226.4	5	12.6
Concrete	188.7	30	56.6	5	122.6	5	9.4
Other	471.7	20	94.3	0	283.0	0	94.3
Total	3144.4		713.8		2135.1		295.6

Table 14.3: Estimated off-site reuse, recycle and disposal rates for construction waste

14.4.3 Operational Phase

As noted in Section 14.1, an *OWMP* has been prepared for the development and is included as Appendix 14.2. The *OWMP* provides a strategy for segregation (at source), storage and collection of all wastes generated within the buildings during the operational phase including dry mixed recyclables (DMR), organic waste and mixed non-recyclable waste (MNR), cardboard, plastic as well as providing a strategy for management of waste glass, batteries, WEEE, printer / toner cartridges, chemicals, textiles, confidential paper, waste cooking oil and furniture.

The total estimated waste generation for the development for the main waste types based on the AWN Waste Generation Model (WGM) is presented in Table 14.4, 14.5 & 14.6 below, and are based on the uses and areas as advised by the Project Architects (O'Mahony Pike), along with the EPA National Waste Database Reports 1998 – 2020, The Circular Economy and National Waste Database Report 2021 (2023) and the EPA National Waste Statistics Web Resource. Further unit breakdowns can be found in Appendix 14.2.

Waste Type	Waste Volume (m ³ /week)			
	Block A1	Block A2	Block B	Block C
Organic Waste	1.30	2.08	1.11	1.98
Dry Mixed Recyclables	9.22	14.22	7.89	14.04
Glass	0.25	0.40	0.22	0.38
Mixed Non-Recyclables	4.85	8.27	4.15	7.38
Total	15.63	24.97	13.37	23.79

Table 14.4: Estimated waste generation for the Residential Units.

Waste Type	Waste Volume (m ³ /week)		
	Block D	Block E (Houses)	Block F (Residential Only)
Organic Waste	0.44	0.11	1.21
Dry Mixed Recyclables	3.09	0.81	8.61
Glass	0.08	0.02	0.24
Mixed Non-Recyclables	1.63	0.43	4.53
Total	5.24	1.37	14.58

Table 14.5: Estimated waste generation for the Residential Unit Blocks and Houses

Waste Type	Waste Volume (m ³ /week)		
	Creche (Block F)	Café/Restaurant (Block F)	Community / Cultural (Tabor / Chapel)
Organic Waste	0.04	0.07	0.32
Dry Mixed Recyclables	1.29	0.15	2.01
Glass	0.01	0.01	0.32
Mixed Non-Recyclables	0.70	0.18	2.46
Total	2.04	0.42	5.11

Table 14.6: Estimated waste generation for the Creche Unit, Café/Restaurant Unit and Community/Cultural Space

The residents and tenants will be required to provide and maintain appropriate waste receptacles within their units to facilitate segregation at source of these waste types. The location of the bins within the units will be at the discretion of the residents. As required, the residents and tenants staff will need to bring these segregated wastes from their units to their allocated Waste Storage Areas (WSAs). All WSA's can be viewed on the plans submitted with the application.

Mitigation measures proposed to manage impacts arising from wastes generated during the operation of the proposed development are summarised below.

14.5 Potential Impact of the Proposed Project

This section details the potential waste effects associated with the proposed development.

14.5.1 Construction Phase

The Proposed Development will generate a range of non-hazardous and hazardous waste materials during site demolition, excavation and construction (see appendix 14.1 for further detail). General housekeeping and packaging will also generate waste materials, as well as typical municipal wastes 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 Development 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 / licenced 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 are presented in Chapter 10. 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**.

14.5.2 Operational Phase

The potential impacts on the environment of improper, or a lack of, waste management during the operational phase would be a diversion from the priorities of the waste hierarchy which would lead to small volumes of waste being sent unnecessarily 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 development means the generation of waste materials during the operational phase is unavoidable. Networks of waste collection, treatment, recovery and disposal infrastructure are in place in the region to manage waste efficiently from this type of development. Waste which is not suitable for recycling can be 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 is likely to lead to litter or pollution issues at the development site and in adjacent areas. The knock-on effect of litter issues is the presence of vermin in affected areas. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **indirect, short-term, significant and negative**. Waste contractors will be required to service the proposed development on a scheduled basis to remove waste, further details can be found in Appendix 14.2. The use of non-permitted

waste contractors or unauthorised facilities could give rise to inappropriate management of waste and result in negative environmental impacts or 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. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **indirect, long-term, significant** and **negative**.

14.6 Avoidance, Remedial & Mitigation Measures

This section outlines the measures that will be employed in order to reduce the amount of waste produced, manage the wastes generated responsibly and handle the waste in such a manner as to minimise the effects on the environment.

The concepts of the 'waste hierarchy' and 'circular economy' are employed when considering all mitigation measures.

The waste hierarchy states that the preferred option for waste management is prevention and minimisation of waste, followed by preparing for reuse and recycling / recovery, energy recovery (i.e. incineration) and, least favoured of all, disposal. A circular economy is a model of resource production and consumption in any economy that involves sharing, leasing, reusing, repairing, refurbishing, and recycling existing materials and products for as long as possible.

14.6.1 Construction Phase

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 requirements of the EPA 'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021) and is included as Appendix 14.1. 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 this *RWMP* will ensure effective waste management and 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 14.1) in agreement with DCC and in compliance with any planning conditions, or submit an addendum to the *RWMP* to DCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream.
- The Contractor will implement the *RWMP* throughout the duration of the proposed demolition, excavation and construction stages.

WM_2:

- A quantity of topsoil and sub soil will need to be excavated to facilitate the proposed development. The Development Engineers have estimated that the majority of excavated material 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.

WM_3:

- Building materials will be chosen to 'design out waste'.

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;
 - 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;
 - Chemicals (solvents, paints, adhesives, detergents etc.).

WM_5:

- Left over 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 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 be provided with training regarding the waste management procedures.

WM_10:

- All waste leaving 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 licenced 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 NWMCPPE 2024. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources.

14.6.2 Operational Phase

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 14.2. 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 2024*, Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland and the DCC waste bye-laws.

- The residents, tenants and facilities management of the site during the operational stage will be responsible for ensuring the ongoing implementation of this *OWMP* and the abiding of DCC 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 residents, tenants and facilities management 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 residents, tenants and facilities management 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; and

WM_19:

- The residents, tenants and facilities management 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 DCC waste by-laws. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

14.7 Residual Impacts

The implementation of the mitigation measures outlined in Section 14.6 will ensure that targeted rates of reuse, recovery and recycling are achieved at the site of the Proposed Development during the construction and operational phases. It will also ensure that European, National and Regional legislative waste requirements with regard to waste are met and that associated targets for the management of waste are achieved.

14.7.1 Construction Phase

A carefully planned approach to waste management as set out in Section 14.6.1 and adherence to the *RWMP* (which includes mitigation) (Appendix 14.1) during the construction phase will ensure that the predicted effect on the environment will be **short-term, imperceptible and neutral**.

14.7.2 Operational Phase

During the operational phase, a structured approach to waste management as set out in Section 14.6.2 and adherence to the *OWMP* (which includes mitigation) (Appendix 14.2) 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**.

14.8 Monitoring

The management of waste during the construction phase will be monitored by the Contactor's appointed Resource Manager to ensure compliance with the above-listed mitigation measures, and relevant waste management legislation and local authority requirements, including maintenance of waste documentation.

The management of waste during the operational phase will be monitored by the Operator / Facilities Manager to ensure effective implementation of the mitigation measures outlined in Section 14.6, Appendix 14.1 and 14.2 internally and by the nominated waste contractor(s).

14.8.1 Construction Phase

The objective of setting targets for waste management is only achieved if the actual waste generation volumes are calculated and compared. This is particularly important during the excavation and construction works, where there is a potential for waste management objectives to become secondary to other objectives, i.e. progress and meeting construction schedule targets. The *RWMP* specifies the need for a Resource Manager 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 being met, the Resource Manager will identify the reasons for this and work

to resolve any issues. Recording of 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 advise on future developments.

14.8.2 Operational Phase

During the operational phase, waste generation volumes should be monitored by the Operator / Facilities Management. There may be opportunities to reduce the number of bins and equipment required in the WSAs, where estimates have been too conservative. Reductions in bin and equipment requirements will improve efficiency and reduce waste contractor costs.

Waste legislation should also be consulted on a regular basis in case of any changes which may impact on waste management procedures.

14.9 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.

14.10 Cumulative Impacts

A full list of developments considered for the cumulative impact during the construction and operational phase of the development can be found in Chapter 19 (Cumulative Effects). All relevant developments and their cumulative impacts have been considered for the construction and operational phases.

Due to the high number of waste contractors in the DCC area and the EMR, as provided from the National Waste Collection Permit Office and the EPA, there would be sufficient contractors available to handle waste generated from a large number of these sites simultaneously, if required. Similar waste materials would be generated by all of the developments. As such the cumulative construction phase effect will be **short-term, not significant** and **neutral**.

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

4.10.1 Construction Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place in the area. A full list of developments that have been considered in the cumulative effects can be found in Chapter 19. In a worst-case scenario, multiple developments in the area could be developed concurrently or overlap in the construction phase.

Due to the high number of waste contractors in the Dublin region as provided from the National Waste Collection Permit Office and the Environmental Protection Agency there would be sufficient contractors available to handle waste generated from a large number of these sites simultaneously, if required. Similar waste materials would be generated by all the developments.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will mitigate against any potential cumulative effects associated with waste generation and waste management. As such the effect will be **short-term, imperceptible** and **neutral**.

4.10.2 Operational Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place. All of the current and potential developments will generate similar waste types during their operational phases. Authorised waste contractors will be required to collect waste materials segregated, at a minimum, into recyclables, organic waste and non-recyclables. An increased density of development in the area is likely improve the efficiencies of waste collections in the area.

Other developments in the area, will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise/mitigate any potential cumulative impacts associated with waste generation and waste management. As such the effect will be a **long-term, imperceptible** and **neutral**.

		Impact Without Mitigation					Mitigation Measures	Monitoring	Impact With Mitigation / Monitoring				
Likely Significant Effect	Extent	Quality	Significance	Duration	Type	Probability			Quality	Significance	Duration	Type	Probability
Litter Pollution	Local	Negative	Significant	Short-Term	Direct	Likely	The Contractor will be required to fully implement the RWMP throughout the duration of the proposed construction phase.	The Contractor will review and maintain waste records and site audits	Neutral	Not Significant	Short-Term	Direct	Un-Likely
Unlicensed Waste Collection (Illegal Dumping)	Local & Regional	Negative	Significant	Long-Term	Direct	Likely	All waste leaving the site will be recorded and copies of relevant documentation maintained.	A register will be maintained and reviewed. A copy of all waste collection permits will be maintained.	Neutral	Not Significant	Short-Term	Direct	Un-Likely
Insufficient Waste Facilities	Local & Regional	Negative	Significant	Short-Term	Direct	Likely	All waste leaving the site will be recorded and copies of relevant documentation maintained.	A register will be maintained and reviewed. A copy of all waste collection permits will be maintained.	Neutral	Not Significant	Short-Term	Direct	Un-Likely
Lack of waste Classification	Local & Regional	Negative	Significant	Short-Term	Direct	Likely	All waste material leaving site will be correctly classified and segregation prior to removal where possible.	An appointed Waste Manager will monitor all onsite waste segregation and classification	Neutral	Not Significant	Short-Term	Direct	Un-Likely

Table 14.7: Summary of Construction Phase Likely Significant Effects With and Without Mitigation / Monitoring

		Impact Without Mitigation					Mitigation Measures	Monitoring	Impact With Mitigation / Monitoring				
Likely Significant Effect	Extent	Quality	Significance	Duration	Type	Probability			Quality	Significance	Duration	Type	Probability
Unlicensed Waste Collection (Illegal Dumping)	Negative	Negative	Significant	Long-Term	Direct	Likely	The Operator / Facilities Manager will ensure that all waste leaving the Site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities.	The Operator / Facilities Manager will maintain waste receipts onsite for a period of 7 years and make available to DCC as requested.	Neutral	Not Significant	Short-Term	Direct	Un-Likely
Poor Waste Segregation	Negative	Negative	Significant	Long-Term	Direct	Likely	The Operator / Facilities Manager 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.	Waste generation volumes will be monitored by the Operator / Facilities Manager.	Neutral	Not Significant	Short-Term	Direct	Un-Likely
Litter Pollution	Negative	Negative	Significant	Short-Term	Direct	Likely	The Operator / Facilities Manager will ensure that all waste collected	Waste storage areas will be monitored by the Operator /	Neutral	Not Significant	Short-Term	Direct	Un-Likely

							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	Facilities Manager.						
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Table 14.8: Summary of Operational Phase Likely Significant Effects With and Without Mitigation / Monitoring

14.11.2025 'Do-Nothing' Impact

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 no operational waste generated from the proposed site. 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 and therefore the likely significant effects would be similar to this proposal.

14.12 Difficulties Encountered in Compiling the Chapter

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.

The waste types generated by this development would be normal C&D waste and it is not envisaged there will be any difficulty allocating receiving waste facilities.

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

14.13 Interactions

Adherence to the mitigation measures outlined in Section 14.6 will ensure that there are no significant impacts on resource or waste management from the proposed development. The management of waste during the construction phase, in accordance with the *RWMP*, and during the operational phase, in accordance with the *OWMP*, will meet the requirements of regional and national waste legislation and promote the management of waste in line with the priorities of the waste hierarchy.

14.13.1 Land & Soils

During the construction phase excavated soil, stone and made ground (between c.74,000m³ and c. 80,000 m³) will be generated from the excavations required to facilitate site levelling, construction of the basement and construction of new foundations. It is estimated that c. between c. 64,000m³ and c. 70,000m³ of excavated material will need to be removed offsite, however it is envisaged that c. 10,000m³ material will be reused onsite. Where material has to be taken off site it will be taken for reuse or recovery, where practical, with disposal as last resort. Adherence to the mitigation measures in Chapter 14 and the requirements of the *RWMP*, will ensure the effect is **long-term, imperceptible and neutral**.

14.13.2 Transportation

Local traffic and transportation will be impacted by the additional vehicle movements generated by removal of waste from the site during the construction and operational phases of the 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 and has been addressed in Chapter 15 Transportation. Provided the mitigation measures detailed in Chapter 15 and the requirements of the *OWMP* (included as Appendix 14.2) are adhered to, the effects will likely be **short to long-term, imperceptible and neutral**.

14.13.3 Population & Human Health

The potential impacts on human beings in relation to the generation of waste during the demolition, construction and operational phases are the incorrect management of waste. This could result in littering which could cause a nuisance to the public and attract vermin. A carefully planned approach to waste management and adherence to the project specific *RWMP* and *OWMP*, will ensure appropriate management of waste and avoid any negative impacts on the local population, and the interaction will likely be **long-term, imperceptible and neutral**.

14.13.4 Biodiversity

The potential impacts on biodiversity in relation to the generation of waste during the construction or operational phases are that the incorrect management of waste could result in littering, pollution issues or vermin in areas affected.

An *Invasive Alien Plant Species: Site Assessment Report & Management Plan (ISMP)* has been prepared by Invasive Plant Solutions for the Proposed Development. The incorrect management or disposal of contaminated material soil material could result in the spread of Invasive species around the site and to other receiving sites. The *ISMP* outlines the measures

for the management of Spanish Bluebell and Three-corned Garlic. Adherence to the mitigation measures set out in this chapter, the *ISMP* and in Chapter 8 (Biodiversity) will ensure the associated effect is **long-term, imperceptible** and **neutral**.

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