11. MATERIAL ASSETS – WASTE MANAGEMENT

11.1 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 of the EIAR has been prepared by Angela Kelly and reviewed by Nevin Traynor, of Traynor Environmental Ltd. Angela is an environmental consultant with over 15 years' experience in the commercial sector where she has undertaken extensive site surveys, watching briefs and report writing. She holds a PG.Dip. in Environmental Science. Nevin Traynor BSc.Env is a Senior Environmental Consultant with Traynor Environmental; with over 25 years' experience in the environmental sector. His project experience includes the management and productions of Environmental Impact Statements (EISs)/EIARs, particularly within the Commercial/Industrial and Housing Sector.

A site-specific Resource Waste Management Plan (RWMP) has been prepared by Traynor Environmental Ltd to deal with waste generation during the excavation and construction phases of the proposed development and has been included as an Appendix of the EIAR. 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 an Appendix of the EIAR.

The 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.

Figure 13.1 Site Layout

11.2 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 (Background to the Scheme) and considers the following aspects:

- Legislative context.
- Construction phase (including site excavations); 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 11.4 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 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.

11.2.1 Legislation 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).

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.

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 – 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 national 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 (NWMPCE)* 2024, *BS 5906:2005 Waste Management in Buildings – Code of Practice*, the South Dublin County Council *(SDCC) South Dublin County Council Household & Commercial Waste Bye-Laws (2018)*, 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*.

11.2.2 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.

11.3 Receiving Environment

In terms of waste management, the receiving environment is largely defined by SDCC 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 EMR Waste Management Plan 2015-2021 and the draft NWMPCE (2023) which will supersede the three current regional waste management plans 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 South Dublin County Council Development Plan 2022 – 2028 (2022) set out the policies and objectives for the SDCC area which reflect those sets out in the regional waste management plan.

In terms of physical waste infrastructure, SDCC no longer operates any municipal waste landfill in the area. There are a number of wastes 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 may 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.

11.4 Characteristics of the Proposed Development

A full description of the proposed development can be found in Chapter 2 (Project Description and Alternatives Examined). The characteristics of the proposed development that are relevant in terms of waste management are summarised below.

11.4.1 Demolition Phase

There are no demolition works required as part of the development.

11.4.2 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, there will be excavations associated with foundations and roads. The project engineers, Waterman Moylan Consulting Engineers have estimated that the total volumes of material to be excavated. Cut and Fill Analysis provided by Waterman Moylan Ltd. Preliminary excavation volume calculations indicate that approximately 57,117 m^3 of soil will need to be removed during the excavation phase. This estimate includes the removal of the topsoil, and the balancing of cut and fill volumes within the site. To provide a robust estimation, it is assumed that an additional 10% of soil to be remove from the site. Therefore, a total of 63,000 m^3 of soil will be removed during the excavation phase.

In order to establish the appropriate reuse, recovery and/or disposal route for the material 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*. Environmental soil analysis will be carried out prior to construction 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.

In the unlikely event that surplus soils/stones are generated it may be suitable for acceptance at either inert or non-hazardous soil recovery facilities/landfills in Ireland, In the event of hazardous material being encountered, it will be transported for treatment/recovery or exported abroad for disposal in suitable facilities.

Waste will be generated from construction workers e.g., organic/food waste, dry mixed recyclables (wastepaper, newspaper, plastic bottles, packaging, aluminium cans, tins, and Tetra Pak cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided onsite during the construction phase. Waste printer/toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently from site offices. Further detail on the waste materials likely to be generated during the excavation and construction works are presented in the project-specific RWMP. Table 11.1 shows the breakdown of C&D waste types produced on a typical site based on data from the EPA National Waste Reports, the GMIT and other research reports.

Waste Types	%
Mixed C&D	33
Timber	28
Plasterboard	10
Metals	8
Concrete	6
Other	15
Total	**100**

Table 11.1 Waste materials generated on a typical Irish construction site.

Table 11.2 shows the predicted construction waste generation for the proposed development based on the information available to date along with the targets for management of the waste streams. The predicted waste amounts are based on an average largescale development waste generation rate per m^2, using the waste breakdown rates shown in Table 11.2 and the schedule of areas supplied by the project architects.

Waste Types	Tonnes	Reuse		Recycle/Recover		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	2390.85	10	239.09	80	1912.68	10	239.09
Timber	2028.60	40	811.44	55	1115.73	5	101.43
Plasterboard	724.50	30	217.35	60	434.70	10	72.45
Metals	579.60	5	28.98	90	521.64	5	28.98
Concrete	434.70	30	130.41	65	282.56	5	21.74
Other	1086.75	20	217.35	60	652.05	20	217.35
Total	**7245.00**		**1644.62**		**4919.36**		**681.04**

Table 11.2 Estimated on and off-site reuse, recycle and disposal rates for construction waste.

11.4.3 Operational Phase

An Operational Waste & Recycling Management Plan (OWRMP) has been prepared for the development. The plan will seek to ensure the development contributes to the targets outlined in the National Waste Management Plan for a Circular Economy 2024 – 2030. Mitigation measures proposed to manage impacts arising from wastes generated during the operation of the proposed development are summarised below.

All waste materials will be segregated into appropriate categories and will be stored in appropriate bins or other suitable receptacles in a designated, easily accessible areas of the site in accordance with the South Dublin County Development Plan.

Waste Volume (L/week)					
Units	**Organic Waste**	**Dry Mixed Recyclables**	**Mixed non-recyclables**	**Glass**	**Total**
Houses - 2 Storey (terraced/semi-ddetached/detached)	985	25,145	25,145	985	52,260
Block A	80	1080	1080	80	2,170
Block B	80	1080	1080	80	2,170
Block C	90	1250	1250	90	2,510
Block D	60	845	845	60	1,700
Block E	30	440	440	30	890
Block F	30	490	490	30	990

Block G	70	980	980	70	1,970
Block H	80	1570	1570	80	3,150
Block I	90	1705	1705	90	3,420
Block J	110	1380	1380	110	2,770
Block K	50	475	475	50	960
Block L	50	540	540	50	1,090
Block M	45	730	730	45	1,470
Block N	40	680	680	40	1,370
Block O	40	680	680	40	1,370
Block P	40	680	680	40	1,370
Block Q	40	680	680	40	1,370
Block R	40	680	680	40	1,370
Block S	45	730	730	45	1,470
Block T	45	730	730	45	1,470
Block U	40	680	680	40	1,370
Block V	40	680	680	40	1,370
Block W	40	440	440	40	890
Block X	40	440	440	40	890
Block Y	45	730	730	45	1,470
Block Z	40	540	540	40	1,090
Block A2	80	1080	1080	80	2,170
Block B2	40	540	540	40	1,090
Total	**2505**	**47,700**	**47,700**	**2505**	**97,650**

Table 11.3 Residential Waste Prediction (L/per week)

Non-Residential Floor Areas	Area (sq.m)	Area (sq.) GIA	Area(sq.) (NIA)	DMR (Recycling)	Food Waste	MNR (Residual)	Glass	Total (L)
Creche	109	100.3	83.93	419.65	10	419.65	5	**854.30**

Table 11.4 Commercial/Creche Waste Predictions (L/per week)

All waste leaving the site will be recycled or recovered, with the exception of those waste streams where appropriate recycling/recovery facilities are currently not available. All waste leaving the site will be transported by suitable permitted contractors and taken to suitably permitted or licenced facilities. All waste leaving the site will be recorded and copies of relevant documentation maintained.

Hazardous Waste

Hazardous waste may be generated from WEEE, batteries, fluorescent tubes, and cleaning products. Any waste classed as hazardous will be required to be taken to a specialise waste company e.g., Rilta.

11.5 Potential Impacts of the Proposed Development

11.5.1 Construction Phase

The Proposed Development will generate a range of non-hazardous and hazardous waste materials during site excavation and construction. General housekeeping and packaging will also generate waste materials, as well as typical municipal wastes generated by construction employees, including food waste. Waste materials will be required to be temporarily stored 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 ***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 ***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 ***short-term, significant*** and ***negative***.

There is a quantity of excavated material which 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 7 (Land, Soils, Geology and Hydrogeology). It is anticipated that c. 63,000m^3 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. However, in the absence of mitigation, the effect on the local and regional environment is likely to be ***short-term, significant*** and ***negative***

11.5.2 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 ***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 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 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 ***short-term, significant and negative.***

Waste contractors will be required to service the Proposed Development on a regular basis to remove waste. 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 ***long-term, significant and negative.***

11.5.3 Potential Cumulative Impact

11.5.3.1 Construction Phase

Multiple permissions remain in place for both residential and commercial developments within the vicinity of the development. 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 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. For further information on these developments, please see Chapter 3 (Description of the proposed Project).

All 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 effects associated with waste generation and waste management. In the event that the proposed development along with the surrounding developments do not appropriately manage waste during the construction phase, the potential effect will be ***short-term, significant*** and ***negative***.

11.5.3.2 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 do/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.

All developments in the area are/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. In the event that the proposed development along with the surrounding developments do not appropriately manage waste during the operational phase, the potential effect will be ***long-term, significant*** and ***negative***

11.6 Do-Nothing Approach

If the Proposed Development was not to go ahead there would be no excavation or construction or operational waste generated at this site. There will be a ***neutral*** effect on the environment. 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 to promote sustainable growth and therefore the likely significant effects would be similar to this proposal.

11.7 Remedial or 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.

11.7.1 Construction Phase

The following mitigation measures will be implemented during the construction phase of the proposed development:

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 an Appendix to the EIAR. The mitigation measures outlined in the RWMP will be implemented in full and form part of mitigation strategy for the site and are listed in summary below. 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 excavation and construction phases of the proposed development.

- Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP in agreement with SDCC and in compliance with any planning conditions, or submit an addendum to the RWMP to SDCC, 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 excavation and construction phases.

A quantity of soil and stone will need to be excavated to facilitate the proposed development. The Project engineers have estimated up to 63,000 m^3 of excavated material will need to be removed offsite. 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. In addition, the following mitigation measures will be implemented:

- Building materials will be chosen to 'design out waste'.
- 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).
    - Plasterboard.
    - Metals.
    - Glass; and
    - Timber.
- 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).
- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site.
- 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).
- A Resource Manager will be appointed by the main Contractor(s) to ensure effective management of waste during the excavation and construction works.
- All construction staff will be provided with training regarding the waste management procedures.
- All waste leaving site will be reused, recycled or recovered, where possible, to avoid material designated for disposal.
- All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities; and
- All waste leaving the site will be recorded and copies of relevant documentation maintained

Nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, where possible. 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 of the EC (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 phase 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 NWMPCE 2023. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources.

11.7.2 Operational Phase

As previously stated, a project specific OWMP has been prepared and is included as an Appendix of the EIAR and are listed in summary below. The mitigation measures outlined in the OWMP will be implemented in full and form part of 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 (2023), Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland and the SDCC waste byelaws.

- The operator of the proposed development during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – the ongoing implementation of this OWMP, ensuring a high level of recycling, reuse and recovery at the site of the proposed development.
- The operator of the proposed development will regularly audit the onsite waste storage facilities and infrastructure and maintain a full paper trail of waste documentation for all waste movements from the site.

The following mitigation measures will be implemented:

- The residents / operator of the proposed development will ensure 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.
    - Cardboard.
    - Plastic.
    - Waste electrical and electronic equipment (WEEE) including computers, printers and other ICT equipment.
    - Waste Electrical and Electronic Equipment
    - Cooking oil.
    - Cleaning chemicals (paints, adhesives, resins, detergents, etc.).
    - Furniture (and from time-to-time other bulky waste); and
    - Abandoned bicycles
- The residents / operator of the proposed development 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.

- The residents / operator of the proposed development 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
- The residents / operator of the proposed development 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 Proposed Development during the operational phase 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 (2023) and the SDCC Waste Byelaws. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

11.8 Residual Impacts of the Proposed Development

It is predicted with the implementation of the mitigation measures outlined in section 11.7 and adherence to the RWMP and OWMP there will be no significant residual impact in relation to material assets- waste management. The implementation of the mitigation measures outlined 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.

11.8.1 Construction Phase

A carefully planned approach to waste management as set out in Section 11.7.1 and adherence to the RWMP (which includes mitigation) during the construction phase will ensure that the predicted effect on the environment will be ***short-term, imperceptible*** and ***neutral*.**

11.8.2 Operational Phase

During the operational phase, a structured approach to waste management as set out in Section 11.7.2 and adherence to the OWMP will promote resource efficiency and waste minimisation. Provided the mitigation measures are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted effect of the operational phase on the environment will be ***long-term, imperceptible*** *and* ***neutral*.**

11.8.3 Conclusion

Assuming the full and proper implementation of the mitigation measures set out herein and in the RWMP and the OWMP, no likely significant negative effects are predicted to occur as a result of the construction or operational of the Proposed Development.

11.8.4 Cumulative

11.8.4.1 Construction Phase

During the Construction phase waste management will be carefully managed as set out in Section 11.7.1. 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 it is considered that the cumulative effect relating to waste management will be ***short-term, imperceptible*** and ***neutral.***

11.8.4.2 Operation Phase

During the Operational phase waste management will be carefully managed as set out in Section 11.7.2. 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 it is considered that the cumulative effect relating to waste management will be ***long-term, imperceptible*** and ***neutral.***

11.9 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 of the proposed development to ensure effective implementation of the mitigation measures.

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 Resource Manager will monitor all on-site waste segregation and classification
Unlicensed Waste Collection (Illegal Dumping)	The operator/ facilities management company will maintain waste receipts on-site for a period of 7 years and make available to SDCC as requested.
Poor Waste Segregation	Waste generation volumes will be monitored by the waste contractor / operator / facilities management company
Litter Pollution	Waste storage areas will be monitored by the waste contractor / operator / facilities management company

Table 12.5 Monitoring Proposals

11.9.1 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.

11.9.2 Operational Phase

During the operational phase, waste generation volumes should be monitored by the waste contractor and or the operator of the proposed development. 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 contactor costs.

11.10 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.

11.11 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) process provides spot samples, and further testing is 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 and EMR regions and across 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 be important 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 ultimate selection of waste contractors and waste facilities would be subject to appropriate selection criteria proximity, competency, capacity and serviceability. The waste facilities selected will ultimately be selected to minimise the environmental impacts on the surrounding environment.

11.12 Conclusion

This chapter has discussed the potential and the predicted the impact of the Proposed Development with regards to waste management. These impacts have been considered for both the construction and operational phases of the Proposed Development. The cumulative impact of the Proposed Development and surrounding developments has also been considered.

Provided all mitigation measures as set out in this chapter and the attached RWMP and OWMP are implemented, the overall predicted impact of the proposed development is ***long-term, imperceptible*** and ***neutral.***

11.13 References

- Waste Management Act 1996 - 2021 (No. 10 of 1996) as amended.
- Protection of the Environment Act 2003, (No. 27 of 2003) as amended.
- Litter Pollution Act 1997 (S.I. No. 12 of 1997) as amended.
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