14 MATERIAL ASSETS (WASTE)

14.1 Introduction

This Chapter of the EIAR comprises an assessment of the likely impact of the Proposed Development on the waste generated from the development as well as identifying proposed mitigation measures to minimise any associated impacts.

This Chapter was prepared by Chonaill Bradley and David Doran of AWN Consulting. Chonaill Bradley is a Senior Environmental Consultant in the Environment Team at AWN. He holds a BSc in Environmental Science. He is an Associate Member of the Institute of Waste Management (CIWM). Chonaill has over seven years' experience in the environmental consultancy sector. David Doran is an Environmental Consultant in the Environment Team at AWN. He holds a MSc in Environmental and Energy Management. David has completed several Material Assets – Waste EIAR chapters, as well as many Operational and Construction & Demolition Waste Management Plans for AWN's clients.

A site-specific Construction and Demolition Waste Management Plan (C&D WMP) has been prepared by AWN Consulting Ltd to deal with waste generation during the excavation and Construction Phase of the Proposed Development and has been included as Appendix 14.1. The C&D WMP was prepared in accordance with the 'Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects' document produced by the National Construction and Demolition Waste Council (NCDWC) in conjunction with the Department of the Environment, Heritage and Local Government in July 2006.

A separate Operational Waste Management Plan (OWMP) has also 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 EPA Guidelines on the Information to be contained in EIAR (2017, Draft)

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

14.2 Assessment 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. A summary of the documents reviewed, and the relevant legislation is provided in the C&D WMP and in the OWMP provided in Appendices 14.1 and 14.2.

This Chapter is based on the Proposed Development, as described in Chapter 3: Description of Proposed Development and considers the following aspects: -

- Legislative context.
- Construction Phase (including site preparation and excavation).
- 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.
- 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. The waste types and estimated quantities are based on published data by the EPA in the National Waste Reports and National Waste Statistics, data recorded from similar previous developments, Irish and US EPA waste generation research as well as other available research sources.

Mitigation measures are proposed to minimise the effect of the Proposed Development on the environment during the Construction and Operational Phases, to promote efficient waste segregation and to reduce the quantity of waste requiring disposal. This information is presented in Section 14.6.

A detailed review of the existing ground conditions on a regional, local and site-specific scale are presented in Chapter 9 of this EIAR (Land, Soils, Geology and Hydrogeology). Chapter 9 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, 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).

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. The need to embed climate action in all strands of public policy aligns with the goals of the European Green Deal.

The strategy for the management of waste from the Construction Phase is in line with the requirements of the Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects, published by the Department of Environment, Heritage and Local Government (DoEHLG) in 2006. The guidance documents, Construction and Demolition Waste Management: A Handbook for Contractors and Site Managers (FÁS & Construction Industry Federation, 2002) and Environmental Protection Agency (EPA) 'Best Practice Guidelines for the Preparation of Resource Management Plans for Construction & Demolition Projects' Draft for public consultation (April 2021) 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 Eastern-Midlands Region (EMR) Waste Management Plan 2015 – 2021, BS 5906:2005 Waste Management in Buildings – Code of Practice, the Fingal County Council (FCC) Waste Management (Segregation, Storage and Presentation of Household and Commercial Waste) Bye-Laws 2020, the EPA National Waste Database Reports 1998 – 2018 and the EPA National Waste Statistics Web Resource.

14.2.2 Terminology

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

- **Waste** – Any substance or object which the holder discards or intends or is required to discard.
- **Prevention** – Measures taken before a substance, material or product has become waste, that reduce: -
    a) the quantity of waste, including through the re-use of products or the extension of the life span of products.
    b) the adverse impacts of the generated waste on the environment and human health.
    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 sets out a non-exhaustive list of disposal operations.

14.3 Receiving Environment

The Proposed Development (Phase 1D) comprises in summary of the following components: -

- 172no. residential units consisting of 22no. duplex / apartments and 150no. houses ranging in heights between 1.5 and 3 storeys.
- Provision of public open space including Skylark Park, (c. 7,000 sq. m), extension to Railway Linear Park (c. 5,900 sq. m) and extension of Townland Boundary Linear Parks (c. 18,500 sq. m).
- Vehicular access to serve the development is proposed off the existing / under construction access points on roads serving the St. Marnock's Bay development.
- A new vehicular road is proposed to serve the Proposed Development which will connect with Mayne Road. The permanent road includes the provision of a new junction with Mayne Road and SuDs features to control surface water run-off.
- Upgrade of existing temporary foul water pumping station and 24 wastewater storage tank to increase capacity.
- All associated and ancillary site development, infrastructural, landscaping and boundary treatment works.

This is referred to as Portmarnock South Phase 1D.

In terms of waste management, the receiving environment is largely defined by FCC 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, which sets out the following targets for waste management in the region: -

- A 1% reduction per annum in the quantity of household waste generated per capita over the period of the plan.
- Achieve a recycling rate of 50% of managed municipal waste by 2020.
- 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 Plan sets a specific target for C&D waste of "70% preparing for reuse, recycling and other recovery of construction and demolition waste" (excluding natural soils and stones and hazardous wastes) to be achieved by 2020.

The National Waste Statistics update published by the EPA in August 2020 identifies that Ireland's current progress against this C&D waste target is at 77% and our progress against 'Preparing for reuse and recycling of 50% by weight of household derived paper, metal, plastic & glass (includes metal and plastic estimates from household WEEE)' is at 51%. Both of these targets are required to be met by 12 December 2020 in accordance with the requirements of the Waste Framework Directive; however, the EPA are yet to confirm that these were met.

The Fingal County Development Plan 2017 – 2023 also sets policies and objectives for the FCC area which reflect those set out in the regional waste management plan.

In terms of physical waste infrastructure, FCC no longer operates any municipal waste landfill in the area. There are a number of waste permitted and licensed facilities located in the Eastern-Midlands 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, hazardous waste treatment facilities, municipal waste landfills, material recovery facilities, waste transfer stations and two waste-to-energy facilities.

14.4 Characteristics of the Proposed Development

14.4.1 Proposed Development

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

14.4.1.1 Demolition Phase

There will be no demolition associated with this Proposed Development.

14.4.1.2 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 appointed 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, topsoil, subsoil and clay will require excavation to facilitate site levelling, construction of foundations, along with the installation of underground services. The volume of material to be excavated has been estimated by J. B. Barry and Partners Limited (Project Engineers) at c. 24,000m^3. It is expected that c. 8,457m^3 of the excavated soil and stone will be reused onsite for landscaping and non-structural fill. The remaining material will be removed from site for appropriate offsite reuse, recovery, recycling and / or disposal.

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 Article 27 classification (European Communities (Waste Directive) Regulations 2011, S.I. No. 126 of 2011). For more information in relation to the envisaged management of by-products, refer to the C&D WMP (Appendix 14.1).

In order to establish the appropriate reuse, recovery and / or disposal route for the soils and stones to be removed off-site, it will first need to be classified. Waste material will initially need to be classified as hazardous or non-hazardous in accordance with the EPA publication Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous (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. It is anticipated that the surplus material will be suitable for acceptance at either inert or non-hazardous soil recovery facilities / landfills in Ireland or, in the unlikely event of hazardous material being encountered, be transported for treatment / recovery or exported abroad for disposal in suitable facilities.

Waste will also be generated from Construction Phase workers e.g. organic / food waste, dry mixed recyclables (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 on-site during the Construction Phase. Waste printer / toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated in small volumes from site offices.

Further detail on the waste materials likely to be generated during the excavation and construction works are presented in the project-specific C&D WMP (Appendix 14.1). The C&D WMP provides an estimate of the main waste types likely to be generated during the Construction Phase of the Proposed Development. These are summarised in Table 14.1.

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	398.5	10	39.9	80	318.8	10	39.9
Timber	338.1	40	135.3	55	186.0	5	16.9
Plasterboard	120.8	30	36.2	60	72.5	10	12.1
Metals	96.6	5	4.8	90	87.0	5	4.8
Concrete	72.5	30	21.7	65	47.1	5	3.6
Other	181.2	20	36.2	60	108.7	20	36.2
Total	**1207.7**		**274.1**		**820.0**		**113.5**

Table 14.1: Estimated off-site Reuse, Recycle and Disposal Rates for Construction Waste.

14.4.1.3 Operational Phase

As noted in Section 14.1, an OWMP has been prepared for the Proposed 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 houses and duplexes during the Operational Phase including dry mixed recyclables (DMR), organic waste and mixed non-recyclable waste (MNR), as well as providing a strategy for management of waste glass, batteries, WEEE, printer / toner cartridges, chemicals, textiles, waste cooking oil and furniture.

The total estimated waste generation for the Proposed Development for the main waste types, based on the AWN waste generation model (WGM), is presented in Table 14.2 below, and is based on the uses and areas as advised by the Project Architects. Further unit breakdowns can be found in Appendix 14.2.

Waste Type	Waste Volume (m^3 / week)
	Residential Units (Combined)
Organic Waste	3.53
DMR	24.15
Glass	0.68
MNR	14.04
Total	**42.40**

Table 14.2: Estimated Waste Generation During Operational Phase.

The residents 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 will need to bring these segregated wastes from their units to their waste receptacles. It is anticipated that residents with external access to the rear of the property and will store waste in bins at the back of the house. For units with no external access to the rear, a dedicated shielded area for storage of 2no. 240l and 1no. 120l wheelie bins have been allocated at the front or side of the property. These waste storage areas can be viewed on the plans submitted with the application under separate cover.

The OWMP seeks to ensure that the Proposed Development contributes to the targets outlined in the EMR Waste Management Plan 2015 – 2021 and the FCC (Segregation, Storage and Presentation of Household and Commercial Waste) Bye-Laws 2020.

Mitigation measures proposed to manage impacts arising from wastes generated during the Operational Phase of the Proposed Development are summarised below.

14.4.2 Cumulative

14.4.2.1 Construction Phase

Multiple permissions remain in place for both residential and commercial developments within the vicinity of the development and it is likely more will occur in the Portmarnock area. In a worst-case scenario, multiple developments in the area could be developed concurrently or overlap in the Construction Phases. 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.

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 effects associated with waste generation and waste management. As such the effect will be short-term, not significant and negative.

14.4.2.2 Operation Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place and the potential for more future development in the Portmarnock area. 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.

14.5 Potential Impact of the Proposed Development

14.5.1 Proposed Development

This section details the potential waste effects associated with the Proposed Development.

14.5.1.1 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, Soil, Geology & Hydrogeology. It is anticipated that c. 23,663m^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.

14.5.1.2 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.

14.5.1.3 Do-Noting Impact

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 would 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.

14.5.2 Cumulative

14.5.2.1 Construction Phase

Multiple permissions remain in place for both residential and commercial developments within the vicinity of the development and it is likely more will occur in the Portmarnock area. In a worst-case scenario, multiple developments in the area could be developed concurrently or overlap in the Construction Phases. Due to the high number of waste contractors in the Fingal 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.

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 effects associated with waste generation and waste management. As such the effect will be short-term, not significant and negative.

14.5.2.2 Operational Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place and the potential for more future development in the Portmarnock area. 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.

14.5.2.3 Do-Noting Impact

As per Section 14.5.1.3.

14.6 Mitigation Measures (Ameliorative, Remedial or Reductive Measures)

14.6.1 Proposed Development

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.

14.6.1.1 Construction Phase

The following mitigation measures will be implemented during the Construction Phases of the Proposed Development: -

- As previously stated, a project specific C&D WMP has been prepared in line with the requirements of the requirements of the Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects (DoEHLG, 2006), and is included as Appendix 14.1.

Adherence to the high-level strategy presented in this C&D WMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the demolition, excavation and Construction Phases of the Proposed Development.

- Prior to commencement, the appointed Contractor(s) will be required to refine / update the C&D WMP (Appendix 14.1) in agreement with FCC, or submit an addendum to the C&D WMP to FCC, 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 be required to fully implement the C&D WMP throughout the duration of the proposed Construction and Demolition Phases.

A quantity of topsoil, sub soil and clay which will need to be excavated to facilitate the Proposed Development. Project Engineers have estimated that c. 23,663 m^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.

In addition, the following mitigation measures will be implemented: -

- Building materials will be chosen with an aim 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.
    - 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.
- 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 Waste Manager will be appointed by the main Contractor(s) to ensure effective management of waste during the demolition, 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.
- 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, 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 Article 27 of the EC (Waste Directive) Regulations (2011). EPA approval will be obtained prior to moving material as a by-product. However, it is not currently anticipated that Article 27 will be used.

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 EMR Waste Management Plan 2015 – 2021. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources.

14.6.1.2 Operational Phase

As previously stated, a project specific OWMP has been prepared and is included as Appendix 14.2.

The residents of the development during the Operational Phase will be responsible for ensuring a high level of recycling, reuse and recovery in their individual units in accordance with the FCC waste-byelaws.

In addition, the following mitigation measures will be implemented: -

- The residents 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.
    - 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).
    - Abandoned bicycles.
- The residents will ensure that all waste materials will be stored in colour coded bins or other suitable receptacles. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials.
- The residents 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.
- The residents 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 EMR Waste Management Plan 2015 – 2021 and the FCC Waste Management (Segregation, Storage and Presentation of Household and Commercial Waste) Bye-Laws 2020. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

14.6.2 Cumulative

14.6.2.1 Construction Phase

Multiple permissions remain in place for both residential and commercial developments within the vicinity of the development and it is likely more will occur in the Portmarnock area. 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 Fingal 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.

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 effects associated with waste generation and waste management. As such the effect will be short-term, not significant and negative.

14.6.2.2 Operational Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place and the potential for more future development in the Portmarnock area. 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.

14.7 Residual Impact of the Proposed Development

14.7.1 Proposed Development

The implementation of the mitigation measures outlined in Section 14.6 will ensure that high 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.

14.7.1.1 Construction Phase

A carefully planned approach to waste management as set out in Section 14.6.1.1 and adherence to the C&D WMP during the Construction Phase will ensure that the predicted effect on the environment will be short-term, imperceptible and neutral.

14.7.1.2 Operational Phase

During the Operational Phase, a structured approach to waste management as set out in Section 14.6.1.2 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.

14.7.1.3 Worst Case Impact

In a worst-case scenario, if no mitigation measures found in section 14.6 are followed, poor onsite waste management, non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste offsite and result in negative environmental impacts or pollution as shown in section 14.5.

14.7.2 Cumulative

14.7.2.1 Construction Phase

During the Construction Phase waste management will be carefully managed as set out in Section 14.6. 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.

14.7.2.2 Operational Phase

During the Operational Phase waste management will be carefully managed as set out in Section 14.6. 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.

14.7.2.3 Worst Case Impact

As per Section 14.7.1.3.

14.8 Monitoring

14.8.1.1 Proposed Development

The management of waste during the Construction Phase will be monitored by the Contactor's appointed Waste 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 residents to ensure effective implementation of the FCC waste bye-laws internally and by the nominated waste contractor(s).

14.8.1.2 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 demolition, 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 C&D WMP specifies the need for a Waste 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 Waste 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.

14.8.1.3 Operational Phase

During the Operational Phase, waste generation volumes will be monitored by residents. It is unlikely that the number of bins in individual households will require adjustment.

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.

14.10 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.

There is a number of licensed, permitted and registered waste facilities in the Fingal region and in the surrounding counties. 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, serviceability, and cost.