Chapter 14 – Material Assets - Waste

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14. MATERIAL ASSETS - WASTE

14.1 Introduction

This chapter of the EIAR assesses the potential significant effects of the Proposed Development on Material Assets - Waste as defined in the EIA Directive (Directive 2011/92/EU as amended by Directive 2014/52/EU) and the EPA 2022 Guidelines on the information to be contained in Environmental Impact Assessment Reports during the construction and operational phases of the Proposed Development, as described in Chapter 2 (Description of Proposed Development).

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

A site-specific Resource Waste Management Plan (RWMP) has been prepared by AWN Consulting to guide and manage the waste generated during the construction (including excavation) phase 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)*.

This 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).

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

14.2 Methodology

14.2.1 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.

This chapter was undertaken in accordance with the Environmental Protection Agency (EPA) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (2022). The methodology applied is consistent with the overarching EIA framework described in Chapter 1 of this EIAR.

The assessment addresses the construction and operational phases of the Proposed Development and, where relevant, considers the potential for direct, indirect and residual effects on the receiving environment.

The impact assessment methodology applied within this chapter comprises the following stages:

1. Study Area

The assessment of waste has utilised two geographically different study areas to examine the use of materials and the generation and management of waste:

The first study area comprises the proposed Project Boundary and any areas required for temporary access, site compounds and other enabling activities. Where materials will be consumed, and materials/waste will be generated.

The second study area extends to the availability of appropriate waste management infrastructure suitable (permitted for waste volume and type) to accept arisings and/or waste generated by the Proposed Development . This includes the Eastern Midlands Region (EMR) (regional) and Ireland (national) as a whole where applicable in order to capture potential impacts of recovering, recycling or disposal of the waste generated from the Proposed Development at waste facilities located throughout the country.

2. Characterisation of Receiving Environment

The receiving environment is described in Section 14.3 of this chapter based on the Proposed Development, as described in Chapter 2 (Description of Proposed Development) and considers the following aspects:

- Legislative context;
- Construction phase; 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.

3. Waste Quantification

Estimates of waste generation during the construction and operational phases of the Proposed Development have been calculated and are included in Section 14.4 of this chapter. The waste types and estimated quantities are based on published data by the EPA in the National Waste Reports and National Waste Statistics, data recorded from similar previous developments, Irish and US EPA waste generation research as well as other available research sources.

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.

4. Identification of Potential Impacts and Significance

The potential impacts arising from interactions between the Proposed Development are identified in Section 14.5 having regard to:

- the location, nature, scale and duration of the proposed works;
- the characteristics and sensitivity of identified receptors; and
- relevant guidance, standards and industry best practice (set out in Section 14.2.2 and Appendix 14.1)

The significance of each identified impact is evaluated using professional judgement, informed by the EPA Guidance (2022) descriptors defined in Table 1 5 of Chapter 1 of this EIAR.

5. Mitigation and Monitoring

Where potentially significant adverse effects are identified, mitigation measures are provided in Section 14.6 of this chapter to avoid or reduce those effects.

Monitoring or reinstatement measures are identified where relevant in Section 14.7 of this chapter

6. Residual Effects Conclusion

Residual effects (the effects after the implementation of the mitigation measures) on waste management are defined in Section 14.8 of this chapter.

14.2.2 Relevant 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) (Insert 14-1).

Insert 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. (Insert 14-2).

Insert 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 most recent policy document, *Waste Action Plan for a Circular Economy 2020 – 2025 (WAPCE) – Waste Management Policy in Ireland*, was published in 2020 and shifts focus away from waste disposal and moves it back up the production chain. The move away from targeting national waste targets is due to the Irish and international waste context changing in the years since the launch of the previous waste management plan, A Resource Opportunity, in 2012.

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

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

The Regional Waste Management Planning Offices published the *National Waste Management Plan for Circular Economy 2024-2030 (2024) (NWMPCE)*. The ambition of this Plan is 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. This Plan provides a waste management planning framework for the waste sector to maintain and strengthen existing services and identifies key interventions to accelerate the transition to a circular economy

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 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 guidelines on the assessment of operational waste generation, and guidance is taken from industry guidelines, plans and reports including the Waste Management Act 1996 as amended; NWMPCE 2024 - 2030, *BS 5906:2005 Waste Management in Buildings – Code of Practice*, Offaly County Council (OCC) *Waste Management (Segregation, Storage and Presentation of Household and Commercial Waste) Bye-Laws* (2018), Meath County Council (MCC) *Waste Management (Segregation, Storage & Presentation of Household and Commercial Waste) Bye-Laws* (2018), OCC - Offaly Development Plan 2021 – 2027, MCC - Meath County Development Plan 2021 – 2027, the *EPA National Waste Database Reports 1998 – 2020*, the Circular *Economy and National Waste Database Report 2021-2022* (2024) and the *EPA National Waste Statistics Web Resource.*

Offaly and Meath Waste bye-laws

The waste bye-laws for both counties require mandatory waste segregation (recycling and food waste), prohibit illegal dumping and backyard burning, and necessitate proof of proper waste disposal to ensure compliance

14.2.3 Terminology

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.

14.2.4 Forecasting Methods and Difficulties Encountered

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 are a number of licensed, permitted and registered waste facilities in the Offaly and Meath areas, the Eastern Midland region 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 import as part of their license agreements. Because of this it would not make it possible to commit to a singular specific receiving facility as it is not available throughout the excavation phase. It would not be viable to cease a development and wait until a receiving facilities annual receiving quotas are reset. In a normal development waste facilities would switch between facilities with available capacity.

There are a large number of available waste facilities for the Proposed Development to utilise - See Appendix A of Appendix 14.1 for this Chapter. The materials used during the construction and operational phases of the Proposed Development will be standard construction and living/municipal waste materials and it is envisaged that there will be capacity to receive any waste materials generated by the Proposed Development during the construction and operational phases..

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.

14.3 Receiving Environment

The Proposed Development site and associated temporary working areas covers an area of approximately 243.4 hectares (ha). The site is located in a rural area compromised predominantly of irregular agricultural fields used for grazing and cropping and bounded by traditional hedgerows characteristic of Counties Meath and Offaly. The lands are largely undeveloped, with no residential dwellings or permanent buildings located within site. Existing infrastructure intersected along the pipeline route includes regional and local roads, agricultural access tracks, drainage ditches, the M4 Motorway, and the Grand Canal. Across its length, the route requires 17 road crossings (including the M4, and local and regional roads), 2 river crossings (the Kilwarden River and the Yellow River), and 30 watercourse crossings (including the Grand Canal).

In terms of waste management, the receiving environment is largely defined by both Offaly County Council (OCC) and Meath County Council (MCC) as the local authorities responsible for setting and administering waste management activities in the areas. This is governed by the requirements set out in the NWMPCE 2024 – 2030 and the WAPCE.

The assessment of waste has utilised two geographically different study areas to examine the use of materials and the generation and management of waste:

The first study area comprises the proposed Project Boundary and any areas required for temporary access, site compounds, working platforms and other enabling activities. Where materials will be consumed, and materials/waste will be generated.

The second study area extends to the availability of appropriate waste management infrastructure suitable (permitted for waste volume and type) to accept arisings and/or waste generated by the proposed Project. This includes the Eastern Midlands Region (EMR) (regional), Ireland (national) and Northern Ireland (International) as a whole where applicable in order to capture potential impacts of recovering, recycling or disposal of the waste generated from the proposed Project at waste facilities located throughout the country.

The WAPCE sets out the following targets for waste management in the region:

- Achieve a recycling rate of 60% of managed municipal waste by 2030; 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 NWMPCE (2024) supersedes the Eastern-Midlands regional 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 Offaly County Development Plan 2021 – 2027 and the Meath County Development Plan 2021 – 2027 set out the policies and objectives for the OCC and MCC areas which reflect those set out in the NWMPCE and can be found in Appendix 14.1.

In terms of physical waste infrastructure, there are a number of waste permitted and licensed facilities located in the Offaly and Meath Areas, Eastern Midlands region and across Ireland and Northern Ireland 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.

14.4 Characteristics of the Proposed Development

The purpose of this section is to provide an overview of the key relevant details of the construction phase and operational phase of the Proposed Development particularly in areas where potential impacts to waste may occur. The information presented in this section is informed by the project design, but it is not a complete description of the Proposed Development. Therefore, it should be read in conjunction with the full development package. For a more comprehensive understanding of the Proposed Development, refer to Chapter 2 (Description of the Proposed Development) of the EIA Report. Chapter 2 provides a detailed overview of the lifecycle of the project, including reference to the architectural and civil engineering, drawings, plans, reports, and other relevant document in order to define the Proposed Development.

The characteristics of the Proposed Development that are relevant in terms of waste management are summarised below.

14.4.1 Demolition

There is no demolition associated with the Proposed Development.

14.4.2 Construction

During the construction phase, waste will be produced from surplus materials such as broken or off-cuts of timber, concrete, bricks, etc. Waste from packaging (cardboard, plastic, timber) and oversupply of materials may also be generated.

During the construction phase, excavated topsoil and subsoil (c. 265,333.6 m^3) will be generated from the excavations required to facilitate site levelling, construction of the pipeline and installation of associated services. It is anticipated that the majority (95% - c. 252,067 m^3) of this clean excavated material will be reinstated as backfill provided that the soil excavated is deemed clean inert soil. It is currently estimated that 5% of the excavated material (c. 13,267 m^3) will need to be removed off site for reuse, recovery, recycling or disposal.

When material that requires removal from the site is deemed to be a waste, removal and reuse / recycling / recovery / disposal of the material will be carried out in accordance with the Waste Management Act 1996 (as amended), the Waste Management (Collection Permit) Regulations 2007 (as amended) and the Waste Management (Facility Permit & Registration) Regulations 2007 (as amended). The volume of waste requiring recovery / disposal will dictate whether a Certificate of Registration (COR), permit or licence is required for the receiving facility. Alternatively, the material may be classed as by-product under Regulation 27 (By-products)of the European Union (Waste Directive) Regulations 2011-2020, (Previously Article 27 of the European Communities (Waste Directive) Regulations). For more information in relation to the envisaged management of by-products, refer to the RWMP (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. Any surplus excavated 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 RWMP (Appendix 14.1). The RWMP provides an estimate of the main waste types likely to be generated during the Construction phase of the Proposed Development. These are summarised in Table 14.1, below.

Table 14.1 Predicted On and Off-Site Reuse, Recycle and Disposal Rates for Construction Waste.

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	0.8	10	0.1	80	0.6	10	0.1
Timber	0.7	40	0.3	55	0.4	5	0.0
Metals	0.2	5	0.0	90	0.2	5	0.0
Concrete	0.1	30	0.0	65	0.0	5	0.0
Other	0.4	20	0.1	60	0.2	20	0.1
Total	**2.3**		**0.5**		**1.6**		**0.2**

14.4.3 Operational Stage

Once operational, it is anticipated that very small amount of waste will be generated at the Proposed Development by staff during their inspections and maintenance works. These wastes may include organic/food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons) and non-recyclable waste. Waste fuels/oils, waste printer/toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently. This will be removed by staff or subcontractors under Article 30 (1) (b) of the Waste Management (Collection Permit) Regulations 2007, as amended).

The transportation of non-hazardous waste by persons who are not directly involved with the waste business, at weights less than or equal to 2 tonnes, and in vehicles not designed for the carriage of waste, are exempt from the requirement to have a waste collection permit (per Article 30 (1) (b) of the Waste Collection Permit Regulations 2007, as amended). Any staff or sub-contractors engaged that do not generate more than 2 tonnes of waste at any one time can transport this waste off-site in their work vehicles (which are not designed for the carriage of waste). However, they are required to ensure that the receiving facility has the appropriate COR / permit / licence.

14.5 Potential Impacts of the Proposed Development

14.5.1 Construction Phase

On-site Waste Management

The Proposed Development will generate a range of non-hazardous and hazardous waste materials during site 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 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 also cause the presence of vermin in areas affected. In the absence of mitigation, inappropriate on-site waste management is likely to result in ***indirect, long-term, significant*** and ***negative*** effect on the local and regional environment.

Waste Contractors and Waste Facilities

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, use of non-permitted waste contractors is likely to result in ***indirect, long-term, significant*** and ***negative*** effect on the local and regional environment.

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, Ireland and Northern Ireland 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 and can be taken for recycling or recovery when managed correctly. However, n the absence of mitigation, use of non-permitted waste facilities is likely to result in ***indirect, long-term, significant*** and ***negative*** effect on the local and regional environment.

Excavations and Earth Works

Excavation works will be required to facilitate the Proposed Development. A detailed review of existing ground conditions at regional, local, and site-specific scales is provided in Chapter 5. It is anticipated that approximately 95% (c. 252,067 m³) of the total excavated soil volume (c. 265,333.6 m³) will be suitable for reuse on site as backfill. The remaining material, estimated at c. 13,267 m³, will be removed from the site for appropriate reuse, recycling, recovery, or disposal by a suitably licensed contractor. Correct classification and segregation of excavated materials will be undertaken to ensure that any potentially contaminated soils are identified and managed appropriately. This process is necessary to protect construction workers and to prevent adverse impacts on soil and water environments both on and off the site.

Of the material requiring removal from the site, the majority is expected to consist of inert, non-hazardous soil and stone. According to the EPA's Waste Statistics (2023), 86% of *waste soils, stones, and dredged materials* were used in backfilling, 13.5% were disposed of, and 0.5% were recycled. Applying these proportions to the quantity of soil requiring removal from the site indicates that approximately c. 1,791 m³ of soil and stone will likely require disposal at licensed facilities.

As outlined in Appendix A of Appendix 14.1 – Resource and Waste Management Plan, there are several licensed facilities within the eastern and midlands regions that are authorised to accept soil and stone for disposal. The volume of material requiring disposal is relatively small, and there is sufficient capacity within the regional waste infrastructure to receive this material.

Environmental testing of soil samples, as documented in Appendix 14.1, has identified a small number of locations on the site where soil quality exceeds inert and non-hazardous threshold limits. As a result, a limited quantity of excavated material will need to be transported to licensed facilities capable of accepting this waste category. However, given the predominantly rural and greenfield nature of the Proposed Development site, such exceedances are expected to be isolated and not representative of the overall volume of soil and stone to be excavated during the construction works

However, in the absence of mitigation, inappropriate disposal soils is likely to result in ***indirect, short-term, significant*** and ***negative*** effects on the local and regional environment.

Summary of Likely Significant Effects

The following table summarises the identified likely significant effects during the construction phase of the Proposed Development before mitigation measures are applied.

Table 14.2 Summary of Construction Phase Likely Significant Effects in the absence of mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Litter Pollution	Negative	Significant	Local	Likely	Short-Term	Indirect & Direct

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Unlicensed Waste Collection (Illegal Dumping)	Negative	Significant	Local & Regional	Likely	Long-Term	Direct
Insufficient Waste Facilities	Negative	Significant	Local & Regional	Unlikely	Short-Term	Direct
Lack of waste Classification	Negative	Significant	Local & Regional	Likely	Short-Term	Direct

14.5.2 Operational Phase

Waste Management Offsite

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 there will be a small quantity of waste materials generated during the operational phase of the development from upkeep and maintenance work. 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).

Waste Management Onsite

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 Management Facilities

Staff and subcontractors will be required to remove waste from the Proposed Development as required and take the material to an appropriately licensed waste facility. The use of unauthorised waste 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***.

Summary of Likely Significant Effects

The following table summarises the identified likely significant effects during the operational phase of the Proposed Development before mitigation measures are applied.

Table 14.3 Summary of Operational Phase Likely Significant Effects in the absence of mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Unlicensed Waste Facilities (Illegal Dumping)	Negative	Significant	Local & Regional	Likely	Long-Term	Direct
Poor Waste Segregation	Negative	Significant	Local & Regional	Likely	Long-Term	Direct
Litter Pollution	Negative	Significant	Local & Regional	Likely	Short-Term	Direct

14.6 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 concept of the 'Waste Hierarchy' and 'Circular Economy' is 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. The circular economy principle aims to keep materials, components, and products in-use in the economy for as long as possible. In circularity, the key objective is to design consumption and production systems to create and retain value. Both principles have been applied and will further be applied during the detailed design, construction and operational phases.

14.6.1 Demolition Phase Mitigation

There is no demolition associated with this development and as such there will be no need for mitigation measures associated with demolition.

14.6.2 Construction Phase Mitigation

The following mitigation measures will be implemented during the excavation and construction phase of the Proposed Development:

As previously stated, a project specific RWMP has been prepared in line with 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 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 excavation and construction phases of the Proposed Development.

1. Prior to commencement, the appointed Contractor(s) will be required to update the RWMP (Appendix 14.1) in agreement with OCC and MCC and in compliance with any planning conditions, or submit an addendum to the RWMP to OCC and MCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream.
2. The Contractor will implement the RWMP throughout the duration of the proposed excavation and construction phases and should treat the document as outlined in the guidance as a live document.

A quantity of topsoil and sub soil will need to be excavated to facilitate the Proposed Development. The project design team have estimated that the majority (95%) of the clean, excavated soil will be reinstated

as backfill. Any remaining excavated soil will be removed from site by a licenced waste contractor. 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:

1. Building materials will be chosen to 'design out waste';
2. On-site segregation of waste materials will be carried out where possible to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated:

    a. Concrete rubble (including ceramics, tiles and bricks);
    b. Metals; and
    c. Timber.
3. 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;
4. All waste materials will be stored in skips or other suitable receptacles in designated areas of the site;
5. 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);
6. A Resource Manager will be appointed by the main Contractor(s) to ensure effective management of waste during the excavation and construction works;
7. All construction staff will be provided with training regarding the waste management procedures;
8. All waste leaving site will be reused, recycled or recovered, where possible, to avoid material designated for disposal;
9. All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities; and
10. 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 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, the NWMPCE (2024). It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources.

14.6.3 Operational Phase Mitigation

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 Waste Management Act 1996, NWMPCE, WAPCE, the OCC and MCC waste bye-laws. As noted in Section 14.4.2 above, all waste generated at the Proposed Development will be managed in line with the requirements of the above aforementioned documents.

The operator (Gas Networks Ireland (GNI)) of the development during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – a high level of recycling, reuse and recovery at the site of the Proposed Development.

GNI will regularly audit the waste records from staff and sub-contractors and maintain a full paper trail of waste documentation for all waste movements from the site.

The following mitigation measures will be implemented:

GNI will ensure all waste materials are segregated appropriate categories, including (but not limited to):

1. Organic waste;
2. Dry Mixed Recyclables;
3. Mixed Non-Recyclable Waste;
4. Glass;
5. Cardboard;
6. Plastic;
7. Waste electrical and electronic equipment (WEEE) including computers, printers and other ICT equipment;
8. Cleaning chemicals (paints, adhesives, resins, detergents, etc.).

GNI will ensure that staff and subcontractors appropriately remove all waste materials from site. There will not be bins stored on site and any waste material produced by staff or subcontractors while visiting the site will be removed by the staff or subcontractors.

The staff and subcontractor 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.

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, the OCC and MCC Waste Bye-Laws. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

14.7 Monitoring or Reinstatement Measures

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 GNI to ensure effective implementation of the mitigation measures outlined in Section 14.6 and Appendix 14.1 internally and by the nominated waste contractor(s).

14.7.1 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 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 will be maintained to advise on future developments.

The following Table summarises the Construction Phase mitigation and monitoring measures.

Table 14.4 Summary of Construction Phase Mitigation and Monitoring

Likely Significant Effect	Quality	Significance

Litter Pollution	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
Unlicensed Waste Collection (Illegal Dumping)	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.
Insufficient Waste Facilities	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.
Lack of waste Classification	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

14.7.2 Operational Phase

The following Table summarises the Operational Phase mitigation and monitoring measures.

Table 14.5 Summary of Operational Phase Mitigation and Monitoring

Likely Significant Effect	Quality	Significance
Unlicensed Waste Collection (Illegal Dumping)	GNI and staff / subcontractors will ensure that all waste produced on the Site will be taken to suitably registered, permitted or licensed facilities.	GNI will maintain waste receipts onsite for a period of 7 years and make available to OCC and MCC as requested.
Poor Waste Segregation	GNI will ensure that all staff or subcontractors producing waste materials on the site will appropriately segregate their waste ensure there is no cross contamination of waste materials on the site.	Waste generation volumes by staff or subcontractors will be monitored by GNI.
Litter Pollution	GNI and staff / subcontractors 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.	Segregation of waste produced on site by the staff or subcontractors will be monitored by GNI.

14.8 Residual Effects of the Proposed Development

This section assesses any potential significant environmental impacts which remain after mitigation measures are implemented.

14.8.1 Demolition Phase

There is no demolition associated with this development and as such there will be no residual impact on the environment caused from demolition.

14.8.2 Construction Phase

A carefully planned approach to waste management as set out in Section 14.6.2 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***.

The implementation of the mitigation measures outlined in Section 14.6.2 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 and the waste will be correctly managed. 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.

The following Table summarises the identified likely significant residual effects during the construction phase of the Proposed Development following the application of mitigation measures.

Table 14.6 Summary of Construction Phase Effects Post Mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Litter Pollution	Negative	Not Significant	Local	Unlikely	Short-Term	Indirect & Direct
Unlicensed Waste Collection (Illegal Dumping)	Negative	Significant	Local & Regional	Unlikely	Long-Term	Direct
Insufficient Waste Facilities	Negative	Significant	Local & Regional	Unlikely	Short-Term	Direct
Lack of waste Classification	Negative	Significant	Local & Regional	Unlikely	Short-Term	Direct

14.8.3 Operational Phase

During the operational phase, a structured approach to waste management 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 impact of the operational phase on the environment will be ***long-term, imperceptible*** and ***neutral.***

The following Table summarises the identified likely residual significant effects during the operational phase of the Proposed Development post mitigation.

Table 14.7 Summary of Operational Phase Effects Post Mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Unlicensed Waste Collection (Illegal Dumping)	Negative	Significant	Local & Regional	Unlikely	Long-Term	Direct
Poor Waste Segregation	Negative	Not Significant	Local & Regional	Unlikely	Long-Term	Direct
Litter Pollution	Negative	Not Significant	Local & Regional	Unlikely	Short-Term	Direct

14.9 References

1. Waste Management Act 1996 - 2021 (No. 10 of 1996) as amended.
2. Protection of the Environment Act 2003, (No. 27 of 2003) as amended.
- Litter Pollution Act 1997 (No. 12 of 1997) as amended.
3. The Circular Economy and Miscellaneous Provisions Act 2022
4. Regional Waste Management Planning Offices, National Waste Management Plan for a Circular Economy 2024 – 2030 (2024).
5. Department of Environment and Local Government (DoELG) Waste Management – Changing Our Ways, A Policy Statement (1998).
6. European Commission, Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (2017).
7. Environmental Protection Agency (EPA) 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (2022)
8. Forum for the Construction Industry – Recycling of Construction and Demolition Waste.
9. Department of Communications, Climate Action and Environment (DCCAE), Waste Action Plan for the Circular Economy - Ireland's National Waste Policy 2020-2025 (Sept 2020).
10. DCCAE, Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less' (2021)
11. Environmental Protection Agency (EPA) 'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021)
12. Department of Environment, Heritage and Local Government, Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (2006).
13. FÁS and the Construction Industry Federation (CIF), Construction and Demolition Waste Management – a handbook for Contractors and site Managers (2002).
14. Offaly County Council (OCC) The Offaly Development Plan 2021 – 2027.
15. Meath County Council (MCC) The Meath County Development Plan 2021 – 2027.
16. OCC *Waste Management (Segregation, Storage and Presentation of Household and Commercial Waste) Bye-Laws* (2018),
17. MCC *Waste Management (Segregation, Storage & Presentation of Household and Commercial Waste) Bye-Laws* (2018).
18. BS 5906:2005 Waste Management in Buildings – Code of Practice
19. Planning and Development Act 2000 (No. 30 of 2000) as amended
20. Environmental Protection Agency (EPA), Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous (2018)
21. Council Decision 2003/33/EC, establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.
22. Environmental Protection Agency (EPA), National Waste Database Reports 1998 – 2020 and the Circular Economy and National Waste Database Report 2021 - 2022
23. US EPA, Characterisation of Building Uses (1998);
24. EPA and Galway-Mayo Institute of Technology (GMIT), EPA Research Report 146 – A Review of Design and Construction Waste Management Practices in Selected Case Studies – Lessons Learned (2015)