

Limerick WWTP Upgrade and Regional Bioresource Centre

ElAR Chapter 17 - Resource and Waste Management

June 2026



Formerly JB Barry Partners who became part of Egis in 2023

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Glossary and Defined Terms

Acronym	Description
AA	Appropriate Assessment
AASR	Appropriate Assessment Screening Report
ACP	An Coimisiún Pleanála
AD	Anaerobic Digestion
AGS	Aerobic Granular Sludge
AER	Annual Environmental Report
BOD	Biochemical Oxygen Demand
BC	Bioresource Centre
C	Carbon
CAFÉ	Clean Air for Europe Directive
CHP	Combined Heat and Power
DIN	Dissolved Inorganic Nitrogen
ECJ	European Court of Justice
EIAR	Environmental Impact Assessment Report
ELV	Emission Limit Value
EPA	Environmental Protection Agency
ESB	Electrical Supply Board
EU	European Union
FOG	Fats Oils and Grease
FST	Final Settling Tank
GHG	Greenhouse Gas
HGV	Heavy Goods Vehicle
MLPS	Main Lift Pumping Station
MCA	Multi-Criteria Analysis
MRP	Molybdate Reactive Phosphate
IDA	Industrial Development Agency
IFAS	Integrated Fixed-Film Activated Sludge
N	Nitrogen
NDP	National Development Plan
NHA	National Heritage Area
NIS	Natura Impact Statement
NPF	National Planning Framework
NSO	National Strategic Outcomes
NSS	National Spatial Strategy
NWSMP	National Wastewater Sludge Management Plan
P	Phosphorous
PE	Population Equivalent - The amount of wastewater received at a treatment plant (and its design capacity) is measured in units known as population equivalent (or PE). The wastewater received from all sources, e.g. industrial, tourism, commercial, residential, etc., is converted into these units, with one unit of PE representing the wastewater treatment load typically generated by a single person.
PFF	Pass Forward Flow
PFT	Picket Fence Thickener

Acronym	Description
SEA	Strategic Environmental Assessment
SBR	Sequencing Batch Reactor
SHC	Sludge Hub Centre
SIA	Stable Isotope Analysis
SID	Strategic Infrastructure Development
Sludge	Solid by-products of wastewater
SPA	Special Protection Area
SS	Suspended Solids
UWWTD	Urban Wastewater Treatment Directive
WFD	Water Framework Directive
WWDA	Wastewater Discharge Authorisation
WWTP	Wastewater Treatment Plant
WSPS	Water Services Policy Statement
ZTV	Zone of Theoretical Visibility
PS	Pumping Station
QI	Qualifying Interest
RAS	Return Activated Sludge
RBC	Regional Bioresource Centre
RSES	Regional Spatial and Economic Strategy
SAC	Special Area of Conservation
TDS	Total Dry Solids
THP	Thermal Hydrolysis Process
pNHA	Proposed National Heritage Area

Departments and Stakeholders

Acronym (where applicable)	Departments & Stakeholders
ACP	An Coimisiún Pleanála
DPER	Department of Public Expenditure and Reform
CACNaT	Department of Climate Action, Communication Networks and Transport
DCCAE	Department of Communications, Climate Action and Environment – Changed in 2020
DCHG	Department of Culture, Heritage and the Gaeltacht – Changed in 2020
DoF	Department of Finance
DHPLG	Department of Housing, Planning and Local Government – Changed in 2020
HLGaH	Department of Housing, Local Government and Heritage
EPA	Environmental Protection Agency
GSI	Geological Survey Ireland
GWS	Group Water Schemes
IFI	Inland Fisheries Ireland
IR	Irish Rail (Iarnród Éireann)
UÉ	Uisce Éireann
LCCC	Limerick City & County Council
LA	Local Authority
NMS	National Monuments Service
NPWS	National Parks & Wildlife Service
NRA	National Roads Authority
NTA	National Transport Authority
OPW	Office of Public Works
OSi	Ordnance Survey Ireland
SRA	Southern Regional Assembly

17 RESOURCE AND WASTE MANAGEMENT

17.1 Introduction

17.1.1 Purpose of this Report

This chapter of the Environmental Impact Assessment Report (EIAR) identifies, describes, and presents an assessment of the likely significant effects of the Limerick WWTP Upgrade and Regional Bioresource Centre (RBC) Project (hereafter referred to as the 'Proposed Development') on Resource and Waste management during both the construction and operational phases.

The assessment presented is informed by the following key chapters of the EIAR: Chapter 3 (The Proposed Development) and Chapter 4 (Construction Strategy). The chapter specifically addresses waste likely to arise from the various phases of the Proposed Development and outlines how materials and waste will be managed in accordance with the principles of the waste hierarchy as outlined in the European Waste Framework Directive (Directive 2008/98/EC as amended, including by Directive 2018/851/EU), as transposed into Irish Law by the European Communities (Waste Directive) Regulations 2011 (SI No. 126 of 2011), as amended by the European Union (Waste Directive) (Amendment) Regulations 2016 (SI No. 315 of 2016) and the European Union (Waste Directive) Regulations 2020 (SI No. 323 of 2020) i.e. prevention, reduction, preparing for reuse, recycling, other recoveries, and, as the least preferred option, disposal (which includes landfilling and incineration without energy recovery).

Other chapters relevant to the resource and waste management assessment include:

- Chapter 6 (Traffic and Transport): Identification of haul routes for materials and waste management.
- Chapter 8 (Air Quality): Details of impacts relating to air quality aspects during haulage of materials and waste.
- Chapter 9 (Climate): Use and management of sustainable materials.
- Chapter 10 (Noise and Vibration): Details of impacts relating to noise and vibration aspects during construction.
- Chapter 19 (Population and Human Health): Details of impacts on community, socio-economic, and human health aspects during construction.
- Chapter 14 (Land and Soils): Soil quality and details of site and ground investigations.

17.2 Methodology

17.2.1 Introduction

This Chapter has followed the overall methodology and guidance relating to the EIA process and preparation as set out in Chapter 1 (Introduction). The impact of the Proposed Development in terms of Waste Management has been assessed for the construction and operational phases by considering the nature and quantities of waste produced, its management and treatment including recovery and reuse as a natural resource.

It is anticipated that impacts on resource use will occur mostly during the construction phase and waste impacts will be encountered during both the construction phase and the operational/maintenance phase of the Proposed Development. This resource and waste management assessment was through a combination of desk-based studies and extensive liaison with the design team.

17.2.2 Study Area

When assessing the Zone of Influence (Zol) for the resource and waste management component of the Proposed Development, it is categorised into two distinct Study Areas comprising of the 'development study area' and the 'expansive study area' in accordance with the ISEP Guide¹.

The development study area comprises of the footprint of the Proposed Development, including temporary land required to facilitate construction. The development study area for the operational phase of the Proposed Development comprises of the area defined by the application site (Limerick WWTP and Corcanree PS) from which operational wastes will be generated.

The expansive study area considers the availability of construction materials and the waste management infrastructure capacity and the remaining landfill void within the region. Waste management capacity is inferred from regional waste arising and waste management data, since baseline data for regional waste management capacity (particularly landfill data) is not frequently published. Figure 17-1 below shows the Southern Waste Region in which the Proposed development lies on.

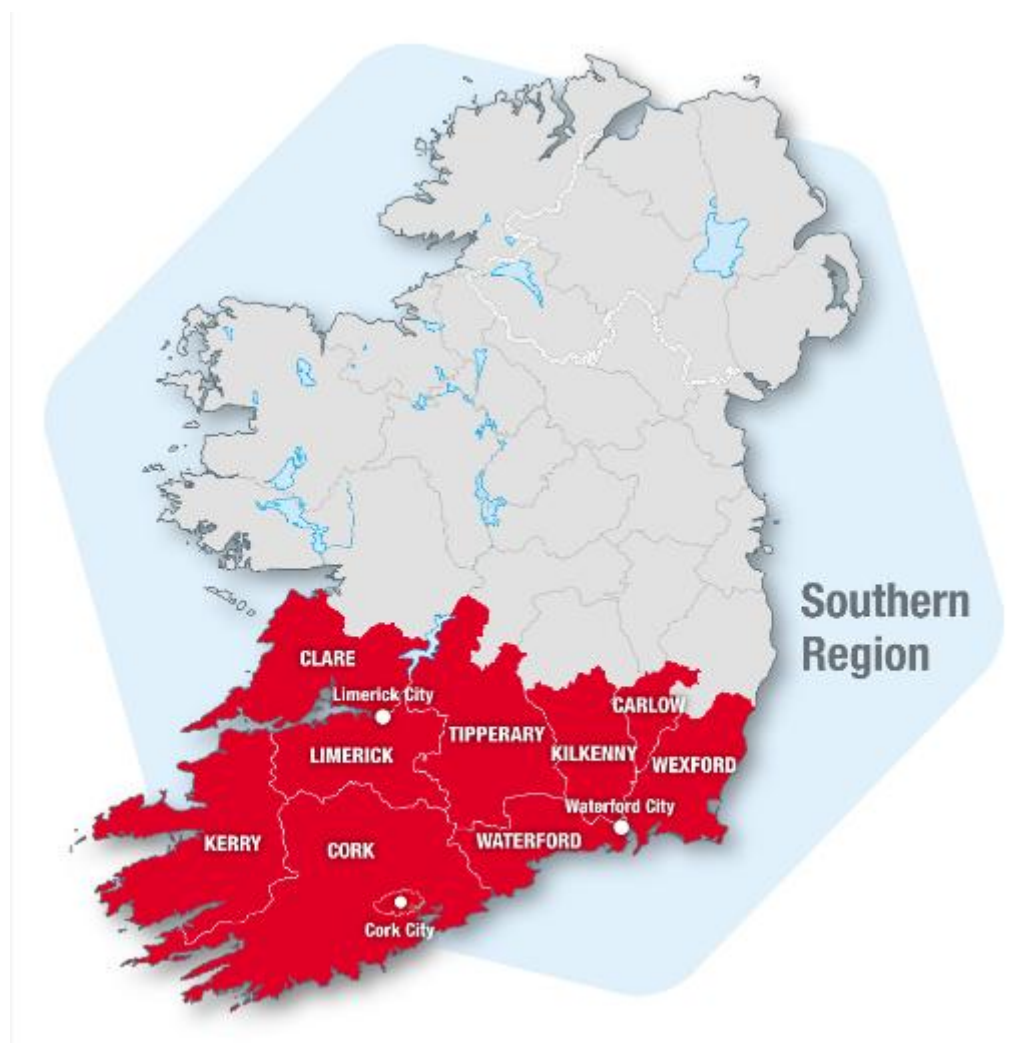


FIGURE 17-1 SOUTHERN WASTE REGION

¹ ISEP (2025) ISEP Guide to: Materials and Waste in Environmental Impact Assessment. Guidance for a proportionate approach.

17.2.3 Relevant Legislation, Policy and Guidelines

17.2.3.1 Introduction

This section sets out the legislation, policy and guidance sources that have informed the scope and methodology for the assessment of waste.

17.2.3.2 Legislation & National Planning Policy

European Communities (Waste Directive) Regulations, 2011

The European Waste Framework Directive (Directive 2008/98/EC), as amended by EU Directive 2018/851 is transposed into Irish legislation by the European Communities (Waste Directive) Regulations S.I. No. 126/2011 as amended, including by the European Union (Waste Directive) (Amendment) Regulations 2025 (S.I. No. 166/2025).

The Regulations mandate the establishment of waste prevention programs and waste management plans, which must adhere to the waste hierarchy. This hierarchy prioritises waste prevention first, followed by preparation for re-use, recycling, other recovery methods (including energy recovery), and ultimately disposal.

The Regulations require measures to be taken for construction and demolition waste to achieve the following target:

By 2020, the preparing for reuse, recycling and other material recovery, including backfilling operations using waste to substitute other materials, of non-hazardous construction and demolition waste excluding naturally occurring material defined in category 17 05 04 in the list of waste is required to have been increased to a minimum of 70% by weight.

To support the implementation of the waste hierarchy the Regulations give provision for an operator to determine that a material is a by-product and not a waste, where certain conditions are met and if approved by the EPA under Article 27. Under Article 28, the Regulations give provision for determining end-of-waste status, when a waste may cease to be a waste when it has undergone a recovery operation.

This assessment is cognisant of managing waste in accordance with the waste hierarchy, including the provisions under Article 27 and 28 (including the national end-of-waste criteria for recycled aggregate), and of the targets for recovery of non-hazardous construction and demolition waste.

A Waste Action Plan for a Circular Economy

Ireland's National Waste Policy 2020-2025, titled "A Waste Action Plan for a Circular Economy," is Ireland's new roadmap for waste planning and management. It outlines the country's strategy for transitioning to a circular economy in alignment with the European Commission's "The European Green Deal" and "A New Circular Economy Action Plan."

For construction and demolition waste, the plan aligns with the provisions and targets of the European Communities (Waste Directive) Regulations by committing to streamline decision-making processes for by-product notifications and end-of-waste criteria, and by updating best practice guidance in accordance with the waste hierarchy. This document has been considered within the assessment as it sets out priority approaches for the construction sector to support the achievement of the national construction and demolition waste recovery target.

For municipal waste, the plan supports the European Communities (Waste Directive) Regulations by introducing recycling targets for waste collectors, standardising bin colours across the state, promoting recycling through a waste recovery levy, managing consumer rights with a waste oversight body, and enhancing waste segregation through education and awareness campaigns.

National Waste Action Plan for Circular Economy 2024-2030

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.

While the need to transition to a circular economy was addressed in the previous Regional Waste Management Plans, the EU and national policy and legislative base has significantly strengthened since 2015. Circular economy policy, legislation and associated targets mandate the need for Ireland to transition to a circular economy over the lifetime of this Plan. The Plan ambition reflects the urgency for the targets, policies and actions of this Plan to contribute to the delivery of this transition and move waste management in Ireland higher up the waste hierarchy and reduce the reliance on both recovery and disposal.

This Waste Action Plan commits to the transition to a circular economy through increased capture of high-quality materials maximising circular potential and using secondary materials from, reuse repair and recycling activities. For this project, detailed measures will be prepared to minimise waste to be transported off-site and ensure resource waste management.

17.2.3.3 Regional & Local Planning Policy

National Waste Management Plan for a Circular Economy 2024–2030

Waste management in the Southern Region is now governed by the National Waste Management Plan for a Circular Economy 2024–2030, which replaces the previous Southern Region Waste Management Plan 2015–2021. This national plan provides the overarching framework for waste prevention, resource efficiency, recycling, and residual waste management across all regions. It sets out national policy direction and the actions required to transition Ireland towards a circular economy, with a strong emphasis on waste prevention, increased reuse, higher recycling performance, and the phased reduction of landfill disposal.

The plan ensures a coordinated and consistent approach to waste management across all local authorities, including Limerick City and County Council. It also aligns with national climate targets and supports the development of sustainable waste treatment infrastructure, improved data systems, and circular economy initiatives.

Limerick Development Plan 2022 to 2028

This Plan is the first to be prepared for Limerick City and County and will replace the Limerick City Development Plan 2010 – 2016 (as extended) and the Limerick County Development Plan 2010 – 2016 (as extended).

Limerick Development Plan 2022 – 2028 notes that construction related waste accounts for a significant proportion of total landfill waste in Ireland. The New Waste Management Plan for Limerick 2015 mentions that households recovery/recycling rate of 63% and a commercial recovery/recycling rate of 61% have been achieved.

17.2.3.4 Standards & Guidance

ISEP Guide to Materials and Waste in Environmental Impact Assessment. Guidance for a Proportionate Approach (ISEP, 2025)

The Institute of Sustainability and Environmental Professionals (ISEP) guide, "Materials and Waste in Environmental Impact Assessment: Guidance for a Proportionate Approach," offers insights into key terms, concepts, and considerations for evaluating the environmental impacts and effects of materials and waste within the Environmental Impact Assessment (EIA) process. While the guide primarily addresses the UK regulatory framework, its principles are broadly applicable to EU jurisdictions and have been used to inform the assessment methodology for evaluating the waste aspect of the Proposed Development.

EPA Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction and Demolition Projects

The EPA Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction and Demolition Projects offer a practical approach informed by best practices in preventing and managing construction and demolition wastes and resources from design through to construction and deconstruction. These guidelines provide clients, developers, designers, practitioners, contractors, sub-contractors, and competent authorities with a unified approach to preparing resource and waste management plans.

The guidelines cover best practices both prior to construction, including the design, planning, and procurement stages before on-site work begins, and during construction, focusing on the effective management of resources and wastes throughout construction or demolition operations.

These guidelines have informed the preparation of the Construction Environmental Management Plan (CEMP) for the Proposed Development.

17.2.4 Appraisal Method for the Assessment of Impacts

The potential for waste to be generated during the excavation, construction and operation phases of the Proposed Development is assessed. Mitigation measures are identified where necessary to reduce the impact of the waste generated by the Proposed Development in the construction and operational phases. The principal objective of sustainable resource and waste management is to use material resources more efficiently, where the value of products, materials and resources is maintained in the economy for as long as possible and the generation of waste is minimised. To achieve resource efficiency there is a need to move from a traditional linear economy to a circular economy.

Where residual waste is generated, it should be dealt with in a way that follows the waste hierarchy set out in the EU Waste Framework Directive (Directive 2008/98/EC) (see Figure 17-2) and actively contributes to the economic, social and environmental goals of sustainable development. This chapter examines the potential environmental effects of the generation and management of solid waste arising from the Proposed Development, in the context of the existing local and national resource and waste management environment.



FIGURE 17-2 WASTE HIERARCHY

17.2.5 Data Collection and Collation

A comprehensive desktop study was undertaken to inform this environmental impact assessment. This study includes a thorough review of available information that is relevant to the waste management of the site of the Proposed Development, which include the following tasks:

- Review of relevant policy and legislation which creates the legal framework for resource and waste management in Ireland including the National Waste Management Plan for a Circular Economy 2024–2030 and the Uisce Éireann’s National Wastewater Sludge Management Plan 2016;
- Review of estimated waste generation during the construction, operational and decommissioning phases;
- Review of the Proposed Development design during development of EIAR to identify mitigation and move waste management up the waste hierarchy through implementation of best practices;
- Review of the types, quantities and management of construction waste arisings generated in Ireland and the relevant Local Authority and Strategic Waste Region (SWR) jurisdictions; and

- Review of the types, quantities and management of commercial and industrial waste generated in Ireland and SWR jurisdictions (Regional Waste Management Offices 2000).

Mitigation measures are proposed to minimise the effect of the Proposed Development on the environment, reduce the quantity of waste sent for final disposal in so far as possible and to promote sustainable waste management practices. These are described in Section 17.5 below. The construction strategy for the Proposed Development is set out in Chapter 4 (Construction Strategy) in Volume 2 of this EIAR. The direct and indirect effects of transport (which includes traffic associated with the movement of waste material) are considered in Chapter 6 (Traffic and Transport) of this EIAR and the geological characterisation of the Proposed Development is considered in Chapter 14 (Land and Soils) of this EIAR.

17.2.6 Waste Management Principles

In the construction of the Proposed Development the appointed contractor will have regard to the following principles of the waste hierarchy, in line with the Waste Framework Directive.

17.2.6.1 Prevention and Reuse

Waste prevention and minimisation is the most environmentally sustainable means of managing surplus material from excavation and construction materials. The principles of prevention and minimisation of waste are inherent in the design of the Proposed Development.

Where naturally occurring material will be used for the purpose of construction in its natural state within the Proposed Development, this material will not be deemed to be a waste in accordance with the Waste Management Act 1996. Naturally occurring material, including topsoil, will be reused for the purpose of construction throughout the Proposed Development, where feasible. The material will also be subject to testing to ensure it is suitable for its proposed end use.

Where non-naturally occurring surplus excavation material occurs within the Proposed Development it will be beneficially reused within the Proposed Development, where feasible. The use of excavation material on other projects, for example in engineering works or landscaping may take place where feasible and where it cannot be reused on-site. Where construction by-products are proposed to be further used on-site or off site, this will take place in compliance with Article 27 of the EC Waste Directive Regulations 2011. The appointed contractor will be responsible for ensuring compliance with these regulations, where appropriate.

17.2.6.2 Recycling, Recovery and Disposal

Where surplus materials are generated which cannot be reused, these will be waste and will be delivered only to recycling or recovery facilities authorised and in accordance with the Waste Management Act 1996, as amended, and which hold a Certificate of Registration, Waste Facility Permit or EPA Licence.

All wastes removed from site will be transported by the holder of the appropriate waste collection permit, granted in accordance with S.I. No. 820/2007 - Waste Management (Collection Permit) Regulations 2007, as amended.

The option of disposal is the least desirable outcome for surplus material generated by the Proposed Development and will only be considered where it is not feasible to deliver wastes for recycling or recovery to appropriately licensed/permitted facilities for reuse/recycling purposes.

In addition, where waste facility capacity does not exist within Ireland for management of specific waste streams, such as hazardous soils, these will be exported for treatment, recovery or disposal in accordance with the provisions of Waste Management (Shipments of Waste) Regulations 2007, as amended (S.I. No. 419/2007) and in accordance with current practice in Ireland.

It will be the responsibility of the appointed contractor, under the Waste Management Act 1996, as amended, to ensure that all material delivered to authorised waste facilities is correctly classified and will meet the waste acceptance criteria of the receiving site.

It will be the responsibility of the appointed contractor to secure agreements for reuse, recycling or disposal of surplus materials from the Proposed Development in construction projects or authorised facilities where appropriate, in accordance with the Waste Management Act 1996, as amended, and associated regulations.

17.2.6.3 Best Practice Waste Management Measures

Table 17-1 sets out a list of best practice waste management measures which will be implemented by the appointed contractor, where practicable, during the Proposed Development construction in accordance with the waste hierarchy.

TABLE 17-1 LIST OF WASTE MANAGEMENT BEST PRACTICE ACTIONS (CONSTRUCTION PHASE)

Stage in Hierarchy	Action
Recycling	Where possible, metal, timber, glass, and other recyclable material will be segregated and removed off site to a permitted/licensed facility for recycling. Waste stream colour coding and photographs will be used to facilitate segregation.
Recycling	On-site office and food waste arising will be source separated at least into dry mixed recyclables, biodegradable and residual wastes.
Recycling	Waste bins, containers, skip containers and storage areas will be clearly labelled with waste types which they should contain, including photographs as appropriate.
Prevention	The site will be maintained to prevent litter and regular litter picking will take place throughout the site.
Prevention	'Just-in-time' delivery will be used as where practicable to minimise material wastage (Building Research Establishment (BRE) 2012; EPA 2015b)
General	The appointed contractor will record the quantity in tonnes and types of waste and materials leaving the site during the construction works. The name, address and authorisation details of all facilities and locations to which waste and materials are delivered will be recorded along with the quantity of waste in tonnes delivered to each facility. Records will show material which is recovered and disposed of.
Prevention	Paints, sealants and hazardous chemicals will be stored in secure, bunded locations.
Prevention	All hazardous waste will be separately stored in appropriate lockable containers prior to removal from site by an appropriate waste collection holder.
General	Waste generated on-site will be removed as soon as practicable following generation for delivery to an authorised waste facility.
General	The appointed contractor will ensure that any off site interim storage facilities for excavated material have the appropriate waste licences or waste facility permits in place.
Prevention	All staff on-site will be trained on how to minimise waste (i.e. training, induction, inspections and meetings).
Prevention	Materials on-site will be correctly and securely stored (BRE 2012).
Prevention / Recycling	Segregated skips will be used on-site if space permits (particularly for hazardous, gypsum, metal, timber, inert waste and general waste) (BRE 2012).

17.2.7 Key Parameters for Assessment

The key parameters assessed in this chapter include waste emissions from the Proposed Development, considering disposal routes such as recycling, recovery, landfill, and energy recovery. Additionally, other materials arising from the Proposed Development, such as soil and stone, are evaluated in terms of sustainable diversion from the disposal/recovery tier through by-product classification to other facilities as part of the Article 27 notification process.

The following factors were considered when determining the significance of the impacts of the Proposed Development on the various aspects of the baseline environment:

- Desk study of current practices for waste and by-product management in Ireland;
- Data gathered on the types and quantities of waste and by-product generation and management from the Proposed Development. This is compared with the established baseline set out in Section 17.4;
- An assessment of the likely environmental impacts that may arise from the quantity of waste requiring disposal to landfill, in line with the significance criteria set out in Chapter 1 (Introduction) of this EIAR;
- The surplus materials arising and waste infrastructure capacity in the SWR in which the Proposed Development is located; and
- A review of the Proposed Development in the context of the waste hierarchy and circular economy principles to determine the mitigation measures required.

17.2.8 Assessment Criteria and Significance

The significance category descriptions and criteria used to assess the impacts of the Proposed Development arising from the generation of waste materials are detailed in Table 17-2, based on the ISEP (September 2025) Guide to Materials and Waste in Environmental Impact Assessment.

For this assessment, the receptor is the available capacity in the disposal tier of the waste hierarchy, specifically landfill and incineration without energy recovery. The sensitivity of available capacity is evaluated by examining current trends in landfill/incineration capacity and depletion, according to the criteria in Table 17-2. The baseline description also considers the capacities of licensed facilities in the Southern Region concerning excess soil, stone, and other materials, which has informed the assessment.

The estimated amounts of waste generated by the Proposed Development during the construction and operational phases are then compared to assess their impact on available landfill and incinerator capacity. The infrastructure for processing and recovering materials, as well as on-site reuse of materials, are recognised in the IEMA Guidelines as beneficial and are considered in the assessment of the magnitude of effect. These practices help divert materials away from landfill and incineration without energy recovery, favouring higher-tier waste management options. The criteria for defining magnitude in this chapter are outlined in Table 17-3.

TABLE 17-2: SENSITIVITY OF LANDFILL / INCINERATOR VOID CAPACITY (DERIVED FROM ISEP, 2025)

Void Capacity Type	Description	Sensitivity
Inert and Non-Hazardous Waste		
Across construction and/or operation phases, the baseline/future baseline (i.e., without development) of regional* (or where justified, national) inert and non-hazardous void capacity is expected to:	Remain unchanged or is expected to increase through a committed change in capacity.	Negligible
	Reduce minimally: by <1% as a result of wastes forecast.	Low
	Reduce noticeably: by 1-5% as a result of wastes forecast.	Medium
	Reduce considerably: by 6-10% as a result of wastes forecast.	High
	Reduce very considerably (by >10%); end during construction or operation; is already known to be unavailable; or would require new capacity or infrastructure to be put in place to meet forecast demand.	Very High

Hazardous Waste		
Across the construction and/or operation phases, the baseline/future baseline (i.e., without development) of regional* (or where justified, national) hazardous void capacity is expected to:	Remain unchanged or is expected to increase through a committed change in capacity.	Negligible
	Reduce minimally: by <0.1% as a result of wastes forecast	Low
	Reduce noticeably: by 0.1-0.5% as a result of wastes forecast.	Medium
	Reduce considerably: by 0.5-1% as a result of wastes forecast.	High
	Reduce very considerably (by >1%); end during construction or operation; is already known to be unavailable; or would require new capacity or infrastructure to be put in place to meet forecast demand.	Very High

*Regional is appraised for the purposes of the Proposed Development.

TABLE 17-3: DEFINITION OF TERMS RELATING TO THE MAGNITUDE OF AN IMPACT

No Change	Negligible	Minor	Moderate	Major
Inert and Non-Hazardous Waste				
Zero waste generation and disposal from development.	Waste generated by the development will reduce regional* landfill / incineration without energy recovery capacity by <1%.	Waste generated by the development will reduce regional* landfill / incineration without energy recovery capacity by 1-5%.	Waste generated by the development will reduce regional* landfill / incineration without energy recovery capacity by 6-10%.	Waste generated by the development will reduce regional* landfill / incineration without energy recovery capacity by >10%.
Hazardous Waste				
Zero waste generation and disposal from development.	Waste generated by the development will reduce national landfill / incineration without energy recovery capacity by <0.1%.	Waste generated by the development will reduce national landfill / incineration without energy recovery capacity by <0.1-0.5%.	Waste generated by the development will reduce national landfill / incineration without energy recovery capacity by <0.5-1%.	Waste generated by the development will reduce national landfill / incineration without energy recovery capacity by >1%.

*Or where justified, national. Regional is appraised for the Proposed Development.

The significance of the effect on sensitive receptors is determined by correlating the magnitude of the impact and the sensitivity of the receptor, as detailed in Table 17-4. Where a range of significance of effect is predicted, the final assessment for each impact is based upon expert judgement.

The definitions for significance in Table 17-4 are as defined in the EPA Guidelines on the information to be contained in EIAR (2022), with 'moderate' and 'major' using the EPA definitions of 'significant' and 'very significant' respectively.

For the purposes of this assessment, any effects with a significance level of slight or less have been concluded to be not significant in terms of the EIA Regulations:

- **Profound:** An effect which obliterates sensitive characteristics;
- **Major:** An effect which, by its character, magnitude, duration, or intensity significantly alters most of a sensitive aspect of the environment;
- **Moderate:** An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends;
- **Slight:** An effect which causes noticeable changes in the character of the environment without affecting its sensitivities; and

IMPERCEPTIBLE: AN EFFECT CAPABLE OF MEASUREMENT BUT WITHOUT SIGNIFICANT CONSEQUENCES. TABLE 17-4: SIGNIFICANCE OF THE IMPACT MATRIX

Sensitivity of Receptor	Magnitude of Impact					
		No Change	Negligible	Minor	Moderate	Major
	Negligible	Imperceptible	Imperceptible	Imperceptible to Slight	Imperceptible to Slight	Slight
	Low	Imperceptible	Imperceptible to Slight	Imperceptible to Slight	Slight	Slight to Moderate
	Medium	Imperceptible	Imperceptible to Slight	Slight	Moderate	Moderate to Major
	High	Imperceptible	Slight	Slight to Moderate	Moderate to Major	Major to Profound
	Very High	Imperceptible	Slight	Moderate to Major	Major to Profound	Profound

17.3 Baseline Environment

17.3.1 Overview of Site Operations

The existing wastewater treatment plant (WWTP) currently serves a population equivalent (PE) of approximately 130,000. The plant receives and treats a combination of domestic, commercial and industrial wastewater. As part of the treatment process, the principal waste streams generated on-site comprise wastewater sludge, screenings (rag) and grit.

In addition to these process-derived wastes, the facility also accepts imported waste streams, including sludge and leachate/wastewater, which are treated within the existing plant infrastructure. Minor quantities of operational and municipal waste are also generated from staff welfare facilities and routine site activities.

17.3.2 Sludge Waste and Management

The primary waste stream generated at the facility is wastewater sludge. Sludge is produced as a by-product of the biological treatment process and is subsequently thickened and dewatered on-site to produce a sludge cake.

Based on current plant operations:

- The treatment of wastewater from a PE of approximately 130,000 generates a significant volume of indigenous sludge.
- In addition to on-site generated sludge, the facility receives imported waste from external sources, averaging approximately 10 sludge and 13 leachate/water waste imports per day.

All sludge, including both indigenous and imported streams, is directed to the on-site sludge treatment system. This includes anaerobic digestion, which stabilises the sludge and generates biogas for on-site energy recovery.

The biogas generated is utilised on-site through a combined heat and power (CHP) system. This currently provides approximately 40% of the WWTP's energy requirements.

Based on recent plant performance data, the facility generates approximately 12,000 tonnes per year of dewatered sludge cake. This material is temporarily stored on-site prior to removal and is exported off-site on a daily basis, typically via 30-tonne articulated trailers.

Sludge cake is removed by an appropriately authorised and licensed waste collection contractor (e.g. Enva or equivalent), in accordance with the Waste Management (Collection Permit) Regulations. The material is

transported to an authorised facility where it undergoes lime stabilisation treatment to produce a stabilised biosolid suitable for beneficial reuse, typically in agriculture, subject to regulatory compliance.

17.3.3 Other Operational Waste Streams

In addition to sludge wastes, the following waste streams are generated:

Screenings (Rag) and Grit

- Screenings (rag) are removed at the inlet works and comprise non-biodegradable materials such as plastics, wipes and other debris.
- Grit (sand, gravel) is also removed during preliminary treatment.

These materials are classified as waste and are collected and transported off-site to appropriately licensed facilities for disposal or recovery.

Municipal-Type Waste

- Small quantities of municipal waste are generated from staff welfare facilities, offices and routine maintenance activities.
- This includes general waste, dry mixed recyclables and potentially biodegradable waste fractions.
- These wastes are segregated where practicable and collected by authorised waste contractors.

Maintenance and Minor Waste Streams

Additional minor waste streams may include:

- Waste oils and lubricants from equipment maintenance
- Packaging waste from delivered materials
- Redundant plant components or consumables

All such wastes are managed in accordance with the Waste Management Act 1996 (as amended) and associated regulations.

17.3.4 Waste Management Practices

Existing waste management practices at the facility include:

- Segregation of waste streams at source, where feasible.
- Temporary storage in designated areas prior to removal.
- Use of authorised waste collection permit holders.
- Off-site treatment, recovery or disposal at licensed facilities.

17.4 Waste Disposal Routes for the Proposed Development

Baseline data has been collected with a focus on these waste streams at both national and regional levels, including information on construction and excavation waste arisings, as well as the capacity of regional and national waste transfer, treatment, and disposal facilities.

Article 27 of S.I. No. 126/2011 - European Communities (Waste Directive) Regulations 2011, as amended (Article 27) allows the EPA to determine, under certain circumstances, that a material is a by-product and not a waste. Substances or objects, such as soil and stones, produced during construction projects may be determined as a by-product if they satisfy all of the following criteria:

- Further use of the material is certain;
- The material can be used directly without any further processing other than normal industrial practice;
- The material is produced as an integral part of the production process;

- Further use is lawful, in that the substance or object fulfils all relevant product, environmental and health protection requirements for the specific use and will not lead to overall adverse environmental or human health impacts.

Substances or objects will be a by-product if they meet each of the conditions detailed in Article 27. The baseline area for reuse of by-products in accordance with Article 27 comprises the whole country, as no regional distinction is made in the Article 27 register.

Where it is proposed to use an Article 27 EPA notification in relation to excavation material from the Proposed Development, the appointed contractor will be responsible for ensuring compliance with Article 27 including notification of the EPA, seeking a determination from the EPA and compliance with all relevant Agency guidance on the matter.

Where it is proposed to use soil from offsite, which is a by-product and subject to Article 27, the appointed contractor is responsible for carrying out any necessary due diligence regarding the material and ensuring that all EPA guidelines relating to that Article 27 notification have been complied with before the soil is imported into the site. Where feasible, appropriate and available construction by-products arising from other sites will be used in the development of this site in place of virgin materials.

17.4.1 Licensed Waste Facilities

Table 17-6 lists licensed waste facilities in the Southern Region that may be suitable for managing materials and waste streams generated by the Proposed Development. Construction-related waste (such as soils, stones, concrete, and mixed C&D waste) will be directed to appropriately licensed soil recovery facilities, C&D waste facilities, waste-to-energy facilities, or landfills, depending on the material type and recovery options available.

Sludge-related waste requires separate consideration. Prior to the RBC upgrade, dewatered sludge cake is classified as a waste product and is managed through authorised sludge treatment or land-spreading contractors. Following the upgrade, the facility will produce a Class A biosolid which is considered a valued resource rather than a waste. Exported sludge cake generated during the operational phase must undergo further lime treatment to stabilise it for land spreading in accordance with regulatory requirements.

The Southern Region contains over 94 licensed waste facilities capable of managing the construction-related waste streams associated with the Proposed Development. Detailed information on each of these facilities is available on the EPA and National Waste Collection Permit Office (NWCPO) websites. Facilities located in Wexford, Carlow, Waterford and Kilkenny have been excluded from the baseline due to excessive travel distances.

There are two historical waste facilities in Limerick listed as historic landfills with Limerick City and County Council as the applicant: Knocknacarriga and Churchtown Landfill. Knocknacarriga is located approximately 24.5km south-east of the Proposed Development and this site is rated as having a low risk (Class C site) according to the Environmental Risk Assessment for Unregulated Waste Disposal sites prepared by LCCC. The Churchtown Landfill is approximately 34.2km south-west of the Proposed Development. Neither of these two sites is intersected by the Proposed Development.

17.4.2 Construction and Demolition Waste

Construction and Demolition (C&D) waste is predominantly comprised of soil and stone but also includes concrete, brick, metal and mixed C&D waste to a lesser extent. In 2023, the latest year for which there are published statistics available, 9 million tonnes of C&D waste was generated, an increase from 8.3 million tonnes in 2022. This waste primarily consists of excavated soil and stones, which make up about 81% of the total C&D waste (EPA 2024a).

A breakdown of the composition of C&D waste in Ireland in 2023 is set out in Table 17-5. These figures should be considered as a guide only as C&D waste can vary significantly from one project to another, depending on the nature of the development and the waste management practices employed on-site.

TABLE 17-5 QUANTITY OF C&D WASTE COLLECTED BY AUTHORISED WASTE COLLECTORS IN 2023 (EPA 2024A)

Waste Materials from C&D Sources	Quantity (tonnes)	Proportion of Material Stream (%)
Soil and stone	7,346,781	81
Mixed C&D waste	679,762	8
Concrete, brick, tiles and similar	613,054	7
Metals	212,700	2
Bituminous mixtures	121,412	1
Segregated wood, glass, and plastic	68,694	1
Total	9,042,402	

As the Proposed Development is located within the administrative area of Limerick City and County Council, it is anticipated that all waste generated on the Proposed Development will be managed within the Southern Waste Region (SWR). The National Waste Management Plan for Circular Economy 2024 -2030 has been published and replaces the Regional Waste Management Plans. The single national waste plan directs waste policy across all three regions; however, the three regional management structures remain in place. The plan sets policies to promote prevention and management of waste in Ireland. The plan also sets targets, methods and key drivers of sustainable consumption practices to reduce waste generation. This will however not change how waste management facilities are operated. The EU Waste Framework Directives (2008/98/EC, amended by 2018/851/EU), transposed into Irish Law by the European Union (Waste Directive) Regulations, 2011 - 2020, require Member States to take the necessary measures to achieve the minimum recycling/ recovery target of 70% by weight for non-hazardous CDW, excluding naturally occurring materials, by 2020. The EPA reported an 85% material recovery of non-hazardous CDW, excluding naturally occurring materials in Ireland in 2021.

Details on facilities in the Southern Waste Region which manage C&D Waste are presented in Table 17-6 listed by county.

17.4.3 Hazardous Waste

In 2023, Ireland generated a total of 381,764 tonnes of hazardous waste, which is approximately 8,000 tonnes less than the amount generated in 2022. This decrease was primarily due to a reduction in the acceptance of hazardous soil and stones by facilities. Of the total hazardous waste, 189,298 tonnes (approximately 50%) were treated abroad, while 192,467 tonnes (approximately 50%) were treated within Ireland.

17.4.4 Municipal and Other Waste

Municipal waste will be generated in small quantities during the Construction and Operational Phases (i.e. associated with maintenance activities) of the Proposed Development. Municipal waste in Ireland is made up of household waste as well as commercial and other waste that, because of its nature or composition, is similar to household waste. According to the EPA, Ireland generated 3.17 million tonnes of municipal waste and recycled 41% of this in 2021 (EPA 2024e).

Biodegradable municipal waste (BMW) comprises those elements of the municipal waste stream that will degrade biologically, for example food waste, garden and parks waste, wastepaper and cardboard.

Under the Landfill Directive, Ireland is committed to meeting targets for the diversion of BMW from disposal to landfill including a target of less than 427,000 tonnes, refer to National Waste Management Plan 2024 – 2030. There has been a steep decline in Ireland's landfill rate for municipal waste from over 80% in 2001. Ireland must reduce the share of municipal waste landfilled to 10% or less by 2035, which includes waste landfilled at each step along the waste treatment process in Ireland and abroad (EPA 2024e).

Ireland's landfill rate also showed a marginal decrease to 15% in the same period. Landfill facilities in the Southern Region are presented in Table 17-6 below.

17.4.5 Sludge / Biosolids (Operational Waste Stream)

Sludge generated during the operation of the facility will be thickened and dewatered on-site to produce sludge cake. This material is currently classified as a waste prior to stabilisation and is removed from the site by an authorised contractor such as Enva under a valid NWCPO waste collection permit.

The exported sludge cake undergoes lime treatment at an authorised facility to produce a Class A biosolid, which is suitable for beneficial reuse on agricultural land in accordance with EPA guidance and the National Wastewater Sludge Management Plan. Once stabilised, Class A biosolids are generally no longer considered a waste product and are managed as a nutrient resource.

17.4.6 Evolution of the Environment in the Absence of the Proposed Development

In the absence of the Proposed Development, sludge would continue to be handled on a county-by-county basis, with no provision for a regional biocentre. This would limit opportunities for the recovery and beneficial reuse of sludge-derived resources, such as fertiliser products.

The existing wastewater treatment plant (WWTP) would continue to operate within its current capacity constraints. Without the proposed upgrades, there would be limited scope to accommodate future increases in loading or to improve storm water management capacity. This may result in continued pressure on the treatment process, particularly during peak flow events, with potential implications for treatment performance and compliance.

From a resource and waste management perspective, sludge would continue to be managed through existing arrangements, which are less efficient and do not maximise resource recovery. The absence of the proposed upgrades and a regional bioresources centre would represent a missed opportunity to transform waste into valuable resources and to implement a more sustainable, integrated approach to sludge management at both site and regional level. A regional bioresources centre could facilitate the conversion of sludge into biogas, fertilisers, and other by-products, promoting sustainable waste management and resource recovery. Additionally, inefficient sludge management can lead to increased operational costs due to higher energy consumption and the need for frequent maintenance.

Therefore, upgrading the WWTP is crucial to effectively manage waste and leverage resources, ensuring environmental sustainability and operational efficiency.

TABLE 17-6: LICENSED WASTE FACILITIES IN THE EXPANSIVE STUDY AREA

No	Facility Name/Licensee	Licence No.	Annual Authorized Intake/Total Capacity (t)/m ³ . Year of Closure	Waste/Material Authorized (Tonnes)	Type of facility	Distance from Proposed Development (km)
County and City Limerick						
1	Michael Bagnell	COR/L/2023/228	Annual: Unknown Total capacity 12,500 Closure date: 2027	Concrete 1000 Bricks 1000 Tiles and Ceramics 1,000 Mixture of concrete, bricks, tiles and ceramics 4,500 Soil and Stone 5,000	Waste Treatment/ recovery	Ballyvelogue Patrickswell (51)
2	Rentokil Initial Ltd	WFP-L-2021-145 -R2	Annual:200t Total capacity: Unkown Closure date: 2026	Mixed Packaging Packaging containing residue of or contaminated by dangerous substances Pesticides	Waste Transfer	V94 D9C5 (52)
3	Dereen Concrete Ltd	WFP-L-021-119	Annual: 20,000t Total capacity:200,000t Closure date: 2026	Soil and Stone 121,812	Waste Recovery	V94 T2Y8 (67)
4	Limerick Polymers Production Unlimited Company	WFP-L-2021-12-001-01-R4-T1	Annual: 50,000t Total capacity: Unkown Closure date: 2026	Metals Plastics Mixed Packaging	Waste recovery	Galvone Industrial Estate Roxboro (46)
5	Donal and Margo Humphreys	COR/L/2021/214	Annual: Unknown Total capacity 23,000 Closure date: 2026	Concrete, Blocks, Tiles 9,200 Soil and Stones 13,800	Waste recovery	V35 HC85 (47)
6	VM Fitzgerald SkipHire Ltd	WFP/L/2021/11/002/01/R3	Annual 19,500t Total capacity: Unknown Closure date:2027	Mixed Packaging C&D Waste Biodegradable Waste Soila and Stone and Park waste	Waste Recovery Waste Transfer	V94 A039(55)
7	Derry White Skip Hire Ltd	COR/2023/224	Annual: Unknown Total capacity 3,900t	Concrete Bricks, Tiles and Ceramics	Waste Recovery	Cloonsherick Newcastle West (37)

			Closure date: 2028			
8	Derry White Skip Hire Ltd	WFP/L/2023/17D/R6	Annual:13,500t Total capacity: Unkown Closure date: Unknown	Metals Mixed Municipal Waste Soil and Stone Combustible waste Glass Gypsum based construction materials	Waste Recovery	P56 N224 (32)
9	McGrath Heavy Transport Limited	WFP/L/2022/223	Annual:22,500t Total capacity: 100,000t Closure date: 2027	Soil and Stone 85,000 Dredging Spoil 10,000 Mixture of concrete, bricks and ceramics 5,000	Waste Recovery	Gooig Castleconnell (64)
10	Coolrus Plant Hire Ltd	WFP-L-2022-189-R2	Annual: 22,500t Total capacity 100,000t Closure date: 2028	Bituminous Mixtures 45,000 Concrete 42,000 Soil and Stone 5,000 Dredging Spoil 5,000 Bricks 1,500 Mixture of concrete, bricks, tiles and ceramics 1,500	Waste Recovery	V35 DA09 (33)
11	Coolrus Plant Hire Ltd	COR/L/2023/226	Annual: 20,000t Total capacity: 78,000t Closure date: 2028	Soil and Stone 67,500 Dredging Spoil (non- Hazardous) 7500 Mixture of concrete , bricks ,tiles and ceramics 1,500 Concrete 750 Bricks 750	Waste Recovery	Cappanihane Kilmallock (32)
12	Valcroft Unlimited	WFP/L/2023/203/R3	Annual: 49,610t Total capacity: Unknown Closure date: 2027	Mixed Municipal Waste (Residual) Mixed Dry Recyclables Biodegradable Waste Metals Soil and Stones Paper and cardboard packaging	Waste Recovery /Treatment	Dock Road Bunlicky (55)

13	Thomas O'Neill (Grain Merchants) Ltd	WFP/L/2022/05B/R3	Annual: 10,000t Total capacity: 6,000m ³ Closure date: 2028	Municipal Waste Waste From agriculture/Forestry Mixed Packaging	Waste Recovery /Treatment	V94 H7W9 (65)
14	Liam Mulcair- CJN Plant Ltd	COR/L/2023/160/R3	Annual: Unknown Total capacity: 4,400t Closure date: 2028	Soil and Stone	Waste Recovery	Commons Croagh(45)
15	United Metal Recycling Ireland Ltd	WFP/L/2022/195/R1	Annual: 18,500t Total capacity: Unknown Closure date: 2028	Mixed Metals from C&D waste Ferrous Metals Iron and Steel from C&D waste Discarded Equipment	Metal Recycling	Ted Russell Docks Dock Road (57)
16	Limerick Metal Recycling Company Ltd	WFP-L-2023-11-001-01-R9-T1	Annual: 160,000t Total capacity: Unknown Closure date: 2026	Waste Metal Plastic packaging Wooden packaging	Reception, Storage and Recycling	V945C67(56)
17	BIGbin Waste Tech Ltd.	COR/L/2023/197/R1/T1	Annual: 900t Total capacity: Unknown Closure date: 2029	Residual Waste 600 Dry recyclable Waste 200 Biodegradable and canteen waste	Mixed Municipal Waste	Circle K Corbally Road(58)
18	Templeglantine Community Development CLG	COR/L/2023/225/R1	Annual: Unknown Total capacity: Unknown Closure date: 2028	Soil and Stones Concrete Mixture of concrete , bricks ,tiles and ceramics	Waste Recovery	V94 KC56(44)
19	Rowen haulage (Limerick) Ltd	COR/2023/227	Annual: Unknown Total Capacity 25,000t Closure date: 2028	Concrete 2500 Mixture of concrete , bricks ,tiles and ceramics 2500 Soil and Stone 20,000	Waste Recovery	Killeenavera Dromkeen(48)
20	Woodstock Composting Ltd.	WFP-L-2023-221-R3-T1	Annual: 5,000t Total capacity: Unknown Closure date: 2027	Waste from forestry Saw dust and wood shavings Green waste Sludge	Waste Treatment/ recovery	Lisnafulla Broadford(38)
County Clare						
21	Clare County Council	W0109-02	Annual: 62,500t	Municipal Waste	Civic Amenity Site	86

			Total capacity 1,000,000t Closure date: Unknown			
22	Clean Ireland Recycling	W0253-01	Annual: Unknown Total capacity 25,000t Closure date: Unknown	Mixed residual waste Mixed dry recyclables (including segregated recyclables) C&D waste Waste timber Paper and cardboard Metals	Waste Transfer Station	63
23	Gerard Ryan	COR-19-0002-01	Annual: Unknown Total capacity:15,000 Tonnes Closure date : 2026	Soil and Stones -15,000t	Waste Recovery	67
24	Clare Waste and recycling	WFP-CE -08-0002-04	Annual: Unknown Total capacity Unknown Closure date: 2028	n.d	Municipal Waste Recycling	83
25	Joe McMahon	COR-CE-21-0001-01	Annual 6,850t Total capacity 35,000t Closure date: 2026	Soil and Stone 6,100 Mixture of concrete, Bricks and ceramics 750	Waste Recovery	81
26	Tullager Tower Quarries	WFP-CE -11-0002-03	Annual: Unknown Total capacity 50,000t Closure date :2026	Glass Waste 35,000 C&D waste 5,000 Waste Plastic 5,000 End of life Tyres 3000 Waste metals 2,000	Recycling/ Reclamation	76
27	Kieran Kelly Haulage	COR -CE -21-0002-01	Annual: Unknown Total capacity 35,000t Closure date:2026	Soil and Stone 20,000 C&D Waste 5,000	Waste Recovery	97
28	Western Excavations and Groundworks Ltd	COR-CE-21-0003-01	Annual: Unknown Total capacity 25,000t Closure date:2026	Soil and Stone 24,999	Waste Recovery	90
29	Michael King	COR-CE- 21-0004-01	Annual: Unknown Total capacity 25,000t Closure date: 2026	Soil and stone, dredging spoil 24,920 Tonnes	Waste Recovery	70
30	Gerard Burke	COR-CE- 21-0007-01	Annual: Unknown Total capacity 35,000 Closure date: Unknown	Soil and Stone 12,000 Mixtures of Brick, tiles and ceramics 7000	Waste Recovery	81

31	Kieran Kelly haulage	COR-CE-21-0008-01	Annual: Unknown Total capacity:25,000t Closure date : 2026	Soil and Stone 20,000 Mixtures of Brick, tiles and ceramics 5,000	Waste Recovery	32
32	Kieran Kelly haulage	COR-CE-21-0009-01	Annual: Unknown Total capacity 25,000t Closure date: 2026	Soil and Stone 20,000 Mixtures of Brick, tiles and ceramics 5,000	Waste recovery	44
33	Kieran Kelly haulage	COR-CE-21-00010-01	Annual: Unknown Total capacity 25,000t Closure date: 2026	Soil and Stone 20,000 Mixtures of Brick, tiles and ceramics 5,000	Waste recovery	97
34	Kieran Kelly haulage	COR-CE-21-00013-01	Annual: Unknown Total capacity 25,000t Closure date: 2027	Soil and Stone, C&D waste	Waste recovery	70
35	Kieran Kelly Haulage	COR-CE-21-0022-01	Annual: Unknown Total capacity: Unknown Closure date: 2027	Soil and Stone, C&D waste	n.d	60
36	Kieran Kelly Haulage	COR-CE-21-0023-01	Annual: Unknown Total capacity 25,000t Closure date: 2028	Soil and Stone (other than those mentioned) 16,000 Soil and stone 2000 Concrete 2000 Bituminous mixtures 5000	Waste Recovery	80
37	Donal Ward	COR-CE-21-0011-01	Annual: Unknown Total capacity 25,000t Closure date: 2026	Soil and Stone	Soil Recycling	64
38	Glencore Construction Limited	COR-CE-21-0012-01	Annual: Unknown Total capacity 25,000t Closure date: 2026	Soil and Stone -5000	Waste Recovery	80
39	Gerard Ryan	COR-CE-21-0014-01	Annual: Unknown Total capacity 25,000t Closure date:2027	Soil and Stone , C&D waste	Waste recovery	67
40	Gerard Ryan	COR-CE-21-0015-01	Annual: Unknown Total capacity 25,000t Closure date:2027	Soil and Stone , C&D waste	Waste recovery	67
41	Michael Begley	COR-CE-21-0016-01	Annual: Unknown Total capacity :25,000t Closure date :2027	Soil and Stone	Waste Recovery	67
42	Martin Kelly Plant Hire	COR-CE-21-0017-01	Annual: Unknown Total capacity: 25,000t	Soil and Stone , C&D waste	Waste Recovery	86

			Closure date: 2027			
43	Western excavation and ground works	WFP- CE -22-0004-01	Annual:50,000t Total capacity:200,000t Closure date: 2028	Soil and Stone	Waste Recovery	96
44	Clean Irl refuse and recycling Co. Unlimited Company	W0253-01	Annual: 64,600t Total capacity: Unknown Closure date: Unknown	Mixed C&D: 17,500	Waste Recovery and Waste transfer	135
45	Ward and Ward haulage	COR-CE—23- 0002-01	Annual: Unknown Total capacity:35,000t Closure date 2028	Soil and Stone 17000 Mixtures of Brick, tiles and ceramics 2000 Concrete 1000 Bituminous mixtures 1000	Waste Recovery	68
46	Tom Marsh	COR-CE-23-0003-01	Annual: Unknown Total capacity:35,000t Closure date:2028	Soil and Stone 17000 Mixtures of Brick, tiles and ceramics 2000 Concrete 1000 Bituminous mixtures 1500	Waste recovery	70
47	Tom Marsh	COR-CE-23-0003-01	Annual: Unknown Total capacity: 35,000t Closure date: 2029	Soil and Stone 20,000 Mixtures of Brick, tiles and ceramics 1,500 Concrete 2,500	Waste recovery	74
48	Mc Grath heavy Transport	WFP-CE-24-0001-01	Annual: Unknown Total capacity: Unknown Closure date: 2029	Soil and Stones Dredging Spoil C&D waste	Waste recovery	67
County Tipperary						
49	Tipperary County Council	W0078-01	Annual: 37,000t Total capacity: Unknown Closure date: Unknown	Household Commercial/Industrial waste Sludge C&D waste	Landfill	Ballaghveny Landfill, Ballymackey (89)
50	Tipperary County Council	W0078-03	Annual: 49,000t Total capacity:446,246m ³ Closure date	Municipal and commercial waste Green waste for composting Non-hazardous C&D waste Pre-treated Sludge	Landfill	Ballaghveny Landfill, Ballymackey (89)

51	Tom and Damien Byrne	COR-T-21-0002-01	Annual: Unknown Total capacity:3,833t Closure date:2026	Mixed Municipal Waste Biodegradable kitchen and Canteen Waste	Waste Treatment	Ballymackeogh Newport (63)
52	BIGbin Waste Tech Ltd	COR-T-21-0005-01	Annual:900t Total capacity: Unknown Closure date:2026	Municipal Waste	Waste Recovery	V94 TPD7(63)
53	BIGbin Waste Tech Ltd	COR-T-21-0006-01	Annual:900t Total capacity: Unknown Closure date:2026	Mixed Municipal Waste	Waste recovery	E41 F9N1(80)
54	Phelan Skip Hire and Waste Management Ltd	COR-T-21-0007-01	Annual: Unknown Total Capacity: 7,000 Closure date:2026	Concrete 1000 Bricks 1000 Tiles and Ceramics 500 Mixture of concrete, bricks, tiles and ceramics 500 Wood 500 Soil and Stone 1000 Mixed C&D 2,500	Waste Recovery	Ballylynch Carrick on Suir(85)
55	Michael and Breda O'Neill	WFP-T-22-0001-01	Annual:13,000t Total capacity:65,000 Closure date:2027	Concrete 500 Bricks 500 Mixture of concrete, bricks, tiles and ceramics 1,000 Soil and Stone 11,000	Waste Recovery	Ballinamore Clonmel (73)
56	Michael and Breda O'Neill	WFP-T-22-0003-01	Annual:6,250t Total capacity: 6,250 Closure date:2027	Soil and Stone 5,300 Mixture of concrete, bricks, tiles and ceramics 950	Waste Recovery	Ballyknockane Clonmel (74)
57	Falconhurst Ltd	COR-T-17-0001-02	Annual: Unknown Total capacity:14,570 Closure date 2027	Soil and Stone 14,290 Dredging Soil 100 Inert waste 180	Waste Recovery	E45 DE04 (78)
58	Rory McDonnell	COR-T-22-0001-01	Annual: Unknown Total capacity:19,700t Closure date:2027	Soil and Stone Dredging Spoil	Waste Recovery	Lahesseragh Ballintoher (83)
59	Quality Recycling Limited	WFP-TS-12-0002-06	Annual:50,000t Total capacity: Unknown Closure date 2028	Mixed Municipal Waste Soil and Stone Packaging waste Biodegradable Waste	Waste Recovery, Civic Amenity Site	E32 DR74 (84)

				Uncontaminated mixed C&D waste		
60	English Tarmac Ltd	WFP-T-19-0002-02	Annual: 17,500T Total capacity:88,733t Closure date: 2028	Soil and Stone Mixed C&D Waste	Waste Recovery	Ballynilard (45)
61	Seamus Walsh Plant Hire Ltd T/A	COR-T-09-0001-04	Annual: Unknown Total capacity:25,000t Closure date:2028	Soil and Stone Mixed C&D Waste	Waste Recovery	Graigue Ballypatrick (76)
62	Killeenyarda Construction Ltd	WFP-T-13-0001-03	Annual: Unknown Total capacity: Unknown Closure date:2029	Soil and Stone Mixed C&D Waste	Waste Recovery	Cabragh Business Park Ballycurrane (79)
63	Andy Fogarty Sand and Gravel Ltd	WFP-T-20-0001-03	Annual: Unknown Total capacity: Unknown Closure date:2028	Soil and Stone Mixture of concrete, bricks, tiles and ceramics	Waste Recovery	E45 RX44 (81)
County Kerry						
64	Jimmy O'Mahony	WFP-KY-20-0008-01	Annual:25,000t Total capacity:89,000t Closure date:2026	Soil and stones	Soil Recovery	Gortanahaneboy East Rathmore (45)
65	Dermot Clancy Landfill Ltd	WFP-KY-21-0001-01	Annual:24,000t Total capacity 120,000t Closure date:2026	Soil and Stone 108,000 Inert demolition waste 12,000	Waste Recovery	Kealid Moyvane(64)
66	McSweeney Bros. Quarries Ltd	WFP-KY-21-0003-01	Annual:25,000t Total capacity:125,000t Closure date:2026	Soil and Stone including topsoil	Soil Recovery	Kilcarra More Duagh (59)
67	Brian Bruton	COR-KY-11-0008-03	Annual: Unknown Total Capacity:25,000t Closure date:2026	Soil and Stones	Soil Recovery	Dromdoohig More Killarney(63)
68	O'Driscoll Plant Hire Ltd	COR-KY-16-0001-02	Annual: Unknown Total capacity: 10,000t Closure date:2026	Soil and Stones 9,500 Concrete and Concrete Blocks 100 Bricks 100 Tiles and Ceramics 100 Mixture of concrete, bricks, tiles and ceramics 200	Waste Recovery	Coramore Valentia Island(124)

69	Farran Plant Hire Ltd.	WFP-KY-21-0008-01	Annual:25,000t Total capacity:125,000t Closure date: 2026	Soil and Stone	Soil Recovery	Cloontarriv Gortatlea(63)
70	Eugene McCarthy	WFP-KY-17-0006-02	Annual:25,000t Total capacity 37,000t Closure date :2027	Soil and Stone 33,000 Concrete 4000	Waste Recovery	Deerpark Killarney(62)
71	Killarney Waste Disposal Unlimited Company	WFP-KY-15-0007-03	Annual: Unknown Total capacity:13,000 Closure date:2027	Soil and Stone 10,000 Waste concrete 3,000	Waste Recovery	Sheans East Killarney(62)
72	Astellas Ireland Co Limited	COR-KY-22-0003-01	Annual :30t Total capacity: Unknown Closure date:2027	Biodegradable Kitchen and garden waste	Waste Treatment/ recovery	V93 FC86(79)
73	Dillon Waste Unlimited Company	WFP-KY-22-0005-01	Annual:50,000t Total closure: Unknown Closure date: 2027	Mixed Municipal Solid Waste Household /Domestic /Recyclable Waste Commercial Waste Industrial waste C&D Waste	Waste Treatment/ recovery	V92 PCA2(76)
74	Brendan Cronin	WFP-KY-22-0003-01	Annual:25,000t Total capacity:55,000t Closure date :2027	Soil and stones	Soil Recovery	Mastergeeha Kilcummin(57)
75	Gerard Naughton & Sons Ltd	WFP-KY-22-0007-01	Annual: Unknown Total capacity:25,000t Closure date:2027	Soil and Stone 18,000 Dredging Spoil 900 Track ballast 900 Concrete 2,200 Bricks 1,600 Tiles and Ceramics 500 Mixture of concrete, bricks, tiles and ceramics 900	Waste Recovery	Nauntinane Killorglin(79)
76	BIGbin Waste Tech Ltd	COR-KY-22-0006-01	Annual:1000t Total capacity: Unknown Closure date:2027	Mixed Municipal Waste 400 Mixed dry recyclables 300 Biodegradable kitchen and canteen waste 300	Waste Recovery	V31 DW99(67)

77	Higgins Waste & Recycling Services Ltd	WFP-KY-21-0002-01	Annual:25,000t Total capacity:93,501 Closure date: 2026	Soil and Stone 84,150 Waste Concrete and Inert rubble 9,351	Waste Recovery	77km
78	Higgins Waste & Recycling	WFP-KY-23-0001-01	Annual:25,000 Total capacity:80,000 Closure date:2028	Soil and Stone	Waste Recovery	Rathscannell Abbeydorney (91)
79	Brendan McGillicuddy	COR-KY-23-0001-01	Annual: Unknown Total capacity:25,000 Closure date 2028	Soil and Stone	Waste Recovery	Owenagarry Killorglin(77)
80	Flor Mc Carthy	WFP-KY-22-0002-02	Annual; Unknown Total capacity: Unknown Closure date:2027	Soil and Stone	Waste Recovery	Killowen Kenmare(72)
81	Kenmare Plant Hire Ltd.	WFP-KY-18-0007-02	Annual:25,000t Total capacity 38,327t Closure date :2028	Soil and Stone 18, 485 Bricks 1,000 Tiles/ceramics 1,000 Concrete 1,400 Concrete, bricks, tiles 16,442	Waste Treatment/ recovery	Claddanure West Kenmare(71)
82	Curreal Ltd	WFP-KY-23-0005-01	Annual:25,000t Total capacity: Unknown Closure date 2028	Soil and Stone 42,500 Inert waste 7,500	Waste Treatment/ recovery	Caherciveen(112)
83	Dillon Waste Unlimited Company	WFP-KY-10-0001-06	Annual:50,000t Total capacity: Unknown Closure date:2028	Mixed Municipal Waste Mixed Municipal Waste (Dry recyclables) Biodegradable Waste Mixture of concrete, bricks, tiles and ceramics	Waste Treatment/ recovery	V92 XK59(77)
84	Higgins Waste & Recycling Services Ltd.	WFP-KY-18-0001-02	Annual:16,500t Total capacity: Unknown Closure date 2028	Waste Metal Hydraulic Oil Paper Packaging Mixture of concrete, bricks, tiles and ceramics	Waste Treatment/ recovery	V92 Y519(77)
85	Green & Gold Composting Ltd	WFP-KY-23-0004-02	Annual:25,000t Total capacity: 138,961t Closure date:2028	Soil and Stone 81,920 Inert Construction & Demolition 57,041 Waste ,Biowaste 3,000	Waste Recovery	V31 K577(72)

86	Brendan Cronin	WFP-KY-23-0006-01	Annual:25,000t Total capacity:50,000t Closure date :2028	Soil and Stone 45,000 Mixture of concrete, bricks, tiles and ceramics 5000	Waste Recovery	Clashnagarrane Kilcummin(59)
87	Dermot Clancy Landfill Ltd	WFP-KY-23-0007-01	Annual:25,000t Total capacity: 74,412t Closure date:2028	Soil and Stone 66,971 Mixture of concrete, bricks, tiles and ceramics 7,441	Waste Recovery	Lissaniska Kilmorna (60)
88	Curreal Ltd	WFP-KY-20-0007-01 (T)	Annual: Unknown Total capacity: Unknown Closure date; 2026	Soil and Stones Concrete		Inch East Lisselton (73)
Cork City						
89	Elmwick Ltd	WFP-CC-76-2023	Annual: 5,200 Total capacity: Unknown Closure date: 2028	Soil and Stone: 250 Wood: 300 Bitumen: 50 Concrete: 150 Mixed C&D: 1,000	Waste recovery	34
90	Mac Plant & Civils Ltd	WFP-CK-23-0234-01-A1	Annual: 24,999 Total capacity: 82,417 Closure date: 2028	Soil and Stone	Waste recovery	Carhoo North and Carhoo South, Townlands (44km)
91	O'Kelly Brothers Civil Engineering Co Ltd - Mobile Plant	COR-CC-2024-15-R1	Annual: Unknown Total capacity: 6,000 Closure date: 2029	Concrete	Waste recovery	46
County Cork						
92	Enva Ireland Limited	W0145-02	Annual:34,000t Total capacity Unknown Closure date: Unknown	Hazardous Waste Non -Hazardous waste	Hazardous Waste transfer station	38.56
93	MMD Construction Ltd	COR-CC-06/2018	Annual: Unknown Total capacity 9,999t Closure date: Unknown	C&D Waste	Waste Recovery	34km
94	Veolia Environmental Services Technical Solutions Limited	W00050-02	Annual: 72,000 Total capacity: Unknown Closure date: Unknown	Hazardous C&D waste Industrial non-hazardous solids Hazardous waste	Hazardous Waste transfer station	Corrin, Fermoy, Co Cork, Cork. (25km)

17.5 Characteristics of the Proposed Development

The Proposed Development will cater for future population growth and industrial development in the area, in line with population projections for Limerick as set out in the National Planning Framework (NPF) Implementation Roadmap and the Southern Region Regional Economic Spatial Strategy (RSES). It will provide 20% Headroom allowance, in line with Uisce Éireann guidelines for large urban settlements. It will also ensure the WWTP continues to comply with requirements of the EPA Wastewater Discharge License (WWDL), Urban Wastewater Treatment Regulations (UWWTR) and other relevant Uisce Éireann Guidelines.

The initial upgrade works will cater for the +10-year growth projections, increasing to 285,000 PE including a future industrial committed load of 27,500 PE. There will be provision made in the civil infrastructural development of the plant (tank sizing and pipework) for the +25-year growth projections of 325,000 PE. However, a planning review will be required before any uplift above 285,000 PE can be instated.

Decommissioning of the Proposed Development is not envisaged at this time. Given the scale of the existing infrastructure, it is anticipated that Uisce Éireann will continue phased development to salvage and re-use as much of the installed infrastructure as possible as the demand in Limerick grows. Consolidating additional infrastructure at this location is considered beneficial and will help minimise future capital investment. The proposed layouts are designed to optimise land take and preserve capacity for future expansion. On this basis, decommissioning has been screened out.

The Proposed Development will generate a range of waste and resource streams during the construction and operational phases. These include excavation materials, construction waste, surplus organic materials, municipal waste, and operational sludge-related materials. The type and quantity of waste generated will depend on the scale of excavation, the construction methods employed, the materials used, and the ongoing maintenance requirements of process equipment.

The potential for waste to be generated during the excavation, construction and operation phases is assessed. Construction waste will be the primary type of waste generated due to the construction of the Proposed Development. This waste will also be present during the operational maintenance phase. Additionally, small quantities of municipal-type waste will be generated during construction (from site and office staff) and operation (associated with site and office staff). The solid wastes typically generated during the operation of the facility include sludge from wastewater treatment, grit and other materials from the inlet works screening processes, maintenance and office wastes.

17.5.1 Excavation Materials

During construction phase, excavation works will generate significant volumes of soil and stones, including subsoil, topsoil and made ground. Localised areas of bituminous material may also be encountered where existing hardstanding or pavements are removed. These materials will be assessed for potential reuse within the works, with surplus quantities transported to suitably licensed recovery facilities.

17.5.2 Construction Waste

Construction waste will arise from concrete, masonry, metals, timber, packaging materials, and surplus construction products. Segregation will be implemented on-site to maximise reuse and recycling in accordance with the waste hierarchy. Appropriate licensed facilities exist in the region for the treatment and recovery of these materials.

17.5.3 Organic Vegetation Waste

Site clearance activities may generate organic waste such as shrubs, grass, and tree trimmings. These will be sent to authorised organic waste facilities for composting or biological treatment. Adequate regional capacity exists for the management of this waste stream.

17.5.4 Municipal Waste

Small volumes of municipal-type waste will arise from construction personnel (e.g., office waste, canteen waste and packaging). These wastes will be segregated at source, where feasible, into appropriate fractions (e.g., dry mixed recyclables, biodegradable waste and residual waste) and collected by a suitably authorised waste contractor.

17.5.5 Operational Waste

During operation, waste streams will primarily comprise screenings (rag), grit, non-hazardous maintenance waste, and residual office and administration waste.

The Regional Bioresource Centre (RBC) facility will accommodate increased sludge-related and liquid waste imports, including approximately 14 sludge imports per day and 13 leachate or wastewater imports per day, which contribute to sludge generation within the treatment process. Dewatered sludge cake will be generated as part of the wastewater treatment process and temporarily stored on-site prior to removal by an authorised contractor for off-site lime stabilisation and conversion to a Class A biosolid suitable for beneficial reuse. Sludge exports will comprise approximately 7 movements per day of dewatered sludge cake transported off-site for treatment.

Additional operational wastes will arise intermittently during maintenance activities, including small volumes of construction and demolition (C&D)-type waste associated with equipment replacement or refurbishment.

17.6 Potential Impacts

This section presents potential impacts that may occur due to the Proposed Development, in the absence of mitigation, but taking into account the best practice measures set out previously in Section 17.2.6 and expanded upon in this Section. This informs the need for mitigation or monitoring to be proposed (refer to Section 17.5). Predicted residual impacts (taking into account any additional proposed mitigation and/or monitoring) are then presented in Section 17.6.

17.6.1 Do Nothing Scenario

In the Do-Nothing scenario, the proposed upgrade of the wastewater treatment plant (WWTP), including increased treatment capacity (PE) and enhanced stormwater handling, would not be implemented.

The existing facility would continue to operate within its current capacity constraints, while population and industrial growth increase loading pressures over time. This would reduce operational efficiency and limit the plant's ability to manage wastewater and associated residuals, including sludge.

Sludge would continue to be managed without the benefit of the proposed Regional Bioresource Centre (RBC), limiting opportunities for centralised treatment and resource recovery (e.g. biosolids and energy generation). This would result in a less efficient system with reduced circular economy outcomes.

Without stormwater capacity upgrades, the plant would remain more susceptible to hydraulic overloading during storm events, potentially leading to operational inefficiencies and increased generation of screenings and grit.

At a regional level, existing waste management infrastructure would continue to operate; however, its capacity to accommodate future increases in sludge and liquid waste arisings may become constrained. This could lead to increased transport distances and greater reliance on external treatment facilities.

Overall, while waste would continue to be managed, the absence of the Proposed Development would limit efficiency, resource recovery and long-term capacity. The resulting impact is therefore considered Slight to Moderate Negative.

17.6.2 Construction Phase

C&D waste is defined as waste which arises from construction and demolition activities. There will be no demolition activities carried out as part of the development, however, dismantling and removal of redundant plant and equipment will be undertaken.

Typical construction wastes, which are likely to arise during the Construction Phase of the Proposed Development, are set out in Appendix 17.1 List of Waste Codes for Construction and Demolition Wastes in Volume 4 of this EIAR, including EPA LoW codes.

The most environmentally sustainable means of managing construction waste and excavated material is its prevention and minimisation. Refer to Section 17.2.6 for the principles of waste management. The appointed contractor will be responsible for implementation of these principles for the Proposed Development. In recent years there has been a shift in focus on best practice waste management and waste minimisation in construction and an increase in the reuse of construction by-products in projects.

17.6.2.1 Site Clearance

Prior to commencing work, the contractor will need to strip surface material within the working areas for the Proposed Development. This will comprise soils, rock, topsoil, vegetation, etc., which is typical of a project of this nature and scale. This material will be reused within the Proposed Development in so far as reasonably practicable or transferred for recovery or disposal at appropriately authorised waste facilities in respect of which a waste permit or a waste licence is granted.

17.6.2.2 Site Clearance – Vegetation

The appointed contractor will conduct site clearance works, including the felling of trees and removal of vegetation from the working areas within the Proposed Development. This will involve the removal of trees, shrubs, and hedges to facilitate construction activities. Vegetation clearance to facilitate construction will be minimised and carried out in accordance with the mitigation measures for the protection of biodiversity outlined in Chapter 13 (Biodiversity Terrestrial).

Most of the removed vegetation will be mulched for reuse on-site or transported to a licensed composting facility. The capacity of available waste facilities far exceeds the projected volume of vegetation, ensuring none will be sent to landfill or incineration without energy recovery. As a result, regional landfill and incineration capacities will remain unaffected. The receptors potentially impacted by the site clearance process and disposal are deemed to be of low importance and rarity at a local scale, with no significant change in their sensitivity.

Organic waste arising from site clearance will be managed through on-site mulching or recovery at appropriately authorised composting facilities, as described previously. As this material will be recovered and does not require disposal to landfill or incineration, the magnitude of impact on regional waste management capacity is assessed as No Change. The significance of the site clearance works is therefore Imperceptible and Not Significant in EIA terms.

17.6.2.3 Excavation

Topsoil, soil, rock and naturally occurring material excavated in the course of construction activities will be reused within the Proposed Development where feasible, subject to further testing to determine if materials meet the specific engineering standards for their proposed end-use. Where naturally occurring, material is used for the purpose of construction in its natural state within the Proposed Development. This material is not deemed to be a waste in accordance with Article 2 of the Waste Directive 2008/98/EC, the European Communities (Waste Directive) Regulations, 2011 and Section 3 of the Waste Management Act 1996, as amended. Reuse must be certain, there must be no intention or requirement for it to be discarded, and no further processing required in order for it to be reused.

All excavated material will be disposed of at a suitable licensed facility in respect of which a waste permit or a waste license is granted if there is no opportunity for reuse on site. The majority of the overburden material within the storm water storage tank footprint is unlikely to be suitable for reuse as an engineered fill. Excavations in made ground will be monitored by an appropriately qualified person to ensure that any evidence

of contamination (e.g. asbestos, hydrocarbons, etc.) encountered are identified, segregated and appropriately contained.

One of the main types of C&D wastes (and waste cost) generated from construction sites is soil and stone removed from the site excavations. It is imperative that the Contractor considers this element at the outset with a view to managing disposal/recycling of their stream in so far as possible.

TABLE 17-7 ESTIMATED BULK MATERIALS QUANTITIES

Item	Unit	Bunlicky	Corcanree	Bioresource Centre	Total
Topsoil Excavation	m3	13,530	2,100	1,860	17,490
Deep Excavation	m3	15,980	15,500	0	31,480
Total	m3	29,510	17,600	1,860	48,970

Excavated material will predominantly consist of soil and stones, as confirmed by the ground investigation results. No contaminated or hazardous soils were encountered during the site investigations, and none are expected to arise during excavation. Localised areas of made ground or bituminous surfacing may be present, but these materials are classified as non-hazardous.

Approximately 48,970 m³ of excavated material will be generated during construction of the Proposed Development. All excavated material will be managed as non-hazardous in accordance with Council Directive 99/31/EC and will be re-used on site as far as possible. All the excavated material that is not suitable for reuse will be transferred off-site to authorised recovery or disposal facilities as required.

Waste will only be transferred by a permitted waste collection contractor and delivered to an authorised waste facility holding the appropriate Certificate of Registration, Waste Facility Permit or Waste Licence for the specific waste types accepted. Suitable authorised facilities are available to accept soil and stone depending on its quality.

17.6.2.4 Construction Waste

Construction works, site offices and temporary works facilities are also likely to generate waste. General construction waste can vary significantly from site to site but typically will include the following non-hazardous fractions:

- Soil and stone;
- Concrete, brick, tiles, and ceramics;
- Bituminous mixtures;
- Metals;
- Wood; and
- Packaging.

The hazardous waste streams which could arise from construction activities include the following:

- Waste electrical and electronic equipment (WEEE) components;
- Batteries;
- Wood preservatives;
- Liquid fuels; and
- Contaminated soil.

Also included within this definition are surplus and damaged products and materials arising in the course of construction work or used temporarily during the course of on-site activities. In the case of the Proposed

Development, the most likely type of construction waste will be surplus concrete and unusable or damaged pipe segments which may arise on site.

Removal of temporary works

Following completion of construction, temporary sheet piles will be extracted and removed. Excavated material will be hauled off site. This material will be delivered for recovery or disposal at licenced and/or permitted facilities in respect of which a waste permit or a waste licence is granted.

With the proposed on-site and off-site waste management measures, the change in regional landfill or incineration capacity without energy recovery is predicted to be less than 1%, rendering the magnitude of the impact negligible.

Consequently, the significance of the effect is deemed imperceptible and is not considered.

17.6.2.5 Surface Water Run Off

Temporary drainage measures (e.g. silt traps, settlement ponds and temporary drainage channels) will be installed during the construction phase to control sediment-laden runoff. These features will be subject to regular inspection and maintenance, including periodic de-silting as required throughout the construction phase, with final clean-out undertaken on completion of the works.

Contaminated sediment generated during the Proposed Development (e.g. from excavation, dewatering and temporary drainage systems) will be removed from site by an authorised waste contractor and transported to appropriately authorised facilities for treatment or disposal. Given the availability of suitable licensed waste management facilities and the temporary nature of these activities, no significant impact on waste management infrastructure is anticipated.

During the construction phase, the on-site wheel washes, oil/petrol interceptors, vortex grit separators, and silt bags will accumulate small volumes of sediment. The quantities of waste generated are expected to be very small, with the regional landfill and incineration capacity without energy recovery likely to decrease by less than 1%. Therefore, the magnitude of the impact is considered low.

The significance of the effect has therefore been determined to be imperceptible.

17.6.2.6 Municipal Waste

During construction, small amounts of municipal waste will be generated by site personnel, including food waste, packaging and office waste from welfare and site facilities. The existing WWTP will remain operational throughout the construction phase, and wastewater treatment processes will continue as normal.

Routine maintenance activities during construction will also generate small quantities of waste, primarily municipal-type waste associated with site personnel.

The quantities of waste produced by individual staff are expected to be minimal. The quantities of waste generated during the Proposed Development will be managed through appropriately authorised waste facilities. Given the availability of suitable licensed facilities within the region, no significant impact on waste management infrastructure is anticipated. The magnitude of impact is therefore Negligible and the resulting effect is Imperceptible and Not Significant.

17.6.3 Operational Phase

During operation, as well as indigenous sludge generated by the WWTP, the Proposed Development will accept sludge and liquid waste streams from the catchment and from other locations within the region for treatment. The sludge will undergo advanced anaerobic digestion, incorporating pre-treatment (e.g. thermal hydrolysis) followed by digestion to stabilise the material, resulting in the production of Class A biosolids and enhanced biogas production. The process will enhance the efficiency of sludge treatment and increase resource recovery capacity at the site.

The Proposed Development will therefore increase the capacity for sludge management within the region, facilitating the centralised treatment and recovery of sludge. This represents a positive development in terms of regional waste management infrastructure and supports circular economy objectives in line with the National Waste Management Plan for a Circular Economy 2024–2030 and the National Wastewater Sludge Management Plan.

17.6.3.1 Output of Resources

Bio Solids

The Proposed Development will produce Class A biosolids suitable for beneficial reuse in agriculture. These biosolids will be managed in accordance with applicable regulatory requirements and, while subject to waste controls during handling and transport, are considered a recovered material suitable for use as a nutrient-rich resource.

The beneficial reuse of biosolids supports circular economy objectives by returning nutrients to the soil, reducing reliance on manufactured fertilisers, and diverting material from disposal.

Biosolids will be transported off-site by authorised contractors to appropriately authorised storage or treatment facilities and subsequently applied to suitable lands in accordance with the European Communities (Use of Sewage Sludge in Agriculture) Regulations 1998, the Waste Management Act 1996 (as amended), the European Union (Good Agricultural Practice for Protection of Waters) Regulations 2022, and the National Wastewater Sludge Management Plan.

Increased process capacity at the RBC will support centralised sludge management within the Southern Region, enhance resource recovery, and result in a positive impact on regional sludge management.

Biogas

The anaerobic digestion process will produce biogas, primarily composed of methane (CH₄) and carbon dioxide (CO₂), with trace quantities of hydrogen sulphide (H₂S) and ammonia (NH₃). The biogas will be captured and utilised on-site for electricity and heat generation, reducing reliance on external energy sources.

At present, biogas recovery at the facility contributes approximately 40% of the WWTP's energy requirements. The Proposed Development will enhance anaerobic digestion capacity and efficiency, resulting in increased biogas production and energy recovery. This will improve the overall energy performance of the facility, with the potential for the site to move towards energy self-sufficiency over time, subject to the availability of sufficient sludge inputs, including imports.

The increased recovery and utilisation of biogas represents a positive impact, contributing to reduced greenhouse gas emissions, improved energy efficiency and increased use of renewable energy.

17.6.3.2 Screening / Grit Removal

Screenings and grit arising from the inlet works, stormwater overflow structures and grit removal processes will be removed from the treatment systems and stored temporarily on-site in covered skips prior to collection.

These materials will be collected by suitably authorised contractors and transported to appropriately authorised facilities for treatment or disposal, in accordance with the Waste Management Acts 1996 (as amended).

The Proposed Development will result in an increase in wastewater loading and associated residuals; however, the management of screenings and grit will remain consistent with existing practices. Given the availability of appropriate waste management infrastructure, no significant impact is anticipated.

17.6.3.3 Municipal Waste

Municipal-type waste will be generated during the Operational Phase from day-to-day activities at the facility, including staff welfare and administrative functions (e.g. office waste, canteen waste and packaging), as well as minor quantities arising intermittently during routine maintenance activities.

These wastes are typical of wastewater treatment plant operations and are consistent with existing site activities.

Waste will be segregated at source, where practicable, and collected by appropriately authorised waste contractors for recovery or disposal at licensed facilities.

Given the relatively small quantities involved and established management practices, the magnitude of impact is assessed as Negligible. The resulting effect is therefore Neutral and Not Significant.

17.7 Mitigation Measures

17.7.1 Construction Phase

A suite of management measures is outlined which the appointed contractor will implement, and, in any event, the appointed contractor will ensure that waste arisings will be managed in accordance with the waste hierarchy and in compliance with the provisions of the Waste Management Act 1996, as amended.

A Construction Resource and Waste Management Plan (CRWMP) will be developed by the appointed contractor(s) prior to commencing works on site and in line with the Best Practice Guidelines for the Preparation of Resource & Management Plans for Construction and Demolition Projects (EPA 2021b). The CRWMP outlines how waste arising during the Construction Phase of the Proposed Development will be managed in a way that ensures compliance with the provisions of the Waste Management Act 1996, as amended. The following is an indicative summary of the content of the CRWMP:

- Description of the project;
- Wastes arising including procedures for minimisation/reuse/recycling;
- Estimated cost of waste management;
- Roles including trainings and responsibilities for construction waste;
- Procedures for education of workforce and plan dissemination programme;
- Record keeping procedures;
- Waste collectors, recycling and disposal sites including copies of relevant permits and licences; and
- Waste auditing protocols. Using the information identified in this section the contractor will be required to develop, implement and maintain a CRWMP during the construction of the Proposed Development.

In addition to the inherent design measures which will be implemented during construction, the following mitigation measures will also be implemented:

Waste Prevention and Material Management

- The Contractor will minimise waste generation and disposal insofar as reasonably practicable, with priority given to prevention and reuse in accordance with the waste hierarchy.
- Opportunities for reuse of materials, by-products and wastes will be identified and implemented throughout the construction phase.
- Excavated materials will be managed to maximise on-site reuse, including balancing cut and fill and reusing suitable materials for backfilling, drainage layers, landscaping and site levelling, subject to appropriate testing.
- Where the off-site reuse or recovery of soil and stone is proposed, an Article 27 by-product notification will be prepared and submitted to the EPA, as required. Notifications will be submitted in advance of excavation works, allowing sufficient time for regulatory approval and coordination with receiving sites.
- 'Just-in-time' delivery of materials will be implemented, where practicable, to minimise material wastage.
- The Contractor will engage with supply chain partners to minimise packaging and promote reuse of packaging materials where feasible.

Segregation, Reuse and Recycling

- Where reuse on-site is not feasible, materials (including excavation materials) will be prioritised for recovery or recycling over disposal.

- Waste materials such as metals, timber, glass and packaging will be segregated at source and stored in clearly labelled containers (including use of colour coding and signage) to maximise recycling rates and material quality.
- Suitable materials from site clearance and existing infrastructure (e.g. stone, concrete, paving materials and vegetation) will be reused on-site where practicable.
- Materials that cannot be reused on-site (e.g. asphalt or tarmac) will be sent to appropriately authorised facilities for recovery or recycling.

Waste Handling, Storage and Transport

- All waste materials will be stored in designated areas on-site prior to removal.
- Hazardous wastes (e.g. waste oils and fuels) will be stored in secure, bunded areas prior to collection.
- Waste will be transported by authorised waste collectors in accordance with the Waste Management (Collection Permit) Regulations, 2007, as amended.
- Waste will be delivered to appropriately authorised waste facilities in accordance with the Waste Management Acts 1996–2022, as amended.
- Any off-site interim storage or recovery of excavated materials will only take place at facilities holding the appropriate waste authorisations.

Waste Recording and Monitoring

- The Contractor will maintain records of the types and quantities (in tonnes) of waste and materials generated and removed from site.
- Records will include details of the destination facilities, including their name, address and authorisation status, and will identify whether materials are recovered or disposed.

17.7.2 Operational Phase

The export of Class A biosolids and the management of biogas and energy production during operation will be undertaken by the appointed operator in accordance with Uisce Éireann procedures, EPA guidance and all applicable regulatory requirements. The facility will operate under an EPA Wastewater Discharge Licence, which sets out conditions relating to environmental performance, monitoring and reporting.

17.7.2.1 Mitigation

- Proper Waste Handling and Disposal by Contractors:** All operational waste, including screenings, grit, residual maintenance waste and biosolids, will be managed by permitted waste contractors holding valid NWCPO Waste Collection Permits and delivering to authorised EPA-licensed facilities. Contractors will be required to provide waste documentation (e.g., waste transfer forms, certificates of acceptance, and treatment records) to demonstrate full compliance with statutory requirements.
- Staff Training and Awareness:** Operational staff will receive training on correct waste segregation, handling, labelling and storage procedures. Training will cover the Waste Management (Collection Permit) Regulations, Uisce Éireann procedures, emergency response actions, and site-specific environmental controls. Refresher training will be provided periodically, and induction training will be mandatory for all new site personnel.
- Compliance with Guidelines and Procedures:** Waste management activities will comply with Uisce Éireann operational procedures, EPA guidance (including biosolids reuse requirements), and the waste hierarchy. Sludge/biosolids will be handled and exported in accordance with the National Wastewater Sludge Management Plan, ensuring appropriate stabilisation (e.g., lime treatment) prior to agricultural reuse. All storage areas, waste containers and transfer points will be managed to prevent odour, spills, contamination, or environmental nuisance.

17.7.3 Monitoring

During construction

Monitoring required as part of the Construction Resource and Waste Management Plan (CRWMP), as outlined in Sections 17.6.1 and/or the Construction Environmental Management Plan (CEMP) (Appendix 4.1, Volume 4 of this EIAR), will be undertaken and recorded by the Contractor(s).

During operation

Monitoring of sludge generation, treatment and management will be undertaken in accordance with the operational procedures for the WWTP and the National Wastewater Sludge Management Plan (NWSMP).

The Environmental Protection Agency (EPA) is the environmental regulator of Uisce Éireann and regulates wastewater treatment plants through the Wastewater Discharge Licensing regime. Compliance with licence conditions, including monitoring, reporting and environmental performance, is subject to EPA oversight and enforcement.

No additional monitoring is considered necessary in respect of other operational waste streams, which are managed in accordance with standard operational procedures and applicable regulatory requirements.

17.8 Residual Impacts

Following implementation of the mitigation described in Section 17.5 the residual effects are as follow:

17.8.1 Construction Phase

The residual effects of excavation waste are expected to be slight, negative and short-term. The impact of general construction waste of the Proposed Development is expected to be imperceptible and short term.

17.8.2 Operational Phase

The residual effects of operational phase of the Proposed Development are expected to be imperceptible and long-term.

17.9 Cumulative Impacts and Interactions

Short term impacts due to construction waste removal are discussed in Chapter 06 (Traffic and Transport) in Volume 2 of the EIAR.

A planning search was undertaken to identify other proposed developments in the vicinity of the Limerick WWTP and Corcanree Pumping Station. No projects were identified that would give rise to significant cumulative effects on waste generation or waste management when considered in combination with the Proposed Development.

The RBC upgrade includes measures that promote resource recovery, including the production of Class A biosolids for beneficial reuse and the generation of biogas for on-site energy recovery. These measures interact positively with national climate and carbon reduction objectives by reducing reliance on fossil fuels, supporting renewable energy generation, and diverting organic material from disposal.

The recovery and reuse of biosolids also reduces the need for manufactured fertilisers, resulting in indirect greenhouse gas emission savings. These interactions are consistent with the objectives outlined in the Climate chapter of the EIAR and the National Waste Management Plan for a Circular Economy 2024–2030

The specific lands that will be utilised for the landspreading of biosolids produced at the Limerick RBC cannot be identified at this stage. Suitable lands are selected on an ongoing basis, taking into account nutrient requirements and site-specific conditions. Uisce Éireann ensures that all landspreading activities comply with the requirements of the National Wastewater Sludge Management Plan (NWSMP) and all relevant legislation.

17.10 Difficulties encountered in Compiling Information

There were no difficulties encountered when completing this chapter.

17.11 References

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