20. Resource & Management

20.1 Introduction

As set out in Chapter 1 of this updated EIAR, Chapter 20 of this updated EIAR assesses the management of resources and the potential effects of the waste generated during the construction and operational phases of the Project. This chapter forms part of the response to the request by An Bord Pleanála (ABP) for further information in December 2023 where they (in addition to a number of other requests) requested Galway City Council (GCC) to "*Update the Environmental Impact Assessment Report*".

This individual chapter did not form part of the 2018 EIAR submitted to ABP in October 2018 as this topic was addressed in Chapter 7, Construction Activities. However, since 2018, additional EIAR guidelines have been published which provide further detail around the consideration of waste as an environmental factor to be considered in EIARs. Furthermore, additional policy and guidance documents have come into force since 2018 which set out Irelands policy for waste planning and resource and management so that circular economy principles and climate action is embedded in such public policy. Many of these policy and guidance documents are noted in the Climate Action Plan 2024 (CAP24)[1]. Further detail on these policy and guidance documents is presented in Section 20.2. Therefore, whilst this chapter comprises some original text, it also updates the waste assessment undertaken in the 2018 EIAR in line with current guidance and policy and forms part of this updated EIAR. The Project is described in full in Chapter 5, Project Description and Chapter 7, Construction Activities of this updated EIAR.

The following aspects of the Project are particularly relevant to the resource and waste assessment:

- **Design:** throughout the design of the Project, consideration has been given to the minimisation of resource usage and the generation of waste through retention of material on site and material reuse
- **Construction phase:** waste will be generated from site clearance, demolition and excavation. General construction waste will also be generated during the construction phase. During the construction of the Project, material usage will be minimised and materials will be reused where possible
- **Operational phase:** Project related maintenance activities will also generate minor quantities of waste during the operational phase

The use of resources and the potential for waste and surplus materials to be generated during the construction and operational phases of the Project are assessed herein. The potential environmental effects of the use of resources and the generation and management of solid waste arisings are examined in the context of the existing local, regional and national resource and waste management environment. Mitigation measures are identified, where necessary, to reduce the impact of resource use and waste generation from the Project during the construction and operational phases.

It should be noted that the decommissioning of the Project has been scoped out of this resource and waste management assessment as there are no decommissioning works proposed or envisaged given that such infrastructure is designed for future generations with a design life in excess of 120 years.

20.2 Legislation, Policy and Guidance

20.2.1 Guidelines and Policy

The following guidelines and policy documents were considered when undertaking the resource management and waste assessment as part of this updated EIAR given that significant new policy documents listed below have evolved since the 2018 EIAR:

[1] Department of the Environment, Climate and Communications, 2024. Climate Action Plan 2024. Available at: https://www.gov.ie/en/publication/67104-climate-action-plan/?

- Whole of Government Circular Economy Strategy 2022 - 2023 (Ireland)[2]
- A Waste Action Plan for a Circular Economy: Ireland's National Waste Policy 2020 - 2025[3]
- Consultation on the Transposition of the Circular Economy Waste Package (Ireland)[4]
- Galway City Development Plan 2023 - 2029[5]
- Environmental Protection Agency (EPA) Construction and Demolition Waste Statistics for Ireland[6]
- EPA Municipal Waste Statistics for Ireland[7]
- EPA Biodegradable municipal waste to landfill[8]
- EPA Hazardous Waste Statistics for Ireland[9]
- EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports 2022 (the 'EPA guidelines')[10]
- The EPA Circular Economy Programme 2021 - 2027[11]
- Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects[12]
- EPA Guidance Note. A guide to by-products and submitting a by-product notification under Article 27 of the European Communities (Waste Directive) Regulations, 2011[13]

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[2] Department of the Environment, Climate and Communications, 2021. Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less'. Available at: https://www.gov.ie/en/publication/b542d-whole-of-government-circular-economy-strategy-2022-2023-living-more-using-less/

[3] Department of the Environment, Climate and Communications, 2020a. Waste Action Plan for a Circular Economy. Available at: https://www.gov.ie/en/publication/4221c-waste-action-plan-for-a-circular-economy/

[4] Department of the Environment, Climate and Communications, 2020b. Consultation on the Transposition of the Circular Economy Waste Package. Available at: https://www.gov.ie/en/consultation/46eb42-consultation-on-the-transposition-of-the-circular-economy-waste-pack/

[5] Galway City Council, 2022. Galway City Development Plan 2023-2029. Available at: https://www.galwaycity.ie/gccfiles/?r=/download&path=L0RlcGFydG1lbnRzL1BsYW5uaW5nL0RldmVsb3BtZW50IFBsYW4vMjAyMy0yMDI5L0Fkb3B0ZWQgUGxhbi9HYWx3YXkgQ2l0eSBEZXZlbG9wbWVudCBQbGFuIFdyaXR0ZW4gU3RhdGVtZW50IDIwMjMgLSAyMDI5LnBkZg%3D%3D

[6] EPA, 2024a. Construction & Demolition Waste Statistics for Ireland. Available at: https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/construction--demolition/#:~:text=The%20C%26D%20sector%20in%20Ireland,C%26D%20waste%20generated%20in%202019.

[7] EPA, 2023a. Municipal Waste Statistics for Ireland. Available at: https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/municipal/

[8] EPA, 2023b. Biodegradable Municipal Waste to Landfill. Available at: https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/biodegradable-municipal-waste/#:~:text=BMW%20comprises%20those%20elements%20of,and%20lessens%20landfill%20aftercare%20burden.

[9] EPA, 2024b. Hazardous Waste Statistics for Ireland. Available at: https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/hazardous/#:~:text=Ireland%20generated%20389%2C908%20tonnes%20of,reducing%20by%20almost%2065%2C000%20tonnes.

[10] EPA, 2022. Guidelines on the Information to be Contained in Environmental Impact Assessment Reports. Available at: https://www.epa.ie/publications/monitoring--assessment/assessment/EIAR_Guidelines_2022_Web.pdf

[11] EPA, 2021a. The Circular Economy Programme 2021-2027. Available at: https://www.epa.ie/publications/circular-economy/resources/EPA_Circular_Economy_2021_Programme_Apr22_Web.pdf

[12] EPA, 2021b. Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects. Available at: https://www.epa.ie/publications/circular-economy/resources/best-practice-guidelines-for-the-preparation-of-resource--waste-management-plans-for-construction--demolition-projects.php

[13] EPA, 2020a. By-Product - Guidance Note. A guide to by-products and submitting a by-product notification under Article 27 of the European Communities (Waste Directive) Regulations, 2011. Available at: https://www.epa.ie/publications/licensing--permitting/waste/ByProduct_Guidance.pdf

- EPA Guidance to Planners, Planning Authorities and An Bord Pleanála on the Management of Excess Soil and Stone from Developments[14]
- EPA Guidance on Soil and Stone By-products in the context of Article 27 of the European Communities (Waste Directive) Regulations 2011[15]
- EPA Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-hazardous[16]
- Institute of Environmental Management and Assessment (IEMA) Guide to Materials and Waste in Environmental Impact Assessment[17]
- Regional Waste Management Offices (RWMO) National Management Plan for a Circular Economy 2024-2030[18]
- RWMO Construction & Demolition Waste, Soil and Stone Recovery / Disposal Capacity[19]
- Transport Infrastructure Ireland (TII) The Management of Waste from National Road Construction Projects, GE-ENV-01101[20]

Whilst new guidance has been developed for management of waste, the original treatment of waste for the 2018 EIAR was robust as it aligned with the Waste Management Act 1996, as amended, and the Waste Framework Directive 2008, as amended, and followed the same principles outlined in these new documents, i.e. minimisation of resource usage and waste generation through circular principles. This updated EIAR provides an assessment of the implications of waste generation during each of the phases of the Project in line with the most recent EPA guidance published in 2022 on the information to be contained in Environmental Impact Assessment Reports[10], and notes it as a specific 'environmental factor' or topic to be considered.

20.2.2 Directives and Legislation

This assessment in this updated EIAR has been undertaken in accordance with Directive 2011/92/EU[21] on the assessment of the effects of certain public and private projects on the environment as amended by Directive 2014/52/EU[22] ('the EIA Directive') in accordance with the latest EPA guidelines of 2022.

In addition, the following European and National legislation was considered when undertaking the waste and resources assessment:

[14] EPA, 2020b. Guidance to Planners, Planning Authorities and An Bord Pleanála on the Management of Excess Soil and Stone from Developments. Available at: https://www.epa.ie/publications/licensing--permitting/waste/Guidance_for_Planners.pdf

[15] EPA, 2019. Guidance on Soil and Stone By-products. Available at: https://www.epa.ie/publications/licensing--permitting/waste/Guidance_on_Soil_and_Stone_By_Product.pdf

[16] EPA, 2018. Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-hazardous. Available at: https://www.epa.ie/publications/monitoring--assessment/waste/2019--FULL-template.pdf

[17] IEMA, 2020. Guide to Materials and Waste in Environmental Impact Assessment. Available at: file:///C:/Users/Martha.Moynihan/Downloads/IEMA-Materials-and-Waste-In-EIA-March-2020.pdf

[18] Regional Waste Management Offices, 2024. National Management Plan for a Circular Economy 2024-2030. Available at: https://www.mywaste.ie/wp-content/uploads/2024/02/National-Waste-Management-Plan-for-a-Circular-Economy-Volume-VA-SEA-Statement.pdf

[19] Regional Waste Management Offices, 2020. Construction & Demolition Waste, Soil and Stone Recovery / Disposal Capacity.

[20] Transport Infrastructure Ireland (TII), 2017. The Management of Waste from National Road Construction Projects, GE-ENV-01101.

[21] European Union, 2011. DIRECTIVE 2011/92/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment. Available at: https://eur-lex.europa.eu/eli/dir/2011/92/oj

[22] European Union, 2014. Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the Assessment of the Effects of Certain Public and Private Projects on the Environment. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32014L0052

- Directive (EU) 2018/851 the 'Waste Framework Directive[23]
- S.I. No. 323/2020 - European Union (Waste Directive) Regulations 2020 'the Waste Directive Regulations[24]
- S.I. No. 86/2008 - Waste Management (Facility Permit and Registration) Regulations 2008, as amended[25]
- S.I. No. 821/2007 - Waste Management (Facility Permit and Registration) Regulations 2007, as amended[26]
- S.I. No. 820/2007 - Waste Management (Collection Permit) Regulations 2007[27], as amended
- S.I. No. 419/2007[28] - Waste Management (Shipments of Waste) Regulations 2007
- Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste 'the Landfill Directive[29]
- S.I. No. 126/2011[30] - European Communities (Waste Directive) Regulations 2011 (as amended)
- The Waste Management Act 1996[31] (as amended)
- Circular Economy and Miscellaneous Provisions Act 2022[32]

A summary of key legislation, policy and guidance is included in Appendix A.20.1 in Volume 4 of this updated EIAR.

20.2.3 Sustainable Resource and Waste Management Principles

20.2.3.1 The Circular Economy

The principal objective of sustainable resource and waste management is to use material resources more efficiently, where the value of products, material and resources is maintained in the economy for as long as possible such that 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, as outlined in Plate 20.1.

The Circular Economy and Miscellaneous Provisions Act 2022 defines the circular economy as:

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[23] European Union, 2018. Directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste. Available at: https://eur-lex.europa.eu/eli/dir/2018/851/oj

[24] Department of Communications, Climate Action and Environment, 2020. S. I. No. 323/2020 - European Union (Waste Directive) Regulations 2020.

[25] Department of the Environment, Heritage and Local Government, 2008. S.I. No. 86/2008 – Waste Management (Facility Permit and Registration) (amendment) Regulation 2008. Available at: https://www.irishstatutebook.ie/eli/2008/si/86/made/en/print#:~:text=No.-,86%2F2008%20%2D%20Waste%20Management%20(Facility%20Permit%20and,Registration)%20(Amendment)%20Regulations%202008&text=%E2%80%9CIris%20Oifigi%C3%BAil%E2%80%9D%20of%208th%20April%2C%202008.&text=1.,)%20(Amendment)%20Regulations%202008.

[26] Department of the Environment, Heritage and Local Government, 2007. S.I., No. 821/2007Waste Management (Facility Permit and Registration) Regulations 2007. Available at: https://www.irishstatutebook.ie/eli/2007/si/821#:~:text=S.I.,Permit%20and%20Registration)%20Regulations%202007

[27] Department of the Environment, Heritage and Local Government, 2007. S.I No. 820/2007 – Waste Management (Collection Permit) Regulations 2007. Available at: https://www.irishstatutebook.ie/eli/2007/si/820/made/en/print

[28] Department of the Environment, Heritage and Local Government, 2007. S.I. No. 419/2007 – Waste Management (Shipments of Waste) Regulations 2007. Available at: https://www.irishstatutebook.ie/eli/2007/si/419/made/en/print

[29] The Council of the European Union, 1999. Directive on the Landfill of Waste. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A31999L0031

[30] Department of the Environment, Heritage and Local Government, 2011. S.I. No. 126/2011 – European Communities (Waste Directive) Regulations 2011. Available at: https://www.irishstatutebook.ie/eli/2011/si/126/made/en/print

[31] Government of Ireland, 1996. Waste Management Act. Available at: https://www.irishstatutebook.ie/eli/1996/act/10

[32] Government of Ireland, 2022. Circular Economy and Miscellaneous Provisions Act. Available at: https://www.irishstatutebook.ie/eli/2022/act/26/

"an economic model and the policies and practices which give effect to that model in which:

(a) production and distribution processes in respect of goods, products and materials are designed so as to minimise the consumption of raw materials associated with the production and use of those goods, products and materials,

(b) the delivery of services is designed so as to reduce the consumption of raw materials

(c) goods, products and materials are kept in use for as long as possible thereby further reducing the consumption of raw materials and impacts harmful to the environment,

(d) the maximum economic value is extracted from goods, products, and materials by the persons using them, and

(e) goods, products and materials are recovered and regenerated at the end of their useful life"

The European Union (EU) Circular Economy Action Plan (European Commission, 2020) notes that:

"…the EU needs to accelerate the transition towards a regenerative growth model that gives back to the planet more than it takes, advance toward keepings its resource consumption within planetary boundaries, and therefore strive to reduce its consumption footprint and double its circular material use rate in the coming decade."

Plate 20.1 Simplified Model of the Circular Economy for Materials and Energy

The European Commission (2020) has adopted a new Circular Economy Action Plan - one of the main blocks of the European Green Deal, Europe's new agenda for sustainable growth. The Circular Economy Action Plan identifies construction as a key area where there are opportunities for resource efficiency and circularity.

The Department of the Environment, Climate and Communications (DECC) published the Whole of Government Circular Economy Strategy 2022 – 2023[2] in December 2021. The Strategy aims to support and implement measures that significantly reduce Ireland's circularity gap, so that Ireland's rate is above the EU average by 2030.

In July 2022, the Oireachtas enacted the Circular Economy and Miscellaneous Provisions Act[32]. This Act places the Strategy and the commitment to a circular economy on a clear statutory footing. It underpins Ireland's shift from a "take-make-waste" linear model to a more sustainable pattern of production and consumption, which retains the value of resources in our economy for as long as possible and that will significantly reduce our greenhouse gas emissions. The Act is a key step in the successful transition of Ireland's economy to a circular economy and is evidence of the State's commitment to the achievement of that goal.

20.2.3.2 The Waste Hierarchy

Where residual waste generation is unavoidable, it will be dealt with in a way that follows the waste hierarchy (as illustrated in Plate 20.2 and set out in the Waste Framework Directive).

The waste hierarchy supports the need to achieve efficient use of material resources, minimise the amount of waste produced (or otherwise increase its value as a resource) and reduce, as far as possible, the amount of waste that is disposed to landfill.

Plate 20.2 Waste Hierarchy

Other topics related to resource and waste management, such as construction phase traffic impacts, water quality impacts and mineral resources are considered in the following chapters:

- Construction phase traffic impacts, including the traffic associated with waste management, are considered in Chapter 7, Construction Activities
- Water quality and pollution risks are considered in Chapter 7, Construction Activities
- Mineral resources are considered in Chapter 9, Soils and Geology and Chapter 10, Hydrogeology

20.3 Methodology

20.3.1 Study Area

In considering the study area for resource and waste management, it is necessary to consider the area within which resources and waste are generated, as well as those facilities which reuse, recycle, recover and/or dispose of waste.

The study area for resource and waste generation from the Project comprises the areas and activities within the Assessment Boundary. Refer to Chapter 5, Description of the Project for further details.

Waste from the Project may be accepted at sites nationally and internationally (which hold the appropriate certificate of registration, waste facility permit and/or EPA waste licence for the waste quantity and type) for treatment, recovery and/or disposal. However, as waste management planning in Ireland takes place on a regional basis, the study area for waste treatment, recovery and / or disposal comprises the Connacht-Ulster Waste Region (CUWR), which takes in the nine local authority administrations listed below in Table 20.1.

Table 20.1 Connacht-Ulster Waste Region Local Authorities

Local Authority	Local Authority
Mayo County Council	Galway City Council
Roscommon County Council	Sligo County Council
Leitrim County Council	Donegal County Council
Cavan County Council	Monaghan County Council
Galway County Council	

Where data is available at a local authority or regional level this has been used. National data is used where this is the only available level at which statistics and data is published.

20.3.2 Appraisal Method for Assessment of Impacts

The potential environmental impacts of solid waste generation and resource use and management associated with the Project were assessed with respect to the construction and operational phases. These impacts may be neutral, positive or negative and are dependent on the measures employed to prevent and/or manage the waste generated and resources used.

20.3.2.1 Assessment Methodology

The likely impacts are assessed by describing waste and by-products generation and management from the Project and comparing this to the current waste and by-product management baseline in Ireland. The impact assessment and waste management options have been considered with regard to the waste hierarchy and the Waste Framework Directive.

The following factors were considered when determining the significance of the impacts of the Project on the various aspects of the receiving 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 Project
- An assessment of the likely environmental impacts that may arise from the quantity of waste requiring disposal, in line with the significance criteria from the EPA Guidelines[10]
- The surplus materials arising and waste infrastructure capacity in the CUWR in which the Project is located

- A review of the likely significant effects associated with the Project in the context of the waste hierarchy and circular economy principles (refer to Section 20.3.4) to determine the mitigation measures required

20.3.3 Data Collection and Collation

A desk study was undertaken for this updated EIAR, comprising reviews of:

- The relevant policy and legislation which creates the waste and resource management legal framework in Ireland
- The Project design to identify appropriate mitigation and move waste management up the waste hierarchy through implementation of best practice, where possible
- Estimated surplus materials and by-product generation for the construction phase of the Project
- Estimated surplus materials and by-product generation for the operational phase of the Project
- Types, quantities and management of construction and demolition (C&D) waste arisings generated in Ireland, the relevant Local Authority and CUWR
- Types, quantities and management of hazardous waste arisings generated in Ireland
- Types, quantities and management of municipal waste generated in Ireland
- Availability (type and capacity) of waste infrastructure within the Local Authority jurisdiction and CUWR

20.3.4 Waste Management Principles

This section details the waste hierarchy principles, in accordance with the Waste Framework Directive, that will be taken cognisance of by the appointed Contractor during the construction phase. This is also outlined in the Construction and Demolition Resource and Waste Management Plan (CDRWMP), which can be found in the Construction Environmental Management Plan (CEMP) in Appendix A.7.5 of Chapter 7, Construction Activities of this updated EIAR.

20.3.4.1 Prevention and Minimisation

Waste prevention and minimisation are the most environmentally sustainable means of managing surplus materials. The principles of prevention and minimisation of waste are inherent in the design of the Project including, for example, consideration of the use of sustainable construction materials and the re-use of excavated materials, where possible.

20.3.4.2 Reuse

Regulation 27 of the European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011), as amended (Regulation 27)[30], allows a material producer 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, can be determined as a by-product if they satisfy all of the following criteria:

- Further use of the substance or object is certain
- The substance or object can be used directly without any further processing other than normal industrial practice
- The substance or object 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 Regulation 27. The baseline area for reuse of by-products in accordance with Regulation 27 comprises the whole country, as no regional distinction is made in the Regulation 27 register.

Where it is proposed to use a Regulation 27 EPA notification in relation to demolition or excavation material from the Project, the appointed Contractor will be responsible for ensuring compliance with Regulation 27 of the European Union (Waste Directive) Regulations 2011 (as amended) including notification to the EPA, seeking a determination from the EPA on the matter and compliance with all relevant Agency guidance on the matter.

Where it is proposed to use soil from off-site which is a by-product and subject to Regulation 27 of the European Union (Waste Directive) Regulations 2011 (as amended), the appointed Contractor is responsible for carrying out any necessary due diligence regarding the material and ensuring that all EPA guidelines relating to that Regulation 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.

20.3.4.3 Recycling, Recovery and Disposal

Where surplus materials are generated that cannot be reused, these will be regarded as waste and will be delivered to recycling, recovery or disposal facilities authorised in accordance with the Waste Management Act[24], which hold a certificate of registration, waste facility permit and/or EPA waste licence.

All wastes removed from site will be transported by the holder of an appropriate waste collection permit, granted in accordance with the S.I. No. 820/2007[27].

The option of disposal is the least desirable outcome for surplus material generated by the Project and will only be considered where it is not possible to deliver wastes for recycling or recovery to appropriately permitted/licensed 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 transported by the holder of an appropriate waste collection permit, granted in accordance with S.I. No. 820/2007 and subsequently exported for treatment, recovery or disposal in accordance with the provisions of S.I. No. 419/2007[28].

It will be the responsibility of the appointed Contractor, under the Waste Management Act 1996, as amended, and as detailed in the Construction and Demolition Resource and Waste Management Plan (CDRWMP) (Appendix A.7.5 CEMP in Volume 4 of this updated EIAR), 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 Project in construction projects or authorised facilities, where appropriate, in accordance with the Waste Management Act 1996, as amended, and associated regulations.

Where feasible, recycled components or materials will be used in the Project in place of virgin materials. The use of recycled components or materials are subject to the provisions of the Waste Management Act 1996, as amended, and Regulation 28 of the European Union (Waste Directive) Regulations 2011 (as amended).

20.3.5 Consultation

Consultation on compliance of the waste license facilities was undertaken for this updated EIAR to obtain the current status of potential facilities. For information regarding the overall consultation for the Project, refer to Chapter 1, Introduction of this updated EIAR.

20.3.6 Difficulties Encountered / Limitations

This chapter of the updated EIAR has been prepared based upon the best available information and in accordance with current best practice and relevant guidelines. There were no technical difficulties encountered in the preparation of this chapter of the updated EIAR.

20.4 Receiving Environment

20.4.1 Construction and Demolition Waste

20.4.1.1 National

List of Waste (LoW) codes for typical C&D wastes are included in Appendix A.20.2 of this updated EIAR. The LoW codes provide context as to the main C&D wastes likely to arise from activities associated with the construction of the Project.

In 2022, the latest year for which there are published statistics available, 8.3 million tonnes of C&D waste were generated in Ireland, representing a decrease of 700,000 tonnes from 2021, according to the Environmental Protection Agency (EPA)[6]. Of this waste, approximately 6.7 million tonnes comprised soil and stones, making up approximately 82% of the material waste stream.

A breakdown of the composition of C&D waste in Ireland in 2022 is set out in Table 20.2, as noted by the EPA[6]. The material stream proportions should be considered as a guide only and not specific to all projects, 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 20.2 Composition of C&D Waste Material Collected in Ireland in 2022[6]

C&D Waste	Quantity (tonnes)	Proportion of Material Stream
Soils stone and dredging spoil	6,741,489	82%
Concrete, bricks, tile, and gypsum	616,687	7%
Mixed C&D waste	544,415	7%
Metal	206,851	3%
Bituminous mixtures	104,270	1%
Segregated wood, glass, and plastic	54,101	<1%
Total	8,267,813	100%

Data issued by the EPA demonstrates that final treatment operations (backfilling, recycling, energy recovery, disposal) of C&D waste materials varied greatly between material streams. By far the largest quantity of C&D waste was used for backfilling (a recovery operation), which generally reflects the dominance of soil and stones in the overall composition mix.

The EPA reports that Ireland achieved 82% material recovery of construction and demolition waste in 2022[6]. Under the Waste Framework Directive member states must have achieved 70% of material recovery of non-hazardous, non-soil-and-stone C&D waste by 2020 and Ireland successfully achieved this.

National authorised capacity statistics for soil recovery facilities are presented in the National Waste Management Plan for a Circular Economy 2024 - 2030[18]. Table 20.3 outlines the national breakdown of all soil recovery facilities in Ireland in 2021.

Table 20.3 Soil Recovery Facilities in Ireland 2021 (RWMO, 2024)

Type of Authorisation	No. of Facilities	Available Treatment Capacity for Soil Waste	Soil Waste Accepted in 2020 (tonnes)	Remaining Available Treatment Capacity for Soil Waste from 2022 (tonnes)
Licensed	16	4,746,400 (annual)	2,773,687	25,272,206 (lifetime)
Permitted	230	9,939,156 (lifetime)	2,436,586	6,686,156 (lifetime)
Registered	228	3,598,291 (lifetime)	578,470	906,948 (lifetime)
Total	474	-	5,788,746	32,865,310

As discussed in Section 20.3.4.2, Regulation 27 of the European Communities (Waste Directive) 2011 (S.I. No. 126 of 2011), as amended (Regulation 27)[30], allows a material producer to declare, under prescribed circumstances, that a material is a by-product and not a waste and can therefore be reused on site or off-site within the industry.

On receipt of Regulation 27 notifications to the EPA, materials can be determined as a waste or a by-product. In some cases, no determination has been issued by the EPA, meaning the material has not been determined as a waste. In 2022, 114 by-product notifications were assessed by the EPA[6]. The EPA determined that 2,630,095 tonnes of the soil and stone notified were by-products, as notified, and that 203,851 tonnes were waste. Notifications for 9,900 tonnes were withdrawn.

The EPA reports that a total of 389,908 tonnes of hazardous waste was generated in Ireland in 2022, representing a decrease of over 77,000 tonnes (or 16%) since 2021. Hazardous waste types include wastes from dredging spoil, contaminated soils, waste treatment, solvents and hazardous elements of waste electrical and electronic equipment. In 2022, 57% of hazardous waste was exported for treatment, with 43% treated in Ireland.

20.4.1.2 Regional

A summary of the facilities with a certificate of registration and the corresponding capacity for the CUWR, at the end of 2018, is presented in Table 20.4. A summary of the facilities with a waste facility permit and the corresponding capacity in the CUWR, at the end of 2018, is presented in Table 20.5. A summary of the facilities with a waste licence and the corresponding capacity in the CUWR, at the end of 2018, is presented in Table 20.6.

Table 20.4 Summary of CUR Waste Capacity – Facilities with Certificate of Registration (2018) (RWMO, 2020)

No. Facilities	Authorised Capacity (Lifetime) (tonnes)	Intake 2018 (tonnes)	Remaining Capacity (Lifetime) (tonnes)
53	1,174,458	95,380	1,005,242

Table 20.5 Summary of CUR Waste Capacity – Facilities with Waste Facility Permit (2018) (RWMO, 2020)

No. Facilities	Authorised Capacity (Lifetime) (tonnes)	Intake 2018 (tonnes)	Remaining Capacity (Lifetime) (tonnes)
17	685,325	48,595	377,170

Table 20.6 Summary of CUR Waste Capacity – Facilities with Waste Licence (2018) (RWMO, 2020)

No. Facilities	Authorised Capacity (Lifetime) (tonnes)	Intake 2018 (tonnes)	Remaining Capacity (Lifetime) (tonnes)
1	-	-	90,000

20.4.2 Resource Use

Resources will be required to be imported for the construction phase of the Project, and to a lesser extent, for the operational phase of the Project.

A report entitled Essential Aggregates: Providing for Ireland's Needs to 2040[33] was published in 2019 which details and quantifies Ireland's natural aggregate reserves. At the time of publication of that report, Ireland had approximately 500 active large commercial quarries, approximately 220 ready-mixed concrete plants, 20 large scale precast concrete plants and 40 plants producing bitumen bound road surfacing materials.

The Irish Concrete Federation, the national representative organisation for the Irish aggregates and concrete products industry, quantifies the annual production of these materials in Ireland on their website (Irish Concrete Federation, 2024)[34], with the 2022 figures being as follows:

- Five million cubic metres of ready-mixed concrete
- 135 million concrete blocks
- 38 million tonnes of aggregates
- Two million tonnes of bituminous road surfacing materials
- Two million square metres of paving products

It is acknowledged that additional resources, will be required during the construction and operational phase of the Project. However, national data / statistics is not presently available on the annual production of these materials in Ireland.

20.4.3 Municipal Waste

Municipal waste will be generated in small quantities during the construction and operational phases of the Project.

Municipal waste in Ireland is made up of household waste, commercial waste 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 in 2021[7].

Of the 3.17 million tonnes of municipal waste generated in Ireland in 2021, 41% was used in energy recovery, 26% was used in material recycling, 16% was landfilled, 15% was used in composting/anaerobic digestion and 1% was unmanaged. Of the 3.17 million tonnes of municipal waste, 57% is estimated to be from households and 43% is estimated to be from commercial and public service sources. Since 2001, significant changes have occurred in the management of municipal waste in Ireland, notably the dramatic decline in landfilling over this period, accompanied by increased levels of recycling in the early 2000s and subsequently an increase in the share of municipal waste sent for energy recovery since 2011.

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. The quantity of BMW disposed to landfill in 2022 was 129,572 tonnes[8].

Capacity from composting and anaerobic digestion, municipal waste landfill, Material Recovery Facilities (MRFs), integrated waste management facilities, municipal waste incinerators and cement kilns accepting wastes for co-incineration can all be used to treat municipal waste.

[33] Irish Concrete Federation, 2019. Essential Aggregates – Providing for Ireland's Needs to 2040. Available at: https://irishconcrete.ie/wp-content/uploads/2019/10/Essential-Aggregates-Final.pdf

[34] Irish Concrete Federation, 2024. Irish Quarrying and Concrete Products Industry 2022. https://irishconcrete.ie/industry-at-a-glance/

20.5 Characteristics of the Project

The Project as described in Chapter 5 of this updated EIAR involves demolition works as part of site clearance and accommodation works for the construction of the Project, including the phased construction of temporary and permanent stables (and associated development) at Galway Racecourse and construction of 17km of dual and single carriageway road, link roads and associated infrastructure.

Different aspects are considered in the assessment of resource and waste management when considering construction phase activities. Aspects considered include the following:

- Site clearance and demolition: removal of vegetation, hard standing and structures
- Excavation: removal and clearance of road surface, including bitumen, ballast materials etc, and excavation of below ground material such as soil and stones
- Imported material: import of soils or earthworks materials to level site post demolition and import of materials for the construction of new structures/road infrastructure
- Construction: waste materials generated from and in relation to the construction of new structures / road infrastructure
- Municipal waste: generation of municipal waste materials

The C&D waste generated by the Project will vary across the sections and phases of development. Phases 1, 3 and 4 will generate waste mainly from demolished structures, e.g. concrete, bricks, metals, glass, and plastics etc., while Phase 2 works will generate waste mainly comprising soils, stone and bituminous mixtures, as well as demolition materials generated from existing third-party structures across the Assessment Boundary.

Further detail on the characteristics of the various phases of the Project as they relate to resource use and C&D waste are presented below.

20.5.1 Construction Phase

20.5.1.1 Phase 1

Phase 1 involves the construction of temporary stables and associated works within the infield of Galway Racecourse.

The stables will be constructed using precast concrete panels, creating 159 no. stables. Retaining wall structures will be constructed to retain the cut slopes but will also provide the backwall of the temporary stable blocks thus minimising concrete volumes, with these being constructed using in-situ poured reinforced concrete. There will be minimal site clearance involved in Phase 1, and only minimal earthworks, with some cut material being generated. Construction material quantities have been carefully considered in the design to minimise future waste generation during Phase 4 when the temporary stables will be demolished. Examples of this are the use of a green roof system as opposed to traditional metal or tiled roofing for the stables, the double purpose of the retaining wall and the design of the stableyard to allow repurposing of the bases of the stables as parking bays. The Phase 1 works are the subject of an application for planning permission by Galway Race Committee Trust (24/60279) which was granted permission by Galway City Council in 2024 but is part of the Project for EIA and AA purposes.

20.5.1.2 Phase 2

Phase 2 involves works related to the provision of the proposed N6 GCRR and various demolition works.

Earthworks volumes generated as a result of the Phase 2 works have been balanced across the proposed N6 GCRR as much as possible to reduce excavation waste, with as much excavation waste as possible either reused directly or repurposed within the fenceline of Phase 2 of the Project. Construction materials will comprise mainly bitumen, ballast, aggregate and other road make up materials. As noted above, demolition activities will also take place during Phase 2. Demolitions will be a mixture of agricultural, residential, and commercial and industrial demolitions. As such there will be a range of demolition materials generated, but will mainly comprise concrete, structural steel, mixed metals, plastics, etc.

20.5.1.3 Phase 3

Phase 3 involves construction of the permanent stables to facilitate the continued operation of Galway Racecourse on land which will be cleared during Phase 2.

Again, the stables will be constructed using precast concrete panels. There will also be small amounts of landscaping added during this phase, and there will be pavement make up and access roads constructed. The Phase 3 works are the subject of an application for planning permission by Galway Race Committee Trust (24/60279) that was granted permission by Galway City Council in 2024 but is part of the Project for EIA and AA purposes.

20.5.1.4 Phase 4

Phase 4 involves the demolition of the temporary stable block.

However, the retaining walls and pavement described in Phase 1 will be retained, with the paved area providing car parking for the use of Galway Racecourse. The bases of the stables will also be retained in-situ and repurposed for parking. This will minimise the quantity of demolition waste generated. The Phase 4 works are the subject of an application for planning permission by Galway Race Committee Trust that was granted permission by Galway City Council in 2024 but is part of the Project for EIA and AA purposes.

20.5.2 Operational Phase

Phase 5 represents the operation of the Project. Aspects considered in the assessment of resource use and waste generation for the operational phase (i.e. Phase 5) included the following:

- Project related C&D waste: generation of Project related C&D waste from maintenance of structures/road infrastructure
- Municipal waste: generation of municipal waste materials from the operation of the Galway Racecourse stables and the tunnel maintenance buildings

20.6 Description of Potential Impacts

This section presents the potential impacts of the Project which may occur in the absence of mitigation on resource and waste management. Necessary proposed mitigation or monitoring arising from this assessment is outlined in Section 20.7, and predicted residual impacts, taking into account any proposed mitigation, are presented in Section20.8.

20.6.1 'Do-Nothing' Effects

The 'Do-Nothing' alternative considers the likely scenario that would arise, assuming the Project were not progressed, i.e., if nothing were done. In the 'Do-Nothing' scenario, the Project would not be constructed, and the waste materials described herein would not be generated. The resultant resource use and waste impact would be neutral.

20.6.2 Construction Phase

The construction phase of the Project is described in more detail in Chapter 5, Description of the Project of this updated EIAR. The use of resources and generation of waste for the aspects outlined in Section 20.5.1 and the resultant resource and waste impacts are described in this section. Typical C&D Wastes that are likely to arise during the construction phase of the Project are set out in Appendix A.20.2 of this updated EIAR, including EPA LoW codes.

The most environmentally sustainable means of managing demolition, excavation and construction material is its prevention and minimisation. The principles of waste management are detailed in Section 20.2.3. The appointed Contractor will be responsible for the implementation of these principles for the Project. There has been a shift in focus in recent years towards best practice waste management and waste minimisation in construction and an increase in the reuse of construction by-products in projects.

20.6.2.1 Site Clearance and Demolition Waste

During Phase 2 of the Project, the Contractor will be required to carry out site clearance works as described in Chapter 5, Description of the Project, and Chapter 7, Construction Activities, in this updated EIAR. The site for Phase 1 is already cleared as it is the infield of Galway Racecourse, and in Phase 3 the site will be levelled and cleared post construction of the Phase 2 of the Project i.e. the proposed N6 GCRR, as described above in Section 20.5.1.2. Phase 2 of the Project, involving construction of the proposed N6 GCRR, generates the most significant site clearance and demolition waste.

Site clearance works will include the removal of vegetation such as trees, climbing plants, shrubs, vines or any other unwanted materials (including non-organic material) or equipment. This will result in the generation of minor quantities of organic waste material which will be removed from site by a waste collection permit holder and delivered to an authorised composting or organic waste facility. Segregation facilities will be provided, where necessary, to ensure that the recovery and recycling of such wastes is maximised.

Materials to be demolished and removed within Phases 2 and 4 of the Project will predominately comprise structural and non-reinforced concrete, masonry stone, metal sheeting and temporary flooring materials. Table 20.7 presents the estimated quantities of demolition waste materials that will be generated by demolition activities associated with the relevant phases of the Project.

Table 20.7 Estimated Demolition Waste Types and Quantities

C&D Waste	Quantity (tonnes)
Phase 2	
Precast Concrete	17,563
Reinforcing Steel	61
Tiles / Ceramics	6,368
Phase 4	
Precast Concrete	3,319
Rubberised Flooring	243
Reinforcing Steel	182

The material within Table 20.7 will be considered for reuse within the Project or in other construction projects in accordance with Regulation 27 of the European Union (Waste Directive)[35]. It will be the responsibility of the appointed Contractor to review the feasibility of reuse of materials and ensure that the necessary testing is undertaken to demonstrate compliance with Regulation 27, as appropriate.

Materials will require on-site segregation by waste classification and if not suitable for reuse, will be delivered to an authorised recycling, recovery or disposal facility. The least preferable option is disposal to an authorised facility and will only be considered by the appointed Contractor when reasonable opportunities for reuse, recycling and recovery are unavailable.

Considering the minor quantities of organic and C&D waste that will be generated by the Project during the construction phase, and the available treatment capacity for the C&D waste generated (refer to Section 20.4), the potential impact of site clearance and demolition waste, in the absence of mitigation is negative, slight and short-term.

[35] European Union, 2020. S.I. No. 323/2020 – European Union (Waste Directive) Regulations 2020. Available at: https://www.irishstatutebook.ie/eli/2020/si/323/

20.6.2.2 Excavation Waste

Excavation waste will arise from activities such as:

- General excavation
- Excavation for utility diversions
- Excavation for retaining walls
- Excavation for foundations
- Excavations for earthwork bunds within the fence line of the Phase 2 works

Whilst there will be a significant volume of excavated material generated by the works within the Assessment Boundary, all the material excavated for the proposed N6 GCRR will be reused, repurposed, repositioned within the Assessment Boundary other than the volume of 18,132 tonnes (7,600m^3) which will be disposed off-site. The excavation material created during Phase 2 will be a mix of topsoil and soil, rock, hazardous and non-hazardous materials.

In addition to the works on the proposed N6 GCRR, excavation works will be required for the construction of the temporary and permanent stable blocks in Phases 1 and 3. For the excavation taking place in Phases 1 and 3, the material will mostly be made up of soil and topsoil, considering that the development is taking place within Galway Racecourse.

As noted in Chapter 7, Construction Activities, the construction traffic is estimated based on the earthworks, quantities of construction and demolition waste for the entire Project to ensure that the worst-case scenario is assessed in terms of construction traffic on links adjacent to the Assessment Boundary. While there will be significant excavations required for the construction of the Project, the majority of the earthworks materials have been balanced for reuse throughout the Assessment Boundary. The resultant total quantity of excavated materials requiring off-site handling including, for example off-site re-use in accordance with Regulation 27, or off-site recovery or disposal to a suitably authorised facility, in accordance with the Waste Management Act, 1996, as amended is 80,432 tonnes , of which 18,132 tonnes is arising during Phase 2 of the Project, which is not considered significant and therefore there are minimal waste material excavations to consider as waste for Phase 2. Within Phase 2 there are 18,132 tonnes of U2 Class (‘unacceptable’ as per the TII Construction and Commissioning CC-SPW-00600 Earthworks specification for national roads[36]) material excavations. This material classification is not considered suitable for reuse or recovery and therefore is scheduled for disposal to a suitably authorised facility, in accordance with the Waste Management Act, 1996, as amended.

The further 62,340 tonnes of material scheduled for disposal is excavated during Phases 1 and 3 of the Project which is scheduled for re-use off-site in accordance with Regulation 27 in accordance with the Waste Management Act, 1996, as amended.

Table 20.8 Estimated Excavation Quantities

Material	Unbulked Quantity (tonnes)
Made Ground*	1,859
Topsoil	14,403
Subsoil	28,656
Topsoil	5,886
Subsoil	11,536
Total (Phases 1 and 3)	**62,340**

*Made ground comprises a mixture of tarmac, concrete, plastics, ballast materials and silica sand

[36] Transport Infrastructure Ireland, 2024. Construction and Commissioning CC-SPW-00600 Earthworks specification for national roads.

The majority of the excavation of the rock to construct the Galway Racecourse Tunnel, the Lackagh Tunnel and the remainder of the Project have the potential to be fully reused within the road construction thereafter. Therefore, it is estimated that the majority of materials excavated during Phase 2 of the Project will be reused within the Project area, providing an earthworks balance across the sections of the Project. Any excavated materials which are not deemed suitable for their proposed end use will be tested to determine if they are suitable for off-site re-use in accordance with Regulation 27, or off-site recovery or disposal to a suitably authorised facility, in accordance with the Waste Management Act, 1996, as amended.

In line with current practice in Ireland, surplus materials and wastes from the Project will be managed as follows:

- Should material require recycling prior to reuse in accordance with the law, it will be delivered to facilities which are authorised under the Waste Management Act 1996, as amended (i.e., which hold a certificate of registration, waste facility permit and/or EPA waste licence, as appropriate). Examples of recycling / recovery activities for excavation material include
  - Processing of stone to produce construction aggregate
  - Backfilling of quarries
  - Raising land for site improvement or development
- Any hazardous waste arising will be managed by the appointed Contractor in accordance with the applicable legislation
- Screening of material may be undertaken, which will be a decision for the appointed Contractor
- In accordance with the law, 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

It will be the responsibility of the appointed Contractor to secure agreements for acceptance of surplus excavation materials from the authorised and regulated facilities, in accordance with the Waste Management Act 1996, (as amended), and the relevant regulations.

Material that requires recycling will be sent to authorised waste facilities and may be used in accordance with Regulation 28 of the European Union (Waste Directive) Regulations 2011 (as amended). Regulation 28 sets the criteria which must be complied with, and which the EPA must use to determine if a waste reaches "end of waste" status and becomes a material.

During the excavation works, there is the potential for encountering contaminated material. However, none of the samples taken during the project specific GI for the Phase 1 of the Project indicated the presence of hazardous materials. The GI undertaken for Phase 2 works informed the quantification of U2 Class ('unacceptable' as per the TII Construction and Commissioning CC-SPW-00600 Earthworks specification for national roads[36]) material arising. No contaminated materials will be encountered in Phase 3, 4 and 5 of the Project.

Where excavated material containing hazardous substances is discovered as part of the Project, this will be delivered to a facility authorised to accept hazardous wastes. It may also be exported from Ireland for treatment, recovery or disposal. Export of hazardous waste from the Project outside of the State is subject to a Europe-wide control system founded on Regulation (EC) No. 1013/2006 of the European Parliament and of the Council of 14 June 2006 on Shipments of Waste ('the Transfrontier Shipment Regulations'). This legislation is supplemented by the Waste Management (Shipments of Waste) Regulations 2007, as amended (S.I. No. 419 of 2007), which makes Dublin City Council responsible for the enforcement of this regulatory system throughout Ireland. Export of hazardous waste from site outside the state will comply with the procedures set out in this legislation.

Considering the available treatment capacity for the C&D waste generated during the excavation works, the potential impact of excavation waste during the construction phase, in the absence of mitigation, is negative, slight and short-term.

20.6.2.3 Imported Material

The construction phase will require the importation of a number of key construction materials for the Project works, such as concrete (precast and poured in-situ), structural steel, ballast and fill materials, and rubber flooring. Table 20.9 provides an estimate of the quantities of the major materials required to complete the construction necessary in Phases 1, 2 and 3 of the Project.

Table 20.9 Estimated Quantities of Construction Materials

Material	Estimated Quantity (tonnes)
Phase 1	
Imported engineering fill	2,555
Granular support fill	16,733
Precast concrete	125
In-situ concrete	404
Structural steel	536
Rubber flooring	243
Phase 2*	
Bitumen	65,000
Binder	90,100
Base course	69,317
Sub-base	297,000
Concrete	37,368
Structural steel	4,951
Phase 3	
Granular support fill	16,950
Precast concrete	124
In-situ concrete	459
Flooring	249
Phase 4	
Landscaping materials	1,000

*In Phase 2, there is an earthworks balance in the overall Project. For this reason, the import of fill quantities has been removed from this table

Importation of material to the Project site will be carried out throughout Phases 1, 2, 3 and 4, with different materials being required at different times. The main direct impacts associated with the importation of construction materials arise from the gathering/manufacturing of the materials, and the fact that, once the materials are used within the Project, they are no longer available for other uses. There will also be impacts associated with the importation of materials through the requirement of heavy goods vehicles for delivery of the material and the use of materials, these impacts have been quantified and assessed in Chapter 7, Construction Activities and Chapter 18, Noise and Vibration of this updated EIAR.

The materials required for Phases 1, 2, 3 and 4 of the Project will be locally and nationally sourced and are generally readily available in Ireland. The potential impact associated with imported materials is negative, slight and permanent.

20.6.2.4 Construction Waste

Construction works and temporary works facilities are also likely to generate construction waste. Construction waste is defined as waste which arises from construction activities, including surplus and damaged products and materials arising during construction work or used temporarily during the course of on-site activities.

Construction waste can vary significantly from site to site but typically would include the following non-hazardous fractions:

- Soil and stone
- Concrete, brick, tiles and ceramics
- Bituminous mixtures
- Metals
- Wood
- Other

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

- Waste electrical and electronic equipment (WEEE) components
- Batteries
- Asbestos
- Wood preservatives
- Adhesives
- Paints
- Liquid fuels
- Contaminated soil

In the case of the Project, the most likely type of general construction waste will be concrete and surplus fill material. There is adequate capacity for the management of such wastes. Segregation facilities will be provided during construction works to ensure that recovery and recycling of such wastes are maximised.

Considering the minor quantities of construction waste that will be generated during the construction phase and the available treatment capacity for C&D waste, the potential impact of construction waste during the construction phase, in the absence of mitigation, is negative, not significant and short-term.

20.6.2.5 Municipal Waste

Minor quantities of general municipal waste will be generated by construction workers during the construction phase (e.g., from site offices and welfare facilities). Segregation facilities will be provided on the construction site, if necessary, to ensure that recovery and recycling of such wastes is maximised.

Considering the minor quantities of municipal waste that will be generated during the construction phase and the available treatment capacity for municipal waste, the potential impact of municipal waste during the construction phase, in the absence of mitigation, is negative, imperceptible and short-term.

20.6.2.6 Summary of Potential Construction Phase Impacts

A summary of the predicted (pre-mitigation) impacts during the construction of the Project is set out below in Table 20.10.

Table 20.10 Summary of Potential Construction Phase Impacts, Pre-mitigation and Monitoring

Assessment Topic	Potential Impact (Pre-mitigation and Monitoring)
Site Clearance and Demolition Waste	Negative, slight and short-term
Excavation Waste	Negative, slight and short-term
Imported Material	Negative, slight and permanent
Construction Waste	Negative, not significant and short-term
Municipal Waste	Negative, imperceptible and short-term

The construction phase of the Project is not predicted to give rise to significant impacts.

20.6.3 Operational Phase

Operational waste generated by the Project will be in line with typical operational waste for large road projects. Operational waste may arise as a result of carriageway maintenance activities, which will take place as necessary. This will primarily consist of bituminous mixtures due to maintenance of carriageway pavement.

Impacts from material consumption will also arise during the maintenance of the Project. However, no significant materials consumption is anticipated during the operational phase.

Minor quantities of municipal waste will be generated throughout the operation of the Galway Racecourse stables, which will be in line with typical agricultural waste generation and will be managed accordingly.

All waste generated during the operational phase will be transferred from site by a waste collection permit holder and delivered to an authorised waste facility (i.e., a facility which hold a certificate of registration, waste facility permit and/or EPA waste licence) for the specific waste types it receives.

The potential impact of maintenance waste and municipal waste during the operational phase is negative, not significant and long-term.

20.7 Mitigation Measures

20.7.1 Construction Phase

The construction phase is not predicted to give rise to significant negative impacts. However, a suite of mitigation measures is outlined below which the Contractor will implement , and in any event, the 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 Acts, 1996, as amended[31].

A CDRWMP has been prepared and is included in the CEMP (Appendix A.7.5 of this updated EIAR). This has been prepared and will be implemented by the appointed Contractor in line with the Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects[12]. The CDRWMP outlines how waste arising during the construction phase of the Project will be managed in a way that ensures compliance with the provisions of the Waste Management Acts[31] as amended and all of the mitigation measures however contained in the CDRWMP will be retained and will be implemented. The appointed Contractor will update the CDRWMP in advance of construction commencing.

The following mitigation measures will be implemented during construction by the appointed Contractor to ensure compliance with the Waste Management Acts and contribute to achieving the objectives set out in the Waste Action Plan for a Circular Economy[3].

- Where waste generation cannot be avoided, waste disposal will be minimised
- Opportunities for reuse of materials, by-products and wastes will be sought throughout the various phases of the Project
- Non-hazardous excavation material will be sent for recycling or recovery
- Excavations of made ground (comprising a mixture of tarmac, concrete, plastics, ballast materials and silica sand) will be monitored by an appropriately qualified person to ensure that any hotspots of possible contamination are properly identified, with the contaminated material segregated and disposed of appropriately
- Any identified contaminated material will be segregated and stored in an area where there is no possibility of runoff generation or infiltration to ground or surface water drainage. Care will be taken to ensure that the hotspot does not cross contaminate clean soils elsewhere throughout the site
- If encountered, any potential asbestos during the construction phase will be managed using standard health and safety measures as outlined in 'Asbestos-containing Materials (ACMs) in Workplaces: Practical Guidelines on ACM Management and Abatement'[37]. This document states that "removal of asbestos from contaminated soil will require a specialist asbestos contractor for any friable asbestos to be removed" and "a risk assessment by an independent competent person should determine the most appropriate control measures and remediation strategies"
- The site will be maintained to prevent litter and regular litter picking will take place throughout the site
- Just-in-time' delivery will be used to minimise material wastage
- Paints, sealants and hazardous chemicals will be stored in secure, bunded locations
- All staff on-site will be trained on how to minimise waste (i.e., training, induction, inspections and meetings)
- Materials on-site will be correctly and securely stored
- 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
- On-site office and food waste arising will be source separated at least into dry mixed recyclables, biodegradable and residual wastes
- Waste bins, containers, skip containers and storage areas will be clearly labelled with waste types which they should contain, including photographs as appropriate
- Segregated skips will be used within a designated waste segregation area to be located in the on-site Construction Compound (particularly for hazardous, gypsum, metal, timber, inert waste and general waste)
- The appointed Contractor will record the quantity in tonnes and types of waste and materials leaving the site during the construction phase. 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, which is recycled and which is disposed of
- Waste generated on-site will be removed as soon as practicable following generation for delivery to an authorised waste facility

[37] Health and Safety Authority, 2013. Asbestos-containing Materials (ACMs) in Workplaces. Available at: https://www.hsa.ie/eng/publications_and_forms/publications/chemical_and_hazardous_substances/asbestos-containing_materials_acms_in_workplaces_-_practical_guidelines_on_acm_management_and_abatement.html

- The appointed Contractor will ensure that any off-site interim storage facilities for excavation material have the appropriate certificate of registration, waste facility permit and/or EPA waste licence in place
- Where Regulation 27 notifications are required in relation to the Project, the appointed Contractor will complete and submit these Regulation 27 notifications to the EPA for by-product reuse
- The relevant appropriate waste authorisation will be in place for all facilities that wastes are delivered to (i.e., certificate of registration, waste facility permit and/or EPA waste licence).

20.7.2 Operation Phase

The maintenance of the proposed N6 GCRR element of the Project will be undertaken by the local authority.

Separately, maintenance works will be carried out by appropriate staff of Galway Racecourse for the stables development for the duration of its operation.

As the effect of operational phase waste during Phase 5 is expected to be not significant, no further mitigation measures are required.

20.8 Residual Effects

20.8.1 Construction Phase

The construction works taking place throughout Phases 1, 2, 3 and 4 are not predicted to have any significant residual impacts with the adoption of sustainable resource and waste management principles. Nonetheless, appropriate mitigation measures have been identified to further ensure that the sustainable resource and waste management principles outlined in Section 20.2.3, including circular economy principles related to the use of resources and adherence to the waste hierarchy, are implemented. A summary of the predicted residual impacts during Phases 1, 2, 3 and 4, following the implementation of the appropriate mitigation measures, is set out in Table 20.11.

Table 20.11 Summary of Predicted Construction Phase Residual Impacts

Assessment Topic	Potential Impact (Pre-mitigation and Monitoring)	Predicted Residual Impact (Post Mitigation and Monitoring)
Site Clearance and Demolition Waste	Negative, slight and short-term	Negative, slight and short-term
Excavation Waste	Negative, slight and short-term	Negative, slight and short-term
Imported Material	Negative, slight and permanent	Negative, slight and permanent
Construction Waste	Negative, not significant and short-term	Negative, not significant and short-term
Municipal Waste	Negative, imperceptible and short-term	Negative, imperceptible and short-term

20.8.2 Operational Phase

The operation of the Project, as described in Chapter 5, is not predicted to give rise to any significant residual impacts with the adoption of sustainable resource and waste management principles. The residual impact on resource and waste management is predicted to be negative, not significant and long-term.

20.9 Cumulative Effects

A ‘long list’ of planned or committed projects which were deemed to be of relevance to be included in the cumulative impact assessment was compiled (refer to Chapter 21, Major Accidents, Inter-Relationships, Interactions and Cumulative Impacts). A screening exercise of the ‘long list’ of planned or committed projects was carried out in order to determine whether each of those other projects have the potential to give rise to likely significant cumulative effects with the Project from a resource and waste perspective. Many of the other projects were screened out for a number of reasons including their location, scale and nature of the project. Those projects which were ‘screened in’ were carried forward for assessment. The results of the

assessment are presented in Chapter 21, Major Accidents, Inter-Relationships, Interactions and Cumulative Impacts.

The assessment concluded an outcome of a negative, slight, short-term cumulative effect on the capacity of waste management facilities and waste industry trends in Ireland during the construction phase due to an increased demand on waster recovery and / or disposal sites. This is as a result of the potential cumulative effect of the projects that were 'screened in' to the assessment should the construction of the Project proceed in parallel or overlap with the construction of these projects.

As noted in Section 20.8.1, waste management effects from the proposed development alone on the capacity of waste management facilities and waste industry trends in Ireland during the construction phase due to an increased demand on waste recovery and/or disposal sites will range from negative, imperceptible to negative, slight. As seen in Table 20.2, above, significant volumes of C&D waste are generated every year, with over 8 million tonnes generated nationally in 2022 in Ireland, noting that the EPA report that Ireland achieved 82% material recovery of construction and demolition waste in 2022. The waste generated during the construction of this Project is presented in Section 20.6.2, with demolition waste presented in Section 20.6.2.1 and excavation waste presented in Section 20.6.2.2. As noted in Section 20.6.2, these waste types comprise the primary waste types that will be generated during the construction of the Project (construction waste and municipal waste generation will be minor). Combined, these waste types give an overall estimate of less than 1% of the total waste generated nationally per annum.

On this basis, this low level is assessed as not significant at a regional level and no significant adverse cumulative effects during the construction phase due to an increased demand on waste recovery and / or disposal sites are likely to arise on waste because of this Project. As the assessment is conducted at a regional level, noting that the volumes above are relevant to a national level, there are no significant adverse effects when this Project is assessed cumulatively with other projects.

The assessment concluded that there are no likely significant cumulative effects on resource use during the construction phase or resource use and waste management during the operational phase of the Project.

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