Chapter 30:
Resource and Waste Management

ORIEL WINDFARM
OFFSHORE RENEWABLE ENERGY

A TETRA TECH COMPANY

PARK WIND
JERA GROUP

Energy for generations

ORIEL WIND FARM PROJECT

Environmental Impact Assessment Report
Chapter 30: Resource and Waste Management

MDR1520B
EIAR – Chapter 30
A1 C01
March 2024

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30.1 Introduction

Article 5(1) of the EIA Directive requires that the description of the project includes information on the '*quantities and types of waste produced during the construction and operation phases'* and a description of the likely significant effects of the project on the environment resulting from the disposal and recovery of waste. Article 4(4) of the EIA Directive requires that '*a description of any likely significant effects… of the project on the environment resulting from… the production of waste, where relevant'* is to be provided by developers.

This chapter of the Environmental Impact Assessment Report (EIAR) provides details on the expected waste arisings during the construction, operational and maintenance, and decommissioning phases of the Oriel Wind Farm Project (hereafter referred to as "the Project"). It also assesses if there is potential for impacts on waste receptors in the context of the availability and capacity of waste facilities to accept the waste.

The assessment presented is informed by the following chapter:

- Chapter 5: Project Description.

The indirect effects arising from the transport of waste offsite are considered in chapter 28: Traffic and Transport and subsequent vehicle emissions arising from traffic are assessed in chapter 23: Air Quality and chapter 17: Climate.

Any waste generated from the Project will be managed in accordance with the principles of the waste hierarchy as outlined in the European Communities Revised Waste Framework Directive (i.e. prevention, preparing for reuse, recycling, other recoveries, and disposal) and the Proximity Principle.

The details and competencies of the specialist who prepared this chapter can be found in volume 2A, chapter 1: Introduction.

30.2 Purpose of this chapter

The primary purpose of the EIAR chapter is to provide an assessment of the likely direct and indirect significant effects of the Project on resource and waste management. In particular, this chapter:

- Presents the existing environmental baseline for waste facilities established from desk studies (section 30.7);
- Identifies any assumptions and limitations encountered in compiling the environmental information (section 30.7.5);
- Presents an assessment of the potential likely significant effects relating to waste during the Project based on the information gathered and the analysis and assessments undertaken. An assessment of potential cumulative impacts is provided in section 30.11 and an assessment of transboundary effects is outlined in section 30.12; and
- Highlights any necessary monitoring (section 30.10.5) and/or measures (section 30.10.4) which could further prevent, minimise, reduce, or offset the possible environmental effects identified in the assessment (section 30.10).

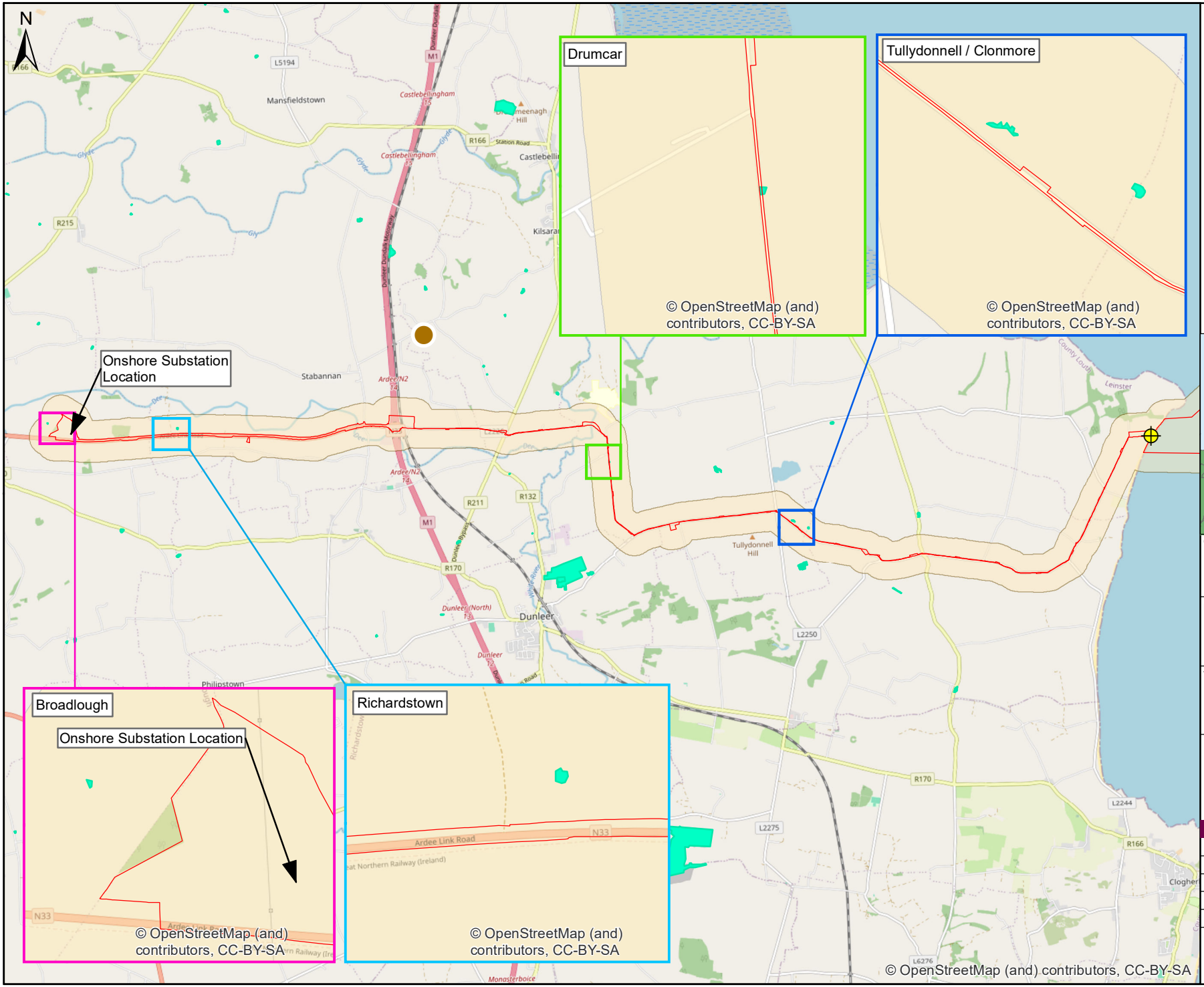
30.3 Study area

There are no guidelines or criteria to define the size of the study area for the assessment of impacts of the Project on resource and waste management receptors. Two Resource and Waste Management Study Areas have been defined by RPS for the purpose of this assessment:

- Regional Resource and Waste Management Study Area: The location of waste facilities within the Eastern and Midlands Region (Table 30-4) that are suitable to accommodate waste materials arising from the construction, operational and maintenance phases of the Project (section 30.7.1); and

- Local Resource and Waste Management Study Area: The lands within the planning application boundary for the onshore infrastructure (including the onshore cable route and substation site) and a buffer area of 300 m to allow identification of potential areas where waste may have been disposed of in the past.

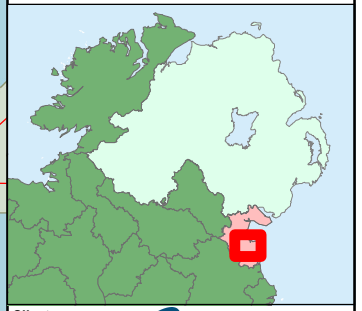
For the purposes of Cumulative Impact Assessment (CIA) (see section 30.11) the Local Resource and Waste Management Study Area was used to search for other projects that could result in potential for cumulative effects with the Project.



Legend

- Planning Application Boundary
- Landfall Location
- Pits and Quarries
- Historic Landfills
- Waste Study Area – 300 m buffer from Onshore Cable Route

Data Sources: OWL, Tailte Éireann.



Client

ORIEL WINDFARM
OFFSHORE RENEWABLE ENERGY

Project

Oriel Wind Farm Project

Title

Figure 30-1: Local Resource and Waste Management Study Area

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Issue Details

Drawn By: NR	**Project No.** MDR1520b
Checked By: CC	**File Ref:** MDR1520bArc3103F02
Approved By: CC	
Scale: 1:80,000 @A4	**Projection:** ITM (IRENET95) Geographic Co-ordinates: ETRS89
Date: 04/03/2024	

30.4 Policy context

Planning policy on renewable energy infrastructure is presented in chapter 2: Policy and Legislation. A summary of the policy framework provisions relevant to waste is outlined in Table 30-1.

The Project is located within the administrative area of Louth County Council (LCC), which is part of the Eastern Midlands Region (EMR). Regional waste management is guided by the EMR Waste Management Plan (WMP) 2015-2021 which was published in 2015. A successor waste plan is in preparation which is focused nationally. This new, single, 'National Waste Management Plan for a Circular Economy' (NWMP) will direct waste policy across all three regions, but the three regional management structures remain in place. The Plan will set policy direction for the next six years in common across all three regions. It may add additional target(s), but it will not materially change how waste management facilities are operated. The European Union (EU) Waste Framework Directives (2008/98/EC and 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 construction and demolition waste (CDW), excluding naturally occurring materials, by 2020. The Environmental Protection Agency (EPA) reported an 84% material recovery of non-hazardous CDW, excluding naturally occurring materials in Ireland in 2021.

The draft NWMP was published in draft for public consultation in July 2023. Once adopted the draft NWMP will replace regional Waste Management Plans (e.g. Eastern Midlands Region Waste Management Plan). The draft NWMP sets out a framework for the prevention and management of waste in Ireland for the period 2023 to 2029 and will replace the existing regional WMP when published. As of October 2023 the NWMP is still at a draft stage.

Table 30-1: Summary of policy framework provisions relevant to waste.

Policy framework	Summary of provisions	How and where considered in the EIAR
A Resource Opportunity - Waste Management Policy in Ireland (EPA, 2013)	Manage the waste collected in accordance with the waste hierarchy and in a manner supportive of the development of a resource efficient and sustainable approach to the management of waste.	Measures included in the project to prevent and minimise waste are outlined in section 30.8.2.
Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (EPA, 2021)	The management of CDW should reflect the waste management hierarchy, with waste prevention and minimisation being the first priority succeeded by reuse and recycling.	
Circular Economy Action Plan (European Commission, 2020)	The Plan outlines initiatives to be implemented throughout the entire life cycle of products. It targets how products are designed, promotes circular economy processes, encourages sustainable consumption, and aims to ensure that waste is prevented and the resources used are kept in the EU economy for as long as possible.	
Closing the Loop: The Circular Economy Package (European Commission, 2015)	When a product reaches the end of its life, its materials are kept within the economy wherever possible.	
Eastern Midlands Region Waste Management Plan (EMRWMP) 2015-2021)	Take measures to ensure the best overall outcome by applying the waste hierarchy to the management of waste streams.	
Draft National Waste Management Plan for a Circular Economy (2023)	This Plan commits to the transition to a circular economy through increased capture of high-quality materials maximising circular potential and using secondary materials for reuse repair and recycling activities.	
Louth County Development Plan 2021-2027	To implement and support the provisions of the EMR WMP 2015-2021 or any subsequent	

Policy framework	Summary of provisions	How and where considered in the EIAR
	plan and EU Directives/Policies. (Policy Objective: ENV 24)	
National Marine Planning Framework (NMPF) (Department of Housing, Local Government and Heritage, 2021)	**Marine Litter Policy 1** Proposals that facilitate waste re-use or recycling, or that reduce marine and coastal litter will be supported, where they contribute to the policies and objectives of this NMPF. Proposals that could potentially increase the amount of litter that is discharged into the maritime area, either intentionally or accidentally, must include measures (such as development of a WMP) to, in order of preference and in accordance with legal requirements: a) avoid, b) minimise, or c) mitigate the litter. Demonstration of these measures must provide satisfactory evidence that the proposal is able to manage all waste without creation of litter.	
A Waste Action Plan for a Circular Economy (Department of Communications, Climate Action and Environment, 2020) (Now DECC).	There is a need to plan for CDW management at the earliest possible stage in a construction project, ideally at concept stage.	

30.5 Consultation

Table 30-2 summarises the issues identified during consultation activities undertaken to date, which are relevant to waste, together with how these issues have been considered in the preparation of this EIAR chapter. Chapter 6: Consultation provides details on the types of consultation activities undertaken for the Project between 2019 and 2024 and the consultees that were contacted.

Table 30-2: Summary of key consultation issues raised during consultation activities undertaken for the Project relevant to waste.

Date	Consultee and type of response	Issues raised	Response to issue raised and/or where considered in this chapter
Jan – Feb 2023	Public consultation	Concerns regarding the volume of spoil created from installation of the underground onshore cable route and questions over 'What will happen to this?'	All soil that cannot be reused during construction will be removed offsite by a licenced waste contractor to a facility with the necessary permits to receive the waste. The road will be reinstated to its condition prior to the works following completion of construction. Section 30.8.1 provides estimated waste arisings resulting from the Project and section 30.7.1 outlines the suitable licensed waste facilities in the region. The impact of waste arising from the construction of onshore infrastructure is assessed in 30.10.1.
Jan – Feb 2023	Public consultation	What happens to the wind farm after 25 years?	All offshore assets are designed for a minimum life of 40 years. The Maritime Area Consent (MAC) for the site is for 45 years including development, construction, operational and maintenance and decommissioning phases. Subject to an agreed rehabilitation plan the assets would be removed from the site at decommissioning. Waste arising

Date	Consultee and type of response	Issues raised	Response to issue raised and/or where considered in this chapter
			from the decommissioning of the offshore infrastructure is considered in section 30.10.2.

30.6 Methodology to inform the baseline

30.6.1 Desktop study

To inform the assessment on waste, a desktop study of existing datasets was carried out to identify suitable waste processing facilities in the EMR, which could be considered to accept material generated by the Project that cannot be reused on site. In addition, estimates of waste generation likely to arise during the construction, operational and maintenance and decommissioning phases was calculated by the project team based on the design information (see chapter 5: Project Description). A desktop study was also undertaken to identify the locations of any historic waste facilities, pits and quarries within the Local Resource and Waste Management Study Area that may have the potential to contain waste material.

The key sources (i.e. data and reports) used to inform the desktop study are summarised in Table 30-3 below. These sources provide the most up to date data for this assessment.

Table 30-3: Summary of key desktop reports.

Title	Source / Author	Year	Data type
CDW: Soil and Stone Recovery / Disposal Capacity Update Report 2020	RPS	2020	Details on available capacity
Waste Facilities dataset	EPA	Accessed 2023	Suitable waste facilities for acceptance of Project waste
Landfills dataset	EPA	Accessed 2023	Locations of landfills
Local Authority Waste Facility Register	National Waste Collection Permit Office (NWCPO)	Accessed Jan 2023	Suitable waste facilities for acceptance of Project waste
OSi/GNI Six-inch mapping:1833-1946: Pits	Osi	Accessed 2021	Pits and quarries within 300 m of the Project that may now contain landfilled waste material
Osi/GNI Six-inch mapping:1833-1946: Quarries	N/A	Accessed 2021	
EMRWMP 2015 – 2021	Eastern – Midlands Waste Region	2014	Section 22 registered (historic waste) facilities in Co. Louth

30.6.2 Site-specific surveys

No site visits or surveys were necessary to inform the waste assessment.

30.7 Baseline environment

The main types and estimated quantities of waste arising from the onshore and offshore infrastructure during all phases of the Project are outlined in section 30.8.1. Baseline data has been collected with a focus on these waste streams at regional level including construction and excavation waste arisings, as well as information on regional waste transfer and treatment and disposal facilities capacity.

30.7.1 Suitable licensed waste facilities

Table 30-4 shows licenced waste facilities in the EMR that may be considered for the disposal of material and waste streams generated by the Project. There are over 80 licensed waste facilities within the region and two further facilities that have applied for waste licenses that are capable of the disposal of materials arising. These include integrated waste management, soil recovery, waste to energy, and landfill facilities. Detailed information on each of these facilities can be found on the EPA[1] and the National Waste Collection Permit Office (NWCPO)[2] websites.

Where waste generated by the Project requires off-site reuse, recovery or disposal in line with the waste hierarchy, it is proposed that where possible facilities in the EMR are used in line with the Proximity Principle.

[1] EPA website: https://epawebapp.epa.ie/terminalfour/waste/index.jsp?disclaimer=yes&Submit=Continue

[2] NWCPO website: http://facilityregister.nwcpo.ie/

Table 30-4: Available waste facilities in the Eastern Midlands Region.

Facility name / licensee	EPA licence no.	Annual authorised intake / total capacity (t or m^3)	Waste / material authorised	Type of facility
Co. Meath				
Clashford Recovery Limited	W0265-01	Annual: 190,000 t Total: 2,618,000 t Closure date: unknown	Soil, Stone, Dredging soil: 170,000 t CDW: 20,000 t	Soil Recovery Facility
Kiernan Sand & Gravel Ltd.	W0262-01	Annual: 187,400 t Total:1,105,500 t Closure date: 2024	Soil, Stone, Dredging soil: 167,400 t CDW: 20,000 t	Soil Recovery Facility
Mullaghcrone Quarry (Roadstone)	W0278-01	Annual: 100,000 t Total: 1,800,000 t Closure date: unknown	Soil, Stone, Dredging Spoil	Soil Recovery Facility
Thornton Waste Disposal Ltd, Dunboyne	W0206-01 (IED)	Annual: 50,000 t Total: *Unknown*	Civic Amenity: 1,980 t (Max. Haz: 480 t) Recovery: 48,020 t (Max. CDW: 28,020 t)	Materials Recovery / Civic Amenity Facility
Bord Na Móna Recycling Ltd, Clonmagaddan	W0131-02 (IED)	Annual: 95,000 t	HH: 38,000 t Comm / Ind.: 33,250 t CDW: 23,750 t	Waste Transfer Station
Starrus Eco Holdings Limited	W0140-05 (IED)	Annual: 250,000 t	Non-Haz: 120,000 t Non-Haz IBA: 130,000 t	Integrated Waste Management Facility
Kilmainhamwood Compost	W0195-02	Annual: 40,000 t	Non-Haz BD: 40,000 t	Composting/Anaerobic Digestion
Kilsaran Concrete Unlimited Company	W0296-01	Annual: 400,000 t Total: *Unknown*	Soil and stone other than 17 05 03	Materials Recovery Facility
Indaver Carranstown	W0167-03 (IED)	Annual: 235,000 t	Non-Haz: 225,000 t Haz: 10,000 t	Waste-to-Energy Facility
Basketstown Landfill Facility	W0010-02	Annual: *Unknown* Total: *Unknown*	Inert subsoil and topsoil for restoration of facility	Landfill – Restoration and aftercare
Knockharley Landfill Ltd.	W0146-02	Annual: 200,000 t Total: 3,616,955 m^3	CDW	Landfill

Facility name / licensee	EPA licence no.	Annual authorised intake / total capacity (t or m^3)	Waste / material authorised	Type of facility
Murphy Concrete Manufacturing Limited	W0151-01	Annual: 750,000 t Total: 3,800,000 t	Inert CDW for Disposal: 738,00 t Inert CDW for Recovery: 12,000 t	Landfill
Co. Louth				
Dundalk Landfill & Civic Waste Facility	W0034-02	Annual: 20,000 t Total: *Unknown*	MSW: 19,000 t CDW: 1,000 t	Integrated Waste Management Facility
Oxigen Environmental (Coes Road)	W0144-01	Annual: 90,000 t Total: *Unknown*	HH: 35,000 t; Comm: 5,000 t; non-Haz Ind.: 30,000 t; CDW: 20,000 t	Waste Transfer Station and Recycling Facility
Drogheda Landfill	W0033-01	Annual: 10,000 t Total: *Unknown*	HH / Comm / Rec	Landfill
Whiteriver Landfill Site	W0060-03 (IED)	Annual: 96,000 t Total: 1,654,456m^3	HH: 31,200 t; Comm: 20,800 t; CDW: 5000 t; Non-Haz Ind. Sludge: 300 t; Non-Haz Ind. Solid: 34,700 t; Waste for Restoration: 4,000 t	Landfill
Co. Dublin				
Huntstown Inert Waste Recovery Facility (Roadstone)	W0277-03	Annual: 1,595,000 t Total: 9,450,000 t Closure date: 2033	Inert soil and stone: 1,500,000 t CDW: 95,000 t	Soil Recovery Facility
Milverton Waste Recovery (Roadstone)	W0272-01	Annual: 400,000 t Total: 2,470,000 t Closure date: 2024	Soil and stone	Soil Recovery Facility
IMS Hollywood	W0129-02	Annual: 500,000 t Total: *Unknown*	Inert CDW and dredging spoil	Landfill
Covanta Poolbeg	W0232-01 (IED)	Annual: 600,000 t Total: *Unknown*	Non-Haz: 500,000 t Comm / Ind.: 100,000 t	Waste to Energy Facility
Sita Environmental Ltd.	W0035-01	Annual: *Unknown* Total: *Unknown*	Hazardous	Hazardous Waste Facility
Indaver Ireland Limited	W0036-02 (IED)	Annual: 50,000 t Total: *Unknown*	Haz: 38,700 t Non-Haz: 11,300 t	Hazardous Waste Transfer Station
Starrus Eco Holdings Limited	W0039-02 (IED)	Annual: 150,000 t Total: *Unknown*	MSW Comm / Ind.	Waste Transfer Station and Recycling

Facility name / licensee	EPA licence no.	Annual authorised intake / total capacity (t or m^3)	Waste / material authorised	Type of facility
Sorundon Limited T/A Irish Environmental Services	W0040-01	Annual: 3,440 t Total: *Unknown*	Non-Haz: 240 t Haz: 3,200 t	Hazardous Waste Facility
Dean Waste Co. Limited	W0042-01	Annual: 150,000 t Total: *Unknown*	Comm/Ind Non-Haz: 45,000 t CDW: 105,000 t	Waste Transfer Station
Thorntons Recycling Centre (Ballyfermot)	W0044-02 (IED)	Annual: 250,000 t Total: *Unknown*	HH: 115,000 t; Comm: 30,000 t; CDW: 30,000 t; Ind Non-Haz: 74,000 t; Haz: 1,000 t	Waste Transfer Station and Recycling
Key Waste Management Limited	W0045-01	Annual: 300,000 t Total: *Unknown*	Comm / Ind Non-Haz: 100,000 t CDW: 200,000 t	Waste Transfer Station
Starrus Eco Holdings Limited	W0079-01	Annual: 145,000 t Total: *Unknown*	Non-Haz	Waste Transfer Station
Sita Environmental Limited, Lower	W0083-01	Annual: 10,000 t Total: *Unknown*	Haz	Hazardous Waste Facility
Swalcliffe Limited	W0097-01	Annual: 50,000 t Total: *Unknown*	Comm: 25,000 t CDW: 25,000 t	Landfill
Balleally Landfill	W0009-03 (IED)	Annual: 451,500 t Total: 1,290,000m^3	HH: 152,500 t; Comm: 200,000 t; SS: 30,000 t; CDW: 63,000 t; Ind. Sludge: 6,000 t	Landfill
Ballyogan Landfill Facility	W0015-01	Annual: 400,000 t Total: *Unknown*		Landfill
Safety Kleen Ireland Limited	W0099-01 (IED)	Annual: *Unknown* Total: *Unknown*	Haz: Waste Oil; Oil filters; Oil/Sand Mixtures or Mixtures of Oil and Other Material; Pharmaceutical Waste; Cytotoxic Waste; Solvents; Photographic Processing Waste; Paint and Ink; Brake fluid; Antifreeze; Wastes for Incineration; Laboratory waste for incineration; Fluid Recovery Service (FRS) Waste Non-Haz: Dried Paints, Dried Varnish & Dried Lacquer; Degreasing Solvent; Aqueous Brake Cleaner	Haz Waste Temporary Storage
National Recycling & Environmental Protection Limited	W0112-01	Annual: *Unknown* Total: *Unknown*	Haz	Hazardous Waste Facility

Facility name / licensee	EPA licence no.	Annual authorised intake / total capacity (t or m^3)	Waste / material authorised	Type of facility
Dunsink Landfill	W0127-01	Annual: 195,500 t Windrow) or 200,000 t (Vessel) Total: *Unknown*	Bring Centre: 3,500 t; Compost (Green): 3,000 t; White Goods: 3,000 t; Inert Waste for Restoration: 186,000 t;	Landfill (Closure and Restoration) Civic Amenity Composting
IMS	W0129-02	Annual: 500,000 t Total: *Unknown*	CDW and Inert dredging spoil	Landfill
Oxigen Environmental	W0152-03 (IED)	Annual: 160,000 t Total: 254,400 t	HH / Comm: 251,400 t Ind: 3,000 t	Municipal Waste Baling Station
Starrus Eco Holdings Limited	W0183-01 (IED)	Annual: 270,000 t Total: 466,500 t	MSW: 165,000 t; Comm / Ind.: 160,000 t; CDW: 54,000 t; Bio: 87,500 t	Non-Haz Rec and WTS
Starrus Eco Holdings Limited	W0188-01 (IED)	Annual: 95,000 t Total: *Unknown*	HH: 15,000 t; Comm: 37,500 t; CDW: 5,000 t; Ind: 37,500 t	Waste Transfer Station
Rilta Environmental	W0185-01 (IED) *(note: licence under review)*	Annual: 60,000 t Total: *Unknown*	HH: 7,000 t; SS: 2,000 t; CDW: 1,000 t; Ind Sludge: 2,000 t; Comm / Ind: 15,000 t; Haz: 33,000 t	Waste Transfer Station *(note: licence under review)*
Rilta Environmental	W0192-03 (IED)	Annual: 111,000 t Total: *Unknown*	Haz: 106,000 t; Comm: 500 t; CDW: 500 t; Ind Sludge: 1,000 t; Other Ind: 3,000 t	Hazardous Waste Facility
JFK Environmental Limited	W0196-01 (IED)	Annual: 35,400 t Total: *Unknown*	Haz: 35,250 t Ind: 150 t	Hazardous Waste Facility
Green Circular Economy Unlimited Company	W0205-01 (IED)	Annual: 250,000 t Total: *Unknown*	Dry Rec HH: 20,000 t; Comm: 95,200 t; Ind: 95,200 t; BD: 33,600 t; CDW: 3,000 t; Haz: 3,000 t	MRF
Oxigen Environmental	W0208-01 (IED)	Annual: 350,000 t Total: *Unknown*	HH (Dry Rec); 180,000 t; Comm (Dry Rec): 40,000 t; Ind (Dry Rec): 19,000 t; Ind Sludge: 1,000 t; CDW: 80,000 t; Haz: 30,000 t; Haz (Medical): 10,000 t	MRF
Bord Na Móna Recycling Limited	W0222-01 (IED)	Annual: 95,000 t Total: *Unknown*	HH: 13,200 t Non-Haz CDW: 29,000 t Non-Haz Comm/Ind: 52,800 t	Waste Transfer Station
Thornton Waste Disposal Limited,	W0227-01 (IED)	Annual: 95,000 t Total: *Unknown*	HH: 40,000 t Comm: 20,000 t Ind: 15,000 t CDW: 20,000 t	Waste Transfer Station

Facility name / licensee	EPA licence no.	Annual authorised intake / total capacity (t or m^3)	Waste / material authorised	Type of facility
Fingal Landfill	W0231-01 (IED)	Annual: 500,000 t Total: *Unknown*	HH / Comm: 348,000 t CDW: 50,000 t Treated SS: 10,000 t Ind Non-Haz Sludge: 2,000 t Ind Non-Haz: 90,000 t	Landfill
Co. Kildare				
Silliot Hill Landfill	W0014-01	Annual: 67,200 t Total: *Unknown*	HH / Comm: 60,000 t; AnSS: 2,000 t; Compost: 5,200 t	IWMF
Kilcullen Landfill Limited	W0081-04	Annual: 275,000 t Total: *Unknown*	Comm: 228,750 t; CDW: 7,750 t; non-Haz Ind: 24,750 t; Sludge: 13;750 t	Landfill
KTK Sand & Gravel Limited	W0156-01	Annual: 242,000 t Total: *Unknown*	CDW	Landfill
Athy Civic Amenity Centre	W0175-01	Annual: 5,500 t Total: *Unknown*	HH: 3,295 t Comm: 2,200 t Haz: 5 t	Waste Transfer Station
Bord na Móna Plc (Kilberry)	W0198-01 (IED)	Annual: 96,000 t Total: *Unknown*	Non-Haz BD	Composting
Drehid Waste Management Facility	W0201-03 (IED)	Annual: 385,000 t Total: 5,040,000m^3	Non-Haz -MSW / Comm / Ind.: 360,000 t (Landfill) 25,000 t (Composting) Inert: *No limit where used in landfill engineering*	Landfill
Behans Land Restoration Limited	W0247-01	Annual: 400,000 t Total: *Unknown*	Soil and Stone (except 17 05 03) 344,000 t CDW: 56,000 t Concrete. Bricks, tiles and ceramics, mixture of above items bar 17 01 06	Soil Recovery Facility
Walshestown Restoration Ltd.	W0254-01	Annual: 330,000 t Total: 2,400,000 m^3	CDW, Soil and Stones, Tailings. Materials listed.	Landfill
GLASSCO Recycling Limited	W0279-02	Annual: 150,000 t Total: *Unknown*	Non-Haz HH / Comm	MRF

Facility name / licensee	EPA licence no.	Annual authorised intake / total capacity (t or m^3)	Waste / material authorised	Type of facility
Drehid Mechanical Biological Treatment (MBT) Facility	W0283-01 (IED)	Annual: 250,000 t Total: *Unknown*	Non-Haz HH / Comm / Ind	MBT
N&C Enterprises Limited	W0292-01	Annual: 345,000 t Total: 1,500,000 t Closure date: unknown	Exhausted quarry void Natural soil and stone	Soil Recovery Facility
Kildare Sand & Gravel Limited	W0295-01	Annual: 345,000 t Total: 1,500,000 t	Soil and Stones (bar 17 05 03) Dredging Spoil	Inert WRF
Co. Offaly				
Derryclure Landfill	W0029-04	Annual: 100,000 t Total: 1,564,000 m^3	HH: 45,500 t; Comm: 39,500 t; non-Haz Ind.: 11,000 t; TMS: 2,000 t; CDW: 2,000 t	Landfill
Clonbulloge Ash Repository	W0049-02 (IED)	Annual: 70,000 t Total: *Unknown*	Non-Haz Ind	Landfill
Bord Na Móna Recycling Limited, Cappincur Industrial Estate	W0104-04 (IED)	Annual: 80,000 t Total: *Unknown*	MSW: 40,000 t Comm / Ind: 20,000 t CDW: 20,000 t	MRF
KMK Metals Recycling Limited	W0113-04 (IED)	Annual: 35,000 t Total: *Unknown*	Haz and Non-Haz including metallic and WEEE	Haz Disposal and Recovery
Co. Westmeath				
Ballydonagh Landfill	W0028-03	Annual: 60,000 t Total: 553,750 m^3	HH / Comm: 53,500 t CDW: 2,000 t Ind: 4,500 t	Landfill
Marlinstown Landfill	W0071-02	Annual: 103,000 t Total: *Unknown*	Inert: 97,300 t HH: 2,500 t Non-HH: 500 t	Landfill Restoration and Aftercare
Soltec (Ireland) Limited	W0115-01 (IED)	Annual: 5,000 t Total: *Unknown*	Organic Solvents	Waste Solvent Recovery
Mulleady's Limited	W0197-02 (IED)	Annual: 50,000 t Total: *Unknown*	HH Dry Rec: 10,000 t; Comm / Ind: 30,000 t; CDW: 8,000 t; Haz (End-of-life Vehicles): 2,000 t	Waste Transfer Station
Co. Laois				

Facility name / licensee	EPA licence no.	Annual authorised intake / total capacity (t or m^3)	Waste / material authorised	Type of facility
Kyletalesha Landfill	W0026-03 (IED)	Annual: 47,100 t Total: 1,888,937m^3	HH: 28,400 t; Comm: 13,400 t; non-Haz Ind: 3,000 t; SS: 1,800 t; CDW: 500 t	Landfill
Ray Whelan Limited	W0158-01	Annual: 33,000 t Total: *Unknown*	HH: 21,450 t; Comm: 2,310 t; non-Haz Ind: 4,620 t; CDW: 4,620 t	Waste Transfer Station
Enva Ireland Limited	W0184-02 (IED)	Annual: 110,000 t Total: *Unknown*	Waste Oil/ Hydrocarbon: 30,000 t; Soil (including contaminated soil): 40,000 t; Other Haz and Non-Haz: 40,000 t	Treatment and Transfer Facility
Bord Na Móna Recycling Limited, Kyletalesha & Kyleclonhobert	W0194-02 (IED)	Annual: 99,000 t Total: *Unknown*	Non-Haz HH /Comm / Ind.: 80,000 t; Non-Haz Sludge: 3,000 t; WEEE: 5,000 t; CDW: 5,000 t; SS: 6,000 t	WTS and Rec
Co. Wicklow				
Ballymurtagh Landfill Facility	W0011-02	Annual: 1,000 t Total: *Unknown*	HH Rec: 1,000 t	Landfill
Marrakesh Limited	W0048-01	Annual: 100,000 t Total: *Unknown*	CDW	Landfill
Starrus Eco Holdings Limited (Fassaroe)	W0053-03 (IED)	Annual: 200,000 t Total: *Unknown*	HH / Comm: 143,560 t CDW: 54,040 t Haz: 2,400 t	IWMF
Rampere Landfill	W0066-03 (IED)	Annual: 50,000 t Total: *Unknown*	Treated SS: 3,000 t HH / Comm: 47,000 t	Landfill
J.W. Carnegie and Company Limited	W0080-01	Annual: 150,000 t Total: 2,020,000 t	Inert CDW	Landfill
Ballynagran Residual Landfill	W0165-02 (IED)	Annual: 175,000 t Total: 2,770,000m^3	HH: 62,500 t; Comm: 67,500 t; Ind: 45,000 t; CDW (Recovery, Restoration and Site Development): 28,000 t	Landfill
Kings Trees Services Composting Facility	W0218-01 (IED)	Annual: 40,000 t Total: *Unknown*	Non-Haz Bio	Composting Facility
Fassaroe Waste Recovery Facility	W0269-01	Annual: 570,000 t Total: 750,000 t	Soil & Stone: 550,000 t CDW: 20,000 t	Soil Recovery Facility
Calary Quarry	W0293-01	Annual: 300,000 t Total: *Unknown*	Soil and Stone Dredging Spoil	Soil Recovery Facility
Co. Longford				

Facility name / licensee	EPA licence no.	Annual authorised intake / total capacity (t or m^3)	Waste / material authorised	Type of facility
Mulleady's Limited	W0169-01	Annual: 95,000 t Total: *Unknown*	MSW / Comm/ Ind: 68,000 t; CDW: 17,280 t; Road Sweepings: 970 t; Farm Plastics: 8,750 t	Waste Transfer Station and Recycling Facility

Table Key: ***Materials and Waste Categories:*** ***AnSS:*** *Anaerobic Stabilised Sludge;* ***BD:*** *Biodegradable;* ***Bio:*** *Biowaste;* ***CDW:*** *Construction and Demolition Waste;* ***Comm:*** *Commercial Waste;* ***Haz:*** *Hazardous Waste;* ***HH:*** *Household Waste;* ***Ind:*** *Industrial Waste;* ***MSW:*** *Municipal Solid Waste;* ***Non-Haz:*** *Non-Hazardous Waste;* ***Non-Haz IBA****: Non-Hazardous Incinerator Bottom Ash;* ***Rec:*** *Recyclable* ***SS:*** *Sewage Sludge;* ***TMS:*** *Treated Municipal Sludge.* ***Licensed Facility Type:*** ***HWF:*** *Hazardous Waste Facility;* ***IED:*** *Industrial Emissions Directive licence;* ***IWMF:*** *Integrated Waste Management Facility;* ***MBT:*** *Mechanical Biological Treatment;* ***MRF:*** *Material Recovery Facility;* ***SRF:*** *Soil Recovery Facility;* ***WtE:*** *Waste-to-Energy;* ***WTS:*** *Waste Transfer Station;* ***WW:*** *Wastewater Treatment.*

30.7.2 Historic waste facilities

According to the EMRWMP, there are no historic landfills located within the Local Resource and Waste Management Study Area. The closest facility is located approximately 1 km to the north of the boundary of the Local Resource and Waste Management Study Area.

30.7.3 OSI pits and quarries

The historic Osi six-inch mapping indicates the presence of an unnamed sand pit at Mullincross which directly intersects the onshore cable route, approximately 8.5 km east of the proposed onshore substation site (Figure 30-1). There is limited information available regarding this site and its presence is not evident from aerial imagery. Also, it is traversed by the local road. Therefore, it considered a low-risk site.

This mapping also shows the presence of a further four pits/quarries located within the Local Resource and Waste Management Study Area but outside the planning application boundary.

There are no quarries located within the Local Resource and Waste Management Study Area. The only named, operational quarry of a significant size located in the vicinity of the Project is Kilsaran Dunleer Quarry, which is located approximately 900 m from the onshore cable route.

30.7.4 Future baseline scenario

The EU (Planning and Development) (Environmental Impact Assessment (EIA)) Regulations 2018 (hereafter the EIA Regulations 2018) require that *"a description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge"* is included within the EIAR.

In the event that the Project is not constructed, an assessment of the future baseline conditions has been carried out and is described below.

The future baseline scenario for this assessment relates to the availability of suitable waste facilities to accept waste arisings over the lifetime of the Project. Some of the facilities identified in section 30.7.1 will not accept waste by the end of the Project life. However, there will be a continued need for such facilities and therefore a similar level of provision is expected in the future to meet the Project's requirements.

30.7.5 Data validity and limitations

The data provided on waste streams during the construction phase has been based on the design details for the construction of the onshore infrastructure (e.g. size of the trench for the installation of the onshore cable route and excavation required for foundations at the onshore substation site). In addition up to date available data from the EPA, namely the National Waste Statistics Reports, and experience from similar projects has also been used to estimate the waste quantities. The design details will be refined prior to construction and it is recommended that the quantities are recalculated at this stage. However, for the purposes of this assessment a conservative approach has been taken to estimate the levels of waste generated to ensure a robust assessment.

30.8 Key parameters for assessment

30.8.1 Project design parameters

The project description is provided in volume 2A, chapter 5: Project Description. Table 30-5 outlines the project design parameters that have been used to inform the assessment of potential impacts of the construction, operation and maintenance and decommissioning phases of the Project on waste.

Table 30-5: Project design parameters considered for the assessment of potential impacts on waste.

Potential impact	Phase[1]			Project design parameters	Justification
	C	O	D		
Waste arising during construction of the onshore infrastructure.	✓	x	✓	• Excavation of 20.1 km onshore cable route and all lands within the planning application boundary from the landfall to and including the onshore substation site; and • Onshore construction phase duration of 27 months.	• Table 30-6 provides details on the types and quantities of waste arisings during the construction phase; • During decommissioning, it is expected that onshore cables would be removed by disconnecting each section at the joint bay and pulling them through the cable ducts. This operation would be a reverse of the installation operation but would result in smaller amounts of waste as excavation along the entire length of the onshore cable route would not be required; and • During decommissioning of the onshore substation site, all of the electrical infrastructure will be removed, and any waste will be taken off site by a licenced waste contractor and disposed of, under licence from the appropriate authority.
Waste arising during construction and decommissioning of the offshore infrastructure.	✓	x	✓	• 475 vessel round trips during the construction phase; and • Offshore construction phase duration of 15 months.	• See paragraph titled *'waste from construction of offshore infrastructure'* below. • All vessels involved in the construction/decommissioning of the offshore wind farm will generate waste; and • During decommissioning, 25 wind turbines and the OSS topside will be removed by reversing the methods used to install them for disassembly and reuse, recycling or disposal onshore.
Waste arising during the operational and maintenance phase of the Project.	x	✓	x	• 352 vessel round trips per year to the offshore wind farm during the operational and maintenance phase; • Onshore substation site: foul water generation; maintenance of silt traps; SF_6; and • Operational phase of 40 years.	• Table 30-7 provides details on the types and quantities of waste arising from the operational and maintenance of the offshore wind farm.

1. C= Construction, O = Operation, D = Decommissioning.

The main waste streams that will be generated during the construction phase of the onshore infrastructure of the Project are outlined in Table 30-6. Each type has been assigned a European Waste Catalogue (EWC) code based on current EPA guidelines (and current understanding of the waste type).

Table 30-6: Types and estimated quantities of waste arising during the construction of the onshore infrastructure of the Project.

Waste Description	Estimated arisings	EWC Code	Onsite management	Offsite management preference
Soil and stone	• Arising from 20.1 km onshore cable construction including joint bays: 40,000 m^3; • Arising from onshore substation site: 20,650 m^3	17 05 04	Stockpiling separately for reuse onsite or to transfer offsite.	Article 27 reuse, disposal at soil recovery facility.
Drill arisings	• Drill arisings from HDD crossings (five) – 220 m^3.	01 05 04/99	Stockpiling separately for treatment offsite	Management at a dedicated facility
Road surface	Arisings from excavation of road surface along 20.1 km onshore cable route: • Class U1: 1185 m^3 • Class U2: 790 m^3	17 03 01/02	Stockpiling separately for reuse offsite	Management at a dedicated facility
Vegetation (hedge and tree trimmings, etc.)	Arising from removal of vegetation. Approximately 500 m^3.	0 02 01	Stockpiling separately for treatment offsite	Management at a dedicated facility
Steel	Arising from removal of steel lattice pylon 5.5 tonne	17 04 05	Stockpiling separately for treatment offsite	Management at a dedicated facility
Concrete	Arising from removal of concrete foundation lattice pylon 11.2 m^3	17 01 07		
Taken in for Liquid fuels	1 m^3	13 07 01-03	Segregated storage container.	Management at a dedicated facility.
Chemicals (solvents, pesticides, paints, adhesives, detergents etc.)	1 m^3	20 01 13, 19, 27-30	Segregated storage container.	Management at a dedicated facility.
Wood from construction	5 tonnes	17 02 01	Segregated skip - reuse on-site where possible.	Reuse or energy recovery.
Gypsum from construction	1 tonne	17 08 02	Segregated skip.	Recycling, disposal.
Plastic from construction	1 tonne	17 02 03	Segregated skip.	Return to supplier, recycling, disposal.
Iron and steel from construction	2 tonnes	17 04 05	Segregated skip.	Recycling, disposal.
Drill arisings				
General mixed waste including commercial waste and municipal waste	5 tonnes	20 03 01	Segregated bin.	Recovery, disposal.
Mixed dry recyclables	3 tonnes	15 01 06	Segregated bin.	Recycling.
Food, biodegradable kitchen, and canteen waste	2 tonnes	20 01 08	Segregated bin.	Recycling.

The main waste streams that will be generated during the operational and maintenance phase of the Project are outlined in Table 30-7.

Table 30-7: Types and estimated quantities of waste arising during the operation and maintenance phase of the offshore wind farm.

Operational activity	Source of waste	Waste type	EWC code	Estimated volumes	Offsite management preference
Movements of CTVs Operation of OSS	CTVs, OSS	Blackwater	20 03 04	3,000 L / week (per CTV) 1,000 L / week (OSS)	Management at a dedicated facility
Movements of CTVs Operation of OSS	CTVs, OSS	Grey water	20 03 99	2,500 L / day (per CTV) 3,000 L week (OSS)	Reuse/ Management at a dedicated facility
Wind turbine energy generation	Wind turbine generator (WTG)	Waste lubricating and hydraulic oils	13 02 04 - 08	Hydraulic oil: 1,000 L / year Lubricant: 12,000 L / year Gear oil: 2,500 L/ year	Management at a dedicated facility
Wind turbine energy generation	WTG, OSS	Waste coolant	16 01 14/15	Coolants: 2,230 L / year	Management at a dedicated facility
Operation of OSS	OSS	Batteries		3,000 kg	Management at a dedicated facility
Operation of OSS	OSS	Fire suspension systems	16 01	5,000 L foam + 5,000kg Argonite	Management at a dedicated facility
Wind turbine energy generation	WTG, OSS – major component replacement	Electrical equipment (e.g. yaw motors, inverters, delta modules motors, pumps, small electric equipment, circuit breakers, fuse)	16 01	Volume will depend on replacement requirements.	Reuse/ Management at a dedicated facility
Wind turbine energy generation	WTG: can depend on selection greases, oily rags, oil filters	Oily materials	15 02 02/03	Grease: 500 L / year Transformer silicon: 8,000 L / year Diesel fuel: 2,000 L / year Nitrogen: 63,000 L / year Damping liquid: 14,000 L / year	Management at a dedicated facility
Operation of CTVs	CTVs and operational staff	Canteen waste	20 01 08	100 kg / day (all CTVs)	Management at a dedicated facility
Operation of the offshore Infrastructure	O&M workshop	Workshop waste	20 03 01	50 kg / week	Management at a dedicated facility
Operation of WTGs, the onshore substation site and OSS	Transformers, OSS	SF_6	16 02 11*	Volume will depend on final design of technologies used.	Management at a dedicated facility

Operational activity	Source of waste	Waste type	EWC code	Estimated volumes	Offsite management preference
Operation of the onshore substation site	Foul waste water	Foul waste water	20 03 04	<10 m^3 per year	Management at a dedicated facility
Operation of the onshore substation site	Petrol/oil interceptors	Petrol/oil	15 02 02/03	1m^3 per service	Management at a dedicated facility

Waste from construction of offshore infrastructure

Waste arising from the construction of the offshore infrastructure is manged on the vessels used for construction. As the infrastructure is fabricated and pre-assembled onshore, waste materials are limited to the materials used to install the infrastructure. Quantities will vary depending on the vessel. Likely materials will include bilge water, oily residues (sludge), sewage (black water), greywater, plastics, food wastes, domestic wastes, cooking oil, operational wastes, cargo residues, other non-common waste streams (e.g. ballast water) (EMSA/OP/02/2016).

All vessels will be required to manage waste in accordance with the accepted EU and international standards. These include the Sea Pollution Act, 1991, 1999, 2005 and 2006, the Dumping at Sea Act 1996, the International Convention on the Prevention of Pollution from Ships (MARPOL Convention), the European Communities (Port Reception Facilities for Ship-Generated Waste and Cargo Residues) Regulations 2003 (S.I. No. 117 of 2003), the Sea Pollution (Prevention of Pollution by Garbage from Ships) Regulations 2012 (S.I. No. 372/2012) and Sea Pollution (Prevention of Pollution by Sewage from Ships) (Amendment) Regulations 2012 (S.I. No. 492/2012). Each Port will also have a Port WMP which must be abided by and if waste is taken ashore the Waste Management Act 1996 (as amended) will apply.

30.8.2 Measures included in the Project

As part of the project design process, a number of measures have been proposed to reduce the potential for impacts with regards to waste (see Table 30-8). As there is a commitment to implementing these measures, they are considered inherently part of the design of the Project and have therefore been considered in the assessment presented in section 30.10 below (i.e. the determination of magnitude and therefore significance assumes implementation of these measures). These measures are considered standard industry practice for this type of development and are compliant with the waste hierarchy principles.

Table 30-8: Measures included in the Project.

Measures included in the Project	Justification
Implementation of the Environmental Management Plan (EMP) (see volume 2A, appendix 5-2: Environmental Management Plan).	The objective of the EMP is to detail appropriate measures for the avoidance, minimisation and control of adverse environmental impacts associated with the offshore infrastructure of the Project. The EMP outlines the framework to how waste associated with the offshore infrastructure will be managed during all phases of the Project. Implementation of this plan is necessary to maximise the prevention and reuse of waste and ensure that all waste is disposed of to an appropriate facility in order to adhere to the waste hierarchy.
Implementation of the Construction Environmental Management Plan (CEMP) (see volume 2A, appendix 5-1: Construction Environmental Management Plan).	The objective of the CEMP is to detail appropriate measures in the avoidance, minimisation and control of adverse environmental impacts associated with the offshore infrastructure of the Project. The CEMP outlines how waste will be managed during the construction phase of the onshore infrastructure. Implementation of the CEMP is necessary to maximise the prevention and reuse of waste and ensure that all waste is disposed of to an

Measures included in the Project	Justification
	appropriate facility in order to adhere to the waste hierarchy.
A Waste Manager will be nominated who will have overall responsibility for the implementation of all waste processes. In conjunction with this, a clear responsibility structure will be introduced for the construction staff/contractor to ensure issues encountered are raised at an appropriate level and acted upon. This is essential in ensuring that all waste is properly dealt with.	The nomination of a Waste Manager is necessary to ensuring that all waste is properly dealt with in accordance with the waste hierarchy and not looked over accidentally in the mindset that another member of staff will undertake the necessary procedure. All personnel involved with the Project must be aware of their role and implement it appropriately.
The management of waste generated by the Project will reflect the waste management hierarchy, with waste prevention and minimisation being the priority succeeded by reuse and recycling. Where there are opportunities for the beneficial reuse and recycling of materials, these will be considered.	Prevention and minimisation of waste in the first place will reduce the amount of waste that requires disposal at a licensed facility. This is necessary to adhere to the circular economy approach and waste hierarchy.
Excess material will be made available for reuse off-site. It is anticipated that the available material will be a clean and valuable resource capable of meeting the specifications of a typical Class 1 material. This material can be reused in local projects under development, assuming by-product classification can be achieved. Alternatively, the material can be recovered at quarries in the local area and beyond. The availability of the material and the scheduling of local construction projects will be kept under review as the project develops. If reuse of surplus material is not possible, it will be sent for appropriate recovery. Any site identified for recovery of soil and stone will require the appropriate planning permission and waste authorisation in place to accept the material on-site.	
Sustainable practices will be implemented when choosing materials to be used in the construction of the Project, including the use of cement containing high levels of Ground Granulated Blast Furnace Slag **(**GGBS) or recycled steel (see chapter 17: Climate for further information relating to sustainable materials).	This is in accordance with the waste hierarchy and national waste policy.
As part of the implementation of the EMP and CEMP, the Applicant will require that all Contractors (and their Sub-Contractors) produce a WMP, providing details of all waste management procedures for their activities and details of expected waste arisings and proposed procedures for waste management. The Contractor's Environmental Manager will be responsible for the compilation of this document. The WMP will include the following aspects as a minimum: • Analysis of the waste arisings/material surpluses; • Specific waste management objectives for the Project; • Methods proposed for prevention, reuse and recycling of wastes; • Material handling procedures; and • Proposals for education of workforce and plan dissemination programme. For the onshore infrastructure, the WMP will be prepared in accordance with the Best Practice Guidelines for the Preparation of Resources & Waste Management Plans for Construction and Demolition Projects (EPA, 2021).	The WMP will provide a clear procedure for the management of waste during the construction phase of the Project. This is necessary to ensure that all waste is properly dealt with in accordance with the waste hierarchy.
The contractors will be obliged to implement and maintain the following measures and actions as part of the WMP (where relevant): a. Meet all relevant legislative and EIAR requirements and obtain whatever additional permits and licences are necessary in relation to waste management;	

Measures included in the Project	Justification
b. Communicate the requirements of the WMP to all personnel during their induction and ensure all operatives on site attend waste reduction toolbox talks to increase awareness of recycling/waste reduction; c. Transfer of waste or refuse will only be conducted by licensed waste carriers and waste treatment and waste disposal will be conducted by licensed and permitted waste management companies, in compliance with applicable waste legislation and current national waste policy. This is necessary so that all waste is disposed of to the best possible facility type to adhere to the circular economy and resource opportunity strategies; d. Be compliant with and use the current version of Transfrontier Shipment of Waste Regulations where waste is being exported by Contractors (or their subcontractors). Export of waste will also be in line with the principles of the Basel Convention of 1989, which was agreed internationally to avoid hazardous waste being unfairly exported to developing countries; e. For the offshore infrastructure, all qualifying vessels must demonstrate compliance with MARPOL Annex V (and equivalent current Irish merchant shipping regulations) for waste management generally and MARPOL Annex IV (and equivalent current Irish merchant shipping regulations) for sewage waste specifically; f. If unforeseen waste or hazardous material is encountered during the Project, the appropriate authorities will be notified, and the material will be deposited at an appropriate waste facility; g. For the onshore infrastructure, appropriate measures will be employed to identify unexpected, contaminated soil and stone material. These measures will include early identification of locations where contamination is more likely. Staff will be trained in how to identify contamination and how to manage it if encountered. Identification will include visual checks for unusual discolouration, oil sheens, anthropogenic materials, and checks for olfactory clues such as hydrocarbon or other odours. Suspect contaminated material will be sampled and appropriately analysed at laboratory; h. Records will be kept on the quantity nature/type and quality of all waste leaving the site. Good record keeping being conducted by the contractor including quantities (tonnes) and type of waste and materials leaving the site. 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 which is disposed; i. Source separating wastes into dry mixed recyclables, biodegradable, and residual wastes. Clear labelling of waste bins, containers, skip containers and storage areas, including waste stream colour coding and photographs as appropriate; j. Appropriate Storage: Waste fuels/oils will be generated from equipment used on-site during construction and will be classified as hazardous waste. Paints, sealants, and hazardous chemicals etc. will be stored in secure, bunded locations. All hazardous waste will be separately stored and labelled, in appropriate lockable containers, prior to removal from site by an appropriately permitted waste collection service provider; and	

Measures included in the Project	Justification
k. Waste generated on site will be removed as soon as practicable following generation for delivery to an authorised waste facility.	

30.8.3 Impacts scoped out of the assessment

On the basis of the baseline environment and the project description outlined in volume 2A, chapter 5: Project Description, a number of impacts are proposed to be scoped out of the assessment on waste. These impacts are outlined, together with a justification for the scoping out decision, in Table 30-9.

Table 30-9: Impacts scoped out of the assessment for waste.

Potential impact	Justification
Material arisings from installation of WTG foundations, offshore cable corridor and inter-array cables during construction of the offshore infrastructure.	Approximately 80,000 m^3 will need to be disturbed and replaced at sea to lay the offshore cables and install the foundations. However, a Dumping at Sea Permit is a requirement for disposing any material at sea. The Applicant will apply for this permit in advance of construction. Alternative methods of management of this material were examined as part of the consideration of alternatives in chapter 4 (volume 2A). The potential impacts arising from the disturbance to the seabed are addressed in chapter 8: Benthic Subtidal and Intertidal Ecology (see volume 2B).
Excavation of onshore cable trench causing the disturbance of existing waste deposits.	There is a possibility that buried waste could be encountered upon excavation of the onshore cable trench during the construction phase. There are no historic landfills located within the Local Resource and Waste Management Study Area. The unnamed sand pit at Mullincross (section 30.7.2) which intersects with the onshore cable route is unlikely to contain waste requiring disposal and the additional four pits/quarries within the Local Resource and Waste Management Study Area will not be disturbed by the excavation of the onshore cable trench. Therefore, the potential disturbance of existing waste deposits is not considered in this assessment.

30.9 Impact assessment methodology

30.9.1 Overview

This waste assessment has followed the methodology set out in volume 2A, chapter 3: EIA Methodology. Specific to waste, the following guidance documents have also been considered:

- Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (EPA, 2021); and
- IEMA guide to: Materials and Waste in Environmental Impact Assessment (IEMA, 2020).

In addition, the assessment has considered the legislative framework as defined by:

- Revised Waste Framework Directive 2008/98/EC;
- Waste Management Act 1996 as amended, and Regulations made thereunder;
- Dumping at Sea Act 1996 as amended, and regulations made thereunder; and
- Eastern Midlands Region Waste Management Plan (to be replaced by National Waste Management Plan when published).

30.9.2 Impact assessment criteria

The criteria for determining the significance of effects involves defining both the magnitude of the impacts and the sensitivity of the receptors. This section describes the criteria applied in this chapter to assign values to the magnitude of potential impacts and the sensitivity of the receptors regarding waste. The terms used to define magnitude and sensitivity are based on those which are described in further detail in volume 2A, chapter 3: EIA Methodology.

The criteria for defining magnitude in this chapter are outlined in Table 30-10 below.

Table 30-10: Definition of terms relating to the magnitude of an impact.

Magnitude of impact	Definition
High	Severe damage to key characteristics, features or elements on the environment. (Adverse).
	Extensive restoration or enhancement; major improvement of attribute quality (Beneficial).
Medium	Partial damage to key environmental characteristics, features or elements (Adverse).
	Improvement of attribute quality (Beneficial).
Low	Some measurable change in attributes, quality or vulnerability, minor loss or, or alteration to, one (maybe more) key characteristics, features or elements (Adverse).
	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring (Beneficial).
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements (Adverse).
	Very minor benefit to, or positive addition of one or more characteristics, features or elements (Beneficial).

The criteria for defining sensitivity in this chapter are outlined in Table 30-11 below.

Table 30-11: Definition of terms relating to the sensitivity of the receptor.

Sensitivity	Definition
High	No or extremely limited capacity / outlets to accept waste in region.
Medium	Limited capacity / outlets to accept waste in region.
Low	Capacity / outlets available to accept waste in region.
Negligible	No expected issues with capacity / available outlets to accept waste in region.

The significance of the effect upon waste is determined by correlating the magnitude of the impact and the sensitivity of the receptor. The particular method employed for this assessment is presented in Section 30.9.2. Where a range of significance of effect is presented in Table 30-12, the final assessment for each effect is based upon expert judgement.

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.

Table 30-12: Matrix used for the assessment of the significance of the effect.

Sensitivity of receptor	Magnitude of impact			
	Negligible	**Low**	**Medium**	**High**
Negligible	Imperceptible	Imperceptible or slight	Imperceptible or slight	Slight
Low	Imperceptible or slight	Imperceptible or slight	Slight	Slight or moderate
Medium	Imperceptible or slight	Slight	Moderate	Moderate or major
High	Slight	Slight or moderate	Moderate or major	Major or profound

30.10 Assessment of significance

The potential impacts arising from the construction, operation and maintenance, and decommissioning phases of the Project are listed in Table 30-5, along with the project design parameters against which each impact has been assessed. A description of the potential effect on waste receptors caused by each identified impact is given below.

Impacts on waste management are considered in the context of the quantities of waste generated, the potential for reuse or recovery of the waste over disposal (in line with the waste hierarchy) and the available capacity at facilities (the receptors in this case) to allow for offsite reuse, treatment or disposal of the waste.

The preferred outcome from an environmental, transportation and resource efficiency perspective is to maximise the reuse of waste material generated on-site.

The management of waste will reflect the waste management hierarchy, with waste prevention and minimisation being the priority succeeded by reuse and recycling.

The main waste streams that will be generated during each phase of the Project are outlined in section 30.8.2, along with estimated arisings. The details of existing licensed waste facilities that can accept the waste types are outlined in Table 30-4. The transient nature of permitted and registered sites will lead to changes in the location of available facilities and a regular check on authorisations is required.

30.10.1 Waste arising during construction of the onshore infrastructure

Construction phase

During the construction of the onshore infrastructure, waste materials will be generated as outlined in Table 30-6. The waste stream with the highest volume of material is soil and stone. In line with the waste hierarchy, this material from the excavation of the onshore infrastructure will be reused on site where possible (e.g. reusing soil material as infill). Where this is not possible, priority will be giving to reuse of this material offsite (see Table 30-4). If any material is found to be contaminated, it will be sent to a processing facility for stabilisation before either reuse or exportation.

Individual waste from Project staff will also be generated, including food waste, foul waste and fuel waste. Measures including segregation of waste, recycling, and composting will be put in place to manage this waste in accordance with the waste hierarchy.

Magnitude of impact

The quantities of waste that will require off site transfer for either reuse, recovery or disposal are not significant in a way that will impact the available and expected waste management capacities in the region.

For materials that are reused on site, the impact will be of local spatial extent, long term duration, continuous, and low reversibility. The magnitude is therefore considered to be low beneficial. For materials that are transferred offsite the impact will be of regional spatial extent, long term duration, continuous and low reversibility. The magnitude is therefore considered to be low adverse.

Sensitivity of the receptor

A list of facilities that are available to take any waste that cannot be reused on site are identified in Table 30-4. These sites are deemed to be of low sensitivity as the capacity is available to accept the waste types that will be generated by the Project.

Significance of the effect

Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be low. The effect will, therefore, be of **slight adverse significance** for waste sent offsite and **slight beneficial significance** for waste reused onsite, which is not significant in EIA terms.

Decommissioning phase

As outlined in chapter 5: Project Description, the case for decommissioning the onshore substation site will be reviewed in discussion with the Transmission System Operator (TSO) and the regulator in the light of any other existing or proposed future use of the onshore substation site. If complete decommissioning is required, then all of the electrical infrastructure will be removed, and any waste will be taken off site by a licenced waste contractor and reused where possible or disposed of, under licence from the appropriate authority.

The structures of the jointing pits and link boxes will also be removed only if it is feasible with minimal environmental disturbance or if their removal is required to return the land to its current use (see volume 2A, chapter 5: Project Description). These materials will be taken off site by a licenced waste contractor and disposed of under licence from the appropriate authority.

The opportunities for decommissioned equipment to be reused, recycled will only be known at the time of decommissioning and will be dependent on what waste facilities are available to accept the equipment at that time. Therefore, an assessment of impacts cannot be undertaken at this time. However, measures to manage the equipment in line with the waste hierarchy and policy at the time of decommissioning are proposed.

30.10.2 Waste arising during construction of the offshore infrastructure

Construction phase

During the construction of the offshore infrastructure, waste materials will be generated as outlined in Section 30.8.1. All waste will be stored on working vessels, which will be required to handle all wastes in accordance with International Maritime Organisation (IMO) requirements or equivalent and in accordance with the requirements of national legislation (i.e. Sea Pollution Acts 1991 to 1999; Sea Pollution (Miscellaneous Provisions) Act 2006) as applicable. Also all waste and/or litter, including potential pollutants produced during construction of the offshore infrastructure will be stored and returned to shore for authorised disposal at suitable facilities (see Table 30-4).

Magnitude of impact

The impact is predicted to be of regional spatial extent, short term duration, and low reversibility. It is predicted that the impact will affect the receptor directly (i.e. the waste facilities). However, the quantities of waste arising for reuse, recovery or disposal are not significant in a way that they will impact on the available and expected waste management capacities in the region. The magnitude is therefore considered to be low adverse.

Sensitivity of the receptor

All waste from vessels will be managed in accordance with the Port's waste management requirements. Such ports may be in Ireland or other jurisdictions. A list of facilities that are available to take any waste are

identified in Table 30-4. These sites are deemed to be of low sensitivity as the capacity is available to accept the waste types that will be generated by the Project.

Significance of the effect

Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be low. The effect will, therefore, be of **slight adverse significance**, which is not significant in EIA terms.

Decommissioning phase

The design life for the Project is for 40 years.

At the end of the operational lifetime of the Project, it is anticipated that all structures above the seabed will be completely removed along with the onshore cables (see chapter 5: Project Description). As there is no statutory requirement for removal of decommissioned offshore cables, it may be agreed with the relevant authorities that the best environmental option is to leave buried cables in-situ, recording their location and terminating, sealing and burying their ends (see volume 2A, chapter 5: Project Description).

If complete decommissioning is required, then all of the electrical infrastructure will be removed, and any waste will be taken off site by a licenced waste contractor and managed in accordance with the waste hierarchy. Only material found to be unsuitable for reuse, recovery or recycling purposes will be sent for disposal. These materials will be taken off site by a licenced waste contractor and disposed of under licence from the appropriate authority.

The opportunities for decommissioned equipment to be reused or recycled will only be known at the time of decommissioning and will be dependent on what waste facilities are available to accept the equipment at that time if reuse is not an option. Therefore, an assessment of impacts cannot be undertaken at this time. However, measures to manage the decommissioned equipment in line with the waste hierarchy and policy at the time of decommissioning are proposed.

30.10.3 Waste arising during the operational and maintenance phase of the Project

Magnitude of impact

All waste generated during the operational and maintenance phase will require off site transfer for either reuse, recycling, recovery, or disposal and quantities are not significant in a way that they will impact on the available and expected waste management capacities in the region. The impact will be of regional spatial extent, long term duration, continuous and low reversibility. However, as the magnitude is therefore considered to be low adverse.

However, the quantities of waste (Table 30-7) arising for reuse, recovery or disposal are not significant in a way that they will impact on the available and expected waste management capacities in the region.

Sensitivity of the receptor

A list of facilities that are available to take any waste that cannot be reused on site are identified in Table 30-4. The waste facilities that will accept waste arising from the operational and maintenance phase are deemed to be of low sensitivity.

Significance of the effect

Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be low. The effect will, therefore, be of **slight adverse significance**, which is not significant in EIA terms.

30.10.4 Mitigation and residual effects

The assessment of impacts has concluded that there are no significant effects with the implementation of the measures included in the Project, and therefore it is considered that no further measures over those included in the Project (as outlined in section 30.8.2) are required.

With the implementation of measures included in the Project (as outlined in section 30.8.2), no significant residual effects were noted for the Project (see section 30.14).

30.10.5 Future monitoring

No waste monitoring to test the predictions made within the impact assessment is considered necessary. All potential impacts are relatively short term and are single occurrence impacts without need for future assessments.

30.11 Cumulative Impact Assessment (CIA)

The CIA takes into account the impact associated with the Project together with other projects. The projects selected as relevant to the CIA presented within this chapter are based upon the results of a screening exercise (see volume 2A, Appendix 3-1: CIA Screening Annex). Each project has been considered on a case-by-case basis for screening in or out of this chapter's assessment based upon data confidence, effect-receptor pathways and the spatial/temporal scales involved.

The approach to CIA examines the effects of the Project alongside the following projects if they fall within the Zone of Influence (ZoI) for waste:

- Other projects with consent but not yet constructed/construction not completed;
- Other projects in a consent application process but not yet determined (including planning applications, foreshore lease/licence applications, Dumping at Sea Permit applications;
- Other projects currently operational that were not operational when baseline data were collected, and/or those that are operational but have an ongoing impact; and
- Projects, which satisfy the definition of 'relevant maritime usage' under the Maritime Area Planning Act (2021) (i.e. wind farm projects designated as 'Relevant Projects' or 'Phase 1 Projects') including North Irish Sea Array (NISA), Dublin Array, Codling Wind Park, Arklow Bank Wind Park (Phase 2) and Sceirde Rocks wind farm).

No projects were screened into the CIA for this assessment as there was no spatial overlap with the Project.

30.12 Transboundary effects

A screening of transboundary impacts has identified that there is minimal potential for significant transboundary effects with regard to waste from the Project upon the interests of the UK or other EEA States.

30.13 Interactions

A description of the likely inter-related effects arising from the Project on waste is provided in volume 2C, chapter 32: Interactions.

30.14 Summary of impacts, mitigation measures and residual effects

Information on waste was established from a desktop study which estimated the amount of waste likely to be generated during the lifetime of the Project and also identified suitable waste processing facilities in the region which could be considered to accept material that cannot be reused on site.

Table 30-13 presents a summary of the potential impacts, mitigation measures and residual effects in respect to waste.

The magnitude of these impacts has been assessed to be low adverse with slight adverse effects predicted on the identified receptors which is not significant in EIA terms. In instances where waste material can be reused on site, the magnitude of these impacts is considered low beneficial with slight beneficial effects on the identified receptors which is not significant in EIA terms.

No potential cumulative or transboundary impacts were identified in regard to the effects of the Project.

The predominant source of waste that will be generated from the Project arises from soil excavation during the construction phase.. The amount of soil waste generated by the Project is relatively small (Table 30-6) and the surrounding area has waste licenced facilities (Table 30-4) that have been shown to have sufficient capacity to deal with the calculated quantities. Material will be reused on site to fill the void where possible. Where this is not possible, priority will be giving to recycling this material, placing it at a licenced facility that uses soil material for ground works or to backfill voids. In the event that any material cannot be reused or recycled, it will be treated as waste and cleaned and disposed of appropriately and in accordance with applicable law.

Table 30-13: Summary of potential environment effects, mitigation and monitoring.

Description of impact	Phase C	Phase O	Phase D	Measures included in the Project	Magnitude of impact	Sensitivity of receptor	Significance of effect	Additional measures	Residual effect	Proposed monitoring
Waste arising during construction of the onshore infrastructure.	✓	×	✓	Waste prevention; Identification of appropriate waste facilities to accept the waste; and Nomination of a Waste Manager.	C: Low adverse (for materials transferred off site) and low beneficial (for materials reused) D: Low adverse and low beneficial	C: Low D: Low	C: Slight adverse and slight beneficial D: Slight adverse and slight beneficial	None	C: Slight adverse and slight beneficial D: Slight adverse and slight beneficial	None
Waste arising during construction of the offshore infrastructure.	✓	×	✓	Waste prevention; Identification of appropriate waste facilities to accept the waste; Nomination of a Waste Manager; and Obtaining and adhering to the requirements of an EPA Dumping at Sea Permit.	C: Low adverse D: Low adverse	C: Low D: Low	C: Slight adverse D: Slight adverse	None	C: Slight adverse D: Slight adverse	None
Waste arising during the operational and maintenance phase of the Project.	×	✓	×	Waste prevention; Identification of appropriate waste facilities to accept the waste; and Nomination of a Waste Manager.	O: Low adverse	O: Low	O: Slight adverse	None	O: Slight adverse	None

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