17. Material Resource and Waste

The material resource and waste ES chapter reports on the likely waste generation effects associated with the demolition and construction stage of the proposed development.

Existing Conditions

A desk-based assessment was undertaken to establish the existing baseline waste conditions in the study area, using data sets and information from Cornwall Council and the Environment Agency.

The study area for waste is south-west England. The Environment Agency Waste Management 2023 data indicates that 20,198,641 tonnes of waste were received/handled within the south-west England in 2023. Of these, 1,665,293 tonnes of waste were received/handled in Cornwall.

As of 2023, in the south-west of England, the landfill void capacity for inert and non-hazardous waste was 16,584,931 m^3, whilst the landfill void capacity for hazardous waste was 339,125 m^3.

By 2030, based on predicted demolition and construction waste arisings and municipal, commercial and industrial waste to be generated, landfill void capacity in south-west England would reduce by 5%.

Demolition and Construction

The non-hazardous waste generation quantities arising from the proposed development demolition and construction stage activities are presented in the following table:

Stage	Waste Type	Waste Quantity (m^3)
Dredging	Seabed and rock material	543,050
Demolition	Concrete (Northern Arm)	14,854
	Precast concrete (Warehouses)	53
	In-situ concrete (Warehouses)	429
	Steel (excluding reinforcement) (Warehouses)	6
	Steel reinforcement (Warehouses)	1
Construction	Concrete	2,718
	Fill materials, including revetments	20,269
	Reinforcement	36
	Rock Armor	1,266
	Steel excluding (reinforcement)	11
Total		582,693

The hazardous waste generation quantities arising from the proposed development demolition and construction stage activities are presented in the following table:

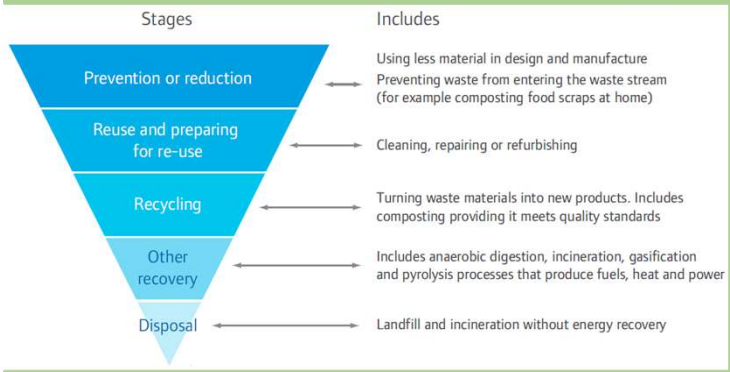
Stage	Waste Type	Waste Quantity (m^3)
Dredging	Seabed and rock material	99,950
Excavation	Revetment fill material	36,840
Demolition	Concrete (Northern Arm)	6,366
	Timber (Western Wharf)	684
	Asbestos cementitious cladding (Warehouses)	17
Total		143,857

During the demolition and construction stage, the following impacts and effects have been assessed:

- Reduced regional landfill void capacity for non-hazardous waste: this effect is assessed to be slight adverse (not significant), and with the implementation of additional mitigation, which would comprise maximising re-use and recycling of waste generated as far as possible (using landfill as a last resort in line with the waste hierarchy), this effect is assessed to be neutral to slight adverse (not significant).
- Reduced regional landfill void capacity for hazardous waste: this effect is assessed to be very large adverse (**significant**).

Operation

Generation of waste during operation of the proposed development was scoped out of assessment. Falmouth Docks is an existing operational facility with waste management practices in accordance with relevant waste legislation. The proposed development is not expected to affect existing activities at the site such as export of glass recycling.



Waste Hierarchy

17 Material Resource and Waste

17.1 Introduction

17.1.1 This chapter reports on the likely waste generation effects associated with the demolition and construction stage and operational stage of the proposed development.

17.1.2 This chapter is supported by the following technical appendices within ES Volume 2:

- Technical Appendix 17.1 – Circular Economy Statement and Materials Management Strategy;
- Technical Appendix 17.2 – Outline Site Waste Management Plan.

17.1.3 The assessment has been informed by the following legislation, policies and published guidance:

- International Legislation:
  - Waste Framework Directive (2008/98/EC)1
  - National and Regional Legislation and Policy:
  - Environmental Protection Act, 19902
  - Waste (England and Wales) Regulations (SI 2011/988), 20113
  - National Planning Policy Framework, 20244
  - National Planning Policy for Waste, 20145
  - Environmental Permitting (England and Wales) Regulations (SI 2016/1154), 20166
  - National Resource and Waste Strategy, 20187
  - National Waste Management Plan for England, 20218
  - The Waste (Circular Economy) (Amendment) Regulations (SI 2020/904) 20209
  - Environment Act, 202110
  - Controlled Waste (England and Wales) (Amendment) (England) Regulations (SI 2023/1243) 202311
  - The waste prevention programme for England: Maximising Resources, Minimising Waste, 202312
- Local Policy:
  - Cornwall Council, Local Plan - Strategic Policies 2010-203013
  - Cornwall Council, Climate Emergency Development Plan Document14, 2023
  - Cornwall Council, Resources and Waste Strategy, 2018[15]
- National guidance and industry standards:
  - Institute of Environmental Management and Assessment (IEMA) guide to: Materials and Waste in Environmental Impact Assessment, 2020[16]

17.1.4 Further details are provided in ES Volume 2: Technical Appendix 17.1 and 17.2.

17.2 Consultation

17.2.1 No EIA scoping opinion responses were received relating to material resources and waste.

17.2.2 No separate consultations have been undertaken at this stage.

17.3 Assessment Scope

17.3.1 In considering the generation and management of waste, it is important to define when, under current legislation and understanding, a material is considered to be a waste. The Waste Framework Directive (2008/98/EC) defines waste as *"…any substance or object which the holder discards, intends to discard or is required to discard".*

17.3.2 More specifically, construction and demolition (C&D) waste is described as waste generated by construction and demolition activities, including excavation materials.

17.3.3 The IEMA guidance relating to Materials and Waste in Environmental Impact Assessment[5] was used in the assessment. Furthermore, professional judgement, experience and best practice methods have been drawn upon to assess the significance of the potential effects of the proposed development. The assessment has taken account of all applicable legislation, policy, and industry guidance.

17.3.4 As defined in the IEMA guidance, materials are physical resources that are used across the lifecycle of a development. Examples include concrete, aggregate, asphalt, bricks, ballast, mortar, glass and timber. Excavated arisings are defined as soil, rock or similar resources generated by excavations either from within the boundary of a development, or from another source (e.g. a donor site); that have been proven to be clean and naturally occurring material that will be reused on the site of origin within 12 months, or meet relevant waste exemption criteria, or fall within the scope of and meet the requirements of the CL:AIRE Definition of Waste: Development Industry Code of Practice (DoW CoP)[17] criteria.

17.3.5 The site is located within the jurisdiction of Cornwall Council (CC) and the CC Local Plan 2010-2030[10] outlines a number of policies specific to material resources and waste as follows:

- Policy 17: Minerals – general principles
- Policy 18: Minerals safeguarding
- Policy 19: Strategic waste management principles
- Policy 20: Managing the provision of waste management facilities.

17.3.6 The CC Local Plan should be read in conjunction with CC's Climate Emergency Development Plan Document, specifically Policy SEC1 'Sustainable Energy and Construction' which sets out principles and requirements around materials and waste.

17.3.7 The waste types and estimated quantities used in this assessment have been based on data provided by the project team.

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[1] European Union, 2008. Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (Text with EEA relevance). Document 32008L0098.
[2] Secretary of State, 1990. Environmental Protection Act 1990. London: The Stationery Office
[3] Secretary of State, 2011, Waste (England and Wales) Regulations (SI 2011/988), Available at https://www.legislation.gov.uk/uksi/2011/988 [Accessed 18/07/2024]
[4] Secretary of State, (amended December 2024). National Planning Policy Framework. London Stationary Office. Available at: https://www.gov.uk/guidance/national-planning-policy-framework [Accessed 15/12/2024]
[5] Secretary of State, 2014. National Planning Policy for Waste. Available at:https://www.gov.uk/government/publications/national-planning-policy-for-waste [Accessed 15/02/2024]
[6] Secretary of State, 2014. Environmental Permitting (England and Wales) Regulations (SI 2016/1154). Available at https://www.legislation.gov.uk/uksi/2016/1154/contents [Accessed 09/07/2024]
[7] Department of Energy and Rural Affairs, 2018. Our Waste, Our Resources: A Strategy for England. Available at: Our waste, our resources: a strategy for England (publishing.service.gov.uk) [Accessed 09/05/2024]
[8] Secretary of State, 2021. Waste Management Plan for England 2021. London Stationary Office. Available at: https://www.gov.uk/government/publications/waste-management-plan-for-england-2021 [Accessed 15/02/2024]
[9] Secretary of State, 2020. The Waste (Circular Economy) (Amendment) Regulations. Available at https://www.legislation.gov.uk/uksi/2020/904/contents/made [Accessed 09/07/2024]
[10] Secretary of State, 2021. Environment Act 2021, London: The Stationary Office
[11] Secretary of State, 2023. The Controlled Waste (England and Wales) (Amendment) (England) Regulations 2023. (SI 2023/1243). Available at: https://www.legislation.gov.uk/uksi/2023/1243/made [Accessed: 9/07/2024]
[12] DEFRA, 2023. The Waste prevention programme for England: Maximising Resources, Minimising Waste. Available at: https://www.gov.uk/government/publications/waste-prevention-programme-for-england-maximising-resources-minimising-waste/the-waste-prevention-programme-for-england-maximising-resources-minimising-waste [Accessed 23/09/2024]
[13] Cornwall Council, 2016. Cornwall Local Plan Strategic Policies 2010-2030. Available at: https://www.cornwall.gov.uk/media/ozhj5k0z/adopted-local-plan-strategic-policies-2016.pdf [Accessed 15/07/2024]
[14] Cornwall Council, 2023. 'Climate Emergency Development Plan Document'. Available at: Climate Emergency Development Plan Document - Strategic Planning (cornwall.gov.uk) [Accessed 04/04/2024]
[15] Cornwall Council, 2018. 'Resources and Waste strategy'. Available at: https://www.cornwall.gov.uk/media/wd4jijho/resources-and-waste-strategy.pdf [Accessed 04/07/2024]
[16] IEMA, 2020. Materials and Waste in Environmental Impact Assessment – March 2020. Available at: IEMA - Materials and Waste in Environmental Impact Assessment - March 2020 [Accessed 04/04/2024]
[17] CL:AIRE, 2024. Definition of Waste: Code of Practice. Available at: DoW:CoP (claire.co.uk) [Accessed 15/02/2024]

Technical Scope

17.3.8 The technical scope of the assessment has considered the following during the demolition and construction stage:

- Remaining landfill void capacity that would be depleted by waste produced during the demolition and construction stage.

17.3.9 The following impacts and effects have been 'Scoped out' as per the scoping report and will not be assessed in this chapter:

17.3.10 The consumption of materials and resources during the demolition and construction stage and the operational stage;

- Offshore disposal location/s during the demolition and construction stage;
- Generation of waste during the operational stage; and
- Generation of dredge arisings during the operational stage.

17.3.11 Dredge arisings suitable for disposal at sea will be disposed of at a licensed marine disposal site (refer to Technical Appendix 5.3: BPEO for further details). As a worst-case assumption, all dredged arisings not disposed offshore will be managed via a suitable permitted facility on land, the effects on which are considered within this assessment.

Spatial Scope

17.3.12 One study area is proposed for waste. The study area is defined as the capacity of waste management infrastructure and remaining landfill void that could accept arisings and/or waste generated by the proposed development, within the southwest of England for waste. The study area takes into account the proximity principle which should ensure that the most appropriate waste management facilities are utilised while balancing other issues such as logistics, cost and environmental impacts of managing waste at greater distance.

17.3.13 While the site is an important export site for glass recycling, it is expected that this scheme will not affect this activity during the redevelopment and as such, a first study area as defined in the IEMA guidance (i.e. the EIA boundary) has not been included in the assessment.

Temporal Scope and Assessment Scenarios

17.3.14 The assessment has considered impacts arising during the demolition and construction stage which would be expected to be temporary and short-term (up to 5 years years) in nature. However, whilst the demolition and construction stage is short-term, waste effects are permanent and irreversible and therefore are considered to be long-term (>10 years).

17.3.15 This assessment has been undertaken against the existing baseline (2023) as further detailed in Section 17.4.

17.4 Baseline Characterisation Method

Desk Study

17.4.1 To establish the existing baseline waste conditions in the study area, relevant data was reviewed and assessed. The data sets and associated sources can be summarised as follows:

- CC Local Plan Strategic Policies 2010-2030[10]
- CC Resources and Waste Strategy 2018[11]
- Environment Agency (EA) Remaining Landfill Capacity, 2023[18]
- Environment Agency (EA) Waste Data Interrogator, 2023[19]

Field Study

17.4.2 Field study/data collection was not required as the data provided by other sources was deemed to be adequate and representative of the site conditions.

17.5 Assessment Method

Methodology

17.5.1 The impacts of the proposed development, arising from the generation and management of waste, have been assessed in line with IEMA guidance. A document review to assist in identifying current requirements of material resources and waste management including national and regional waste policy, waste strategies, management plans, legislative requirements and relevant reports has also been undertaken.

Demolition and Construction Stage

17.5.2 The following tasks were carried out to determine the impact from the generation of waste from the proposed development:

- Review of relevant legislation, national and regional and local planning policies and guidance to identify waste management objectives and targets relevant to the proposed development;
- Establishing a baseline for waste;
- Review of the overall design and data from the Client and design team to estimate the quantities of wastes to be generated during dredging, demolition and construction;
- Identification and evaluation of the impacts of the proposed development against baselines for waste; and
- Identification of opportunities/mitigation measures to reduce, re-use, recover and/or recycle wastes through a review of the proposed development's design.

Operational Stage

17.5.3 Impacts from materials and waste during the operational stage are scoped out of this assessment.

Cumulative Effects

17.5.4 No projects have been identified that would have a cumulative impact with the proposed development and result in any combined effects on the receptors assessed in this chapter.

17.6 Assessment Criteria

17.6.1 The general criteria used to assess if an effect is significant or not, has been made using the criteria set out in the IEMA guidance and further details are provided herein. This is determined by consideration of the sensitivity of the receptor, magnitude of impact and scale of the effect. In considering the significance of an effect, consideration has been given to the duration of the effect, the geographical extent of the effect and the application of professional judgement.

Receptor Sensitivity/Value Criteria

17.6.2 The receptors for waste relates to availability of regional (and where appropriate, national) landfill void capacity in the absence of the proposed development. Landfill capacity is recognised as an unsustainable and increasingly scarce option for managing waste as it is a finite resource, and hence – through the ongoing disposal of waste – there is a continued need to expand existing and develop new facilities. This requires the depletion of natural and other resources which, in turn, adversely impacts the environment.

17.6.3 Sensitivity of receptors for waste have been classified as negligible, low, medium, high or very high, in accordance with the IEMA guidance and criteria for this is set out in Table 17.1.

[18] Environment Agency, 2024. Remaining Landfill Capacity. Available at:https://www.data.gov.uk/dataset/237825cb-dc10-4c53-8446-1bcd35614c12/remaining-landfill-capacity [Accessed 04/04/2024]

[19]Environment Agency, 2024. Available at: https://ckan.publishing.service.gov.uk/dataset/2022-waste-data-interrogator [Accessed 04/04/2024]

Table 17-1: Receptor Sensitivity Criteria (Non-Hazardous and Hazardous Waste)

Sensitivity	Criteria
Negligible	Inert and non-hazardous landfill void capacity is expected to remain unchanged or is expected to increase through a committed change in capacity. Hazardous waste baseline landfill void capacity is expected to remain unchanged or is expected to increase through a committed change in capacity.
Low	Inert and non-hazardous landfill void capacity is expected to reduce minimally by <1 % as a result of wastes forecast. Hazardous waste baseline landfill void capacity is expected to reduce minimally by <0.1% as a result of wastes forecast.
Medium	Inert and non-hazardous landfill void capacity is expected to reduce noticeably by 1-5 % because of wastes forecast. Hazardous waste baseline landfill void capacity is expected to reduce by 0.1- 0.5% as a result of wastes forecast.
High	Inert and non-hazardous landfill void capacity is expected to reduce considerably by 6-10 % because of wastes forecast. Hazardous waste baseline landfill void capacity is expected to reduce considerably by 0.5-1% as a result of wastes forecast.
Very High	Inert and non-hazardous landfill void capacity is expected to reduce very considerably (by >10 %); end during construction or operation; is already known to be unavailable; or would require new capacity or infrastructure to be put in place to meet forecast demand. Hazardous waste baseline landfill void capacity is expected to reduce very considerably (by >1%)/end during construction or operation; is already known to be unavailable; or would require new capacity or infrastructure to be put in place to meet forecast demand.

Impact Magnitude Criteria

17.6.4 The magnitude of impact for waste is assessed through the application of void capacity and has been classified as no change, negligible, minor, moderate, or major in accordance with the IEMA guidance and the criteria for this is set out in Table 17.2 for both non-hazardous and hazardous waste.

Table 17-2: Impact Magnitude Criteria (Non-Hazardous and Hazardous Waste)

Magnitude of Impact	Criteria
No Change	Zero inert and non-hazardous waste generation and disposal from the development. Zero hazardous waste generation and disposal from the development.
Negligible	Inert and non-hazardous waste generated by the development will reduce regional landfill void capacity baseline by <1%. Hazardous waste generated by the development will reduce national landfill void capacity baseline by <0.1%
Minor	Inert and non-hazardous waste generated by the development will reduce regional landfill void capacity baseline by 1-5%. Hazardous waste generated by the development will reduce national landfill void capacity baseline by <0.1-0.5%
Moderate	Inert and non-hazardous waste generated by the development will reduce regional landfill void capacity baseline by 6-10%. Hazardous waste generated by the development will reduce national landfill void capacity baseline by <0.5-1%
Major	Inert and non-hazardous waste generated by the development will reduce regional landfill void capacity baseline by >10%.

Table 17-2: Impact Magnitude Criteria (Non-Hazardous and Hazardous Waste)

Magnitude of Impact	Criteria
	Hazardous waste generated by the development will reduce national landfill void capacity baseline by >1%

Scale of Effect Criteria

17.6.5 The impacts have been assessed on the basis of the sensitivity of receptors against the magnitude of impact to determine the scale of effect as presented in Table 17.3. These have been determined in accordance with the IEMA guidance for materials and waste.

Table 17-3: Scale of Effect Criteria Thresholds

Sensitivity of Receptor	Magnitude of Change (impact)				
	No Change	Negligible	Minor	Moderate	Major
Very High	Neutral	Slight	Moderate or large	Large or very large	Very large
High	Neutral	Slight	Slight or moderate	Moderate or large	Large or very large
Medium	Neutral	Neutral or slight	Slight	Moderate	Moderate or large
Low	Neutral	Neutral or slight	Neutral or slight	Slight	Slight or moderate
Negligible	Neutral	Neutral	Neutral or slight	Neutral or slight	Slight

17.6.6 Environmental effects for waste are combined to determine the proposed developments significant as show in Table 17.4. The proposed development can be defined as significant or not significant as outlined in Table 17.4.

Table 17-4: Significance Criteria for Waste

Effect	Waste
Neutral	Not significant
Slight	
Moderate	Significant
Large	
Very large	

17.6.7 In determining the significance of reported effects, consideration has been given to the type of effect i.e. direct, indirect or secondary, the geographical extent of the effect and the duration of the effect i.e. temporary which is considered to be either short-term (up to 5 years) or medium-term (5-10 years) or long-term (10 years or more).

Nature of Effect Criteria

17.6.8 The nature of the effect is in accordance with ES Chapter 2: EIA Process and Methodology and has been described as either adverse, neutral or beneficial.

17.7 Assumptions and Limitations

17.7.1 The assumptions applicable to the assessment methodology are outlined as follows:

- A conservative approach has been used to estimate the quantity of dredge arisings that will be used onsite within the proposed development. Pending further geotechnical investigation, a greater quantity of dredge arisings could be reused than that assumed herein.
- Waste arising from dredging will either be reused on site, disposed of at sea or disposed of on land. Of the amount of dredging being sent to landfill, 45% (99,950m³) has been classified as hazardous based on waste classification testing data and assumes appropriate measures are

undertaken by the Contractor to segregate hazardous from non-hazardous dredging waste. It should be noted that whilst this assessment has assumed hazardous waste arising from dredging would be disposed via hazardous waste landfill, the Applicant would explore the potential for treatment and subsequent reuse or recycling of this waste.

- The quantities of waste estimated to arise from the demolition and construction stage of the proposed development have been derived based on professional judgement, experience on similar schemes and the initial ground investigation works. The exact volumes of waste would be confirmed following further ground investigation works and detailed design.
- Construction waste quantities have been estimated based on construction waste factors taken from RICS Whole Life Carbon Assessment Report 2023[20] that have been applied to the materials to be used in the proposed development.
- The assessment has relied on data provided by the design team. It has been assumed that these data sets have been reported correctly.

17.7.2 The following limitations have been identified for the assessment:

- The existing materials which form the dock structures and the resulting waste generated through demolition and construction of the proposed development have been estimated from the available design information. These quantities will be updated at the detailed design, prior to the demolition and construction stage. As such, a worst-case scenario for waste generation has been adopted within this assessment.
- The waste baselines presented in this chapter use publicly available data. It has been assumed that these data sets have been reported correctly.
- The assessment for waste receptors has been based on a review of the baseline information available at the time of assessment. Whilst the baseline data sources used in this assessment have been obtained from the most recently available information, it is still possible that conditions could have changed since their publication.
- Indirect impacts, such as those from the offsite manufacture of products or extraction of mineral resources, are outside the scope of the assessment, as it is not possible at this stage to determine where products will be manufactured, or mineral resources extracted.
- Impacts associated with the transport of materials and waste are considered in relevant ES chapters, including ES Volume 2: Chapters 13-16: Transport and Accessibility, Noise and Vibration, Air Quality and Climate.

17.7.3 It is not considered that these limitations and/or assumptions have affected the ability to undertake the assessment, nor the conclusions reported in this chapter.

17.8 Baseline Conditions

Existing Baseline

17.8.1 At a national level, the UK generated 59.4 million tonnes of non-hazardous construction and demolition waste in 2020, of which 55 million tonnes was recovered giving a rate of 92.6% recovery. In 2022, England generated 63.0 million tonnes of non-hazardous construction and demolition waste, of which 59.4 million tonnes was recovered giving a rate of 94% recovery[21].

17.8.2 At a regional level, in 2023, according to data from the Environment Agency, the southwest region produced 1,134,417 tonnes of construction and demolition wastes of which 5,514 tonnes (0.5%)[22] was sent to landfill. In 2022, 16,530,437 tonnes of construction and demolition wastes were produced, of which 463,714 tonnes was sent to landfill (2.8%).

17.8.3 EA Waste Management 2023 data indicates that 20,198,641 tonnes of waste were received/handled within the southwest in 2023. Of these, 1,665,293 tonnes of waste were received/handled in Cornwall.

17.8.4 EA records relating to landfill inputs in Cornwall and the southwest region for all types of waste provided by the EA Waste Management information 2023 have been summarised in Table 17.5 below.

Table 17-5: Landfill Inputs for Cornwall and Southwest (2023)

Landfill type	Cornwall (tonnes)	Southwest (tonnes)
Hazardous	-	38,255
Non-Hazardous	-	936,082
Inert	48,001	1,327,941
Total	48,001	2,302,278

17.8.5 Looking at trends in landfill inputs from the Waste Data Interrogator, waste being sent to landfill from Cornwall has been steadily decreasing over the last 10 years. However, within the southwest region, volumes of waste sent to landfill is roughly between 2,700,000-3,500,000 tonnes with some minor fluctuations within this range.

17.8.6 The Environment Agency provides estimated landfill void capacity[18], which can be used to establish a waste baseline. Table 17.6 provides a summary of the trends in landfilling void capacity within Cornwall and the southwest region in the last 10 years. The general trend is that landfill void capacity within the region has been decreasing.

Table 17-6: Landfill Void Capacity Trends (2012-2022)

Year	Site Type	Cornwall (000s tonnes)	Southwest (000s tonnes)
2012	Inert	406	9,468
	Non-Inert*	2,457	27,595
	Total	2,902	37,102
2013	Inert	493	9,737
	Non-Inert	2,187	25,411
	Total	2,713	35,180
2014	Inert	429	9,538
	Non-Inert	1,829	22,781
	Total	2,258	32,318
2015	Inert	1,863	10,897
	Non-Inert	1,673	19,556
	Total	3,536	30,453
2016	Inert	338	9,763
	Non-Inert	1,564	17,135
	Total	1,903	26,898
2017	Inert	431	9,386
	Non-Inert	1,521	16,024
	Total	1,952	25,410
2018	Inert	1,993	12,117

[20] RICS, 2023. Whole life carbon assessment for the built environment. 2nd edition. Available from: [Accessed on 25/10/2024]
[21] DEFRA, 2024. UK Statistics on Waste. Available at https://www.gov.uk/government/statistics/uk-waste-data/uk-statistics-on-waste#:~:text=In%202020%2C%20it%20is%20estimated,50.3%20million%20tonnes%20was%20recovered. [Accessed on 19/10/2024]
[22] Environment Agency, 2023 Waste Data Interrogator, Available at 2023 Waste Data Interrogator - data.gov.uk. [Accessed 09/07/2024]

Table 17-6: Landfill Void Capacity Trends (2012-2022)			
	Non-Inert	1,184	15,351
	Total	3,177	27,468
2019	Inert	294	11,760
	Non-Inert	1,501	13,544
	Total	1,795	25,304
2020	Inert	214	17,251
	Non-Inert	1,502	12,369
	Total	1,716	29,620
2021	Inert	180	15,859
	Non-Inert	1,502	10,950
	Total	1,682	26,809
2022	Inert	172	10,269
	Non-Inert	1,502	10,977
	Total	1,674	21,246

*Non-inert includes sites that can accept non-hazardous and/or hazardous waste.

17.8.7 Table 17.7 summarises landfill void capacity information for the Southwest of England in 2023, which is the most recent year for which data is available.

Table 17-7: Southwest of England Landfill Void Capacity	
Landfill type	**Void capacity - southwest (m³)**
Inert and non-hazardous	16,584,931
Hazardous	339,125

17.8.8 According to the Environment Agency Landfill Capcity[25], there are 25 licensed waste management permitted non-hazardous landfills in the southwest of which five are in Cornwall in 2023. The five permitted non-hazardous landfills in Cornwall are:

- Lean Quarry Landfill, Horningtops, Liskeard PL14 3QD;
- Tiscott Wood Depot Landfill, Bude, Cornwall, EX23 9LE;
- Tregongeeves Quarry Landfill, St Mewen, St Austell, Cornwall, PL26 7DS;
- Trevozah Barton Inert Landfill, South Petherwin, Launceston, Cornwall, PL15 9LT; and
- Roodscroft Landfill Site Hatt, Saltash, Cornwall, PL12 6PJ.

17.8.9 There are no permitted hazardous landfills in Cornwall but there are two in the wider southwest region.

- Wingmoor Farm, Stoke Orchard Road, Cheltenham GL52 4DG; and
- Parkgate Farm Hazardous waste landfill, Purton SN5 4HG.

Future Baseline

17.8.10 Construction and demolition waste arising in Cornwall is predicted to increase by 230,000 tonnes resulting in a total of 1.18 million tonnes of waste generated per year[13]. This would result in a need for an additional 659,000m³ of landfill provision by 2030[13] for construction, demolition and excavation waste. This translates to an average of 47,071m³ of additional landfill provision per year by 2030. In addition, approximately 200,000 m³ of void space is needed for the provision of municipal, commercial and industrial waste that is forecasted to go to landfill by 2030. With a total of approximately 859,000m³ expected to be sent to landfill by 2030, this is a 5% reduction in landfill void capacity within the southwest, based on 2023 data.

17.8.11 Considering the trend of an increasing amount of waste being sent to landfill within the southwest region, the decline in landfill capacity over time and the forecasted increase of waste that will be sent to landfill within the region, there is a noticeable impact on landfill void capacity in the future baseline scenario. With a minimum of at least 5% reduction in landfill capacity without the proposed development, the sensitivity of the receptor using the IEMA guidance set out in Table 17.1 is **Medium** for non-hazardous waste.

17.8.12 Due to limited information on forecasts of hazardous waste within the region, a future baseline for hazardous waste cannot be determined.

17.8.13 However, in 2023, 38,255m³ of hazardous waste was sent to landfill, which is 11% of the landfill void capacity (based on 2023 data). Based on the this, the sensitivity of the receptor using the IEMA guidance set out in Table 17.1 is **Very High** for hazardous waste

Sensitive Receptors

17.8.14 The receptors identified as sensitive to the proposed development, and which have been 'scoped-in' to the assessment are summarised in Table 17.8.

Table 17-8: Summary of Sensitive Receptors	
Receptor	**Sensitivity**
Landfill void capacity (southwest) Non-hazardous waste	Medium
Landfill void capacity (southwest) Hazardous waste	Very High

17.9 Assessment of Effects

Demolition and Construction Effects

17.9.1 Waste will be generated during demolition, dredging, excavation and construction of the proposed development. Table 17.9 summarises the total hazardous and non-hazardous waste arising from each of these stages.

Table 17-9: Total Hazardous and Non-Hazardous Waste Generation Quantities		
Stage	**Waste Type**	**Waste Quantity (m³)**
Dredging	Seabed and rock material	643,000
Excavation	Fill material (Central Causeway)	36,840
Demolition	Concrete (Northern Arm)	21,220
	Timber (Western Wharf)	684
	Precast concrete (Warehouses)	53
	In-situ concrete (Warehouses)	429
	Steel (excluding reinforcement) (Warehouses)	6
	Steel reinforcement (Warehouses)	1
	Asbestos cementitious cladding (Warehouses)	17
Construction	Concrete	2,718
	Fill materials including revetments	20,269
	Reinforcement	36
	Rock Armour	1,266
	Steel excluding (reinforcement)	11
Total		**726,549**

Effect on landfill Void Capacity: Hazardous Waste

17.9.2 Table 17.10 details the total expected non-hazardous waste arisings from the proposed development that are known at this stage prior to any additional mitigation.

Table 17-10: Non-Hazardous Waste Generation Quantities

Stage	Waste Type	Waste Quantity (m³)
Dredging	Seabed and rock material	543,050
Demolition	Concrete (Northern Arm)	14,854
	Precast concrete (Warehouses)	53
	In-situ concrete (Warehouses)	429
	Steel (excluding reinforcement) (Warehouses)	6
	Steel reinforcement (Warehouses)	1
Construction	Concrete	2,718
	Fill materials, including revetments	20,269
	Reinforcement	36
	Rock Armour	1,266
	Steel excluding (reinforcement)	11
Total		582,693

17.9.3 Based on the total amount of non-hazardous waste produced, if this was all assumed to go to landfill directly, this would reduce the landfill void capacity in the southwest by 4%. Using criteria in Table 17.2 the magnitude of impact is minor on a receptor of medium sensitivity Therefore, the scale of the effect of waste on non-hazardous landfill void capacity is **slight adverse** and **not significant**.

Effect on landfill Void Capacity: Hazardous Waste

17.9.4 Table 17.11 details the total expected hazardous waste arisings that are known at this stage (worst-case estimates).

Table 17-11: Hazardous Waste Generation Quantities

Stage	Waste Type	Waste Quantity (m³)
Dredging	Seabed and rock material	99,950
Excavation	Revetment fill material	36,840
Demolition	Concrete (Northern Arm)	6,366
	Timber (Western Wharf)	684
	Asbestos cementitious cladding (Warehouses)	17
Total		143,857

17.9.5 Based on the total amount of hazardous waste generated by the proposed development, if this was all assumed to go to landfill directly, hazardous landfill void capacity would reduce by 42% in the southwest region. Using criteria in Table 17.2 the magnitude of impact is major on a receptor of very high sensitivity. Therefore, the scale of the effects of waste on hazardous landfill void capacity is **very large adverse** and **significant** at a regional level.

17.9.6 For all waste effects within this assessment, the duration of the effect is considered to be long-term and the effect on the landfill void capacity happens immediately, is permanent and irreversible.

Operational Effects

17.9.7 Operational effects have been scoped out and are not included in this assessment.

17.10 Additional Mitigation

17.10.1 A Site Waste Management Plan would be produced prior to the demolition and construction stage and would ensure suitable management of construction, demolition, excavation and dredging waste, preventing (where practicable) and minimising waste arising and maximising waste re-use and recycling as per the waste hierarchy. The SWMP will be based on the outline SWMP (Technical Appendix 17.2), which outlines the following mitigation measures that would be implemented at the demolition and construction stage:

- All excavations and dredging would be carefully monitored by a suitably qualified person to ensure that any potentially contaminated material is identified and segregated, if encountered. If any potentially contaminated material is encountered, it will be segregated from clean/inert material, tested, and classified as either non-hazardous or hazardous and further classified as clean, inert, non-hazardous, or hazardous prior to disposal.
- Waste materials generated at the site compound would be stored in suitable receptacles in designated areas.
- On-site segregation of waste materials would be carried out to increase opportunities for off-site reuse, recycling, and recovery. This will ensure that the majority of construction materials are either recyclable or recoverable – it is anticipated that the following waste types, at a minimum, would be segregated: concrete, rock, timber.
- All waste contractors collecting waste from the site would hold a valid waste carriers licence and every movement of waste off site will be accompanied by a waste transfer note complying with Duty of Care requirements.
- Construction wastes would be taken to suitably permitted/licenced waste facilities for processing and segregation, recycling, recovery and/or disposal.
- All waste leaving site will be reused, recycled, or recovered where possible to avoid disposal at landfill as far as practicably possible.
- All waste leaving the site would be recorded and copies of relevant documentation maintained, such as waste transfer notes, for a minimum of two years. Hazardous waste consignment notes would be retained for a minimum of three years.
- Mandatory digital waste tracking is to be implemented, in accordance with the Resources and Waste Strategy for England, in April 2025 (and therefore during the demolition and construction stage of the proposed development). This will require all waste management contractors to adhere to these requirements once implemented.
- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) would also be segregated and would be stored in appropriate receptacles (in suitably bunded areas, where required).
- A Waste Manager would be appointed by the main contractor to ensure effective management of waste during the excavation and construction works.
- All construction staff would be provided with training regarding the waste management procedures, for example via toolbox talks.

17.10.2 These mitigation measures would ensure that the waste arising from the demolition and construction stage of the proposed development are managed in-line with Policy SEC1 of Cornwall's Climate Emergency Development Plan, ensuring optimum levels of waste reduction, reuse, recycling, and recovery are achieved and will encourage sustainable consumption of resources.

Demolition and Construction Stage

17.10.3 During the demolition and construction stage, opportunities to reuse materials have been considered.

Dredged Waste

17.10.4 A total of 643,000 m³ of dredge material is estimated to arise. The project aims to reuse resources where feasible, particularly with regard to the handling of dredged material and demolished concrete. It has been assumed that as a minimum approximately 65,000 m³ of dredged rock can be recovered and reused for land reclamation behind the Western Wharf.

17.10.5 Table 17.12 summarises the quantities of waste arisings from the dredged material and the amount that it may be possible to recover for land reclamation and disposal at sea and via landfill.

Table 17-12: Dredged Material management

Material	Volume (m³)	Estimate reuse (m³)	Estimate disposal at sea (m³)	Estimate disposal at land – non-hazardous landfill (m³)	Estimate disposal at land –hazardous landfill (m³)
Dredging	643,000	65,000 (Rock)	357,000	121,050	99,950
Total	**643,000**	**65,000**	**578,000**		

17.10.6 Of the remaining dredged material that will be disposed of at sea, a further 70,000 m^3 could be rock material and may also be suitable for re-use on site (depending on its suitability and further testing). This has been further investigated within the BPEO Assessment (ES Volume 2: Technical Appendix 5.3).

Excavation waste

17.10.7 Table 17.13 summarises the quantities of waste arising from the excavation of the central causeway. This material is assumed to be contaminated and hazardous and may be suitable for treatment at an appropriately permitted treatment facility. Any material not suitable for treatment will be disposed of at landfill.

Table 17-13: Management of Excavation Waste

Material	Volume (m³)	Estimate reuse (m³)	Estimate recycled (m³)	Estimate disposal–hazardous landfill (m³)
Fill Material	36,840	0	0	36,840
Total	**36,840**	**0**	**0**	**36,840**

Demolition Waste

17.10.8 Table 17.14 summarises the quantities of the materials arising from the demolition of the Northern Arm and Western Wharf and the anticipated waste routes. A conservative assumption has been made whereby 50% of demolished material from the Northern Arm will be reused in the land reclamation behind the Western Wharf. A conservative figure of 20% has been applied to the waste that will be recycled off site, with the remaining 6,366 m³ (30%) requiring disposal at landfill.

17.10.9 In addition, the existing Western Wharf consists of timber, which is currently in poor condition. 684 m³ is assumed to be hazardous and will be removed from site and sent to an appropriate facility for disposal other than landfill.

Table 17-14: Management of Demolition Waste

Material	Volume (m³)	Estimate reuse on-site 50% (m³)	Estimate recycled off-site (20%) (m³)	Estimate disposal – not at landfill (m³)	Estimate disposal - hazardous landfill (m³)
Concrete (Northern Arm)	21,220	10,610	4,244	0	6,366
Timber (Western Wharf)	684	0	0	684	0
Total	**21,220**	**10,610**	**4,244**	**684**	**6,366**

Demolition of on-site buildings

17.10.10 A small number of buildings will be demolished on site. It is anticipated that some of these buildings contain asbestos. Warehouses 54, 55 and 56 contain an asbestos cement clad steel frame and the roofs of buildings 45 and 478 may consist of an asbestos cement sheeting.

17.10.11 Table 17.15 summarises the estimated waste arisings for key materials from warehouse 54, 55, 56 and 68. Quantities for the remainder of the buildings that will be demolished are not yet known due to limited information but are anticipated to consist of similar materials as those listed in the table below. Recovery rates have been based on RICS Whole Life Carbon Assessment, 2023. These quantities will need to be confirmed by either the Applicant or Main Contractor prior to demolition. In addition, those wastes containing asbestos should be treated as hazardous waste and further assessed to manage their appropriate disposal.

Table 17-15: Quantities of waste arising from demolition of buildings on site for Warehouse 54, 55, 56 and 68

Material	Volume (m³)	Recovery rates (%)	Estimate reuse off-site (m³)	Estimate recycled (m³)	Estimate disposal – non-hazardous landfill (m³)	Estimate disposal – hazardous landfill (m³)
Precast concrete	53	1% reuse 97% recycling	1	51	1	0
Asbestos cementitious cladding	17	0%	0	0.0	0	17
In-situ concrete	429	97% recycling	0	418	11	0
Steel (excluding reinforcement)	6	7% reuse 93% recycling	1	5	0	0
Steel reinforcement	1	100% recycling	0	1	0	0
Total	506		2	476	12	17

Construction Waste

17.10.12 Table 17.16 outlines the estimated construction waste expected to arise from the proposed development based on RICS Whole life carbon assessment, 2023. A 100% recovery rate has been assumed for these wastes as they can be easily segregated and sent offsite for recovery.

Table 17-16: Management of Construction Waste

Material Type	Construction wastage estimate (m³)	Estimate recycled (m³)	Estimate disposal - landfill (m³)
Concrete	2,718	2,718	0
Fill Material (including revetments)	20,269	20,269	0
Reinforcement (steel)	36	36	0
Rock Armour	1,266	1,266	0
Steel (excluding reinforcement)	11	11	0
Total	24,299	24,299	0

Operational Stage

17.10.13 Operational effects have been scoped out of this assessment as there will be minimal waste produced by the operational use of the proposed development.

17.11 Enhancement Measures

17.11.1 The client will explore non landfill options for waste to minimise further impact where feasible.

17.12 Demolition and Construction Residual Effects

17.12.1 With the additional mitigation in place, the residual demolition and construction effects are detailed below.

Landfill Void Capacity: Non-hazardous Waste

17.12.2 The total amount of non-hazardous waste that could be sent for disposal to landfill, as outlined above, is 121,062 m^3, as a worst-case scenario.

17.12.3 This would reduce the non-hazardous landfill void capacity in the southwest region by 0.01%. Using criteria in Table 17.2 the magnitude of impact is negligible on a receptor of medium sensitivity. Therefore, the scale of the effect of waste on non-hazardous landfill void capacity is **neutral to slight adverse** and **not significant**.

Landfill Void Capacity: Hazardous Waste

17.12.4 No additional mitigation has been identified for hazardous waste so the scale of effect remains as stated within the assessment of effects.

17.13 Operational Stage Residual Effects

17.13.1 Operational stage effects have been scoped out of this assessment as there will be minimal waste produced by the operational use of the proposed development.

17.14 Summary of Significant Effects

17.14.1 Table 17.16 provides a tabulated summary of the outcomes of the materials and waste assessment of the proposed development. It reports on the likely effects with respect to materials and waste associated with the demolition and construction and operational stages of the proposed development.

Table 17.16: Summary of Resource and Waste Effects

Receptor	Description of Effect	Pre-Additional Mitigation Effect: Scale/ Nature/ Significance*	Additional Mitigation	Post-Additional Mitigation Effect: Scale/ Nature/ Significance*	Details of Residual Effect			
					Direct/ Indirect	Permanent/ Temporary	Reversible/ Irreversible	Short-term/ Medium-term/ Long-term
Demolition and Construction								
Landfill void – non-hazardous waste	Reduced regional landfill void capacity for non-hazardous waste	Slight /Adverse/Not Significant	Reuse of 50% of dredging on site as fill Reuse of 50% of crushed concrete on site as fill and 20% sent for recycling. Management of Construction Demolition Waste via a SWMP and high recovery rates.	Neutral to Slight /Adverse / Not Significant	Direct	Permanent	Irreversible	Long-term
Landfill void – hazardous waste	Reduced regional landfill void capacity for hazardous waste	Very large/Adverse/ **Significant**	No additional mitigation identified	Very large/ Adverse/ **Significant**	Direct	Permanent	Irreversible	Long-term
Operational Development								
N/A								
Notes (refer to ES Chapter 2: EIA Process and Methodology for definitions): * Negligible/Minor/Moderate/Major, Adverse/Beneficial, Significant/Not Significant								

17.15 Cumulative Effects

Intra-Project Effects

17.15.1 As explained in Chapter 2: EIA Process and Methodology, intra-project cumulative effects are discussed in Chapter 20: Intra-Cumulative Effects.

Inter-Project Effects

17.15.2 No development projects have been identified as likely to have inter-project cumulative effects