Lighthouse Green Fuels Development Consent Order

Preliminary Environmental Information Report

Chapter 16: Materials and Waste

Planning Inspectorate Reference: EN0110025

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1. Introduction

1.1 Overview

1.1.1 This Chapter outlines the scope of the assessment to be undertaken for Materials and Waste. It also discusses the potential environmental effects associated with the Proposed Development during construction, operation and decommissioning.

1.1.2 The assessment follows the Institute of Environmental Management and Assessment (IEMA) guidance for Materials and Waste in Environmental Impact Assessment (Ref 1) . The effects will also be assessed in the context of relevant national, regional, and local materials and waste management policies.

1.1.3 It sets out the proposed methodology for the materials and waste assessment and identifies those impacts that can be scoped out of the assessment. Where impacts are scoped in, further assessment will be presented in the Environmental Statement (ES).

1.1.4 Operational phase activities of the Proposed Development are not anticipated to require consumption of non-sustainable material resources beyond natural gas use during start up (or as a support fuel) and potentially external power from the grid. In addition, ammonia for flue gas treatment, dosing chemicals, some consumables, and those materials necessary for routine repair and maintenance may be used. In future, blue hydrogen may be used as part of the SAF production process. As such, the impacts associated with material resource consumption are considered to be minimal and not significant. This is therefore scoped out and does not require further assessment in the ES. A description of the nature and quantity of the materials (including feedstock) to be used in the production of SAF by the Proposed Development will be included in the ES.

1.1.5 Some operational waste, such as ash and slag, may be disposed of to landfill if alternative waste recovery routes (e.g. recycled as aggregate or used in other construction products) cannot be found. However, total quantities of operational waste are anticipated to be small and therefore does not require further assessment in the ES. The ES will include an estimate, by type and quantity, of the operational waste generated by the Proposed Development.

1.1.6 In addition operational materials and waste will be considered in the Chapter 14: Greenhouse Gases (PEIR Volume 1).

1.1.7 The design life of the Proposed Development is anticipated to be a minimum of 25 years. Material resources are not anticipated to be required for decommissioning the works. Decommissioning is a separate activity to

demolition. As such, the effects associated with material resource consumption and end of life wastes are considered to be minimal and not significant during decommissioning. Decommissioning is therefore scoped out and does not require further assessment in the ES. However the ES will include an estimate of waste generated by the Proposed Development during decommissioning.

1.1.8 There may be other potential effects from material and waste on other disciplines. Therefore, please also refer to the following chapters of this PEIR:

- Chapter 14: Greenhouse Gases (PEIR Volume 1);
- Chapter 15: Climate Resilience (PEIR Volume 1); and
- Chapter 21: Geology and Soils (PEIR Volume 1).

2. Legislation and Planning Policy Context

2.1 Overview

The policy, legislation, and guidance relevant to the material and waste assessment of the Proposed Development is shown in Table 2-1.

Table 2-1 Materials and Waste – Summary of key Policy, Legislation and Guidance

Policy / Legislation / Guidance	Description
Policy	
Overarching NPS for Energy EN-1 2024 (Ref 2)	Sets out the Government's policy for delivery of major energy infrastructure and will be the primary basis for decision making. Section 5.14: Waste Management outlines government policy on hazardous and non- hazardous waste and sustainable waste management implemented through the waste hierarchy. The overall aim is to produce less waste by reusing it as a resource wherever possible, or to dispose of it in a way that is least damaging to the environment and human health. Paragraph 5.14.6 of NPS EN-1 refers to the specific requirement to prepare a SWMP, which should include information on the proposed recovery and disposal of waste, along with an assessment of the impact of waste arising from the development on the capacity of waste management facilities in the area. The Waste Management Plan for England provides a detailed analysis of the present state of waste management at the national level, and assesses how the objectives of the Waste Framework Directive will be effectively supported. It outlines the Waste Hierarchy, which gives top priority to waste prevention, followed by preparing for reuse, recycling, other types of recovery and finally disposal (e.g. landfill).
National Policy Statement for renewable energy infrastructure (EN-3) (Ref 3)	This guidance supports decision makers, applicants and the wider public to understand government policy on the need for Nationally Significant Infrastructure Projects (NSIPs) and how applications for energy infrastructure will be assessed.
National Planning Policy Framework (2024) (NPPF) (Ref 4)	The NPPF highlights that the purpose of the planning system is to contribute to the achievement of sustainable development through three overarching objectives: economic, social and environmental. The environmental objective requires the planning system to contribute and enhance the natural and local environment by "using natural resources prudently" and "minimising waste and pollution."
National Planning Policy for Waste (2014) (Ref 5)	The National Planning Policy for Waste outlines the Government's ambition to promote a sustainable approach to resource use and management. It sets out waste planning policies and should be read alongside: the National Planning Policy Framework; the National Waste Management Plan for England and any relevant successor policies, guidance or documents.

Policy / Legislation / Guidance	Description
The UK Marine Policy Statement (Ref 6)	This Marine Policy Statement (MPS) is the framework for preparing Marine Plans and taking decisions affecting the marine environment and includes policies relevant to the Proposed Development's marine works such as dredging.
National Policy Statement for Hazardous Waste (2013) (Ref 7)	The National Policy Statement for Hazardous Waste outlines the Government's main objectives for hazardous waste and the key principles for management of hazardous waste.
Our Waste, Our Resources: A Strategy for England (2018) (Ref 8)	Our Waste, Our Resources: A Strategy for England sets out how the Government will preserve stock of material resources by minimising waste, promoting resource efficiency and moving towards a circular economy. The strategy also outlines the Government's aims to minimise the damage caused to the natural environment by reducing and managing waste safely and carefully, and by tackling waste crime. It combines actions to take now with firm commitments for the coming years and gives a clear longer-term policy direction in line with the 25 Year Environment Plan.
Tees Valley Joint Minerals and Waste Development Plan Documents (2011) (Ref 9)	The Tees Valley Minerals and Waste Development Plan Documents have been prepared jointly by the boroughs of Darlington, Hartlepool, Middlesbrough, Redcar and Cleveland and Stockton-on-Tees. The Core Strategy Development Plan Document (DPD) and Policies and Sites DPD set out the vision and strategic policies required to achieve the key objectives for minerals and waste in the Tees Valley. The development plan aims are for the Tees Valley, by 2026, to give priority to the production of secondary and recycled aggregates for construction; limit and carefully manage primary aggregate extraction and safeguard mineral resources; and promote the reuse, recycling and recovery of value from waste.
North East Marine Plans (Ref 10)	The North East Marine Plan provides a policy framework which will be used to help inform decision-making on what activities take place in the marine environment and how the marine environment is developed, protected and improved in the next 20 years. It provides a clear, evidence-based approach to inform decision-making by marine users and regulators on where, when or how activities might take place within the north-east marine area, balancing environmental, economic and social factors. The Plan includes policies relevant to the Proposed Development's marine works such as dredging.
Legislation	
The Environment Act 2021 (Ref 11)	The Act sets out clear statutory targets for the recovery of the natural world in four priority areas, one of which is waste: Part 3 specifically refers to waste and resource efficiency, incorporating producer responsibility obligations; resource efficiency; managing waste; and waste enforcement and regulation.
Waste (Circular Economy) (Amendment) Regulations 2020 (Ref 12)	These regulations amend The Waste (England and Wales) Regulations 2011 and The Environmental Permitting (England and Wales) Regulations 2016 to include prevention of waste generation and establishing waste prevention programmes, greater segregation of waste and more detailed records.

Policy / Legislation / Guidance	Description
The Environmental Permitting (England and Wales) Regulations 2016 (as amended) (Ref 13)	Aims to streamline the legislative system for industrial and waste installations into a single permitting structure for those activities which have the potential to cause harm to human health or the environment.
The Controlled Waste (England and Wales) Regulations 2012 (Ref 14)	The Controlled Waste (England and Wales) Regulations 2012 provide a definition of controlled waste and classifies waste as household, industrial or commercial waste. It allows Local Authorities to implement charges for the collection of waste from non-domestic properties.
The Waste (England and Wales) Regulations 2011 (Ref 15)	These regulations allow for the transfer of controlled waste to be recorded on alternative documentation, such as invoices, instead of waste transfer notes.
The Revised EU Waste Framework Directive 2008/98/EC (Ref 16)	The Directive provides a comprehensive foundation for the management of waste across the European Community and provides a common definition of waste. A definition of waste is provided in the predecessor to this Directive (European Directive 2006/12/EC) which defines waste as: “any substance or object that the holder discards, or intends or is required to discard.”
The Clean Neighbourhoods and Environment Act 2005 (Ref 17)	The Act provides that it is the responsibility of construction workers on-site to guarantee that waste is disposed in the appropriate manner.
The Hazardous Waste (England and Wales) Regulations 2005 (Ref 18)	These regulations introduced measures to control storage, transport and disposal of hazardous waste. The Regulations provide a means to ensure that hazardous waste and any associated risks are appropriately managed.
The Environmental Protection Act 1990 (Ref 19)	The Act defines, within England and Wales and Scotland, the fundamental structure and authority for waste management and control of emissions into the environment. The Act outlines the requirement of the manager of a development to ensure that any excess materials or waste as a result of construction activities are recovered or disposed of without any subsequent adverse effects upon the surrounding environment.
The Control of Pollution (Amendment) Act 1989 (Ref 20)	The Control of Pollution (Amendment) Act 1989 makes it a criminal offence for a person who is not a registered carrier to transport controlled waste to or from any place in Great Britain. The Act also provides for the seizure and disposal of vehicles used for illegal waste disposal.
Guidance	
IEMA Guide to Materials and Waste in Environmental Impact Assessment (2020) (‘the IEMA Guidance’) (Ref 1)	Guidance used to assess the potential impacts and effects from the Proposed Development, using the process and significance criteria it sets out.
Simpler Recycling: workplace recycling in England (Ref 21)	All workplaces in England must separate their waste before it’s collected, including any waste produced by employees, customers and visitors. Workplaces must separate dry recyclable materials (plastic, metal, glass, paper and card), food waste, non-recyclable waste (also called residual waste).

3. Assessment Methodology and Significance Criteria

3.1 Overview

3.1.1 The assessment generally follows the IEMA guidance for Materials and Waste in EIA (Ref 1). The effects will also be assessed in the context of relevant national, regional materials and waste management policies.

3.1.2 The IEMA Guidance provides information for EIA practitioners and stakeholders concerned with the impacts and effects of materials and waste on the environment. The guidance provides considerations for screening, scoping, consultation, assessment, and subsequent reporting and monitoring.

3.1.3 The guidance splits the definition of 'materials' and 'waste' into four main sub-elements. These sub-elements, and the way they interrelate, should be given due consideration throughout the EIA process:

- Materials;
- Excavated Materials;
- Waste for Recovery (including Re-use and Recycling); and
- Waste Disposal.

3.1.4 The IEMA assessment of materials and waste during EIA follows these key principles:

- The use of materials, and the production and disposal of waste, produce adverse environmental effects;
- Where materials are used, and waste is produced, indirect adverse effects can potentially arise from dust, noise, and vehicle emissions, which are considered by other EIA disciplines;
- EIA topic leads drive the development of materials and waste information throughout a project's life cycle e.g. from an early stage in the design process, detailed design, procurement, construction, operation and where feasible at the end of life;
- The availability of data is likely to limit the assessment of end-of-life impacts, and the assessment should consider a proportionate approach; and
- The assessment process will aim to deliver results that follow the Waste Hierarchy, the Proximity Principle and the Circular Economy (CE).

3.1.5 At the detailed design stage the appropriate mitigation measures will be identified to reduce the quantity of waste sent for final disposal and to apply sustainable waste management practices within the development.

Materials

3.1.6 Materials are regarded as sensitive receptors as consuming them impacts on their availability in the short term and as such can adversely impact the environment. Consuming non-renewable materials derived from natural resources depletes those natural resources and may also result in adverse impacts on the environment.

Waste

3.1.7 The IEMA (Ref 1) guidance considers that for waste, the sensitive receptor is landfill capacity. Consented landfill void is, at any one point in time, a finite resource and through the ongoing disposal of waste, there is a continued need to expand existing and develop new facilities or find alternative means of disposal or recovery. The impacts and effects of materials and waste are set out in Table 3-1. Landfill void capacity is considered as the sensitive receptor rather than waste management infrastructure capacity for the following reasons:

- Disposal to landfill results in a permanent impact and the landfill void capacity is no longer available (e.g., in most cases is irreversible);
- Impacts on other types of waste management infrastructure (e.g. material recovery facilities), are temporary in nature and occur over a period of months or years; and
- Other types of waste management infrastructure are better placed to react to waste management market demands (e.g., by provision of additional plant and equipment).

Table 3-1 Material consumption and waste disposal impacts and effects

Element	Direct Impacts	Adverse effects	Indirect impacts
Materials	Consumption of non-renewable resources	Depletion of resources, resulting in the temporary or permanent degradation of the natural environment.	Release of greenhouse gas emissions (through transportation). Water consumption. Visual impacts, noise, vibration, disruption to traffic and other potential causes of nuisance.
Waste	Generation and disposal of waste	Reduction in landfill capacity Unsustainable use or loss of resources to landfill that results in the temporary or permanent degradation of the natural environment	Release of greenhouse gas emissions (through transportation and management). Ecological impacts (e.g., offshore disposal of dredged arisings).

Element	Direct Impacts	Adverse effects	Indirect impacts
			Visual impacts, noise, vibration, disruption to traffic and other potential causes of nuisance.

3.2 Sensitivity of receptors

3.2.1 The sensitivity of receptors (i.e., material demand for construction) depends on the availability in the UK and type of resources to be consumed in the course of the Proposed Development during construction and operation. The criteria described within Table 3-2 have been used to determine the sensitivity of materials.

Table 3-2 Material receptor sensitivity (as set out in the IEMA guidance)

Negligible	Low	Medium	High	Very high
Materials are forecast (through trend analysis and other information) to be free from known issues regarding supply and stock. and/or Are available comprising a very high proportion of sustainable features and benefits compared to industry-standard materials.	Materials are forecast (through trend analysis and other information) to be generally free from known issues regarding supply and stock. and/or Are available comprising a high proportion of sustainable features and benefits compared to industry-standard materials.	Materials are forecast (through trend analysis and other information) to suffer from some potential issues regarding supply and stock. and/or Are available comprising some sustainable features and benefits compared to industry-standard materials.	Materials are forecast (through trend analysis and other information) to suffer from known issues regarding supply and stock. and/or Comprise little or no sustainable features and benefits compared to industry-standard materials.	Materials are known to be insufficient in terms of production, supply and/or stock. and/or Comprise no sustainable features and benefits compared to industry-standard materials.

3.2.2 The sensitivity of waste receptors relates to the availability of regional (and where appropriate, national) landfill void capacity. This is assessed by virtue of the rate at which the available capacity is anticipated to change in the absence of the Proposed Development. The sensitivity thresholds are identified in Table 3-3.

Table 3-3 Thresholds for considering the sensitivity of landfill capacity (as set out in the IEMA guidance)

Waste	Negligible	Low	Medium	High	Very High

Receptor					
Inert waste and non-hazardous landfill capacity	Remain unchanged or is expected to increase through a committed change in capacity.	Reduce minimally: by < 1% as a result of wastes forecast.	Reduce noticeably: by 1–5% as a result of wastes forecast.	Reduce considerably: by 6–10% as a result of wastes forecast.	Reduce very considerably (by > 10%); ends during operation; is already known to be unavailable; or would require new capacity or infrastructure to be put in place to meet forecast demand.
Hazardous landfill capacity	Remain unchanged or is expected to increase through a committed change in capacity.	Reduce minimally: by < 0.1% as a result of wastes forecast.	Reduce noticeably: by 0.1–0.5% as a result of wastes forecast.	Reduce considerably: by 0.5–1% as a result of wastes forecast.	Reduce very considerably (by > 1%); ends during operation; is already known to be unavailable; or would require new capacity or infrastructure to be put in place to meet forecast demand.

3.3 Magnitude of impacts

3.3.1 The magnitude of impacts associated with materials will be assessed by using a percentage-based approach that determines the influence of material consumption on the baseline market capacity (production, stocks or sales), during both construction and/or operation. The assessment will also consider the potential to sterilise (substantially) one or more allocated mineral sites. The magnitude thresholds to be used are shown in Table 3-4.

Table 3-4 Thresholds for considering the magnitude of impacts from materials

No change	Negligible	Minor	Moderate	Major
No materials are required	No individual material type is equal to or greater than 1% by volume of the regional (or where justified national) baseline availability.	One or more materials are between 1-5% by volume of the regional (or where justified national) baseline availability. and/or The development has the potential to adversely and substantially impact access to one or more allocated mineral site (in their entirety),	One or more materials are between 6-10% by volume of the regional (or where justified national) baseline availability. and/or One allocated mineral site is sterilised by the development	One or more materials are >10% by volume of the regional (or where justified national) baseline availability. and/or More than one allocated mineral site is substantially

No change	Negligible	Minor	Moderate	Major
		placing their future use at risk.	rendering it inaccessible for future use.	sterilised by the development rendering it inaccessible for future use.

3.3.2 The magnitude of impacts from waste will be assessed by determining the percentage of the remaining landfill void capacity that will be depleted by waste produced during the construction, operation and/or decommissioning phases of the Proposed Development. The magnitude thresholds to be used are shown in Table 3-5.

Table 3-5 Thresholds for considering the magnitude of impacts from waste (as set out in the IEMA guidance (Ref 1)

Waste Receptor	No change	Negligible	Minor	Moderate	Major
Inert landfill	Zero waste generation and disposal from the development.	Waste generated by the Proposed Development will reduce regional landfill void capacity baseline by < 1%.	Waste generated by the Proposed Development will reduce regional landfill void capacity baseline by 1 to 5%.	Waste generated by the Proposed Development will reduce regional landfill void capacity baseline by 6 to 10%.	Waste generated by the Proposed Development will reduce regional landfill void capacity baseline by > 10%.
Non-hazardous landfill	Zero waste generation and disposal from the Proposed Development.	Waste generated by the Proposed Development will reduce regional landfill void capacity baseline by < 1%.	Waste generated by the Proposed Development will reduce regional landfill void capacity baseline by 1 to 5%.	Waste generated by the Proposed Development will reduce regional landfill void capacity baseline by 6 to 10%.	Waste generated by the Proposed Development will reduce regional landfill void capacity baseline by > 10%.
Hazardous landfill	Zero waste generation and disposal from the Proposed Development.	Waste generated by the Proposed Development will reduce national landfill void capacity baseline by < 0.1%.	Waste generated by the Proposed Development will reduce national landfill void capacity baseline by < 0.1 to 0.5%.	Waste generated by the Proposed Development will reduce national landfill void capacity baseline by < 0.5 to 1%.	Waste generated by the Proposed Development will reduce national landfill void capacity baseline by > 1%.

3.3.3 The IEMA Guidance (Ref 1) provides a table for assessing the magnitude of impact for the diversion of waste as displayed in Table 3-6.

Table 3-6 IEMA Magnitude Landfill Diversion (as set out in the IEMA guidance)

No Change	Negligible	Minor	Moderate	Major
100% landfill diversion	99-90% landfill diversion	89-60% landfill diversion	59-30% landfill diversion	<30% landfill diversion

3.4 Significance criteria

3.4.1 The significance of environmental effects associated with materials and waste will be determined by considering the scale and nature of impacts within the context of the sensitivity of receptors affected. The IEMA Guidance provides a table for assessing the magnitude of impact for materials and waste as displayed in

3.4.2 Table 3-7. Where there are two potential values for significance (i.e. slight or moderate) the EIA will identify the value which reports the reasonable worst case (i.e. if it is as adverse effect it will be the higher value and if it is beneficial it will be the lower value). Any effect identified to be moderate or greater will be considered to comprise a significant environmental effect.

Table 3-7 Significance matrix (as set out in the IEMA guidance)

		Magnitude of impact				
		No change	Negligible	Minor	Moderate	Major
Sensitivity (or value) of receptor	Very high	Neutral	Slight	Moderate / Large	Large / Very Large	Very Large
	High	Neutral	Slight	Slight / Moderate	Moderate / Large	Large / Very Large
	Medium	Neutral	Neutral / Slight	Slight	Moderate	Moderate / Large
	Low	Neutral	Neutral / Slight	Neutral / Slight	Slight	Slight / Moderate
	Negligible	Neutral	Neutral	Neutral / Slight	Neutral / Slight	Slight

3.5 Significance of effect

3.5.1 The IEMA Guidance provides a table for determining whether an effect is significant or not as displayed in Table 3-8.

Table 3-8 IEMA significance threshold

Effect	Materials	Waste
Neutral	Not significant	Not significant

Slight	Not significant	Not significant
Moderate	Significant	Significant
Large	Significant	Significant
Very large	Significant	Significant

3.5.2 Any effect identified to be moderate or greater will be considered to comprise a significant environmental effect.

3.6 Study Areas

3.6.1 Appropriate study areas have been established for the Materials and Waste assessment as outlined in the IEMA Guidance.

3.6.2 The 'development study area' will consist of the extent of works within the Proposed Development, including the Main Site, connection corridors, areas required for temporary access, site compounds and other enabling activities.

3.6.3 The 'expansive study area' will consist of different geographical areas.

3.6.4 The north-east region will be used as the study area for the availability of materials as a worst-case. The expansive study area can be enlarged to include national materials stocks where necessary. The north-east region will also be used as the study area for the capacity of waste management infrastructure (inert and non-hazardous landfill).

3.6.5 In addition, the expansive study area for hazardous waste landfill capacity is within England as the study area.

3.6.6 As indicated within the IEMA guidance, professional judgement will be used to provide consideration on a balance of the proximity principle and value for money principle for establishing the second study area. The proximity principle implies that materials are procured, and waste generated as near as possible to its place of production.

4. Baseline Conditions

4.1 Overview

4.1.1 This section describes baseline material consumption and waste disposal for the current land use and provides regional and national information and data in the context of which environmental assessment can be undertaken.

4.1.2 The most up to date sources of information have been used to collate data for material resource availability, mineral safeguarding, landfill capacity and waste recovery. Indication of the most recent year from which data has been acquired is provided throughout. The baseline data collected and presented in this section were obtained by desk study, from publicly available data sources.

4.1.3 The Main Site is a former industrial site which is currently vacant land which has been cleared and which is located in Flood Zone 1. There will need to be groundworks to clear any scrub vegetation, take up the existing concrete hardstanding across the site, and cap or remove foundations and piles. The exiting jetties will require demolition and removal along with dredging of material for the marine works. The grass covered land in the west of the Main Site is an historical landfill formerly known as Seal Sand Waste Disposal Site which was operated by Cleveland County Council and also Monsanto. The landfill site has no current environmental permits, and no ongoing monitoring or management. Subject to ground investigation, it is intended to reclaim the landfill site by capping with inert material.

Existing baseline

Material resources

~~4.1.4~~ The Development Study Area formerly contained a chemical production plant which has been decommissioned and demolished; the assets on this part of the site do not, therefore, currently generate any site arisings~~.~~

4.1.5 Materials used during construction of the Proposed Development would include primary raw materials, such as aggregates and minerals, and manufactured construction products, which include recycled and secondary aggregates. The term “aggregate” is an umbrella descriptor for bulk raw materials used in large development and infrastructure construction schemes.

4.1.6 Whilst conventional construction materials will be required for some elements of the Proposed Development, e.g. offices, the SAF production facility will be of modular construction, with the modules constructed overseas and imported by sea using the new quay and transported from the quay using self-propelled modular transporters to the Main Site.

4.1.7 Baseline information on national and global availability for material resources has been collected for the key raw materials likely to be used in the Proposed Development these include aggregates, asphalt, cement and steel, as shown Table 4-1.

Table 4-1 Raw material availability (Ref 22)

Material	Material availability (million tonnes per annum)
Sand and gravel (UK) 2022	53,000 million tonnes
Crushed rock (UK) 2021	148,000 million tonnes
Asphalt (UK) 2021	28,000 million tonnes
Finished cement (UK) 2021	11,000 million tonnes
Crude steel (global) 2021	1,915,000 million tonnes

4.1.8 Table 4-2 provides a summary of the availability of the main construction materials available in the north-east of England region. The items listed are considered to be appropriate to the bulk construction materials required for the Proposed Development. The Proposed Development may need to import materials from outside the north-east of England region and the UK. For example modular plant will be constructed overseas and delivered by ship and fill materials may be imported using marine vessels from outside the north-east of England region. The overview provided excludes technological products but provides a proportionate context in which the assessment of impacts and significant effects from material consumption from the Proposed Development can be undertaken.

Table 4-2 Construction materials availability in the North-East of England (Ref 23)

Material Type	**North-East England**
Sand and gravel	2.2 million tonnes (2022)
Permitted crushed rock *	4.9 million tonnes (2020)
Primary aggregate (comprises sand and gravel and crushed rock) *	6.5 million tonnes (2022)
Concrete blocks +	29.4 million square meters (Mm2) (North) (2022)
Recycled and secondary aggregate*	* 0.8Mt (2022) (Ref. 14.25)
Ready-mix concrete *	0.6 million cubic meters (Mm3) (2019)
Steel	(no data)
Asphalt	0.8Mt (2019)
Sand and gravel *	2.2 million tonnes (Mt) (2022)
# stocks + production * sales	

4.1.9 Across the UK, the availability of materials typically required for construction schemes, indicates that stocks / production / sales remain buoyant,

although information on steel stocks, production or sales are not available for the region.

4.1.10 The Tees Valley Joint Minerals and Waste Core Strategy DPD (Ref 9) identifies that the sterilisation of minerals occurs when non-minerals developments take place either on, or near to, mineral deposits and make them unable to be extracted. Sand and gravel, limestone, potash, salt, gypsum/anhydrite, and coal are widespread across the Tees Valley. There is sand and gravel extraction at Stockton Quarry near Thorpe Thewles and Hart Quarry (Hartlepool) however these are not located close to the Proposed Development.

4.1.11 The Tees Valley Joint Minerals and Waste Core Strategy DPD includes plans for Mineral Safeguarding Areas. Whilst the Strategy indicates there are no shallow reserves of coal, sand and gravel, limestone, there are deep reserves of gypsum and salt located within and adjacent the Development Study Area. However, the nature of gypsum and salt deposits means that they can also be worked (including potentially beneath the site) from other locations using standard techniques (solution or room and pillar mining).

4.1.12 Marine dredged sands and gravels are landed at two wharves on the River Tees which are safeguarded in the Joint Minerals and Waste Core Strategy DPD:

- Tees Dock (Redcar and Cleveland); and
- Billingham Reach Industrial Estate (Stockton-on-Tees).

4.1.13 The DPD also identifies there is one brinefield currently active near Seal Sands, Stockton-on-Tees. Two further brinefields in the Seal Sands area have extant planning permissions and two brinefield cavities at Wilton (Redcar and Cleveland) have extant permission for extraction under an 'Instrument of Consent'. However brinefield workings are not to present under the Proposed Development.

4.1.14 British Geological Survey (Ref 24) data identifies Mineral Safeguarding Areas (MSAs) for the following:

- gypsum/anhydrite located within the development study area;
- salt located within development study area; and
- superficial sand and gravel located close to the development study area.

4.1.15 However as it has been assessed that the MSAs for gypsum and salt (see section 4.1.11) and sand and gravel (see Section 4.1.10) will not to be sterilised by the Proposed Development.

4.1.16 There are a range of material assets in the Tees Valley Combined Authority area. A Local Aggregate Assessment (LAA) (Ref 23) has been prepared jointly by the five Tees Valley authorities of Darlington Borough Council, Hartlepool Borough Council, Middlesbrough Council, Redcar and Cleveland Borough Council and Stockton-on-Tees Borough Council. The

LAA provides an assessment of the demand for and supply of aggregates in the joint Tees Valley local authority areas, other relevant local information, and an assessment of all supply options.

4.1.17 The assessment identifies the joint Tees Valley local authority areas have permitted reserves of 1.5 million tonnes of crushed rock in 2021.

4.1.18 The LAA identifies that Stockton Quarry has ceased operating however, there are still extractable resources and there are gypsum resources around the area.

4.1.19 The sensitivity of raw material resources outside of the Proposed Development in the expansive study area are considered to be low due to the existing trend in available materials.

4.1.20 There are also a range of material assets across the north-east of England. A LAA (Ref 25) has been prepared jointly that provides an assessment of the demand for and supply of aggregates in the north-east. The assessment identifies the Nort East has permitted reserves of 173 million tonnes of crushed rock in 2022 and of 13 million tonnes of sand and gravel in 2022.

4.1.21 The western part of the Main Site is a former landfill believed to have been in operation in the 1970s/80s. The current development layout includes some development will take place on the landfill area. A second former landfill is present adjacent to the boundary of the Main Site to the north.

4.1.22 There are a number of landfills (historical landfill highlighted in Purple and permitted waste sites highlighted in Brown) adjacent to the south and east of the Proposed Development.

4.1.23 There are no areas determined as contaminated land under Part 2A Contaminated Land Statutory Guidance (Ref 26). There is potential for localised hotspots of contamination in the ground beneath the site associated with the former chemical works and other industrial activities in the surrounding area (see Chapter 21, Geology and Soils, PEIR Volume 1). Intrusive ground investigation to inform design is planned post consent.

Waste

Environment Agency

4.1.24 Information from the Environment Agency (Ref 27) has been used to inform the baseline with respect to waste infrastructure capacity in the north-east former planning region and England in 2023.

4.1.25 The Environment Agency provides landfill capacity data in volume and this has, been converted to mass (tonnes) using the following conversion factors provided by the Environment Agency (Ref 28)

- • 1.5 tonnes per m^3 for hazardous waste landfill;
- • 0.83 tonnes per m^3 for non-hazardous waste landfill; and

- 1.5 tonnes per m^3 for inert waste landfill.

4.1.26 The above have been applied as they are considered robust.

4.1.27 Table 4-3 provides a summary of the transfer, treatment and metal recycling capacity in the north-east in 2023.

Table 4-3 Transfer, Treatment and Metal Recycling Capacity in the north-east

Facility type	County Durham (tonnes)	Northumberland (tonnes)	Tees Valley Unitary (tonnes)	Tyne and Wear (tonnes)	North-east Capacity (tonnes)
Waste transfer	455,000	383,000	671,000	1,137,000	2,647,000
Waste treatment	463,000	419,000	2,318,000	722,000	3,922,000
Metal recycling	257,000	2,300	202,000	434,000	895,000

4.1.28 The waste incineration capacity for north-east in 2023 is displayed in Table 4-4.

Table 4-4 Waste incineration capacity in the north-east in 2023

Facility type	County Durham (tonnes)	Northumberland (tonnes)	Tees Valley Unitary (tonnes)	Tyne and Wear (tonnes)	North-east Capacity (tonnes)
Hazardous Waste	0	0	7,400	0	7,400
Co-Incineration of Non-Hazardous Waste	0	0	0	0	0
Municipal and/or Industrial & Commercial	0	0	1,128,000	0	1,128,000
Biomass / Waste Wood	113,000	0	35,000	0	148,000

4.1.29 Table 4-5 below provides a summary of the landfill capacity within the north-east in 2023 for the disposal of construction and operation waste arising from the Proposed Development.

Table 4-5 Landfill capacity the north-east in 2023

Facility type	County Durham (tonnes)	Northumberland (tonnes)	Tees Valley Unitary (tonnes)	Tyne and Wear (tonnes)	North-east Capacity (tonnes)
Inert waste landfill	9,589,000	0	0	293,000	9,882,000

Facility type	County Durham (tonnes)	Northumberland (tonnes)	Tees Valley Unitary (tonnes)	Tyne and Wear (tonnes)	North-east Capacity (tonnes)
Non-hazardous waste landfill	2,192,000	472,000	4,715,000	0	7,380,000
Hazardous waste landfill	0	0	5,687,000	0	5,687,000

4.1.30 Table 4-6 below provides a summary of the hazardous waste landfill capacity within England in 2023 for the disposal of hazardous construction and operational waste.

Table 4-6 Hazardous landfill capacity in England in 2023

Facility type	England (tonnes)
Hazardous waste landfill	15,561,710

4.2 Construction and Demolition Waste

4.2.1 The Proposed Development will generate waste arising from Construction, Demolition and Excavation (CD&E). The UK had a commitment to recovering (e.g., diverting from disposal) at least 70% of non-hazardous construction waste by 2020 as required by the EU Framework Directive on Waste. This target has not yet been reported against or amended for future years and was reiterated in the Waste Management Plan for England, published by Defra (Ref 29). The last published data from 2020 indicated that England was achieving a recovery rate of 92.6% for non-hazardous construction and demolition waste (Ref 30).

Future baseline

4.2.2 When determining the baseline for assessment has been considered how changes to the baseline may occur, as far as natural changes can be established, to consider a future baseline scenario. Considerations for waste and resources include factors such as the latest available information on material resources (from the Construction Products Association) waste infrastructure capacity (from the Environment Agency). Where information on likely trends is available, this is used to define the potential future baseline.

Waste

Future Landfill Capacity

4.2.3 The latest available information on waste infrastructure capacity has been used to inform the future baseline. Where information on likely trends is

available, this is utilised to define the potential future baseline.

4.2.4 It is anticipated that different types of waste infrastructure capacity will continue to be available during the construction, operation and decommissioning of the Proposed Development.

4.2.5 The future landfill inert and non-hazardous capacity is displayed in Table 4-7 and is based on the average percentage change in permitted landfill capacity for the years 2015 to 2023 reported by the Environment Agency. The average percentage change has then been applied to the 2015 permitted landfill capacity and projected forward to 2028. This method assumes that the average percentage change in permitted capacity for each class of landfill remains constant. The use of an average value taken from historical data provides an allowance for potential future increases or decreases in permitted capacity for each class of landfill. The data identifies the future inert and non-hazardous in north-east for the disposal of construction and operation waste arising from the Proposed Development.

Table 4-7 Future landfill capacity in the north-east

Facility type	2024	2025	2026	2027	2028
Inert waste landfill	9,974,000	9,238,000	8,556,000	7,924,000	7,339,000
Non-hazardous landfill	7,497,000	7,386,000	7,277,000	7,169,000	7,063,000

4.2.6 The future hazardous landfill capacity for England is displayed in Table 4-8 and is based on the average percentage change in permitted landfill capacity for the years 2015 to 2023 reported by the Environment Agency. The data identifies the future hazardous landfill capacity in England for the disposal of construction and operation waste arising from the Proposed Development.

Table 4-8 Future hazardous landfill capacity in England

Facility type	2024	2025	2026	2027	2028	2029
Hazardous waste landfill	12,817,000	10,556,000	8,694,000	7,161,000	5,898,000	4,857,414

5. Development Design and Impact Avoidance

5.1 Overview

5.1.1 The design of the Proposed Development is ongoing. Measures to manage impacts associated with materials and waste, including associated mitigation, will be assessed in the ES.

Materials

5.1.2 The Proposed Development's design will, where possible, include use of sustainable materials to construct the plant and also to facilitate recycling of materials following decommissioning.

5.1.3 In addition a large proportion of the plant will be of modular construction, with the modules imported by sea. The modular construction of the plant will reduce material consumption and waste as the modules will be manufactured in an on-shore fabrication facility. The material required for construction of the modular construction plant would include metals such as steel, stainless steel and other steel alloys as well as other specialist industrial materials. .

Waste

5.1.4 The Proposed Development's design considers both sustainable resource management and takes into consideration the waste hierarchy (see Inset 7-1 The Waste HierarchyInset 7-1) to decrease the amount of waste arisings via designing out waste and maximising efficient use of materials ultimately to prevent and minimise waste sent to landfill. Where any construction waste is generated from the site clearance and preparation works, the Proposed Development will strive to re-use or recycle materials, such as crushed concrete and hardstanding, within the Proposed Development.

6. Likely Impacts and Effects of the Proposed Development

6.1 Overview

Construction Phase

Materials

6.1.1 During the construction phase, natural materials will be required. The types and quantities of construction materials will be assessed as part of the Environmental Statement.

Waste

6.1.2 Waste will be generated during construction phase. Landfill capacity is considered a sensitive receptor. The potential for waste to be diverted from landfill through re-use of site arisings and recovery, recycling or treatment will reduce the adverse effects on landfill capacity. The types and quantities of waste generated and the anticipated disposal method will be assessed as part of the Environmental Statement.

Operation Phase

Materials

6.1.3 During operation, it is anticipated that natural material resource consumption will be limited and only be required for maintenance or repair works along with natural gas during startup or operation (e.g. as a support fuel) and general consumables. Using professional judgement, it is considered that the quantities of materials required will be negligible and therefore will not result in significant adverse effects. The feedstock for the Proposed Development will be sustainably sourced biomass (which may include agricultural residues) including waste wood) and therefore will not impact on the depletion of material resources and is therefore not within the scope of this assessment.

6.1.4 Waste generated by the operation of the Proposed Development will be managed accordance with the Waste Hierarchy to maximise diversion from landfill where possible. Some operational waste may be disposed of to landfill, such as ash and slag, if alternative waste recovery routes cannot be found. However, the total quantities of operational waste are anticipated to be small and therefore there will be no need for an Outline Waste Management Plan to accompany the ES. However, the ES will include an estimate, by type and quantity, of the operational waste generated from the

Proposed Development.

6.1.5 Waste wood used as fuel for the biomass CHP plant is a feedstock and is not generated by the Proposed Development and is therefore not within the scope of this assessment.

Elements Scoped In or Out of Further Assessment

6.1.6 The assessment follows the IEMA guidance for Materials and Waste in EIA[Ref 1]. The effects are assessed in the context of relevant national, regional and local materials and waste management policies. The elements scoped in and out for further assessment are summarised in Table 6-1.

Table 6-1 Elements scoped in and out for further assessment

Element	Phase	Scoped In	Scoped Out	Justification
Materials	Construction	Yes		Additional materials consumed during construction
Waste	Construction	Yes		Additional waste generated during construction
Materials	Operation		Yes	Operation phase activities of the Proposed Development are not anticipated to require consumption of non-sustainable material resources beyond those necessary for routine repair and maintenance. As such, the impacts associated with material resource consumption are considered to be minimal and not significant. This is therefore scoped out and does not require further assessment in the ES. However, a description of the nature and quantity of the materials (including feedstock) to be used in the production of SAF by the Proposed Development will be included in the ES.
Waste	Operation		Yes	The operation of the Proposed Development is anticipated to generate waste arisings (e.g. ash and slag). However, the total quantities of operational waste are anticipated to be small and therefore there will be no need for an Outline Waste Management Plan to accompany the ES. This is therefore scoped out and does not require further assessment in the ES. However, the ES will include an estimate by type and quantity of the operational waste generated from the Proposed Development.
Materials	Decommissioning		Yes	The design life of the Proposed Development is anticipated to be at least 25 years. Material resources are not

Element	Phase	Scoped In	Scoped Out	Justification
				anticipated to be required for decommissioning the works. As such, the effects associated with material resource consumption are considered to be minimal and not significant.
Waste	Decommissioning		Yes	The design life of the Proposed Development is anticipated to be at least 25 years. As it is not practicable to reliably predict the scale and nature of waste infrastructure and management processes that will be available so far into the future, effects associated with waste generation and disposal at the time of decommissioning are scoped out from this chapter, but should be assessed and managed in the decommissioning plan in accordance with best practice at the time. The ES will include a high-level estimate of waste generated by the Proposed Development during decommissioning.

6.1.7 As this is a large-scale project, the quantities of material resources and waste associated with the earthworks mean that a balance between excavation (cut) and material placement (fill) may not be achieved. If there is more cut material than is required for fill, the material will be re-used within the Proposed Development. Where excavated materials are not suitable for re-use within the Proposed Development, either under a deposit for recovery permit or, if this is not required they will be removed for re-use, recycling or recovery outside of the Proposed Development.

6.1.8 It is anticipated there is potential for localised hotspots of contamination in the ground beneath the site associated with the former chemical works (see the Geology and Soils Chapter for more details).

Materials

6.1.9 The potential material types that could be consumed during the construction phase are summarised in Table 6-2. These materials will be estimated and assessed in the ES.

Table 6-2 Potential materials consumed during the construction phase

Construction phase	Material Used
Preliminary works	Fill material for construction purposes. Primary/secondary/ recycled aggregates.
Site Clearance and Construction	Aggregates Asphalt and bituminous materials Cabling

	Cladding Glass Insulation In-situ cast concrete Steel, stainless steel and other steel alloys as well as other specialist industrial materials. Precast concrete products (structural components, kerbs, drainage pipes, chambers and channels) Masonry Paint Paving Made ground, topsoil and subsoil for landscaping and restoration

Waste

6.1.10 The potential waste sources generated during the construction phase are summarised in Table 6-3. These waste streams will be estimated and assessed in the ES including the dredgings from the excavation of the berthing pocket material dredged during quay construction and operation disposed of at sea within licensed disposal sites.

Table 6-3 Potential waste sources during the construction phase

Construction phase	Potential wastes produced	Classification of waste	Potential impacts
Construction	Construction waste, such as concrete, bricks, plastics, metals, plasterboard, timber, paint, etc.	Inert; and/or, Non-hazardous; and/or, Hazardous.	The reduction in regional inert, non-hazardous and national hazardous landfill capacity.
	Made ground, soil and sub-soils.	Non-hazardous, and Hazardous if it contains sufficiently high levels of heavy metals.	The reduction in regional non-hazardous and national hazardous landfill capacity.
	Waste products arising from the presence of construction staff within the Proposed Development e.g. effluent from portable toilets, food waste and packaging, as well as waste from surplus materials and spillages.	Inert; Non-hazardous and potentially Hazardous.	The reduction in regional inert, non-hazardous and national hazardous landfill capacity.
Demolition	Materials from the removal of the concrete hardstanding and the existing jetties.	Inert; Non-hazardous and potentially Hazardous.	The reduction in regional inert, non-hazardous and national hazardous landfill capacity
	Asphalt and bituminous products.	Inert; Non-hazardous and	The reduction in regional inert,

Construction phase	Potential wastes produced	Classification of waste	Potential impacts
		potentially Hazardous.	non-hazardous and national hazardous landfill capacity.
	Dredge spoil and disposal of the arisings associated with the construction of the marine works.	Inert; Non-hazardous and potentially Hazardous.	Dredgings from excavation of the berthing pocket requiring disposal are most likely to be deposited at a licensed marine disposal site e.g. Tees Bay A and C.
Excavation	Made ground, soil and sub-soils.	Inert; and/or, Non-hazardous; and/or, potentially Hazardous if it contains sufficiently high levels of heavy metals.	The reduction in regional inert, non-hazardous and national hazardous landfill capacity

6.1.11 The potential likely significant effects (LSEs) for Materials and Waste for the Proposed Development for construction are identified in Table 6-4 following the IEMA Guidance[Ref 1]). The potential LSEs have been identified qualitatively and are in development. The potential LSEs will be assessed quantitively through the EIA process and reported in the Environmental Statement as the design for the Proposed Development is refined.

Table 6-4 Material and Waste Likely Significant Effects for the Proposed Development

	Likely Significant Effects
Materials	
One allocated mineral site would be substantially sterilised by the Proposed Development.	There are Mineral Safeguarding Areas for deep reserves of gypsum and salt located within and adjacent the Development Study Area. However, the nature of gypsum and salt deposits means that they can also be worked (including potentially beneath the site) from other locations using standard techniques (solution or room and pillar mining). Therefore, a Likely Significant Effects (LSE) for the sterilisation of a mineral site will not occur.
One or more materials between 6-10% by volume of the regional (or where justified national) baseline availability.	The Proposed Development will require materials for construction however it is unlikely it will produce an LSE as adequate material stocks are available as identified in the Baseline in Section 4.

	Likely Significant Effects
Waste	
30-59% landfill diversion rate.	The last published data indicated that England was achieving a recovery rate of 92.6% for non-hazardous construction waste. Therefore, the landfill diversion rate for the Proposed Development during construction is very unlikely to produce an LSE.
Reduction in the capacity of inert landfill in the expansive study area (north-east).	Inert waste arising from the construction of the Proposed Development that cannot be re-used, recycled or recovered will need to be disposed to inert landfill. According to the Future Inert Landfill Capacity for the north-east (see Table 4-7) there appears to be adequate landfill capacity (7,924,000 tonnes in 2028) to dispose of waste from the Proposed Development and is very unlikely to produce an LSE.
Reduction in the capacity of non-hazardous landfill in the expansive study area (north-east).).	Non-hazardous waste arising from the construction of the Proposed Development that cannot be re-used, recycled or recovered will need to be disposed to non-hazardous landfill. According to the Future Non-Hazardous Landfill Capacity for the north-east (see Table 4-7) there appears to be adequate landfill capacity (7,169,000 tonnes in 2028) to dispose of waste from the Proposed Development and is very unlikely to produce an LSE.
Reduction in the capacity of hazardous landfill in the expansive study area (England).	Hazardous waste arising from the construction of the Proposed Development that cannot be recycled or recovered will need to be disposed to hazardous landfill. According to the Future Hazardous Landfill Capacity for England (see Table 4-8) there appears to be adequate landfill capacity (5,898,000 tonnes in 2028) to dispose of hazardous waste from the Proposed Development and is very unlikely to produce an LSE.

7. Mitigation and Enhancement Measures

7.1 Construction

7.1.1 Mitigation will be implemented by the Proposed Development to prevent or reduce adverse environmental effects. The initial design measures have been developed using a series of principles to mitigate materials use and waste generation, treatment and disposal.

Materials

7.1.2 By considering materials at the earliest opportunity in the design process there are likely to be far more significant opportunities for resource efficiency. The Proposed Development will adopt Designing out Waste principals for material and waste and include:

- Design for re-use and recovery: identifying, securing, recycling, treating and using materials that already exist within the Proposed Development or can be sourced from other projects;
- Design for materials optimisation: simplifying layout and form to minimise material use, using standard design parameters, balancing cut and fill, maximising the use of renewable materials and materials with recycled content;
- Design for construction outside of the Proposed Development: maximising the use of prefabricated structure and components, encouraging a process of assembly rather than construction;
- Design for the future (deconstruction and flexibility): identify how materials can be designed to be more easily adapted over an asset lifetime and how de-constructability and de-mountability of elements can be maximised at end of first life; and
- Design for waste efficient procurement: identify and specify materials that can be acquired responsibly, in accordance with recognised industry standards.

7.1.3 More efficient use of materials would make a major contribution to reducing the environmental effects of construction including reducing demand for landfill and the depletion of finite, natural resources through:

- Minimising the overall creation of waste resulting from, for example, over ordering or inefficient design;
- Reducing the quantity of material sent to landfill during the construction process through effective waste management;
- Recycling materials already within the Proposed Development into construction; and
- Using more recycled materials and mainstream products with higher recycled content and supporting a circular economy.

7.1.4 This materials management will drive the implementation of good practice and sustainable procurement.

7.1.5 The depletion of finite material resources will occur through extraction of primary aggregates (e.g. sands and gravels).

7.1.6 Materials selected will be durable to ensure long life and reduced need for replacement.

7.1.7 Materials will be appropriately handled and stored throughout their lifecycle from delivery to inclusion, e.g. return surplus materials to storage.

7.1.8 Materials will be delivered to the Proposed Development 'just-on-time', this will limit the need for excess storage within the Proposed Development and will limit the chance of wastage through damage of the stored materials.

7.1.9 There will be designated areas for the segregated storage of materials.

7.1.10 Opportunities will be investigated to introduce standardisation across the Proposed Development to ensure waste inherent in the design is reduced.

7.1.11 The designers may investigate and identify how materials can be designed to be more flexibly adapted over an asset lifetime and also consider how the deconstruction of elements can be maximised at the end of their first life.

7.1.12 The location of material storage areas will be determined following detailed design and detailed construction phase planning, when storage requirements are finalised.

7.1.13 In addition to these mitigation measures, the Proposed Development will be committed to:

- Specifying the use of materials with a high percentage of recycled content;
- Local sources for aggregate supplies within the expansive study area should be considered whenever possible;
- Ensuring demolition, excavation, construction arisings generated are handled, stored, managed and re-used or recycled as close as possible to the point of origin; and
- Re-using packaging by returning to supplier/manufacturer or using it for other purposes (e.g., timber packaging pallets can be chipped and used for landscaping top mulch).

Excavation

7.1.14 Site levels and grading of the Proposed Development would be designed to attain a cut and fill balance where feasible. The Proposed Development would also be designed to enable flexibility in the landscaping, so that it could accommodate the changes in spoil volumes that may arise when site conditions differ from those assumed during the design.

7.1.15 A sustainable earthworks strategy will enable materials which will be excavated within the Proposed Development to be re-used or recycled at areas where materials are required where practicable. This will aim to

minimise the amount of material that is required from sources outside of the Proposed Development, and the transportation impacts associated with removal or delivery of aggregates outside of the Proposed Development.

7.1.16 There are no areas determined as contaminated land under Part 2A Contaminated Land Statutory Guidance. There is potential for localised hotspots of contamination in the ground beneath the site associated with the former chemical works and landfill site and other industrial activities in the surrounding area (see Chapter 21: Geology and Soils (PEIR, Volume 1) for more details). Intrusive ground investigation to inform design is planned later in the Proposed Development which will allow the presence and, if necessary, quantity of potentially contaminated material to be identified.

Site Clearance

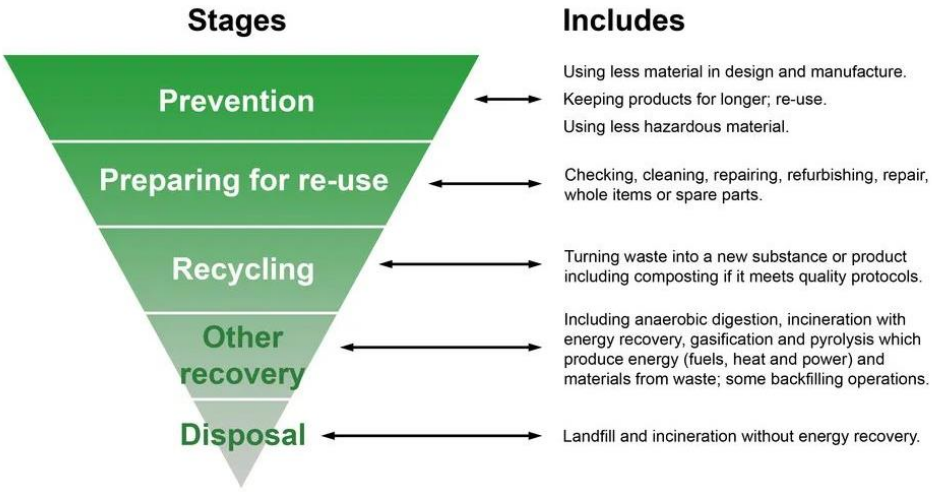
Materials

7.1.17 The Proposed Development will generate waste associated with site clearance and demolition of the jetties. Where on-site recycling (e.g. re-use of crushed concrete as fill) is not feasible the project team shall identify opportunities for recycling these materials outside of the Proposed Development in other suitable local projects, through a recycling contractor or in other external projects.

Construction

Waste

7.1.18 The Proposed Development's design would take into consideration the waste hierarchy to decrease the amount of waste arisings via designing out waste and maximising efficient use of materials ultimately to prevent and minimise waste sent to landfill.



Inset 7-1 The Waste Hierarchy

7.1.19 A Site Waste Management Plan (SWMP) will be developed during the design stage of the Proposed Development. The SWMP is an important tool to improve the environmental performance of the Proposed Development. It will also be used to monitor waste arisings and optimise the strategy going forward. During construction it will be updated by the contractor and will include a number of actions to achieve sustainable resource and waste management. The contractor will strive to reduce the quantity of material sent to landfill during the construction phase through effective waste management. Where waste generated cannot be avoided this will be recovered through re-use and recycling where feasible.

7.1.20 Where construction waste cannot be reduced, re-used, recycled or recovered, the proximity principle will be applied to residual waste to ensure it is disposed of close to the Proposed Development where it is generated, with the aim of treating the waste at primarily a sub-regional level and where this is not feasible at a regional level. Early contact with waste management contractors and facilities would be made to notify them of the quantities and timings of CD&E waste that would be generated to ensure they can plan and manage the waste appropriately.

7.1.21 The contractor shall establish a waste storage and recycling area for the safe storage and processing of recovered materials to ensure that opportunities for re-use, recycling and recovery are maximised. Where no other waste management option is found to be feasible, wastes shall be sent to an appropriately permitted landfill site in accordance with UK legislation.

7.1.22 While reduction of waste should remain the highest priority, where feasible waste produced shall be segregated for recycling. This will allow materials to be recycled and ultimately reduce the amount of waste that has to be finally disposed of. The Contractor will establish waste storage and recycling areas for the safe storage and processing of separated waste

streams to ensure that opportunities for re-use are maximised. The Proposed Development will strive to implement industry best practice with regard to the segregation of waste by adopting the Considerate Constructors Scheme (CCS) colour coding system on waste skips. The colour coding scheme is a simple system which colour labels waste skips indicating the types of waste that can be placed in them. Where no other waste management option is found to be feasible, wastes shall be sent to an appropriately permitted waste management facility in accordance with UK legislation.

7.1.23 Hazardous waste shall be correctly labelled, securely contained and not be mixed with non-hazardous waste.

Construction Environmental Management Plan (CEMP)

7.1.24 A CEMP will be prepared which will capture information on the management of key material assets and waste issues including recycling and hazardous waste as well as providing links to the SWMP and MMP.

Materials Management Plan

7.1.25 An MMP will be prepared following the protocols within the Contaminated Land: Applications in Real Environments (CL:AIRE) 2011 Definition of Waste.

Site Waste Management Plan

7.1.26 An SWMP will be prepared by the project team to plan, implement, monitor and review waste minimisation and management on construction sites.

8. Residual Effects and Conclusions

8.1 Overview

Materials

8.1.1 The Proposed Development will require materials for construction however it is unlikely it will produce an LSE as adequate material stocks are available as identified in the Baseline in Section 4.

8.1.2 There are Mineral Safeguarding Areas for deep reserves of gypsum and salt located within and adjacent the Development Study Area. However, the nature of gypsum and salt deposits means that they can also still be worked from a location outside of the Proposed Development. Therefore an LSE for the sterilisation of a mineral site will not occur.

Waste

8.1.3 Waste will be generated during construction phase.. The potential for waste to be diverted from landfill through reuse of site arisings and recovery, recycling or treatment will reduce the adverse effects on landfill capacity. The types and quantities of waste generated and the anticipated disposal method will be assessed as part of the Environmental Statement.

8.1.4 Inert waste arising from the construction of the Proposed Development that cannot be re-used, recycled or recovered will need to be disposed to inert landfill. According to the Future Inert Landfill Capacity for the north-east (see Table 4-7) there appears to be adequate landfill capacity (7,924,000 tonnes in 2028) to dispose of waste from the Proposed Development and is very unlikely to produce an LSE.

8.1.5 Non-hazardous waste arising from the construction of the Proposed Development that cannot be re-used, recycled or recovered will need to be disposed to non-hazardous landfill. According to the Future Non-Hazardous Landfill Capacity for the north-east (see Table 4-7) there appears to be adequate landfill capacity (7,169,000 tonnes in 2028) to dispose of waste from the Proposed Development and is very unlikely to produce an LSE. Dredgings from excavation of the berthing pocket or future maintenance dredging requiring disposal are most likely to be deposited at a licensed marine disposal site e.g. Tees Bay A and C.

8.1.6 Hazardous waste arising from the construction of the Proposed Development that cannot be recycled or recovered will need to be disposed to hazardous landfill. According to the Future Hazardous Landfill Capacity for England (see Table 4-8) there appears to be adequate landfill capacity (5,898,000 tonnes in 2028) to dispose of hazardous waste from the Proposed Development and is very unlikely to produce an LSE.

8.1.7 The Environmental Statement will include a description of the nature and quantity of the materials (including feedstock) to be used in the production of SAF by the Proposed Development.

8.1.8 The Environmental Statement will include an estimate, by type and quantity, of the operational waste generated from the Proposed Development.

8.1.9 The Environmental Statement will also include an estimate of waste generated by the Proposed Development during decommissioning.

Applicants proposed matters to scope out	Inspectorate's comments	Response
Feedstock	Consumption of material resources associated with the proposed development during operation is proposed to be scoped in, however the feedstock (biomass) is proposed to be scoped out on the basis that it will be sustainably sourced and therefore will not impact on the depletion of material resources. The ES must include a description of the nature and quantity of the materials (including feedstock) to be used in the production of SAF. The Inspectorate recognises that the biomass will be sustainably sourced, however information is requested to be provided on the availability of certified sustainable biomass to put the demands of the proposed development in context.	Text has been added for review in 1.1. 4, Table 6.1 and 8.1.7 stating the ES will include a description of the nature and quantity of the materials (including feedstock) to be used in the production of SAF by the Proposed Development.
Dredge Spoil	Table 14.11 proposes to scope in the disposal and recovery of waste associated with the construction of the proposed development, but makes no mention of the dredge spoil and disposal of the arisings associated with the construction of the marine works. The Inspectorate notes that material dredged during quay construction and operation will be disposed of at sea within licensed disposal sites offshore in the UK Economic Exclusive Zone (paragraph 8.10.1). This should also be assessed within the ES, including the potential for dredged material to contain levels of contamination restricting disposal in the marine environment, where relevant.	Text has been added for review in Table 6.3, 6.1.1 and 8.1.1 stating the ES will assess the disposal of marine dredging spoil during construction and operation.

Applicants proposed matters to scope out	Inspectorate's comments	Response
Disposal and recovery of waste during operation	The applicant proposes to prepare an outline waste management plan as part of the ES, to manage waste in accordance with the waste hierarchy and maximise diversion from landfill where possible (in lieu of scoping in operational waste). The ES must include an estimate by type and quantity of waste produced during the operation phase.	Text has been added for review in 1.1. 5, 6.15, Table 6.1 and 8.1.7 stating the ES will include an estimate, by type and quantity, of the operational waste generated from the Proposed Development.
Dredge Spoil	Table 14.11 refers to ash and slag as examples of waste arisings but makes no mention of the dredge spoil from the maintenance of the dredge pocket. Deposition of dredge spoil should be assessed within the ES, including the potential for dredged material to contain levels of contamination restricting disposal in the marine environment, where relevant. The Inspectorate agrees that other waste streams (ash and slag) can be managed through an outline waste management plan, and a detailed assessment is not required.	Text has been added for review in Table 6.3, 6.1.1 and 8.1.1 stating the ES will assess the disposal of marine dredging spoil during construction and operation.
Disposal and recovery of waste during decommissioning	This matter is proposed to be scoped out on the basis that it is not practicable to reliably predict the scale and nature of waste infrastructure and management processes that will be available so far into the future, however the applicant commits to assessing and managing decommissioning waste in the decommissioning plan in accordance with best practice at the time. The Inspectorate agrees this matter can be scoped out providing the commitment to producing a Decommissioning Environmental Management Plan (DEMP) is secured within the dDCO. The ES should however include an estimate of waste produced by the proposed development in the decommissioning phase.	Text has been added for review in 1.1. 7, Table 6.1 and 8.1.7 stating the ES will include an estimate of waste generated by the Proposed Development during decommissioning.
One allocated mineral site		Tere are Mineral Safeguarding Areas for deep reserves of gypsum and salt located within and adjacent the

Applicants proposed matters to scope out	Inspectorate's comments	Response
would be substantially sterilised by the Proposed Development.		Development Study Area. However, the nature of gypsum and salt deposits means that they can also be worked (including potentially beneath the site) from other locations using standard techniques (solution or room and pillar mining). Therefore, a Likely Significant Effects (LSE) for the sterilisation of a mineral site will not occur.
One or more materials between 6-10% by volume of the regional (or where justified national) baseline availability.		The Proposed Development will require materials for construction however it is unlikely it will produce an LSE as adequate material stocks are available as identified in the Baseline in Section 4.
Waste		
30-59% landfill diversion rate.		The last published data indicated that England was achieving a recovery rate of 92.6% for non-hazardous construction waste. Therefore, the landfill diversion rate for the Proposed Development during construction is very unlikely to produce an LSE.
Reduction in the capacity of inert landfill in the expansive study area (north-east).		Inert waste arising from the construction of the Proposed Development that cannot be re-used, recycled or recovered will need to be disposed to inert landfill. According to the Future Inert Landfill Capacity for the north-east (see Table 4-7) there appears to be adequate landfill capacity (7,924,000 tonnes in 2028) to dispose of waste from the Proposed Development and is very unlikely to produce an LSE.
Reduction in the capacity of non-hazardous landfill in the expansive study area (north-east).).		Non-hazardous waste arising from the construction of the Proposed Development that cannot be re-used, recycled or recovered will need to be disposed to non-hazardous landfill. According to the Future Non-Hazardous Landfill Capacity for the north-east (see Table 4-7) there appears to be adequate landfill capacity (7,169,000 tonnes in 2028) to dispose of waste from the

Applicants proposed matters to scope out	Inspectorate's comments	Response
		Proposed Development and is very unlikely to produce an LSE.
Reduction in the capacity of hazardous landfill in the expansive study area (England).		Hazardous waste arising from the construction of the Proposed Development that cannot be recycled or recovered will need to be disposed to hazardous landfill. According to the Future Hazardous Landfill Capacity for England (see Table 4-8) there appears to be adequate landfill capacity (5,898,000 tonnes in 2028) to dispose of hazardous waste from the Proposed Development and is very unlikely to produce an LSE.

9. Summary of Significant Effects

9.1 Introduction

9.1.1 Summaries of the potential significant effects associated with the construction and decommissioning of the Proposed Development are presented in Table 9-1.

Table 9-1 Summary of Significant Effects

Potential Impact	Receptor	Importance	Magnitude of Impacts	Likely Significant Effects	Proposed Mitigation	Residual Effects
Changes in Available Regional and National material stocks	Regional and National material stocks	Sensitive	Slight Adverse	Not significant	Implementation of the Site Waste Management Plan.	Slight
Changes in Available Inert Landfill Void capacity	Inert Landfill in north-east	Sensitive	Slight Adverse	Not significant	Implementation of the Site Waste Management Plan.	Slight
Changes in Available Non-hazardous Landfill Void capacity	Non-hazardous Landfill in north-east	Sensitive	Slight Adverse	Not significant	Implementation of the Site Waste Management Plan	Slight
Changes in Available Hazardous Landfill Void capacity	Hazardous Landfill in England	Very Sensitive	Slight Adverse	Not significant	Implementation of the Site Waste Management Plan	Slight

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Ref 5 Department for Communities and Local Government (2014) National Planning Policy for Waste 2014

Ref 6 Department for Environment, Food & Rural Affairs (2011) UK Marine Policy Statement

Ref 7 Department for Communities and Local Government (2013) National Planning Policy for Hazardous Waste 2013

Ref 8 HM Government (2018) Our Waste, Our Resource: a strategy for England 2018

Ref 9 Boroughs of Darlington, Hartlepool, Middlesbrough, Redcar and Cleveland and Stockton-on-Tees (2011) The Tees Valley Joint Minerals and Waste Policies and Sites DPD Adopted September 2011

Ref 10 Marine Management Organisation (2016) North East Marine Plans

Ref 11 The Environment Act 2021

Ref 12 The Waste (Circular Economy) (Amendment) Regulations 2020

Ref 13 The Environmental Permitting (England and Wales) Regulations 2016 (as amended)

Ref 14 The Controlled Waste (England and Wales) Regulations 2012

Ref 15 The Waste (England and Wales) Regulations 2011

Ref 16 The European Commission (2008) Waste Framework Directive (Directive 2008/98/EC)

Ref 17 The Clean Neighbourhoods and Environment Act 2005

Ref 18 The Hazardous Waste (England and Wales) Regulations 2005

Ref 19 The Environmental Protection Act 1990

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