

The Lighthouse Green Fuels Order

Application Reference: EN0110025

Applicant: LGF Projects Limited

Environmental Statement Volume I Chapter 16: Materials and Waste

Document Reference: 6.1.16

Revision: 00

APFP Reg. 5(2)(a) and EIA Reg. 14

Document information

Document Title	ES Chapter 16: Materials and Waste
Document Ref	6.1.16
Author	Arup

Revision record

00	Purpose	DCO Application Submission
	Date	September 2026

Information classification

Information Classification	Date	Reason
Public	September 2026	Proprietary information which will have no impact on the company if disclosed publicly

Contents

Abbreviations	1
16 Materials and Waste	2
16.1 Introduction.....	2
16.2 Legislation and planning policy context.....	2
16.3 Assessment methodology and significance criteria	6
Assumptions and Limitations.....	12
Overview.....	12
Materials	13
Waste.....	13
Visual impacts, noise, vibration, disruption to traffic and other potential causes of nuisance.	14
Sensitivity of receptors	14
Significance criteria	18
Significance of effect	19
Study areas	19
16.4 Baseline conditions.....	20
Overview.....	20
Existing baseline.....	21
Waste.....	24
Future baseline.....	27
Sensitivity of receptors	28
16.5 Development design and impact avoidance.....	29
Overview.....	29
Materials	29
Waste.....	29
16.6 Likely impact and effects of the Proposed Development.....	30
Construction phase.....	30
Operation phase	39
Decommissioning	43
16.7 Mitigation and enhancement measures	43
Construction	43
Construction	46
16.8 Residual effects and conclusions.....	48
Materials	48
Waste.....	48

16.9 Summary of significant effects	48
References	50

Tables

Table 16.1	Materials and Waste – Summary of key Legislation, Policy, and Guidance	3
Table 16.2	Scoping Responses	7
Table 16.3	Statutory Consultation Responses	8
Table 16.4	Elements scoped in and out for further assessment	11
Table 16.5	Material consumption and waste disposal impacts and effects	14
Table 16.6	Material receptor sensitivity (as set out in the ISEP guidance [Ref 1])	15
Table 16.7	Thresholds for considering the sensitivity of landfill capacity (as set out in the ISEP guidance [Ref 1])	16
Table 16.8	Thresholds for considering the magnitude of impacts from materials .	16
Table 16.9	Thresholds for considering the magnitude of impacts from waste (as set out in the ISEP guidance [Ref 1])	17
Table 16.10	ISEP Magnitude Landfill Diversion (as set out in the ISEP guidance [Ref 1])	18
Table 16.11	Significance matrix (as set out in the ISEP guidance [Ref 1])	19
Table 16.12	ISEP significance threshold	19
Table 16.13	Raw material availability	22
Table 16.14	Construction materials availability in the north east of England	23
Table 16.15	Transfer, Treatment and Metal Recycling Capacity in the north east	24
Table 16.16	Waste incineration capacity in the north east in 2024	26
Table 16.17	Landfill capacity the north east in 2024	26
Table 16.18	Hazardous landfill capacity in England in 2024	26
Table 16.19	Future landfill capacity in the north east	28
Table 16.20	Future hazardous landfill capacity in England	28
Table 16.21	Sensitivity of key materials	28
Table 16.22	Material consumption required for Proposed Development	30
Table 16.23	Potential materials consumed during the construction phase	30
Table 16.24	Material consumption required for Proposed Development to introduce a significant environmental effect	32
Table 16.25	Potential waste sources during the construction phase	33
Table 16.26	Estimated waste generated from the Site Clearance	34
Table 16.27	Earthworks estimate	34
Table 16.28	Earthworks estimate	35
Table 16.29	Construction waste estimates	35
Table 16.30	Estimated CD&E Waste	36

Table 16.31	Landfill Diversion	37
Table 16.32	Inert landfill capacity in the expansive study area (the north east) ..	37
Table 16.33	Non-hazardous landfill capacity in the expansive study area (the north east)	39
Table 16.34	Hazardous landfill capacity in England	39
Table 16.35	Inventory of the feedstocks used in the production of SAF	40
Table 16.36	Operational waste generated from the Proposed Development	41
Table 16.37	Summary of significant effects during construction	49

Insets

Inset 16.1	The waste hierarchy	46
------------	---------------------------	----

Abbreviations

Abbreviation	In full
CCS	Considerate Constructors Scheme
CD&E	Construction, Demolition and Excavation
CE	Circular Economy
CEMP	Construction Environmental Management Plan
CL:AIRE	Contaminated Land: Applications in Real Environments
DEMP	Decommissioning Environmental Management Plan
DPD	Development Plan Document
EIA	Environmental Impact Assessment
EN-1	Overarching National Policy Statement for Energy
EN-3	National Policy Statement for renewable energy infrastructure
ES	Environmental Statement
FSWMP	Framework Site Waste Management Plan
IEMA	The Institute of Environmental Management and Assessment
ISEP	The Institute of Sustainability and Environmental Professionals
LAA	Local Aggregate Assessment
LSE	Likely Significant Effect
MMP	Materials Management Plan
MPS	Marine Policy Statement
NPPF	National Planning Policy Framework
NPS	National Policy Statement
PINS	Planning Inspectorate
RCBC	Redcar and Cleveland Borough Council
SAF	Sustainable Aviation Fuel
SPMTs	Self-Propelled Modular Transporters
STBC	Stockton-on-Tees Borough Council
TVCA	Tees Valley Combined Authority
WRAP	Waste and Resources Action Programme

16 Materials and Waste

16.1 Introduction

- 16.1.1 This Chapter outlines 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.
- 16.1.2 This chapter sets out the relevant legislation, policy, standards and guidance applied to the assessment process; consultation undertaken to inform the assessment; assessment methodology; the relevant baseline conditions upon which the assessment is based; embedded mitigation considered in place before the assessment is undertaken; the likely significant effects that may arise as a result of the Proposed Development considering embedded mitigation; further mitigation proposals to reduce or remove identified likely significant effects wherever possible; likely remaining residual effects following further mitigation; and any monitoring proposals.
- 16.1.3 The assessment follows the Institute of Environmental Management and Assessment (IEMA)¹ guidance for Materials and Waste in Environmental Impact Assessment (EIA) [Ref 1]. The effects are also to be assessed in the context of relevant national, regional, and local materials and waste management policies.
- 16.1.4 For potential effects from material and waste on other disciplines please refer to the following chapters of this Environmental Statement (ES):
- **Chapter 14: Greenhouse Gas Emissions (ES Volume I, Application Document Ref. 6.1);**
 - **Chapter 15: Climate Change Resilience (ES Volume I, Application Document Ref. 6.1); and**
 - **Chapter 21: Geology and Soils (ES Volume I, Application Document Ref. 6.1).**

16.2 Legislation and planning policy context

- 16.2.1 The legislation, policy, and guidance relevant to the material and waste assessment of the Proposed Development is shown in Table 16.1.

¹ In July 2025 IEMA officially rebranded to the Institute of Sustainability and Environmental Professionals (ISEP)

Table 16.1 Materials and Waste – Summary of key Legislation, Policy, and Guidance

Legislation/Policy/Guidance	Description
Legislation	
Environment Act 2021 [Ref 2]	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.
The Waste (Circular Economy) (Amendment) Regulations 2020 [Ref 3]	These regulations amend the Waste (England and Wales) Regulations 2011 and the Environmental Permitting (England and Wales) Regulations 2016 to strengthen the waste management framework in England and Wales. In particular, they place greater emphasis on the prevention of waste generation and the preparation of waste prevention programmes, introduce enhanced requirements for the separate collection and segregation of waste, and require more detailed record-keeping to support improved monitoring and regulatory compliance.
The Environmental Permitting (England and Wales) Regulations 2016 [Ref 4]	Aims to streamline the legislative system for industrial and waste operations 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 5]	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 6]	These regulations allow for the transfer of controlled waste to be recorded on alternative documentation, such as invoices, instead of waste transfer notes.
Waste Framework Directive 2008/98/EC [Ref 7]	The Directive provides a comprehensive foundation for the management of waste across the European Community and provides a common definition of waste. The 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.”
Clean Neighbourhoods and Environment Act 2005 [Ref 8]	The Act strengthens the ability to enforce against waste-related offences including in relation to on-site construction workers.
Hazardous Waste (England and Wales) Regulations 2005 [Ref 9]	These regulations introduced measures for the classification, transport and tracking of hazardous waste. The regulations provide a means to ensure that hazardous waste and any associated risks are appropriately managed.

Legislation/Policy/Guidance	Description
Environmental Protection Act 1990 [Ref 10]	The Act provides the framework, within England, Wales and Scotland for waste management and control of emissions into the environment. The Act outlines the requirement of the person who is responsible for the management of extractive waste (e.g. the site manager) to take reasonable measures to ensure that any excess materials or waste as a result of construction activities are recovered or disposed of lawfully.
Control of Pollution (Amendment) Act 1989 [Ref 11]	The Control of Pollution (Amendment) Act 1989 makes it a criminal offence for a person who is not a registered carrier of controlled waste, in the course of business or otherwise with a view to profit, to transport controlled waste to or from any place in Great Britain. The Act also provides for the seizure of vehicles used for illegal waste disposal.
Policy	
Overarching National Policy Statement (NPS) for Energy EN-1 [Ref 12]	The Overarching National Policy Statement (NPS) for Energy (EN-1) sets out the government's policy for delivery of major energy infrastructure. NPS EN-1 explains why the government sees a need for nationally significant energy infrastructure and sets out the general policies for assessing applications relating to energy infrastructure including policies relevant to assessing environmental impacts. Section 5.15: Resource and 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. Applicants must ensure that all proposals align with circular economy objectives.
National Policy Statement for renewable energy infrastructure (EN-3) [Ref 13]	The National Policy Statement for Renewable Energy Infrastructure (EN-3), read alongside EN-1, applies to nationally significant renewable projects and stresses the urgent need for renewable generation to meet net zero and carbon budgets.
National Planning Policy Framework (2026) (NPPF) [Ref 14]	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 15]	The National Planning Policy for Waste outlines the Government's ambition to promote a sustainable approach to resource use and management. It sets

Legislation/Policy/Guidance	Description
	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.
The UK Marine Policy Statement (MPS) [Ref 16]	This 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.
The National Waste Management Plan for England [Ref 17]	The Waste Management Plan for England focuses on waste arisings and management. It provides an overview of the existing waste management situation in England as well as actions to divert waste suitable for recycling or other recovery from landfill. 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). It is supplemented by the Waste Prevention Programme for England which sets out priorities and measures for preventing products and materials from becoming waste, including by greater re-use, repair and remanufacture.
National Policy Statement for Hazardous Waste (2013) [Ref 18]	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 19]	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 20]	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

Legislation/Policy/Guidance	Description
	promote the reuse, recycling and recovery of value from waste.
North East Marine Plans [Ref 21]	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 capital dredging.
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 of materials and waste from the Proposed Development, using the process and significance criteria it sets out.
Simpler Recycling: workplace recycling in England [Ref 22]	All workplaces in England must separate their waste before it is 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).

16.3 Assessment methodology and significance criteria

Consultation, engagement and scoping

Scoping opinion

- 16.3.1 The **EIA Scoping Report (Appendix 2A, ES Volume III, Application Document Ref. 6.3)** was issued to the Planning Inspectorate (PINS) on 1st of October 2025. PINS provided its **EIA Scoping Opinion (EN0110025)** on 11th of November 2025 (**Appendix 2B, ES Volume III, Application Document Ref. 6.3**), which included feedback from consultation bodies that it formally consulted.
- 16.3.2 Table 16.2 captures the key Scoping Opinion comments received from PINS relevant to the materials and waste assessment, along with the Applicant's response to these at this stage of the assessment. The full consultee comments on the **EIA Scoping Report** and responses to these are provided in **Appendix 2A (ES Volume III, Application Document Ref. 6.3)**.

Table 16.2 Scoping Responses

Stakeholder	Scoping Comment	Applicant response
PINS ID3.10.1	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.	The materials and waste assessment includes a description of the nature and quantity of the materials (including feedstock) to be used in the production of SAF by the Proposed Development displayed in Table 16.35. More detail on feedstock sourcing is set out in Chapter 4: Proposed Development (ES Volume I, Application Document Ref. 6.1) .
PINS ID3.10.2	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.	This has been assessed in the this chapter which includes a description of the nature and quantity of the dredge spoil associated with the Proposed Development in Section 16.6.
PINS 3.10.3	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. makes no mention of the dredge spoil from the maintenance of the dredge pocket. The ES must include an estimate	This has been assessed in the materials and waste chapter which includes an estimate, by type and quantity, of the operational waste generated from the Proposed Development as displayed in Table 16.36.

Stakeholder	Scoping Comment	Applicant response
	by type and quantity of waste produced during the operation phase. Table 14.11 refers to ash and slag as examples of waste arising. 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.	
PINS ID3.10.5	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 DCO. The ES should however include an estimate of waste produced by the proposed development in the decommissioning phase.	The materials and waste assessment includes a description of waste associated with the decommissioning of the Proposed Development in Section 16.6.23.

Statutory public consultation

16.3.3 Statutory consultation on the proposals for the Project was undertaken from 02 December 2025 to 13 January 2026.

Statutory consultee responses raised concerns, objections or requests for clarification that affect the scope, methodology, assumptions or conclusions of the materials and waste assessment are presented in the Table 16.3.

Table 16.3 Statutory Consultation Responses

Stakeholder	Scoping Comment	Applicant response
Durham County Council	The paragraphs following these tables then refer to the adopted Tees Valley Joint Minerals and Waste Core Strategy DPD and at paragraph	The Materials and Waste assessment includes an updated baseline for materials including updated data from

Stakeholder	Scoping Comment	Applicant response
	4.1.16 to Local Aggregate Assessment (LAA) [1a.i.1.a.i.1.a.Ref 28] that 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. This LAA which is referred to is also out of date containing information from 2021 and therefore does not reflect the current aggregate resource availability in the Tees Valley. A further reference at paragraph 4.1.20 also refers to the same LAA and refers to resource availability in 2022. This chapter needs to be updated to take into account the latest available information on sand and gravel and crushed rock availability, which will be for the 2024 calendar year. Regard should also be had to existing and emerging Local Aggregate Assessments prepared by County Durham and North Yorkshire which both adjoin the Tees Valley.	Tees Valley Joint LAA in Section 16.4.
Durham County Council	It is considered that the report should clearly set out likely aggregate requirements for the construction of the proposed development. It does not appear that the report actually states how much aggregate would be required for the proposed development. It should do so as the proposal may have the potential to require significant quantities of aggregates which may not be available from the Tees Valley – in 2024 there were no land won sand and gravel sites remaining and the Tees Valley's one crushed rock remained inactive. The Tees Valley is largely dependent on a combination of marine dredged sand and gravel and imports of aggregates from surrounding sub-regions in the North East and the Yorkshire and Humber. This is considered important to ensure that	The Materials and Waste assessment includes estimates of materials, including aggregates, for the Proposed Development in Table 16.22 and Section 16.6.

Stakeholder	Scoping Comment	Applicant response
	sufficient aggregates are available for the proposed development.	
Durham County Council	The report also sets out and refers to Environment Agency data from 2023. The sections on waste will need to be updated to take into account the availability of more up to date Environment Agency data for 2024.	The Materials and Waste assessment includes an updated baseline for waste including updated data from EA from 2024 in Section 16.4.
Durham County Council	In overall terms further consideration needs to be given in the report to waste management and remaining landfill capacity to ensure that the waste management facilities and landfill capacity which are required for this proposed development are actually available for the management of waste derived from the construction of the proposed development. It does not appear that the report actually states how much waste would need to be generated and managed or disposed to landfill, it should do so. This is a significant issue for County Durham given that the majority of all inert void space remaining in the North East lies in three inert landfill sites in County Durham (6,165,844m³ at the end of 2024 out of a total in the NE of 6,372,922m³). It should be noted that there are no inert landfill sites in the Tees Valley although there are a number of non-hazardous who would be able to accept inert wastes as well as non-hazardous wastes.	Inert Construction, Demolition and Excavation (CD&E) waste arising from the Proposed Development that cannot be re-used, recycled or recovered will need to be disposed to inert landfill. In order to model the reasonable worst case scenario, the total waste identified for off-site disposal arising from the construction of the Proposed Development has been compared to the total future inert landfill capacity in the expansive study area (the north east) in 2028 following the ISEP Guidance. The results are shown in Table 16.32.
	Waste materials The Environmental Protection (Duty of Care) Regulations 1991 for dealing with waste materials are applicable to any off-site movements of wastes. The code of practice applies to you if you produce, carry, keep, dispose of, treat, import or have control of waste in England or Wales. The law requires anyone dealing with waste to keep it safe and make sure	The Proposed Development will comply the Duty of Care Requirements. The Framework Site Waste Management Plan (fSWMP) (ES Volume III, Appendix 5B: Framework Site Waste Management Plan) has been developed to ensure compliance with environmental legislation.

Stakeholder	Scoping Comment	Applicant response
	it's dealt with responsibly and only given to businesses authorised to take it.	

16.3.4 The elements scoped in and out for further assessment are summarised in Table 16.4.

Table 16.4 Elements scoped in and out for further assessment

Element	Phase	Scoped In / Out	Justification
Materials	Construction	In	Additional materials consumed during construction.
Waste	Construction	In	Additional waste generated during construction.
Materials	Operation	Out	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 are included in the ES.
Waste	Operation	Out	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 does include an estimate by type and quantity of the operational waste generated from the Proposed Development.
Materials	Decommissioning	Out	The design life of the Proposed Development is anticipated to be at least 25 years. Material resources are not 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	Out	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

Element	Phase	Scoped In / Out	Justification
			scoped out from this chapter and will be managed in a Decommissioning Environmental Management Plan (DEMP) in accordance with good industry practice at the time. The ES includes a high-level estimate of waste generated by the Proposed Development during decommissioning.

Assumptions and Limitations

- 16.3.5 The materials and waste assessment is based on information available at the time of writing.
- 16.3.6 The materials and waste assessment is based on information based on relevant design and construction information provided by design teams. The assessment in relation to materials and waste has been based on appropriate 'reasonable worst case' assumptions, based on information available at the time of assessment, including the materials and earthworks estimates.
- 16.3.7 The impacts associated with the extraction of raw materials and the manufacture of products are not included in the scope of the assessment. These impacts would occur off-site and may possibly occur outside of the UK. They include the depletion of non-renewable resources and the production of waste at the point of resource/ material extraction and during manufacturing.

Overview

- 16.3.8 The assessment generally follows the Institute of Sustainability and Environmental Professionals (ISEP) Guidance [Ref 1]. The effects will also be assessed in the context of relevant national, regional materials and waste management policies.
- 16.3.9 The ISEP guidance [Ref 1] provides information for Environmental Impact Assessment (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.
- 16.3.10 The guidance divides the definition of 'materials' and 'waste' into four main parts:
- Materials;
 - Excavated Materials;
 - Waste for Recovery (including Re-use and Recycling); and

- Waste Disposal.

16.3.11 These, and the way they interrelate, should be given due consideration throughout the EIA process.

16.3.12 This assessment follows the ISEP guidance [Ref 1] using the following 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;
- 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).

16.3.13 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

16.3.14 Materials are regarded as sensitive receptors as consuming them impacts on their availability in the short term and as such this 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

16.3.15 The ISEP guidance [Ref 1] 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 16.5. 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 16.5 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). Visual impacts, noise, vibration, disruption to traffic and other potential causes of nuisance.

Sensitivity of receptors

- 16.3.16 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. The criteria described within Table 16.6 have been used to determine the sensitivity of materials.

Table 16.6 Material receptor sensitivity (as set out in the ISEP guidance [Ref 1])

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.

16.3.17 The sensitivity of waste receptors relates to the availability of regional (and where appropriate, national) landfill void capacity.

16.3.18 The sensitivity of waste receptors is considered to comprise the availability of landfill void capacity in the absence of the Proposed Development. Sensitivity is defined by assessing how the future baseline of regional inert, non-hazardous, and hazardous landfill void capacity would be expected to change over the construction and operational phases, in the absence of the Proposed Development. The sensitivity of landfill void capacity was assessed by applying the following two-step process:

- forecast the landfill void capacity that is expected to be available in the future (the future baseline), using historical trends; and
- calculate the utilisation of landfill void space, by comparing capacity in the first year of operation against the baseline year.

16.3.19 The sensitivity thresholds are identified in Table 16.7.

Table 16.7 Thresholds for considering the sensitivity of landfill capacity (as set out in the ISEP guidance [Ref 1])

Waste Receptor	Negligible	Low	Medium	High	Very High
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.

16.3.20 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 construction. 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 16.8.

Table 16.8 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	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	One or more materials are >10% by volume of the regional (or where justified national) baseline availability. and/or More than one allocated

No change	Negligible	Minor	Moderate	Major
		allocated mineral site (in their entirety), placing their future use at risk.	sterilised by the development rendering it inaccessible for future use.	mineral site is substantially sterilised by the development rendering it inaccessible for future use.

16.3.21 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 16.9.

Table 16.9 Thresholds for considering the magnitude of impacts from waste (as set out in the ISEP 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%.

16.3.22 The ISEP guidance [Ref 1] provides a table for assessing the magnitude of impact for the diversion of waste as displayed in Table 16.10.

Table 16.10 ISEP Magnitude Landfill Diversion (as set out in the ISEP guidance [Ref 1])

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

Significance criteria

16.3.23 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 ISEP guidance [Ref 1] provides a table for assessing the magnitude of impact for materials and waste as displayed in Table 16.11. Where there are two potential values for significance (e.g. slight or moderate) the EIA will identify the value which reports the reasonable worst case (i.e. if it is an 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 16.11 Significance matrix (as set out in the ISEP guidance [Ref 1])

		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

Significance of effect

16.3.24 The ISEP guidance [Ref 1] provides a table for determining whether an effect is significant or not as displayed in Table 16.12.

Table 16.12 ISEP 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

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

Study areas

16.3.26 Appropriate study areas have been established for the Materials and Waste assessment as outlined in the ISEP guidance [Ref 1].

16.3.27 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.

16.3.28 The 'expansive study area' will consist of different geographical areas as described below.

- 16.3.29 The north east region will be used as the wider 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).
- 16.3.30 In addition, the expansive study area for hazardous waste landfill capacity is within England as the study area.
- 16.3.31 As indicated within the ISEP 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.

16.4 Baseline conditions

Overview

- 16.4.1 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.
- 16.4.2 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.
- 16.4.3 The Main Site is a former industrial site which is currently vacant. The majority of the portion south of Seal Sands Road was previously developed and has been cleared. 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 existing jetties will require demolition and removal along with capital dredging of material for the marine works. The grass covered land in the west of the Main Site is a historic landfill formerly known as Seal Sand Waste Disposal Site which was operated by Cleveland County Council and later 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. The portion north of Seal Sands Road has not previously been developed.

Existing baseline

Material resources

- 16.4.4 The Development Study Area formerly contained a chemical production plant which has been decommissioned and demolished above ground level..
- 16.4.5 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.
- 16.4.6 Whilst conventional construction materials will be required for some elements of the Proposed Development, e.g. offices, the Sustainable Aviation Fuel (SAF) production facility will include both traditional and 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 (SPMTs) to the Main Site.
- 16.4.7 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 16.13. Material production and import data has been used, due to limited data availability on the potential volume of recoverable reserves of raw materials. Material production per annum may not reflect the lifetime availability of these materials in the ground. Using material production per annum is considered to comprise of a reasonable worst-case scenario.

Table 16.13 Raw material availability

Material	Material availability (tonnes)	Sources
Aggregate	176,426,500	British Geological Survey (2024) United Kingdom Minerals Yearbook [Ref 23]
Aluminium	149,246	British Geological Survey (2024) United Kingdom Minerals Yearbook [Ref 23]
Concrete ready-mixed/products	50,097,674	Mineral Products Association (2023) Profile of the UK Mineral Products Industry 2023 [Ref 24]
Plastic	1,600,000	British Plastics Federation (2023) About The British Plastics Industry [Ref 25]
Steel	4,000,000	UK Steel (2024) Key Stats Guide 2024 [Ref 26]

- 16.4.8 It is currently envisaged that construction of the Proposed Development would begin in 2028. To ensure that the potential impact of material consumption for the construction of the Proposed Development is considered against the quantities of the respective material resources likely to be available in the years in which the materials are required, trend analysis has been undertaken for materials produced in the UK. Historical records show that material production has been stable or growing, throughout the last 5 years, for all of the materials for which consistent long-term data is available. Therefore, it is considered that the most recent production values presented in Table 16.13 represent a reasonable worst-case in terms of future availability.
- 16.4.9 Table 16.14 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 as well as by HGV. 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.
- 16.4.10 There are a range of material assets in the north east region. The North East England Aggregates Working Party [Ref 27] to collate data and review the production and supply of aggregates across 13 mineral planning authorities.

Table 16.14 Construction materials availability in the north east of England

Material Type	Sales in 2024 (tonnes)	Permitted reserves at 31 December 2024 (thousand tonnes)	Landbank (years)
Land won sand and gravel	841,000	16,953,000	13.1
Crushed Rock	5,251,000	167, 571,000	27.6
Marine and Sand and Gravel	966,000	Not applicable	Not applicable
Total Primary Aggregates	7,059,000	184,525,000	Not applicable
Recycled and secondary aggregate	871,0000	Not applicable	Not applicable

- 16.4.11 Across the UK, the availability of materials typically required for construction schemes, indicates that stocks/production/sales remain available.
- 16.4.12 There are a range of material assets in the Tees Valley Combined Authority (TVCA) area. A LAA [Ref 28] has been prepared jointly by the five Tees Valley authorities of Darlington Borough Council, Hartlepool Borough Council, Middlesbrough Council, Redcar and Cleveland Borough Council (RCBC) and Stockton-on-Tees Borough Council (STBC). 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.
- 16.4.13 The assessment identifies that the joint Tees Valley local authority areas have permitted reserves of 1.4 million tonnes of crushed rock in 2021.
- 16.4.14 The LAA identifies that Stockton Quarry has ceased operating, however there are still extractable resources and there are gypsum resources around the area.
- 16.4.15 The western part of the Main Site is a historic landfill believed to have been in operation in the 1970s/80s. The current development layout includes some development taking place on the landfill area. A second historic landfill is present adjacent to the boundary of the Main Site to the north.
- 16.4.16 There are a number of landfills adjacent to the south and east of the Proposed Development.
- 16.4.17 There are no areas determined as contaminated land under Part 2A Contaminated Land Statutory Guidance [Ref 29]. 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, ES Volume I,**

Application Document Ref. 6.1). Intrusive ground investigation to inform design is planned post consent.

Waste

Environment Agency (EA)

- 16.4.18 Information from the EA [Ref 30] has been used to inform the baseline with respect to waste infrastructure capacity in the north east former planning region and England in 2024.
- 16.4.19 The EA provides landfill capacity data in volume and this has been converted to mass (tonnes) using the following conversion factors provided by the EA on behalf of High Speed Rail [Ref 31]. The above have been applied as they are considered robust.
- 1.5 tonnes per m³ for hazardous waste landfill.
 - 0.83 tonnes per m³ for non-hazardous waste landfill.
 - 1.5 tonnes per m³ for inert waste landfill.
- 16.4.20 The above have been applied as they are considered robust.
- 16.4.21 Table 16.15 provides a summary of the transfer, treatment and metal recycling capacity in the north east in 2024.

Table 16.15 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	484,296	349,909	679,990	1,097,718	2,611,913
Waste treatment	559,302	373,597	2,520,498	707,400	4,160,796
Metal recycling	241,711	1,424	179,456	398,540	821,131

The waste incineration capacity for north east in 2024 is displayed in

16.4.22 Table 16.16.

Table 16.16 Waste incineration capacity in the north east in 2024

Facility type	County Durham (tonnes)	Northumberland (tonnes)	Tees Valley Unitary (tonnes)	Tyne and Wear (tonnes)	North east Capacity (tonnes)
Hazardous Waste	0	0	48,000	0	48,000
Co-Incineration of Non-Hazardous Waste	0	0	0	0	0
Municipal and/or Industrial & Commercial	0	0	1,256,000	0	1,256,000
Biomass/ Waste Wood	125,000	0	310,000	0	435,000

16.4.23 Table 16.17 below provides a summary of the landfill capacity within the north east in 2024 for the disposal of construction and operation waste arising from the Proposed Development. In 2024, there is no inert landfill capacity in the Tees Valley Unitary area where the Proposed Development is located. However there is 9.6 million tonnes of inert land capacity in the wider north east region expansive study area.

Table 16.17 Landfill capacity the north east in 2024

Facility type	County Durham (tonnes)	Northumberland (tonnes)	Tees Valley Unitary (tonnes)	Tyne and Wear (tonnes)	North east Capacity (tonnes)
Inert waste landfill	9,248,226	0	0	311,157	9,559,383
Non-hazardous waste landfill	2,062,001	461,801	4,297,908	0	6,821,710
Hazardous waste landfill	0	0	5,592,840	0	5,592,840

16.4.24 Table 16.18 below provides a summary of the hazardous waste landfill capacity within England in 2024 for the disposal of hazardous construction and operational waste.

Table 16.18 Hazardous landfill capacity in England in 2024

Facility type	England (tonnes)
Hazardous waste landfill	14,772,375

Construction and demolition waste

- 16.4.25 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 Waste Framework Directive 2008/98/EC [Ref 7] . 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 32]. The last published data from 2022 indicated that England was achieving a recovery rate of 94.3% for non-hazardous construction and demolition waste [Ref 33].

Future baseline

- 16.4.26 When determining the baseline for the assessment it has been considered how changes to the baseline may occur in the future,. Considerations for waste and resources include factors such as the latest available information on material resources and waste infrastructure capacity from the EA [Ref 30]. Where information on likely trends is available, this is used to define the potential future baseline.

Waste***Future landfill capacity***

- 16.4.27 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.
- 16.4.28 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.
- 16.4.29 The future landfill inert and non-hazardous capacity is displayed in Table 16.19 and is based on the average percentage change in permitted landfill capacity for the years 2018 to 2024 reported by the EA [Ref 30]. The average percentage change has then been applied to the 2018 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 16.19 Future landfill capacity in the north east

Facility type	Capacity 2025 (tonnes)	Capacity 2026 (tonnes)	Capacity 2027 (tonnes)	Capacity 2028 (tonnes)	Capacity 2029 (tonnes)
Inert waste landfill	8,321,806	7,764,464	7,244,448	6,759,261	6,306,568
Non-hazardous landfill	6,485,981	6,324,364	6,166,774	6,013,112	5,863,278

16.4.30 The future hazardous landfill capacity for England is displayed in Table 16.20 and is based on the average percentage change in permitted landfill capacity for the years 2018 to 2024 reported by the EA [Ref 30]. The data identifies the future hazardous landfill capacity in England for the disposal of construction and operation waste arising from the Proposed Development.

Table 16.20 Future hazardous landfill capacity in England

Facility type	2025	2026	2027	2028	2029
Hazardous waste landfill	13,408,102	12,169,823	11,045,903	10,025,781	9,100,061

Sensitivity of receptors

Materials

16.4.31 The key materials expected to be consumed by the Proposed Development are nationally and globally traded commodities and historically have few issues regarding supply and stock in the UK. Whilst the stock and supply issues are likely to have resolved prior to the commencement of construction in 2028, a reasonable worst-case has been taken when appraising the sensitivity of these receptors, as identified in Table 16.21.

Table 16.21 Sensitivity of key materials

Material	Supply availability	Sensitivity
Aggregate	Generally free from known issues	Low
Aluminium	Generally free from known issues	Low
Concrete ready-mixed/products	Generally free from known issues	Low
Copper	Potential supply constraints or vulnerabilities	Medium
Plastic	Generally free from known issues	Low
Steel	Generally free from known issues	Low

Waste

16.4.32 As defined in the ISEP guidance [Ref 1] the sensitivity of landfill capacity as a receptor is defined by the projected proportional decline in capacity within the assessment period, without the Proposed Development. It is forecasted that the sensitivity of the identified receptors, is considered to be:

- inert waste landfill capacity – Low;
- non-hazardous waste landfill capacity – Low; and
- hazardous waste landfill capacity - Medium.

16.5 Development design and impact avoidance

Overview

16.5.1 The design of the Proposed Development is ongoing. Measures to manage impacts associated with materials and waste, including associated mitigation, are identified in the ES.

Materials

16.5.2 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.

16.5.3 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

16.5.4 The Proposed Development's design considers both sustainable resource management and takes into consideration the waste hierarchy (see Inset 16.1) 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.

16.6 Likely impact and effects of the Proposed Development

Construction phase

Materials

- 16.6.1 During the construction phase, materials will be required. Based on preliminary design information, and overarching assumptions, the use of key materials consumed by the Proposed Development during construction has been forecast in Table 16.22.

Table 16.22 Material consumption required for Proposed Development

Material	Estimated quantity of key materials consumed during construction (tonnes)
Aggregates	293,590
Concrete ready-mixed/products	1,720,083
Copper	1,523
Steel	79,232

- 16.6.2 The other potential material types that will be consumed during the construction phase are summarised in Table 16.23.

Table 16.23 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

Potential materials effects

- 16.6.3 The estimated consumption of materials has been assessed against the baseline resource availability to identify the magnitude impact and the potential significance of effect; these are presented in Table 16.24.

Table 16.24 Material consumption required for Proposed Development to introduce a significant environmental effect

Material	Material availability (tonnes)	Sensitivity of receptor	Estimated quantity of material consumed during construction (tonnes)	Proportion of available material to be consumed	Magnitude	Significance
Aggregates	176,426,500	Low	293,590	0.2	Negligible	Slight Adverse (non-significant)
Concrete ready-mixed/ products	50,097,674	Low	1,720,083	3.4	Minor	Slight Adverse (non-significant)
Copper	1,815,010	Medium	1,523	0.1	Negligible	Slight Adverse (non-significant)
Steel	4,000,000	Low	79,232	2	Minor	Slight Adverse (non-significant)

Waste

- 16.6.4 Waste will be generated during the 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.
- 16.6.5 The potential waste sources generated during the construction phase are summarised in Table 16.25.

Table 16.25 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.	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 contaminants.	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 potentially hazardous.	The reduction in regional inert, 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.

Construction phase	Potential wastes produced	Classification of waste	Potential impacts
Excavation	Made ground, concrete, 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.

Site clearance waste estimates

16.6.6 The estimated waste generated from Site Clearance are displayed in Table 16.26.

Table 16.26 Estimated waste generated from the Site Clearance

Waste stream	Waste arisings (tonnes)
Concrete	169,517
Metals	59,645
Plastic	4,236
Rock and Stones from the Clearance of the Existing Quay	20,000
Insulation	169
Hazardous Waste -Waste Electrical and Electronic Equipment and cabling	5,512
Total	259,078

Earthworks

16.6.7 The earthworks estimations are provided in volume (cubic metres) in Table 16.27.

Table 16.27 Earthworks estimate

Earthworks Activity	Volume (m³)
Main Site Excavation	235,200
Total Soil Excavation	454,253
Total re-use of excavated materials on-site	194,552
Total Backfill Materials	775,701
Levelling of site	280,800
Ineos site backfill material	494,901

16.6.8 The excavation waste associated with the Proposed Development is available in volume (cubic metres) in the Earthwork Cut & Fill Quantity Estimate Summary and has been converted to mass (tonnes) in the ES using the EA conversion factor of 1.25 tonnes per cubic metre used for inert materials (Table 16.28).

Table 16.28 Earthworks estimate

Earthworks Activity	Destination	Volume (m³)	Mass (tonnes)
Surface scrape removes unsuitable materials and topsoil and off-site waste disposal	Non-hazardous Waste Disposal	18,000	22,500
	Hazardous Waste Disposal	2,000	2,500
Remediation or removal of identified gross soil and groundwater contamination	Hazardous Waste Disposal	3,000	3,750
Disposal of arisings from piled foundations	Hazardous Waste Disposal	1,500	1,875
Sub-total Non -Hazardous Waste Disposal		18,000	22,500
Sub-total Hazardous Waste Disposal		6,500	8,125

Construction waste

16.6.9 The construction waste forecast likely to be generated by the Proposed Development is displayed in Table 16.29. The construction waste forecast has been estimated by applying a recognised Waste and Resources Action Programme (WRAP) [Ref 34] wastage rate to the materials consumed by the Proposed Development.

Table 16.29 Construction waste estimates

Activity	Waste arisings (tonnes)
Steel	1,981
Concrete	43,002
Copper	38
Instrumentation	42
Equipment	81
Total	45,144

16.6.10 The quantity of CD&E waste that will be diverted from landfill via re-use, recycling and recovery is based on a landfill diversion rate of 90%. Therefore, as a realistic worst-case scenario it has been assumed that the remaining 10% of construction waste arising will be disposed of off-site to landfill. The last published data from 2022 indicated that England was

achieving a recovery rate of 94.3% for non-hazardous construction and demolition waste [Ref 33].

- 16.6.11 The estimated CD&E waste for the Proposed Development is displayed in Table 16.30.

Table 16.30 Estimated CD&E Waste

Activity	Waste arisings (tonnes)	CD&E 90% Recycled (tonnes)	CD&E Waste Disposed (tonnes)
S Excavation	30,625		30,625
Site Clearance	259,078	233,170	25,908
Construction	45,144	40,630	4,514
Total	334,847	273,800	61,047

Dredging

- 16.6.12 Quantities of dredged material associated with construction of the quay are estimated to be between 400,000 and 800,000m³ (depending on which quay construction method is selected).
- 16.6.13 It is estimated that approximately two-thirds (538,000m³) of the dredge spoil is likely to be uncontaminated materials from the excavation of the berthing pocket and quay approach and will require disposal. It is assumed that it will be most likely to be deposited at a licensed marine disposal site e.g. Tees Bay - C.
- 16.6.14 It is assumed, as a reasonable worst case, that the remaining third of the dredge spoil is likely to be contaminated. Once the results of the contaminant analyses are available for this waste stream the management and disposal methods for the contaminated dredge spoil will be identified but may include disposal at Tees Bay C.

Potential waste effects

Landfill diversion

- 16.6.15 The quantity of CD&E that will be diverted from landfill via re-use, recycling and recovery is based on a landfill diversion rate of 90% and is shown in Table 16.31. Therefore, as a worst-case scenario it has been assumed that the remaining 10% of CD&E waste arising will be disposed of off-site to landfill. The last published data indicated that England was achieving a recovery rate of 94.3% [Ref 33] for non-hazardous construction waste. Therefore, a recycling and recovery rate of CD&E waste of 90% is expected to be achieved on the Proposed Development.

Table 16.31 Landfill Diversion

Activity	Total waste (tonnes)	Quantity diverted (tonnes)	Quantity for off-site disposal (tonnes)	Magnitude of impact
Total CD&E Waste	334,847	273,800	61,047	Minor
Proportion	100%	82%	18%	

Waste

Inert waste disposal capacity

16.6.16 Inert waste arising from the Proposed Development that cannot be re-used, recycled or recovered will need to be disposed to inert landfill. In order to model the reasonable worst-case scenario, the total waste identified for offsite disposal arising from the construction of the Proposed Development has been compared to the total future inert landfill capacity in the expansive study area (the north east) in 2028. The year 2028 has been selected for the assessment as it is the first year of construction. The results are shown in Table 16.32 in expansive study area in 2028.

Table 16.32 Inert landfill capacity in the expansive study area (the north east)

Maximum Inert Waste (tonnes)	Future Inert landfill capacity (tonnes)	% Inert waste disposal capacity	Sensitivity	Magnitude	Significance
30,422	6,759,261	0.45	Low	Negligible	Slight Adverse (Not significant)

Non-hazardous waste disposal capacity

Non-hazardous waste arising from the Proposed Development that cannot be re-used, recycled or recovered will need to be disposed to non-hazardous landfill. In order to model the reasonable worst-case scenario, the total waste identified for off-site disposal arising from the construction of the Proposed Development has been compared to the total future non-hazardous landfill capacity in the expansive study area (the north east) in 2028. The year 2028 has been selected for the assessment as it is the first year of construction. The results are shown in

16.6.17 Table 16.33 in expansive study area in 2028.

Table 16.33 Non-hazardous landfill capacity in the expansive study area (the north east)

Maximum Non-hazardous Waste (tonnes)	Future Non-hazardous landfill capacity (tonnes)	% Non-hazardous waste disposal capacity	Sensitivity	Magnitude	Significance
52,922	6,013,112	0.9	Low	Negligible	Slight Adverse (Not significant)

Hazardous waste disposal capacity

- 16.6.18 Hazardous waste arising from the Proposed Development will need to be disposed to hazardous landfill. In order to model the reasonable worst case scenario, the hazardous waste identified for off-site disposal arising from the construction of the Proposed Development has been compared to the total future hazardous landfill capacity in England in 2028. The year 2028 has been selected for the assessment as it is the first year of construction. The results are shown in Table 16.34 in expansive study area in 2028.

Table 16.34 Hazardous landfill capacity in England

Maximum Hazardous Waste (tonnes)	Future Hazardous landfill capacity (tonnes)	% Hazardous waste disposal capacity	Sensitivity	Magnitude	Significance
13,638	10,025,949	0.14	Medium	Minor	Slight Adverse (Not significant)

Operation phase

Materials

- 16.6.19 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 and are available in **Chapter 14: Greenhouse Gas Emissions (ES Volume I, Application Document Ref. 6.1)**.

Feedstock

- 16.6.20 Table 16.35 includes an inventory of the feedstock used in the production of SAF and in the CHP plant by the Proposed Development.

Table 16.35 Inventory of the feedstocks used in the production of SAF

Description	Purpose	Proposed Supply Method	Phase	Annual Consumption (Tonnes)
Industrial Wood Pellets	SAF Plant Feedstock CHP Fuel	Ship	Solid	917,000
Agricultural Residues	SAF Plant Feedstock CHP Fuel	Ship	Solid	419,000
Waste Wood	CHP Fuel	Ship/Truck	Solid	701,000

Waste

16.6.21 Table 16.36 includes an estimate, by type and quantity, of the operational waste generated from the Proposed Development.

Table 16.36 Operational waste generated from the Proposed Development

EWC Code	Description	Source	Phase	Classification	Approx. Quantity Generated Per Annum (Tonnes)	Proposed Disposal Method
19 01 07*	Solid waste from gas treatment	CHP Boiler	Solid	Hazardous	32,000	Product (construction material)/ Landfill
19 01 11*	Bottom ash	CHP Boiler	Solid	Non - hazardous	40,000	Product (construction material)/ Landfill
10 01 18*	Solid waste from gas treatment	SAF Plant	Solid	Non - hazardous	2,300	Product (construction material)/ Landfill
10 01 01	Bottom ash	SAF Plant	Solid	Non - hazardous	2,700	Product (construction material)/ Landfill
10 01 01	Slag	SAF Plant	Solid	Non - hazardous	8,600	Product (construction material)
10 01 21	Filter Cake	SAF Plant	Solid	Non - hazardous	13,100	Product (construction material)
07 01 99	Feedstock contaminants	SAF Plant	Solid	Non - hazardous	133	Landfill
16 08 02*	Spent Catalyst/ Adsorbent	SAF Plant	Solid	Hazardous	256	Metals reclamation
16 08 05*	Spent Catalyst/ Adsorbent	SAF Plant	Solid	Hazardous	39	Incineration
16 08 07*	Spent Catalyst/ Adsorbent	SAF Plant	Solid	Hazardous	25	Incineration or Landfill
07 01 11*	Water Treatment Sludges	SAF Plant Off-sites & Utilities	Solid	Hazardous	1,630	Specialist Wastewater Treatment Works

EWC Code	Description	Source	Phase	Classification	Approx. Quantity Generated Per Annum (Tonnes)	Proposed Disposal Method
07 01 99	Wax	SAF Plant	Solid	Non - hazardous	10	Incineration
13 02 08*	Waste oils	CHP Boiler SAF Plant Off-sites & Utilities	Liquid	Hazardous	10	Incineration

- 16.6.22 Capital dredging quantities associated with maintenance and operation are not available at this stage, as they are currently unknown and volumes will be informed by the hydraulic modelling results once available.

Decommissioning

- 16.6.23 The Proposed Development has a design life of at least 25 years and as such it is not considered possible to reliably forecast decommissioning requirements and infrastructure this far in the future. However, the operational life could be longer subject to market conditions and plant condition, and this ES does not assume that the facilities will be removed after at least 25 years, but as it is based on annual waste basis, any extension of the lifetime will not impact on the results of this assessment.
- 16.6.24 The quay has been designed to be retained for potential use by future developments if required, so may be retained when the other elements of the Proposed Development are decommissioned. The **draft DCO (Application Document Ref. 3.1)** includes a requirement that provides for the submission and approval of a Decommissioning Environmental Management Plan(s) (DEMP) prior to decommissioning of the relevant part of the Proposed Development, The DEMP(s) will consider in detail all potential environmental risks on the Site and contain guidance on how risks can be removed or mitigated. Effects associated with the decommissioning phase would not be any worse than those experienced during the construction of the Proposed Development as the quantities of decommissioning waste are likely to be lower.

16.7 Mitigation and enhancement measures

Construction

- 16.7.1 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

- 16.7.2 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 principles 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, aiming to balance 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.
- 16.7.3 This materials management will drive the implementation of good practice and sustainable procurement.
- 16.7.4 Materials selected will be durable to ensure long life and reduced need for replacement.
- 16.7.5 Materials will be appropriately handled and stored throughout their lifecycle from delivery to inclusion, e.g. return surplus materials to storage.
- 16.7.6 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.
- 16.7.7 There will be designated areas for the segregated storage of materials.
- 16.7.8 Opportunities will be investigated to introduce standardisation across the Proposed Development to ensure waste inherent in the design is reduced.
- 16.7.9 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.
- 16.7.10 Adequate areas of the Main Site as well as the Wider Site will be used for temporary construction compounds (see **Figure 5.1, ES Volume II, Application Document Ref. 6.2**). The location of material storage areas will be determined following detailed design and detailed construction phase planning, when storage requirements are finalised.

16.7.11 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 where practicable;
- 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

16.7.12 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.

16.7.13 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.

16.7.14 There are no areas determined as contaminated land under Part 2A Contaminated Land Statutory Guidance [Ref 35]. There is potential for localised hotspots of contamination in the ground beneath the site associated with the former chemical works and historic landfill site and other industrial activities in the surrounding area (see **Chapter 21: Geology and Soils, ES Volume I, Application Document Ref. 6.1**) 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

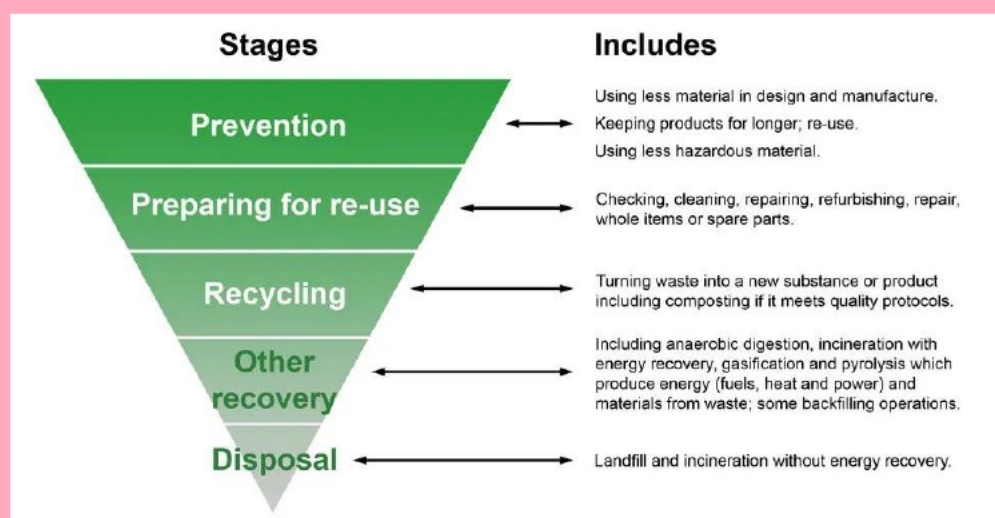
16.7.15 The Proposed Development will generate waste associated with site clearance and demolition of the jetties. Where on-site recycling (e.g. re-use of crushed concrete as fill) is not feasible the project team shall identify

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

- 16.7.16 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 16.1 The waste hierarchy

- 16.7.17 A **Framework Site Waste Management Plan (fSWMP) (Appendix 5B, ES Volume III, Application Document Ref. 6.3)** has been 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 EPC Contractor(s) 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.
- 16.7.18 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 EPC Contractor(s) 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.

- 16.7.19 The EPC Contractor(s) 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.
- 16.7.20 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 EPC Contractor(s) 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.
- 16.7.21 Hazardous waste shall be correctly labelled, securely contained and not be mixed with non-hazardous waste.

Construction Environmental Management Plan (CEMP)

- 16.7.22 A **Framework Construction Environmental Management Plan (fCEMP) (Appendix 5A, ES Volume III, Application Document Ref. 6.3)** has been prepared which captures information on the management of key material assets and waste issues including recycling and hazardous waste as well as providing links to the SWMP.

Materials Management Plan (MMP)

- 16.7.23 A MMP will be submitted to and approved by the local planning authority in accordance with a requirement in the **draft DCO (Application Document Ref. 3.1)**. The MMP will follow the protocols within the Contaminated Land: Applications in Real Environments (CL:AIRE) 2011 Definition of Waste.

16.8 Residual effects and conclusions

Materials

- 16.8.1 The Proposed Development will require materials for construction however it is not likely it will produce a Likely Significant Effect (LSE) as adequate material stocks are available as identified in Section 16.6.

Waste

- 16.8.2 Waste will be generated during construction phase, which has the potential for significant adverse effects on remaining landfill capacity. Landfill capacity is considered a sensitive receptor in the UK. 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. Operational waste arisings are scoped out.
- 16.8.3 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 document Future Inert Landfill Capacity for the north east [Ref 30] there is adequate landfill capacity to dispose of inert waste from the Proposed Development and the inert waste arising from the Proposed Development will not produce an LSE as identified in Section 16.6.
- 16.8.4 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 [Ref 30] there is adequate landfill capacity to dispose of non-hazardous waste from the Proposed Development and this will not produce an LSE as identified in Section 16.6.
- 16.8.5 Hazardous waste arising from the construction of the Proposed Development that cannot be re-used, recycled or recovered will need to be disposed to hazardous landfill. According to the Future Hazardous Landfill Capacity for the England [Ref 30] there is adequate landfill capacity to dispose of hazardous waste from the Proposed Development and hazardous waste will not produce a LSE as identified in Section 16.6.

16.9 Summary of significant effects

- 16.9.1 Summaries of the potential significant effects associated with the construction of the Proposed Development are presented in Table 16.37.

Table 16.37 Summary of significant effects during construction

Potential Impact	Receptor	Sensitivity	Magnitude of Impacts	Likely Significant Effects	Proposed Mitigation	Residual Effects
Changes in Available Regional and National material stocks	Regional and National material stocks	Medium	Minor	Not significant	Implementation of the SWMP	Slight Adverse
Changes in Available Inert Landfill Void capacity	Inert Landfill in north east	Low	Negligible	Not significant	Implementation of the SWMP	Slight Adverse
Changes in Available Non-hazardous Landfill Void capacity	Non-hazardous Landfill in north east	Low	Negligible	Not significant	Implementation of the SWMP	Slight Adverse
Changes in Available Hazardous Landfill Void capacity	Hazardous Landfill in England	Medium	Minor	Not significant	Implementation of the SWMP	Slight Adverse

References

- Ref 1 IEMA (2025) Materials and Waste in Environmental Impact Assessment. Available online: [IEMA-Materials-and-Waste-In-EIA-March-2020.pdf](#) [Accessed March 2026].
- Ref 2 HM Government (2021) The Environment Act 2021. Available online: <https://www.legislation.gov.uk/ukpga/2021/30/contents> [Accessed March 2026].
- Ref 3 HM Government (2020) The Waste (Circular Economy) (Amendment) Regulations 2020. Available online: <https://www.legislation.gov.uk/uksi/2020/904/contents/made> [Accessed March 2026].
- Ref 4 HM Government (2016) The Environmental Permitting (England and Wales) Regulations 2016. Available online: <https://www.legislation.gov.uk/uksi/2016/1154/contents> [Accessed March 2026].
- Ref 5 HM Government (2012) The Controlled Waste (England and Wales) Regulations 2012. Available online: <https://www.legislation.gov.uk/uksi/2012/811/contents> [Accessed March 2026].
- Ref 6 HM Government (2011) The Waste (England and Wales) Regulations 2011. Available online: <https://www.legislation.gov.uk/uksi/2011/988/contents> [Accessed March 2026].
- Ref 7 HM Government (2008) The Waste Framework Directive (Directive 2008/98/EC). Available online: <https://eur-lex.europa.eu/eli/dir/2008/98/oj/eng>. [Accessed March 2026].
- Ref 8 HM Government (2005) The Clean Neighbourhoods and Environment Act 2005. Available online: <https://www.legislation.gov.uk/ukpga/2005/16/contents> [Accessed March 2026].
- Ref 9 HM Government (2005) The Hazardous Waste (England and Wales) Regulations 2005. Available online: <https://www.legislation.gov.uk/uksi/2005/894/contents> [Accessed March 2026].
- Ref 10 HM Government (1990) The Environmental Protection Act 1990. Available online: <https://www.legislation.gov.uk/ukpga/1990/43/contents> [Accessed March 2026].

- Ref 11 HM Government (1989) The Control of Pollution (Amendment) Act 1989. Available online: <https://www.legislation.gov.uk/ukpga/1989/14/section/11> [Accessed March 2026].
- Ref 12 Department of Energy and Climate Change (DESNZ) (2026) Overarching National Policy Statement for Energy (EN-1). Available online: <https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1-2025> [Accessed August 2026].
- Ref 13 Department for Energy Security and Net Zero (DESNZ) (2025) National Policy Statement for Renewable Energy Infrastructure (EN-3). Available online: <https://www.gov.uk/government/publications/national-policy-statement-for-renewable-energy-infrastructure-en-3-2025> [Accessed August 2026].
- Ref 14 Ministry of Housing, Communities and Local Government (2024) National Planning Policy Framework (NPPF). Available online: https://assets.publishing.service.gov.uk/media/6a8334c03bd75b81e2329ac4/National_Planning_Policy_Framework.pdf [Accessed September 2026].
- Ref 15 Department for Communities and Local Government (2014) National Planning Policy for Waste. Available online: <https://www.gov.uk/government/publications/national-planning-policy-for-waste/national-planning-policy-for-waste> [Accessed August 2026].
- Ref 16 Department for Environment, Food & Rural Affairs (2011) UK Marine Policy Statement. Available online: <https://www.gov.uk/government/publications/uk-marine-policy-statement> [Accessed August 2026].
- Ref 17 Department for Environment, Food & Rural Affairs (2021) The Waste Management Plan for England. Available online: <https://assets.publishing.service.gov.uk/media/60103f71d3bf7f05bc42d294/waste-management-plan-for-england-2021.pdf> [Accessed June 2026].
- Ref 18 Department for Communities and Local Government (2013) National Planning Policy for Hazardous Waste: A framework document for planning decisions on nationally significant hazardous waste infrastructure. Available online: <https://assets.publishing.service.gov.uk/media/5a7c68b7e5274a5590059abd/pb13927-hazardous-waste-policy-20130606.pdf> [Accessed August 2026].
- Ref 19 HM Government (2018) Our Waste, Our Resource: a strategy for England 2018. Available online: <https://assets.publishing.service.gov.uk/media/5c18f11740f0b60bbee0d827/resources-waste-strategy-dec-2018.pdf> [Accessed August 2026].

- Ref 20 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 21 Marine Management Organisation (2016) North East Marine Plans.
- Ref 22 Department for Environment, Food & Rural Affairs (2025) Simpler recycling: workplace recycling in England.
- Ref 23 British Geological Survey (2024) United Kingdom Minerals Yearbook. Available online: https://webapps.bgs.ac.uk/services/ngdc/accessions/index.html?_ga=2.164574333.351867717.1765465113-1556504192.1765465113#item188239 [Accessed March 2026].
- Ref 24 Mineral Products Association (2023) Profile of the UK Mineral Products Industry 2023. Available online: <https://www.mineralproducts.org/Facts-and-Figures.aspx>. [Accessed March 2026].
- Ref 25 British Plastics Federation (2023) About The British Plastics Industry. Available online: <https://www.bpf.co.uk/industry/Default.aspx>. [Accessed March 2026].
- Ref 26 UK Steel (2024) Key Stats Guide 2024. Available online: <https://www.uksteel.org/reports-and-publications>. [Accessed March 2026].
- Ref 27 Darlington Borough Council, Hartlepool Borough Council, Middlesbrough Council, Redcar and Cleveland Borough Council and Stockton-on-Tees Borough Council (2025) North East England Aggregates Working Party – Annual Report 2024 Available online: <https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/Planning-and-Building/planning%20policy/Studies%20and%20Evidence%20Reports/Minerals%20Waste%20Studies/1.%20NE%20Aggregates%20Working%20Party/NEAWPAnnualReport2024.pdf> [Accessed March 2026].
- Ref 28 Darlington Borough Council, Hartlepool Borough Council, Middlesbrough Council, Redcar and Cleveland Borough Council and Stockton-on-Tees Borough Council (2024) Tees Valley Joint Local Aggregates Assessment 2023. Available online: <https://www.middlesbrough.gov.uk/planning-and-development/planning-policy/tees-valley-joint-local-aggregate-assessment-laa/> [Accessed March 2026].
- Ref 29 Department for Environment Food and Rural Affairs (2012) Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance.

- Ref 30 The Environment Agency (2025) Waste Data Interrogator 2023. Available online: <https://www.data.gov.uk/dataset/59ab8448-3905-49c6-9122-ae762f96f66b/2023-waste-data-interrogator> [Accessed August 2026].
- Ref 31 High Speed Rail (2015) High Speed Rail London to West Midlands Environmental Statement.
- Ref 32 Department for Environment, Food and Rural Affairs (2021) Waste Management Plan for England. Available online: <https://www.gov.uk/government/publications/waste-management-plan-for-england-2021> [Accessed March 2026].
- Ref 33 Department for Environment, Food and Rural Affairs (2025) UK Statistics on Waste. Available online: <https://www.gov.uk/government/statistics/uk-waste-data/uk-statistics-on-waste> [Accessed March 2026].
- Ref 34 Waste and Resources Action Programme (WRAP) (2008) Net Waste Tool Guide to Reference Data, Version 1.0.
- Ref 35 Department for Environment Food and Rural Affairs (2012) Environmental Protection Act 1990: Part 2A – Contaminated Land Statutory Guidance. Available online: <https://assets.publishing.service.gov.uk/media/5a757dfa40f0b6360e47489d/pb13735cont-land-guidance.pdf> [Accessed June 2026].



www.lighthousegreenfuels.co.uk

