Immingham Green Energy Terminal

Environmental Impact Assessment

Preliminary Environmental Information Report

Volume II – Main Report

Chapter 20: Material Assets and Waste

Associated British Ports

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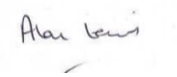
Signed		Date	20/12/2022
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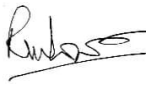
Signed		Date	20/12/2022
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20.1 Introduction

20.1.1 This chapter presents the preliminary findings of the assessment of the likely effects of the Project on materials and waste.

20.1.2 This chapter presents an initial baseline for material and waste relevant to the Project and sets out the study area. In addition, the chapter provides an overview of the assessment methodology being followed for the environmental assessment and identifies potential effects identified to date.

20.1.3 This assessment follows the methodology as set out in the Institute of Environmental Management and Assessment's (IEMA) guide to: Materials and Waste in Environment Assessment, Guidance for a Proportionate Approach (referred to herein as the 'IEMA Guidance') (Ref 20-1).

20.1.4 For the purpose of this Preliminary Environmental Information (PEI) Report, materials and waste comprise:

a. The consumption of materials (key construction materials only).

b. The generation and management of waste.

20.1.5 Materials are defined in the IEMA Guidance as "*physical resources that are used across the lifecycle of a development. Examples include key construction materials such as concrete, aggregate, asphalt and steel*."

20.1.6 Other material assets considered include built assets such as landfill void capacity and safeguarded mineral and waste sites.

20.1.7 Waste is defined as per the Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on Waste and Repealing Certain Directives (Waste FD) (Ref 20-2) as "*any substance or object which the holder discards or intends or is required to discard*".

20.1.8 There are some interrelationships between potential effects on materials and waste and other disciplines. Therefore, reference should also be made to **Chapter 21: Ground Conditions and Land Quality** for information potential contaminated land that could give rise to waste requiring offsite waste management. Other interrelationships are outlined in **Paragraph 20.2.4b** and **20.2.4e.**

20.2 Scoping Opinion

20.2.1 A scoping exercise was undertaken in August 2022 to establish the form and nature of the waste and materials assessment, and the approach and methods to be followed.

20.2.2 The Scoping Report (**Appendix 1.A** of PEI Report, Volume IV) records the findings of the scoping exercise and details the technical guidance, standards, best practice and criteria being applied in the assessment to identify and evaluate the likely significant effects of the Project on materials and waste.

20.2.3 As outlined in the Scoping Report and confirmed in the Scoping Opinion (**Appendix 1.B** of PEI Report, Volume IV) and **Table 20.1** (Summary of Consultation to Date) regarding the information to be provided in the Environmental Statement (ES), the following requirements have been identified which will be taken into account as part of the ongoing materials and waste assessment:

a. The ES must provide an estimate of the types of quantities of waste that would arise from decommissioning.

Table 20.1: Scoping Opinion comments on material assets and waste

Consultee	Summary of Response	How comments have been addressed in this chapter
Planning Inspectorate	The Scoping Report assumes that waste arising from the extraction, processing and manufacture of construction components and products that would be used during the Project are being produced in manufacturing facilities with their own waste management plans, facilities, and supply chain (outside of the geographical scope of the assessment) and therefore seeks to scope this matter out of the assessment. The Inspectorate is content to scope this matter out on this basis.	The comment is noted.
	The Scoping Report states that other impacts associated with the management of waste (e.g. on water resources, air quality, noise or traffic resulting from the generation, handling, on-site temporary storage or off-site transport of materials and waste) are addressed separately in other relevant chapters of the ES and can therefore be scoped out of this aspect chapter. The Inspectorate agrees that this impact pathway should be considered separately in the other relevant chapters of the ES. The Materials and Waste aspect chapter should however cross reference to where this has been assessed elsewhere.	The comment is noted. The Materials and Waste chapter of the ES will include cross references to other aspect chapters where appropriate.
	The Scoping Report seeks to scope out this matter as the project site is not in the vicinity of any safeguarded/ allocated mineral sites. The Inspectorate agrees that this matter can be scoped out due to the absence of this type of receptor in the development study area.	The comment is noted.
	The Scoping Report seeks to scope out this matter as the project site is not in the vicinity of any Mineral Safeguarding Areas. The Inspectorate agrees that this matter can be scoped out due to the absence of this type of receptor in the development study area.	The comment is noted. Impacts are not assessed in the materials and waste assessment in accordance with the IEMA Guidance. However, MSAs are included for context in the baseline since MSAs are a planning consideration. It is noted that the Project does not pass through any MSAs.

Consultee	Summary of Response	How comments have been addressed in this chapter
	The Scoping Report states that dredged materials would not be brought onshore for disposal and the effects associated would be addressed separately in other relevant chapters within the ES (Chapter 8 Nature Conservation (Marine), Chapter 9 Ornithology, Chapter 11 Marine Transport and Navigation, Chapter 14 Historic Environment (Marine), Chapter 15 Physical Processes, Chapter 16 Marine Water and Sediment Quality). On the basis that dredging arisals will not be disposed onshore, the Inspectorate considers that this matter is adequately addressed in the other aspect chapters and can therefore be scoped out of the materials and waste chapter.	The comment is noted. Any material not suitable for management within the estuary would be brought onshore (e.g. contaminated material). Material requiring management onshore will be considered in the materials and waste ES chapter. Material quantities are not yet confirmed.
	The Scoping Report considers that any forecast effects (using professional judgement) on the availability of materials during operation would be negligible in relation to the scale and nature of the development. The Inspectorate agrees given the nature of the development operational materials use can be scoped out of the assessment.	The comment is noted.
	The Scoping Report argues that it is not possible to assess waste and material resources effects of decommissioning, since waste infrastructure, technologies and good practices are likely to be substantially different to those currently in place. It states that an outline of the approach to decommissioning will be provided within the ES, which will detail measures envisaged to be implemented to avoid or reduce impacts during the decommissioning of the landside elements. Given the nature and scale of the development the Inspectorate agrees that this matter can be scoped out of the ES, however the ES must provide an estimate of the types of quantities of waste that would arise from decommissioning.	The landside elements of the Project have a design life of up to approximately 25 years although the operational life could be longer, and when appropriate, this infrastructure would be decommissioned and all materials removed would be reused or recycled where possible or disposed of in accordance with relevant waste disposal regulations at the time of decommissioning. The DCO application would not make any provision for the decommissioning of the marine infrastructure or plant or equipment on the jetty topside and this is discussed further in **Chapter 2: The Project**. It is not possible to assess waste and material resources effects of decommissioning of landside elements at the present time, since waste infrastructure, technologies and good practices are likely to be substantially different to those currently in place: specific measures would be addressed as part of a Decommissioning Environmental Management Plan produced prior

Consultee	Summary of Response	How comments have been addressed in this chapter
		to the decommissioning phase. The facility design is to, as far as possible use a flexible modular construction and this approach makes decommissioning easier, quicker and means it has lower environmental impact by preventing waste generation. The process plant is constructed mainly from metals that are easy to reuse or recycle., individual items of equipment may be removed and redeployed. There is no underground storage. An Outline Decommissioning Environmental Management Plan (DEMP) including an estimate of the types and quantities of waste that would arise from decommissioning of the landside elements will be submitted with the DCO. Application and a detailed DEMP will be secured via a requirement of the DCO. In a worst-case scenario, where the Project elements would be fully removed, the potential risks during the decommissioning phase would be similar to those encountered during the Project construction phase.
Environment Agency	We are pleased to see the acknowledgement in paragraph 19.6.2 that any waste producers have a legal duty to manage their wastes in accordance with regulations: wastes produced or imported must be moved with due regard to the legal requirements for registered Waste Carriers under The Waste (England and Wales) Regulations 2011. If wastes are used for any construction they must be stored at an appropriately permitted or exempt site, in accordance with the Environmental Permitting (England & Wales) Regulations 2016. Any direct transfer and reuse of clean naturally occurring soil materials between sites must be done in accordance with the Definition of Waste: Development Industry Code of Practice. Site drainage must be engineered to prevent pollution to the environment. Any potentially contaminated or contaminating liquids must be held and disposed of appropriately.	The reuse of excavated material would be covered by a Contaminated Land: Applications in Real Environments (CL:AIRE) Definition of Waste: Development Industry Code of Practice (DoW CoP) Materials Management Plan (MMP) developed by the Contractor before the commencement of construction. Details of the requirements for the contractor will be set out in an Outline Environmental Management Plan (OEMP). An OEMP will accompany the DCO application.

20.2.4 Having regard to the information presented within the Scoping Report (**Appendix 1.A** of PEI Report, Volume IV), the Planning Inspectorate's Scoping Opinion (**Appendix 1.B** of PEI Report, Volume IV) has confirmed the Applicant's view that some materials and waste aspects are unlikely to generate significant effects and can thus be scoped out of consideration in the ES as follows:

a. Waste arising from extraction, processing and manufacture of construction components and products.

b. Other environmental impacts associated with the management of waste from the Project (e.g. on water resources, air quality, noise or traffic resulting from the generation, handling, on-site temporary storage or off-site transport of materials and waste).

c. Direct impacts on safeguarded/ allocated mineral sites.

d. Direct impacts on Mineral Safeguarding Areas (MSAs).

e. Materials arising from marine dredging (unless material is not suitable for management in the estuary e.g. contaminated material). .

f. Effects on the availability of materials during operation.

g. Effects associated with decommissioning of the Project.

20.3 Legislation, Policy and Guidance

20.3.1 **Table 20.2** presents the legislation, policy and guidance relevant to the materials and waste assessment and details how their requirements will be met by the Project.

Table 20.2: Relevant legislation, policy and guidance regarding materials and waste

Legislation/ Policy/ Guidance	Consideration within the PEI Report
Waste Framework Directive (2008) (Ref 20-2)	
Establishes the wider regulatory context for waste management across Europe. In addition to defining waste, it also introduces the concept of the waste hierarchy and establishes landfill diversion targets for Member States. The requirements of the Waste FD are transposed into applicable national law through the *Waste (England and Wales) Regulations 2011* (Ref 20-3) as amended including The Waste (Miscellaneous Amendments) (EU Exit) Regulations 2019 (Ref 20-4).	The assessment of materials and waste has taken account of the waste hierarchy in the management of waste, and of the targets for recovery of non-hazardous construction and demolition (C&D) waste.
The Environmental Protection Act 1990 (Ref 20-5)	
The duty of care for waste management is set out under section 34 of the *Environmental Protection Act 1990* and the *Waste (England and Wales) Regulations 2011 (as amended)*. It requires anyone who produces, imports, keeps, stores, transports, treats or disposes of waste to take all reasonable steps to ensure that waste is managed properly.	Details of the duty of care for waste management requirements for the contractor will be set out in the Outline Site Waste Management Plan (OSWMP) which will accompany the Development Consent Order (DCO) application and the contractor's Site

Legislation/ Policy/ Guidance	Consideration within the PEI Report
	Waste Management Plan (SWMP) to be prepared before the commencement of construction (as based upon the OSWMP).
The Waste (England and Wales) Regulations 2011 (Ref 20-3)	
Transposes the requirements of the Waste FD in England and Wales and requires the Secretary of State (SoS) to establish waste prevention programmes and waste management plans that apply the waste hierarchy (as defined in the Waste FD). The waste hierarchy prioritises waste prevention, followed by preparing for reuse, recycling, recovery and finally disposal to the management of waste. The Regulations require businesses to apply the waste hierarchy when managing waste, and also require that measures are taken to ensure that, by the year 2020, at least 70% by weight of non-hazardous C&D waste is subjected to material recovery.	The assessment of materials and waste has taken account of the waste hierarchy in the management of waste, and of the targets for recovery of non-hazardous C&D waste.
The Environmental Permitting (England and Wales) Regulations 2016 (Ref 20-6)	
The Regulations require sites where waste is processed, treated or disposed of to hold a valid Environmental Permit issued by the Environment Agency (EA). The Regulations also include a schedule of activities that are exempt from the requirements of permitting. However, to comply with the Regulations, an exempt activity must generally be registered with the EA before commencing.	Details of the permits and exemption requirements for the contractor will be set out in the OSWMP which will accompany the DCO application and the contractor's SWMP to be prepared before the commencement of construction (as based upon the OSWMP).
The Hazardous Waste (England and Wales) Regulations 2005 (Ref 20-7)	
The Regulations set out the regime for the control and tracking of the movement of hazardous waste for the purpose of transposing the requirements of the *Hazardous Waste Directive (Directive 91/689/EC)* (Ref 20-8).	Details of the hazardous waste management requirements for the contractor will be set out in the OSWMP which will accompanying the DCO application and the contractor's SWMP to be prepared before the commencement of construction (as based upon the OSWMP).
The Environment Act 2021 (Ref 20-9)	
The Act makes provision about targets, plans and policies for improving the natural environment; for statements and reports about environmental protection; for the establishment of the Office for Environmental Protection; about waste and resource efficiency; about air quality; for the recall of products that fail to meet environmental standards; about water; about nature and biodiversity; for conservation covenants; about the regulation of chemicals; and for connected purposes. The Act will deliver:	Key sections including Part 3 Waste and Resource Efficiency (producer responsibility, resource efficiency, managing waste and waste enforcement) which could be relevant to the Project in the *Environment Act 2021* have been considered in the assessment.

Legislation/ Policy/ Guidance	Consideration within the PEI Report
• An extension of producer responsibility to make producers pay for 100% of the cost of disposal of products, starting with plastic packaging. • A Deposit Return Scheme for single use drinks containers. • Charges for single use plastics. • Greater consistency in recycling collections in England. • Electronic waste tracking to monitor waste movements and tackle fly-tipping. • Further tackling of waste crime. • The power to introduce new resource efficiency information (labelling on the recyclability and durability of products). • The regulation of the shipment of hazardous waste. • A ban or export restriction of waste to non-OECD countries.	
National Policy Statement for Ports (NPSfP) (Ref 20-11)	
Paragraph 5.5.2 of Section 5.5: Waste Management states *"Sustainable waste management is implemented through the 'waste hierarchy':* • *prevention;* • *preparing for re-use;* • *recycling;* • *other recovery, including energy recovery; and* • *disposal.* *Disposal of waste should only be considered where other waste management options are not available or where it is the best overall environmental outcome."*	The assessment of materials and waste has taken account of the waste hierarchy in the management of waste.
Paragraph 5.5.3 states *"All large infrastructure projects are likely to generate hazardous and non hazardous waste during the construction, operation and decommissioning phases. The Environment Agency's (EA) Environmental Permitting (EP) regime incorporates operational waste management requirements for certain activities. When an applicant applies to the EA for an Environmental Permit, the EA will require the application to demonstrate that processes are in place to meet all relevant EP requirements."*	Details of the permits and exemption requirements for the contractor will be set out in the OSWMP which will accompany the DCO application and the contractor's SWMP to be prepared before the commencement of construction (as based upon the OSWMP).
Paragraph 5.5.4 states *"The applicant should set out the arrangements that are proposed for managing any waste produced and prepare a Site Waste Management Plan. The arrangements described and the Management Plan should include information on the proposed waste recovery and disposal system for all waste generated by the development*	A OSWMP will accompany the DCO application, whilst the contractor will develop a SWMP before the commencement of construction (as based upon the OSWMP).

Legislation/ Policy/ Guidance	Consideration within the PEI Report
and an assessment of the impact of the waste arising from development on the capacity of waste management facilities to deal with other waste arising in the area for at least five years of operation. The applicant should seek to minimise the volume of waste produced and the volume of waste sent for disposal, unless it can be demonstrated that this is the best overall environmental outcome."	The assessment considers the impact of the waste arising from the Project on the capacity of waste management facilities, specifically landfills. Operational waste quantities are not yet known and will be further assessed in the ES. The approach to minimising waste for the Project is outlined in **Section 20.6** of this chapter.
Paragraph 5.5.5 states *"The decision-maker should consider the extent to which the applicant has proposed an effective system for managing hazardous and non-hazardous waste arising from the construction, operation and decommissioning of the proposed development. It should be satisfied that:* • *any such waste will be properly managed, both on-site and off-site;* • *the waste from the proposed facility can be dealt with appropriately by the waste infrastructure which is, or is likely to be, available. Such waste arisings should not have an adverse effect on the capacity of existing waste management facilities to deal with other waste arisings in the area; and* • *adequate steps have been taken to minimise the volume of waste arisings, and of the volume of waste arisings sent to disposal, except where that is the best overall environmental outcome."*	An OSWMP will accompany the DCO application, whilst the contractor will develop a SWMP before the commencement of construction (as based upon the OSWMP). The assessment considers the impact of the waste arising from the Project on the capacity of waste management facilities, specifically landfill. Operational waste quantities are not yet known and will be further assessed in the ES. The approach to minimising waste for the Project is outlined in **Section 20.6** of this chapter.
National Planning Policy Framework (NPPF) (Ref 20-12)	
The NPPF does not contain specific waste policies as these are detailed within the National Planning Policy for Waste (Ref 20-13) and Waste Management Plan for England (Ref 20-14), however, the following overarching policies are relevant to materials and waste: • The environmental objective set out at paragraph 8 of the NPPF is *"to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."* • The environmental objective set out in paragraph 210 of the NPPF is to *"so far as practicable, take account of the contribution that substitute or secondary and recycled materials and minerals waste would make to the supply of materials, before considering extraction of primary*	The approach to minimising waste for the Project is outlined in **Section 20.6** of this chapter. A recycled content target would be considered for inclusion in the contractor's SWMP.

Legislation/ Policy/ Guidance	Consideration within the PEI Report
materials, whilst aiming to source minerals supplies indigenously."	
National Planning Policy Guidance (NPPG) for Minerals (Ref 20-15) **and Waste** (Ref 20-16)	
Published to provide more in-depth guidance to the NPPF. The NPPG aims to make planning guidance more accessible and ensures that the guidance is kept up to date.	The guidance provides further information in support of the implementation of waste planning policy and on the planning for mineral extraction in plan making and the application process. This information has been taken into consideration when reviewing local policy, but is not directly used in the assessment.
National Planning Policy for Waste (Ref 20-13)	
The National Planning Policy for Waste sets out detailed waste planning policies to be applied in conjunction with the NPPF. It states: "*when determining planning applications for non-waste development, local planning authorities should, to the extent appropriate to their responsibilities, ensure that:* • *The likely impact of proposed, non-waste related development on existing waste management facilities, and on sites and areas allocated for waste management, is acceptable and does not prejudice the implementation of the waste hierarchy and/or the efficient operation of such facilities;* • *New, non-waste development makes sufficient provision for waste management and promotes good design to secure the integration of waste management facilities with the rest of the development, and* • *The handling of waste arising from the construction and operation of development maximises reuse/recovery opportunities, and minimises off-site disposal*".	The likely impact of proposed, non-waste related development (the Project) on existing waste management facilities (specifically landfill) is considered in the assessment. Embedded mitigation measures include activities that would be undertaken during the design stage to minimise waste thus reducing the need for waste management and landfill disposal. These include the design of adequate provision for internal and external waste storage to allow waste segregation during Project operation. The assessment of materials and waste has taken account of the waste hierarchy in the management of waste, and of the targets for recovery of non-hazardous construction and demolition waste. An OSWMP will accompany the DCO application, whilst the contractor will develop a SWMP before the commencement of construction (as based upon the OSWMP).
The Waste Management Plan for England 2021 (Ref 20-14)	
Provides an overview of waste management in England and reiterates the requirement for all waste producers and waste management providers to implement the waste hierarchy. It also highlights the need for waste to be managed using the	The assessment of materials and waste has taken account of the waste hierarchy in the management of

Legislation/ Policy/ Guidance	Consideration within the PEI Report
proximity principle and confirms England's commitment to recovering at least 70% by weight of non-hazardous C&D waste by 2020 (excluding soils and stones). Recovery is assumed in the context of this policy to include reuse, recycling and incineration with energy recovery.	waste, and of the targets for recovery of non-hazardous C&D waste.
A Green Future: Our 25 Year Plan to Improve the Environment (Ref 20-17)	
The plan "*sets out goals for improving the environment within a generation and leaving it in a better state than we found it*". It details how the government will work with communities and businesses to do this. The following policies are relevant: • Make sure that resources are used more efficiently and kept in use for longer to minimise waste and reduce its environmental impacts by promoting reuse, remanufacturing and recycling. • Work towards eliminating all avoidable waste by 2050 and all avoidable plastic waste by end of 2042. • Reducing food supply chain emissions and waste. • Reducing litter and littering. • Improving management of residual waste.	Key policies which could be relevant to the Project such as waste minimisation have been considered in Section 20.6. The approach to minimising waste for the Project is outlined in **Section 20.6** of this chapter.
Our Waste, Our Resources, A Strategy for England (Ref 20-18)	
The Strategy will help the government to meet the commitments outlined in the 25 Year Plan and "*sets out how we will preserve our stock of material resources by minimising waste, promoting resource efficiency and moving towards a circular economy. At the same time we will minimise the damage caused to our natural environment by reducing and managing waste safely and carefully, and by tackling waste crime*." The strategy combines actions to be taken now and commitments for the coming years. Key targets and milestones and targets, which could be relevant to the Project, include: • Roll out of a deposit return scheme (subject to consultation) – 2023. • Legislation for mandatory separate food waste collections (subject to consultation) – 2023; • 75% recycling rate for packaging (subject to consultation) – 2023; • 65% recycling rate for municipal solid waste – 2035. • Municipal waste to landfill 10% or less – 2035.	Key targets and milestones which could be relevant to the Project such as how waste might need to be managed onsite (e.g. segregation) are considered in **Section 20.6**.

Legislation/ Policy/ Guidance	Consideration within the PEI Report
North East Lincolnshire Local Plan 2013 to 2032 (Ref 20-19)	
Sets out the Council's approach to accommodating future requirements in relation to the demands on the Borough's mineral resource and waste needs. Relevant policies include: • Policy 44 – Safeguarding minerals and related infrastructure. • Policy 45 – Future mineral extraction and Secondary Aggregates. • Policy 47 – Future requirements for waste facilities. • Policy 48 – Safeguarding waste facilities and related infrastructure. • Policy 49 – Restoration and aftercare (waste). The Policy Map (Ref 20-20) shows the extent of Mineral Safeguarding Areas (MSAs) for sand and gravel and blown sand and existing waste management facilities.	**Section 20.5** of this chapter considers allocated/ safeguarded mineral and waste sites in the vicinity of the Project.
IEMA Guidance (Ref 20-1)	
The document offers guidance and recommendations for EIA practitioners and stakeholders concerned with the impacts and effects of materials and waste on the environment. The guidance provides considerations for screening, scoping, consultation, assessment and subsequent reporting and monitoring.	The assessment has been completed in accordance with the IEMA Guidance as outlined in **Section 20.4**.
Contaminated Land: Applications in Real Environments (CL:AIRE) Definition of Waste: Development Industry Code of Practice (DoW CoP), v2 (Ref 20-21)	
The DoW CoP provides a process which enables the reuse of excavated materials on-site or their movement between sites. Use of the DoW CoP supports the sustainable and cost-effective development of land. It can provide an alternative to Environmental Permits or Waste Exemptions.	The reuse of excavated material would be covered by a CL:AIRE DoW CoP Materials Management Plan (MMP) developed by the Contractor before the commencement of construction. Details of the requirements for the Contractor will be set out in an Outline Environmental Management Plan (OEMP). An OEMP will accompany the DCO application
Waste and Resources Action Programme (WRAP) Designing Out Waste: A Design Team Guide for Civil Engineering (Ref 20-22) **and Designing Out Waste: A Design Team Guide for Buildings** (Ref 20-23).	
The guides outline the case for taking action to designing out waste, provides a detailed explanation of the key principles that	Designing out waste key principles have been considered and will

Legislation/ Policy/ Guidance	Consideration within the PEI Report
designers can use during the design process and how these principles can be applied to civil engineering and building projects to maximise opportunities to reduce construction waste and use materials more efficiently. It gives examples of technical solutions and how, in practice, designers have helped achieve significant waste reductions.	continue to be considered during the design of the Project and are outlined in **Section 20.4** of this chapter.

20.4 Assessment Method

20.4.1 The general approach for Environmental Impact Assessment (EIA) provided in **Chapter 5: EIA Approach** is not used for materials and waste since specific topic guidance for materials and waste has been developed by IEMA (Ref 20-1).

20.4.2 As per the IEMA Guidance embedded measures are considered prior to the assessment of effects to avoid considering assessment scenarios that are unrealistic in practice i.e. do not take account of such measures even though they are likely to be standard practice standard mitigation and/ or form part of the Project design (embedded mitigation). Taking these measures into account means that realistic likely environmental effects are identified. Where likely significant adverse effects are identified after considering these embedded measures, Project specific mitigation measures will be considered, developed and proposed, where necessary and possible.

Scope of the Assessment

20.4.3 The assessment of materials and waste considers the following:

a. Waste producers have a legal duty of care to manage their waste in accordance with regulations and to ensure that any waste leaving the site where it is generated is transferred to a suitably licensed facility for further treatment or disposal.

b. Facilities transferring, treating or disposing of waste must be either licensed or apply for an exemption from a licence, and impacts arising from the operation of waste management facilities are considered as part of the planning and permitting process for these facilities themselves.

c. As part of their planning function, Waste Planning Authorities (WPAs) are required to ensure that sufficient land is available to accommodate facilities for the treatment of all waste arising in the area, either within the WPA area, or through export to suitable facilities in other areas.

d. MPAs are required to ensure an adequate supply of minerals, sufficient to meet the needs of national and regional supply policies, and local development needs.

20.4.4 The sensitive receptors for the materials and waste assessment are:

a. Landfill void capacity in the expansive study areas of East Midlands and Yorkshire and the Humber (non-hazardous landfill void capacity) and England (hazardous landfill void capacity). As defined in the IEMA Guidance "*landfill is a finite resource, and hence – through the ongoing disposal of*

waste – there is a continued need to expand existing and develop new facilities, this requires the depletion of natural and other resources which, in turn, adversely impacts the environment."

b. Materials, national and regional consumption of key construction materials. As outlined in the IEMA Guidance "*materials are, in their own right, sensitive receptors. Consuming materials impacts upon their immediate and (in the case of primary material) long-term availability; this results in the depletion of natural resources and adversely impacts the environment*."

c. Safeguarded/ allocated waste sites.

20.4.5 The IEMA Guidance "*does not consider waste processing and recovery facilities as sensitive receptors, rather: they are part of a system that has the potential to reduce the magnitude of adverse impacts associated with waste generation and disposal. Waste processing and recovery facilities are, hence, different to landfills, in that the latter are finite resources*."

20.4.6 The materials and waste assessment entails the following:

Materials

a. Establishing the baseline for national and regional consumption of key materials (construction materials) by weight.

b. Assessing the sensitivity of materials as related to the availability and types of materials to be consumed by the Project during construction.

c. Establishing the quantities of key construction materials required for the construction of the Project.

d. Comparing the total quantities of key construction materials with the most recent national and regional demand (using a percentage approach).

e. Considering whether any allocated/ safeguarded waste sites would be impacted by the Project.

Waste

a. Establishing the baseline landfill void capacity in the defined study areas.

b. Assessing the sensitivity of landfill void capacity.

c. Establishing the quantities of construction, demolition and excavation waste to be generated during the construction of the Project.

d. Comparing the total waste arising from the construction of the Project against the landfill void capacity (using a percentage approach).

Assessment Criteria

Sensitivity

20.4.7 The sensitivity of materials takes into account the availability and type of construction material to be consumed by the Project. The IEMA Guidance criteria described within **Table 20.3** have been used to determine the sensitivity of materials.

Table 20.3: Materials Receptors Sensitivity

Effects	Criteria for Materials Receptor Sensitivity
Negligible	On balance, the key materials required for the construction of the Project 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.*
Low	On balance, the key materials required for the construction of the Project 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.
Medium	On balance, the key materials required for the construction of the Project 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.
High	On balance, the key materials required for the construction of the Project 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.
Very High	On balance, the key materials required for the construction of the Project are forecast 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.
* Subject to supporting evidence, sustainable features and benefits could include, for example, materials or products that: comprise reused, secondary or recycled content (including excavated and other arisings); support the drive to a circular economy; or in some other way reduce lifetime environmental impacts.	

20.4.8 The sensitivity of waste relates to the availability of landfill capacity in the absence of the Project. As outlined in the IEMA Guidance "*landfill capacity is recognised as an unsustainable and increasingly scarce option for managing waste*". The sensitivity of landfill capacity has been assessed based on a review of historic landfill void capacity trends where available and information from relevant policy documents.

20.4.9 The criteria described within **Table 20.4** and **Table 20.5** have been used to determine the sensitivity of landfill capacity.

Table 20.4: Inert and Non-hazardous Landfill Capacity Sensitivity

Effects	Criteria for Inert and Non-hazardous Landfill Capacity Sensitivity
Negligible	Across construction and/ or operational phases, the baseline/ future baseline (i.e. without the Project) of regional inert and non-hazardous landfill capacity expected to remain unchanged, or is expected to increase through a committed change in capacity.
Low	Across construction and/ or operational phases, the baseline/ future baseline (i.e. without the Project) of regional inert and non-hazardous landfill capacity is expected to reduce minimally by <1% as a result of wastes forecast.
Medium	Across construction and/ or operational phases, the baseline/ future baseline (i.e. without the Project) of regional inert and non-hazardous landfill capacity is: expected to reduce noticeably by 1-5% as a result of wastes forecast.
High	Across construction and/ or operational phases, the baseline/ future baseline (i.e. without the Project) of regional inert and non-hazardous landfill capacity is: expected to reduce considerably: by 6-10% as a result of wastes forecast.
Very High	Across construction and/ or operational phases, the baseline/ future baseline (i.e. without the Project) of regional inert and non-hazardous landfill capacity is: • Expected to reduce very considerably (by >10%). • End during construction or operation. • Is already known to be unavailable. • Would require new capacity or infrastructure to be put in place to meet forecast demand.

Table 20.5: Hazardous Landfill Capacity Sensitivity

Effects	Criteria for Hazardous Landfill Capacity Sensitivity
Negligible	Across the construction and/ or operational phases, the baseline/future baseline (i.e. without the Project) of regional (or where justified, national) hazardous landfill capacity is expected to remain unchanged, or is expected to increase through a committed change in capacity.
Low	Across the construction and/ or operational phases, the baseline/future baseline (i.e. without the Project) of regional (or where justified, national) hazardous landfill capacity is expected to reduce minimally: by <0.1% as a result of wastes forecast.
Medium	Across the construction and/ or operational phases, the baseline/future baseline (i.e. without the Project) of regional (or where justified, national) hazardous landfill capacity is: expected to reduce noticeably: by 0.1-0.5% as a result of wastes forecast.

Effects	Criteria for Hazardous Landfill Capacity Sensitivity
High	Across the construction and/ or operational phases, the baseline/future baseline (i.e. without the Project) of regional (or where justified, national) hazardous landfill capacity is expected to reduce considerably: by 0.5-1% as a result of wastes forecast.
Very High	Across the construction and/ or operational phases, the baseline/ future baseline (i.e. without the Project) of regional (or where justified, national) hazardous landfill capacity is: • Expected to reduce very considerably (by >1%); • End during construction or operation; • Is already known to be unavailable; or • Would require new capacity or infrastructure to be put in place to meet forecast demand.

Magnitude

20.4.10 The magnitude of impact describes the degree of variation from the baseline conditions as result of the Project. The methodology for assessing the magnitude of impact associated with materials comprises a percentage-based approach that determines the influence of construction materials use during the construction of the Project on the baseline national and regional demand. The criteria used to assess the magnitude of impact for materials are provided within **Table 20.6**.

Table 20.6: Materials Magnitude of Impacts

Effects	Criteria for Materials Magnitude of Impacts
No change	Consumption of no materials is required.
Negligible	Consumption of no individual material type is equal to or greater than 1% by volume of the regional* baseline availability.
Minor	Consumption of one or more materials is between 1-5% by volume of the regional* baseline availability.
Moderate	Consumption of one or more materials is between 6-10% by volume of the regional* baseline availability.
Major	Consumption of one or more materials is >10% by volume of the regional* baseline availability.
**A national baseline is used for steel in the absence of regional consumption data.*	

20.4.11 The methodology for assessing the magnitude of impact for waste comprises a percentage-based approach that determines the influence of waste generation from the construction of the Project on the baseline landfill capacity. The criteria used to assess the magnitude of impact for waste are provided within **Table 20.7** and **Table 20.8** for inert and non-hazardous waste and hazardous waste respectively.

Table 20.7: Inert and Non-Hazardous Waste - Magnitude of Impact

Effects	Criteria for Waste Magnitude of Impacts
No change	Zero waste generation and disposal from the Project.
Negligible	Waste generated by the Project would reduce expansive study area landfill capacity baseline# by <1%.
Minor	Waste generated by the Project would reduce expansive study area landfill capacity baseline# by 1-5%.
Moderate	Waste generated by the Project would reduce expansive study area landfill capacity baseline# by 6-10%.
Major	Waste generated by the Project would reduce expansive study area landfill capacity baseline# by >10%.
# Forecast as the worst-case scenario, during a defined construction and/ or operational phase.	

Table 20.8: Hazardous Waste - Magnitude of Impact

Effects	Criteria for Waste Magnitude of Impacts
No change	Zero waste generation and disposal from the Project.
Negligible	Waste generated by the Project would reduce expansive study area landfill capacity baseline# by <0.1%.
Minor	Waste generated by the Project would reduce expansive study area landfill capacity baseline# by <0.1-0.5%.
Moderate	Waste generated by the Project would reduce expansive study area landfill capacity baseline# by <0.5-1%.
Major	Waste generated by the Project would reduce expansive study area landfill capacity baseline# by >1%.
# Forecast as the worst-case scenario, during a defined construction and/ or operational phase.	

Significance

20.4.12 **Table 20.9** describes the effect thresholds used to determine the significance of potential materials and waste effects (taking into account receptor sensitivity and the magnitude of impact), whilst **Table 20.10** shows that effects assessed as being moderate, large or very large are deemed to be significant.

Table 20.9: Effect Thresholds

		Magnitude of Impact				
		No change	**Negligible**	**Minor**	**Moderate**	**Major**
Sensitivity of Receptor	**Very High**	Neutral	Slight	Moderate or large	Large or very large	Very large
	High	Neutral	Slight	Slight or moderate	Moderate or large	Large or very large
	Medium	Neutral	Neutral or slight	Slight	Moderate	Moderate or large
	Low	Neutral	Neutral or slight	Neutral or slight	Slight	Slight or moderate
	Negligible	Neutral	Neutral	Neutral or slight	Neutral or slight	Slight

Table 20.10: Significance of Effect

Effect	**Materials**	**Waste**
Neutral	Not significant	Not significant
Slight		
Moderate	Significant	Significant
Large		
Very large		

Stakeholder Engagement

20.4.13 A range of stakeholders have been engaged as part of the scoping process to obtain their views on the Project and the scope of the materials and waste assessment. Comments from stakeholders are detailed within the Scoping Opinion (**Appendix 1.B** in PEI Report Volume IV).

20.4.14 The Environment Agency noted the following:

a. Waste producers have a legal duty to manage their wastes in accordance with regulations

b. Wastes produced or imported must be moved with due regard to the legal requirements for registered Waste Carriers under The Waste (England and Wales) Regulations 2011.

c. If wastes are used for any construction they must be stored at an appropriately permitted or exempt site, in accordance with the Environmental Permitting (England & Wales) Regulations 2016.

d. Any direct transfer and reuse of clean naturally occurring soil materials between sites must be done in accordance with the CL:AIRE DoW CoP.

e. Site drainage must be engineered to prevent pollution to the environment.

f. Any potentially contaminated or contaminating liquids must be held and disposed of appropriately.

20.4.15 No materials and waste specific consultation has been undertaken to date. Further consultation will be undertaken as required. Consultation in relation to the safeguarding of allocated/ safeguarded waste sites in the vicinity of the Project would be required as described in **Table 20.14**. However, permanent impacts upon allocated/ safeguarded waste sites are not anticipated: any Project impacts on site access would be of limited duration (during construction only), whilst alternative access arrangements would be put in place during this time in order to avoid undue disruption.

Limitations and Assumptions

20.4.16 The information presented in this preliminary assessment reflects that obtained and evaluated at the time of reporting, and is based on an emerging design for the Project and the maximum likely extents of land required for its construction and operation in accordance with the principles of the Rochdale Envelope approach.

20.4.17 The findings of this preliminary assessment may be subject to change as the design of the Project is developed and refined further through the assessment and consultation processes, and as further research and investigative surveys are completed to fully understand its potential effects.

Study Area

20.4.18 The study areas for the assessment of impacts related to materials and waste have been defined in line with the IEMA Guidance. Two types of study area are defined in the IEMA Guidance, namely a 'Project Study Area' relevant to waste generation, material use and impacts on allocated/ safeguarded sites; and an 'Expansive Study Area' relevant to management of waste and the availability of materials. Within this section, study areas are defined for the following:

a. Construction and operational waste generation.

b. Use of construction materials (key construction materials only (steel, aggregates, asphalt and concrete).

c. Impact on allocated/ safeguarded mineral and waste sites.

d. Presence of MSAs.

e. Non-hazardous, inert and hazardous construction waste management.

f. Non-hazardous, inert and hazardous operational waste management.

g. Availability of key construction materials.

Project Study Area

20.4.19 The Project study area for construction and operational waste generation and the use of construction and materials (key construction materials only) comprises the

Project site. The study area is deemed to include the footprint of the proposed works, together with any temporary land requirements during construction which may include temporary offices, compounds and storage areas.

20.4.20 The Project study area for the impacts on allocated/ safeguard mineral and waste sites is defined by the Project site boundary. Impacts on allocated/ safeguarded waste sites are not included in the IEMA Guidance, however are included for completeness.

20.4.21 Impacts on MSAs are not assessed in the materials and waste assessment in accordance with the IEMA Guidance. However, MSAs are included for context in the baseline since MSAs are a planning consideration.

Expansive Study Area

20.4.22 The expansive study area for non-hazardous waste management (construction and operation) comprises the East Midlands and Yorkshire and the Humber. The expansive study area includes the following sub-regions as outlined in the *EA's 2021 Waste Summary Tables for England* - Version 2 (Ref 20-24):

a. Lincolnshire, Derbyshire, Leicestershire, Northamptonshire and Nottinghamshire.

b. Former Humberside, North Yorkshire, South Yorkshire, West Yorkshire.

20.4.23 The expansive study area for non-hazardous and inert waste management is defined based on professional judgement and informed by consideration of the proximity principle and value for money. The study area has been determined to comprise the wider region within which landfill capacity is located i.e. East Midlands region and the Yorkshire and the Humber region since the Project is located close to the northern border of the East Midlands and waste could be managed in either region.

20.4.24 The expansive study area for hazardous waste management (construction and operation) is England. The expansive study area is defined based on professional judgement and informed by consideration of the proximity principle and value for money. The proximity principle for hazardous waste in England is outlined in Principle 2 - Infrastructure Provision in the Strategy for Hazardous Waste Management in England "*We look to the market for the development of hazardous waste infrastructure, which implements the hierarchy for the management of hazardous waste and meets the needs of the UK to ensure that the country as a whole is self-sufficient in hazardous waste disposal, facilities are put in place for hazardous waste recovery in England, and the proximity principle is met*" (Ref 20-25). Planning for hazardous waste management is also undertaken at a national level.

20.4.25 The expansive study area for availability of key construction materials (aggregates, asphalt, concrete and steel) covers the United Kingdom (UK) or Great Britain (GB) or East Midlands region and the Yorkshire and the Humber region dependent on baseline information availability. Regional information on the availability of key construction materials is included in the baseline where available.

20.5 Baseline Conditions

Regional and National Availability of Key Construction Materials

Current Baseline

20.5.1 UK and GB data and regional data has been used to establish a quantitative national baseline of the consumption for key constructional materials. Table 20.11 summarises national consumption in 2018 for aggregates, asphalt, concrete and steel (the most recent year for which data is available), which are the key construction materials expected to be used during the construction of the Project.

Table 20.11: National Consumption for Key Construction Materials

Material	National Consumption (million tonnes, year)	Baseline Data Year	Data Description
Steel	17	2018	UK total consumption (Ref 20-26)
Aggregates **of which:**	251	2018	Minerals and mineral products sales in Great Britain (Ref 20-27)
• Crushed rock	117.3		
• Sand and gravel - land won	48.9		
• Sand and gravel - marine	13.7		
• Recycled and secondary	71		
Asphalt	25.4		
Concrete **of which:**	86.2		
• Ready-Mixed Concrete	54.2		
• Concrete products	32		

20.5.2 Construction material sales data by region are provided for the regions surrounding the Project in **Table 20.12**. It is assumed that the majority of key construction materials (e.g. aggregates, asphalt and concrete) required for the Project would be sourced regionally, taking into account the proximity principle and value for money. Other materials such as steel may be sourced at a national level.

Table 20.12: Construction Material Sales by Region

Construction Material	East Midlands	Yorkshire and the Humber
Crushed rock (million tonnes)	26.5	11.5
Sand and gravel (million tonnes)	6.1	2.3
Ready-mixed concrete (million m^3)	1.4	1.2
Asphalt (million tonnes)	2.8	2.1

20.5.3 Potential recycled contents for the main construction materials likely to be used during Project construction are outlined in **Table 20.13**. These "good practice" rates are derived from WRAP's Designing Out Waste Tool for Civil Engineering (Ref 20-28).

Table 20.13: Potential Recycled Content

Material Type	Potential Recycled Content (% by weight)
Concrete	16
Asphalt	25
Aggregates	50
Steel reinforcement	100
Structural steel	60

Future Baseline

20.5.4 There is no publicly available information on any potential long-term changes to national material demands by the time of construction of the Project. Construction material demand such as ready mixed concrete is closely aligned to both the quantity of construction taking place and the general economy. Therefore, it is deemed inappropriate to forecast future demand as it is unlikely to be linear. It is, therefore, not possible to set a future baseline for materials. As such, the future baseline is assumed during Project construction to be the same as the current baseline as outlined in **Table 20.11**.

Allocated/ Safeguarded Mineral and Waste Sites and MSAs

20.5.5 As outlined in the North East Lincolnshire Local Plan 2013 to 2032 (adopted 2018) (Ref 20-19) "*the area features some mineral deposits of economic importance, however, no primary extraction occurs in the Borough"*. However, *"significant existing and planned infrastructure identified on the Policies Map, that supports the supply of minerals in the Borough would be safeguarded against development that would unnecessarily sterilise or prejudice its use, including development of incompatible land uses nearby. This includes strategic rail freight links, sites for concrete batching, manufacture of coated materials and concrete*

products, and sites associated with the handling, processing, and distribution of substitute, recycled and secondary aggregate material."

20.5.6 There are no active mineral extraction "*sites in North East Lincolnshire contributing to primary aggregate production and the Council's call for sites has not identified any potential minerals sites*." Therefore, there are no allocated/ safeguarded mineral sites within the Site.

20.5.7 Three sites producing secondary and recycled aggregates are listed in the North East Lincolnshire Local Plan, noting that these sites are not within close proximity (over 1km) of the Site. There are no concrete batching/ aggregate sites within close proximity of the Site as outlined on the MSA and Waste Sites Policy Map (Ref 20-20).

20.5.8 North East Lincolnshire safeguard the existing waste management facilities identified on the Policies Map (Minerals and Waste) "*from the encroachment of incompatible development unless the planning permission has expired and/ or it can be demonstrated that the site is no longer required. The Council would seek to ensure that new development in proximity to a waste site is not incompatible with the waste management facility and would not prejudice its ongoing operation*". The details of waste sites adjacent or within the Site are presented in **Table 20.14**.

20.5.9 Consultation in relation to the safeguarding of allocated/ safeguarded waste sites in the vicinity of the Project would be required. However, permanent impacts upon allocated/ safeguarded waste sites are not anticipated: any Project impacts on site access would be of limited duration (during construction only), whilst alternative access arrangements would be put in place during this time in order to avoid undue disruption.

Table 20.14: Safeguarded Waste Sites Within or Adjacent to the Project

North East Lincolnshire Local Plan reference	Operator	Site Location	Details
WM05	Grimsby Operations Ltd	Household Waste Recycling Centre, Queens Road, Immingham	Adjacent to the Project.
WM07	Integrated Waste Management Ltd	Queens Road, Immingham	Access road to the permitted landfill is within the Site.

20.5.10 Three other safeguarded waste sites are located within 1km of the Site as presented in **Table 20.15**.

Table 20.15: Other Safeguarded Waste Sites Within 1km of the Project

North East Lincolnshire Local Plan Reference	Operator	Site Location
WM03	Associated British Ports	Immingham Dock Olive Residue Storage
WM08	Selvic Shipping Services Ltd and FBM Metals (UK) Ltd (licence name F B M Metals (UK) Ltd and F B M Holdings Ltd	Kiln Lane Treatment Plant, Netherlands Way, Stallingborough
WM09	SJP Trading Ltd (licence name Stokesley Metals Ltd)	Huckers Yard, Netherlands Way, Stallingborough

20.5.11 North East Lincolnshire has designated MSAs for sand and gravel and blown sand, however these areas are not located within close proximity of the Site (in the Stallingborough area and Habrough area over 4km away).

Landfill Capacity

Current Baseline

20.5.12 **Table 20.16** presents remaining landfill capacity at the end of 2020 as outlined on the EA's 2021 Waste Summary Tables for England – Version 1 (last updated 30th September 2022) (Ref 20-24) for the non-hazardous and inert waste expansive study area (East Midlands and Yorkshire and the Humber) and the hazardous waste study area (England).

20.5.13 Merchant landfills are operated for commercial purposes accepting waste from construction projects and operating businesses. Merchant landfills are therefore considered to form the baseline. In contrast, restricted landfills are sites that deal with their own produced waste (i.e. not operating for commercial purposes) and therefore additional capacity associated with such facilities is excluded from the baseline. Some non-hazardous landfill have a Stable Non-Reactive Hazardous Waste Cell (SNRHW) e.g. for asbestos.

Table 20.16: Landfill Capacity (2021) in East Midlands, Yorkshire and The Humber, and England

Landfill Type	Sub-Region			
	East Midlands	Yorkshire and the Humber	Total in East Midlands and Yorkshire and the Humber	England
	Capacity ('000s m^3)			
Hazardous Merchant	800	700	1,500	12,107
Non-hazardous with SNRHW cell	15,884	1,243	17,127	52,006
Non-hazardous	17,570	45,196	62,766	162,369
Inert	21,574	25,283	46,857	129,078
Sub-total (non-hazardous and inert)	55,028	71,722	126,750	12,107
Total	800	700	1,500	355,560

20.5.14 **Table 20.16** indicates that total non-hazardous and inert landfill capacity in the non-hazardous study area is 127 million m^3. Total hazardous landfill capacity in the hazardous waste study area is 15.6 million m^3.

Future Baseline

20.5.15 The EA has published landfill capacity trends for 2004 to 2021 in 2022 within the EA's 2021 Waste Summary Tables for England – Version 1 (last updated 30th September 2022) (Ref 20-24).

20.5.16 **Plate 20-1** presents the historic trend for the remaining landfill capacity for the East Midlands and Yorkshire and the Humber.

20.5.17 **Plate 20-2** presents the historic trend for remaining landfill capacity for England.

20.5.18 Data is only available for "Inert" (inert landfill only) and "Non-Inert" (non-hazardous landfill sites, non-hazardous landfill sites with a SNHRW cell and merchant hazardous landfill sites) therefore the categories do not align with the 2021 landfill capacity data which is split by hazardous, non-hazardous and inert as shown in **Table 20.16**.

Plate 20-1: Historic Trend for Landfill Void Capacity in East Midlands and Yorkshire and the Humber (Ref 20-24)

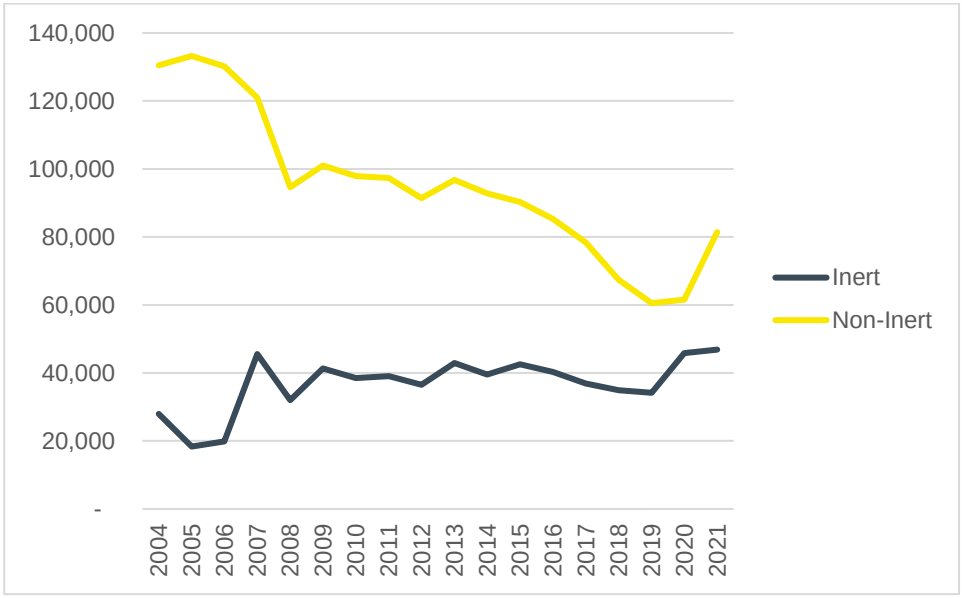
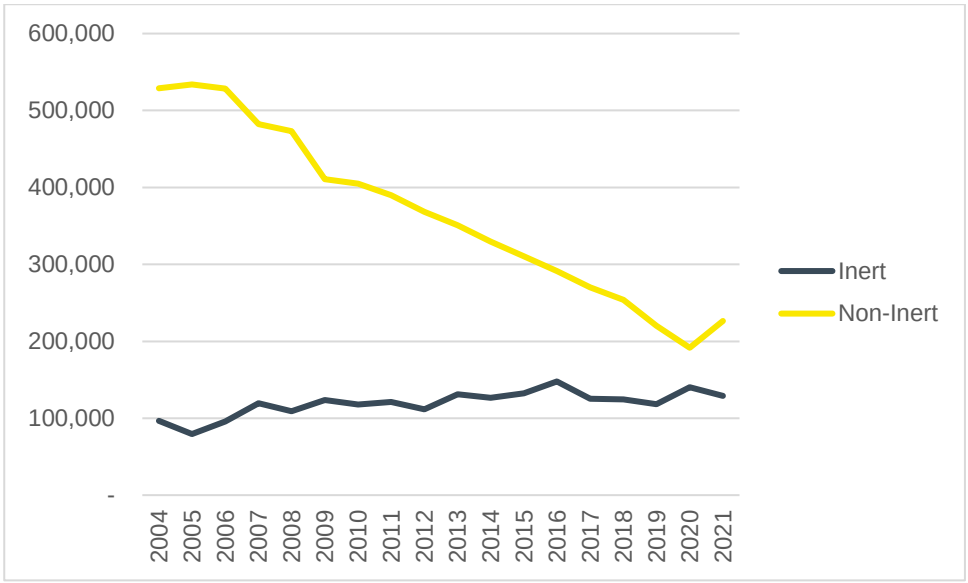


Plate 20-2: Historic Trend for Landfill Void Capacity in England (Ref 20-24)



20.5.19 There is no publicly available information on any potential changes to landfill capacity by the time of project construction. Due to the cyclic nature of inert landfill capacity, it is not realistic to forecast future landfill capacity since this may result in an increase in landfill capacity. Therefore, future inert landfill capacity during Project construction is assumed to be the same as the current baseline as outlined in **Table 20.16**.

20.5.20 For non-inert landfill (which includes hazardous waste) capacity using the current rate of decline of landfill capacity and forecasting into the future would lead to the inevitable conclusion that there would be no void space remaining. However, this is not a credible scenario as if there is still a need for landfill, then the WPA would need to consent new landfill capacity to replace that which has been used up.

Therefore, future non-hazardous and hazardous landfill capacity during Project construction is assumed to be the same as the current baseline as outlined in **Table 20.16**.

Waste Management Infrastructure

20.5.21 The permitted capacity of other types of waste infrastructure is publicly available (e.g. Environmental Permitting Regulations - Waste Sites (Ref 20-29)), however, the permitted capacity is not necessarily representative of the actual operational capacity of the infrastructure since waste inputs may not be as high as permitted capacity. Therefore, inputs data are collated from the EA's Waste Data Interrogator 2021 – Waste Received (Excel) – Version 1 (Ref 20-30) and presented in **Table 20.17**.

20.5.22 Inputs are not totalled since the double counting of waste in the Waste Data Interrogator cannot be discounted. Double counting results from the same waste making multiple movements through multiple facilities e.g., transfer station to treatment facility with residues going to an energy from waste plant.

Table 20.17: Summary of Waste Inputs by Facility Type (Ref 20-30)

Facility Type	East Midlands (tonnes received)	Yorkshire and the Humber (tonnes received)
Landfill	4,238,163	4,501,192
MRS	843,958	1,817,180
On/ In Land	551,542	1,397,745
Transfer	4,588,886	5,394,163
Treatment	7,389,323	14,703,527
Combustion	72,986	71,810
Incineration	1,006,895	2,908,832
Mining	4,575	752
Storage	146,905	315,692
Processing	185,618	534,065

20.5.23 The IEMA Guidance "*does not consider waste processing and recovery facilities as sensitive receptors, rather: they are part of a system that has the potential to reduce the magnitude of adverse impacts associated with waste generation and disposal. Waste processing and recovery facilities are, hence, different to landfills, in that the latter are finite resources*." Therefore, a full list of waste management infrastructure is not included in the baseline as presented herein.

Historic Landfills

20.5.24 Historic landfills are potentially relevant to this assessment since excavations in historic landfill can give rise to waste that would require appropriate management. The EA's Historic Landfill Sites spatial data (Ref 20-31) does not present any historic landfills in close proximity to the Project site. There is one historic landfill 100 metres to the north of the Project on the northern side of the railway line (i.e. Dock South East, Immingham). First waste inputs to the landfill occurred in 1986, whilst the licence was surrendered in 1990. The landfill was licensed to accept inert and industrial waste.

Targets

20.5.25 The national target for recovery of C&D waste is 70% by weight, as set out in the Waste FD and the Waste Management Plan for England (Ref 20-14). The target specifically excludes naturally occurring materials with European Waste Catalogue (EWC) Code 17 05 04 (soil and stones other than those mentioned in 17 05 03* (soils and stones containing dangerous substances)). Recovery is deemed to include reuse, recycling and other recovery e.g. energy recovery.

20.5.26 A good practice landfill diversion target of 90% has been achieved and exceeded by major UK developments as outlined in the IEMA Guidance. In 2018, the UK generated 67.8 million tonnes of non-hazardous C&D waste, of which 62.6 million tonnes was recovered. This represents a recovery rate of 92.3% (Ref 20-32).

20.5.27 Standard, good and best practice recovery rates by material are provided by Waste & Resources Action Programme (WRAP) (Ref 20-33). Recovery rates for key construction materials and other construction wastes relevant to the Project construction phase are provided in **Table 20.18**.

Table 20.18: Standard, Good and Best Practice Recovery Rates by Material

Material	Standard Practice Recovery (%)	Good Practice Recovery (%)	Best Practice Recovery (%)
Metals	95	100	100
Packaging	60	85	95
Concrete	75	95	100
Inert	75	95	100
Plastics	60	80	95
Miscellaneous	12	50	75
Electrical equipment	Limited information	70	95
Cement	Limited information	75	95
Liquids and oils	100	100	100

Material	Standard Practice Recovery (%)	Good Practice Recovery (%)	Best Practice Recovery (%)
Hazardous	50	Limited information, cannot be 100% since some hazardous waste e.g. asbestos must be landfilled.	

Receptor Sensitivity

20.5.28 Materials required for Project construction are determined to be receptors of 'low' sensitivity. On balance, the key materials required for the construction of the Project are forecast (through trend analysis and other information) to be generally free from known issues regarding supply and stock. Key materials required for the construction are likely to be available comprising a high proportion of sustainable features and benefits (e.g. recycled content).

20.5.29 Potential recycled content for the main Project construction materials are outlined in **Table 20.13**.

20.5.30 Waste receptors of relevance to the Project are determined to have a 'very high' sensitivity. Since there is no publicly available information on any potential changes to landfill capacity by the time of the Project construction and operation, a worst-case scenario has been considered.

20.5.31 It is assumed that (without the Project) non-hazardous landfill void capacity in the expansive study area is expected to:

a. Reduce very considerably (by >10%);
b. End during Project construction and operation;
c. Is already known to be unavailable; or
d. Would require new capacity or infrastructure to be put in place to meet forecast demand.

20.5.32 It is assumed that (without the Project) hazardous landfill void capacity in the expansive study area is expected to:

a. Reduce very considerably (by >1%), in the past there has been >1% reduction in landfill capacity;
b. End during Project construction and operation;
c. Is already known to be unavailable; or
d. Would require new capacity or infrastructure to be put in place to meet forecast demand.

20.6 Design, Mitigation and Enhancement Measures

Embedded Mitigation

20.6.1 As described in the IEMA Guidance, embedded (primary) mitigation is the prevention or reduction of adverse effects through the resource-efficient design, construction and/ or lifetime operation of a project.

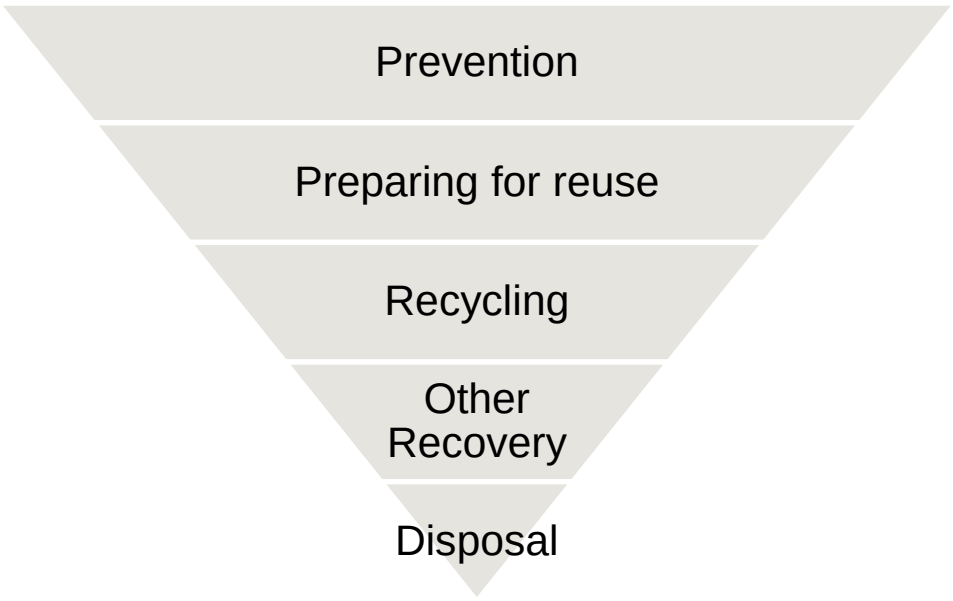
20.6.2 Primary mitigation measures are an intrinsic part of the Project, and do not require additional action to be taken. Such measures are often identified as a

result of the interaction between the environmental and engineering specialists within a project team, who are able to identify and agree by consensus resource-efficient design solutions.

20.6.3 Embedded mitigation measures of relevance to materials and waste for the Project are described below.

20.6.4 The Project will aim to prioritise waste prevention, followed by preparing for re-use, recycling and recovery and lastly waste disposal to landfill as per the waste hierarchy as detailed in **Plate 20-3**.

Plate 20-3: The Waste Hierarchy, from Defra's Guidance on Applying the Waste Hierarchy, recreated by AECOM (Ref 20-34)



20.6.5 The following designing out waste mitigation measures will be considered and implemented where applicable during the Project design and subsequent construction phase:

a. Design for reuse and recovery: identifying, securing and using materials that already exist on site, or can be sourced from other projects.

b. Design for materials optimisation: simplifying the Project layout and form to minimise material use, using standard design parameters, balancing cut and fill, maximising the use of renewable materials and materials with recycled content.

c. Design for off-site construction: maximising the use of pre-fabricated structures and components, encouraging a process of assembly rather than construction.

d. Design for the future (deconstruction and flexibility): identify how materials can be designed to be more easily adapted over an asset lifetime and how deconstructability and demountability of elements can be maximised at end of first life.

e. Design for materials and waste efficient procurement: identify and specify materials that can be acquired responsibly, in accordance with a recognised industry standard.

20.6.6 As per the IEMA Guidance embedded measures are considered prior to the assessment of effects to avoid considering assessment scenarios that are unrealistic in practice i.e. do not take account of such measures even though they are likely to be standard practice (tertiary mitigation) and/ or form part of the Project design (embedded mitigation). Taking these measures into account means that realistic likely environmental effects are identified. Where likely significant adverse effects are identified after considering these embedded measures, Project specific mitigation measures will be considered, developed and proposed, where necessary and possible.

20.6.7 All mitigation by design measures will be described within the ES with the rationale for the inclusion of the identified embedded measures clearly stated.

Standard Mitigation

20.6.8 As described in the IEMA Guidance, additional (secondary) mitigation are actions that require further activity in order to achieve the anticipated outcome. These may be imposed as part of the consent or requirement, or through inclusion in an environmental management plan.

20.6.9 Construction of the Project would be subject to measures and procedures defined within a Construction Environmental Management Plan (CEMP), which would be produced prior to the commencement of construction by the Contractor and would be based on, and incorporate, the contents and requirements of the outline CEMP which will be submitted with the DCO Application. In addition, an Outline Site Waste Management Plan (OSWMP) will be prepared and accompany the DCO application. The Contractor will prepare a Site Waste Management Plan (SWMP) before the commencement of construction, as based upon the OSWMP. The OSWMP would set out the generic measures that will be implemented by the Contractor to manage waste generated by the Project construction. This OSWMP would include:

a. An overview of applicable legislation;

b. Details of the Project;

c. Management arrangements, including roles and responsibilities, training, targets and best practice measures;

d. Estimates of construction material use and waste arising and how they will be managed;

e. Design decisions;

f. Materials and waste management on-site; and

g. Opportunities for waste minimisation, reuse, recycling and recovery in line with the requirements of the waste hierarchy.

20.6.10 Targets for waste recovery and recycled content will be included in the contractor's SWMP and could include for example:

a. Achieving a set percentage (by weight) for recovery of non-hazardous C&D waste. Such a target would specifically exclude naturally occurring materials with EWC Code 17 05 04 (soil and stones other than those mentioned in 17 05 03* (soils and stones containing dangerous substances)). Recovery is deemed to include reuse, recycling and other recovery e.g. energy recovery.

b. Achieving a set percentage (by weight) of materials imported to site for use within the Project containing alternative (reused, recycled or secondary) content, for those applications where it is technically and economically feasible to substitute these alternatives to primary materials.

20.6.11 The reuse of excavated material would be covered by a CL:AIRE DoW CoP (Ref 20-21) MMP developed by the Contractor before the commencement of construction and for obtaining all necessary approvals (in accordance with the OEMP). This would support the re-use of excavated materials, minimise off-site disposal; and to demonstrate the necessary lines of evidence to support the proper reuse/ offsite disposal of materials and ensure compliance with regulatory guidance.

20.7 Potential Impacts and Effects

Potential Impacts

20.7.1 Potential materials and waste impacts associated with the Project include:

a. Reduction in materials required for construction available in the relevant markets (key construction materials e.g. concrete, asphalt, steel, aggregates).

b. Effects that on-site generated materials (e.g. soils, waste arisings) have on the existing and future landfill void capacity during Project construction.

c. Effects that on-site generated waste arisings have on the existing and future landfill void capacity during Project operation.

d. Changes to allocated/ safeguarded waste site access.

Construction

20.7.2 **Table 20.19** summarises the likely types of materials that would be used and wastes that are likely to be generated during the Project construction phase.

Table 20.19: Construction Material Use and Waste Types Arising from Project Construction

Construction Activity	Materials Used	Waste Types Generated
Site remediation/ preparation/ earthworks	Fill material for construction purposes. Primary/secondary/recycled aggregates for ground stabilisation. Topsoil and subsoil for landscaping and restoration.	Surplus excavated materials. Surplus topsoil and subsoil. Unsuitable and contaminated soils and excavated materials. Vegetation from site clearance.
Site clearance and demolition activities	Materials are not required for demolition works.	Waste arisings from demolition and clearance. Extensive demolition is not anticipated as the site is either hardstanding, brownfield or agricultural field.
Site construction	Main construction materials including: • Concrete • Steel • Pipe supports • Cables, cable trays and instruments • Asphalt • Piles • Gravel • Fill material	Excess, offcuts and broken/ damaged construction materials. Existing infrastructure removed during works. Packaging from materials delivered to site e.g. timber crates. Construction worker wastes from offices and welfare areas/ canteens. Waste oils from construction plant.

Construction Materials

20.7.3 The estimated main types and quantities of materials anticipated to be used during construction of the various Project phases (Phase 1-6) have been obtained from the Applicant and AP, as presented in **Table 20.20**, **Table 20.21** and **Table 20.22** alongside national and regional materials consumption. Regional material consumption is not available for steel.

20.7.4 Phase 1 is anticipated to be three years (2025-2027), each subsequent phase (2-6) would be two years each. Phase 4 (2031 and 2032), Phase 5 (2032 and 2033) and Phase 6 (2033 and 2035) are anticipated to overlap by one year. A worst case that all material used and waste generation occurs within one year for each phase is taken in the assessment.

20.7.5 Table 20.21These tables also include potential material wastage estimates and a total construction waste estimate based on material wastage only. The estimates are preliminary and would be updated as appropriate in the ES. Asphalt material quantities have been converted from m^2 to m^3 by applying an indicative material depth of 170mm.

20.7.6 Data on the bulk density of materials has been used to convert quantities between volume (m^3) and weight (tonnes). Information on the typical bulk density of materials has been sourced from WRAP's Designing Out Waste Tool for Civil Engineering (Ref 20-28).

20.7.7 The estimated wastage rates for each material are based on the "good practice" rates from WRAP's Designing Out Waste Tool for Civil Engineering (Ref 20-28).

Table 20.20: Estimated Construction Material Quantities and Wastage – Terminal Phase 1

Material	Material Density (t/m^3)	Quantity (tonnes)	Quantity (m^3)	National Material Consumption (million tonnes)	% of National Material Consumption and Magnitude	Regional Material Consumption (million tonnes)	% of Regional Material Consumption	Wastage Rate (%)	Waste Quantity (tonnes)	Waste Quantity (m^3)
Concrete	2.4	128,880	53,700	86.2	**0.15**	2.6	**4.96**	2.5	3,222	1,343
Steel - rebar	7.85	6,900	879	17	**0.04**	n/a	**n/a**	5	345	44
Steel - structural	7.85	6,900	879	17	**0.04**	n/a	**n/a**	0	-	-
Asphalt	2.4	6,477	2,699	25.4	**0.03**	4.9	**0.13**	2.5	162	67
Aggregates - gravel	1.9	4,290	2,258	250.9	**0.002**	46.4	**0.01**	5	215	113
Aggregates - fill material	1.9	100,000	52,632	250.9	**0.04**	46.4	**0.22**	5	5,000	2,632
Total material construction waste based on wastage									8,943	4,198

Table 20.21: Estimated Construction Material Quantities and Wastage – Terminal Each Subsequent Phases (2-6)

Material	Material Density (t/m^3)	Quantity (tonnes)	Quantity (m^3)	National Material Consumption (million tonnes)	% of National Material Consumption	Regional Material Consumption (million tonnes)	% of Regional Material Consumption	Wastage Rate (%)	Waste Quantity (tonnes)	Waste Quantity (m^3)
Concrete	2.4	21,480	8,950	86.2	**0.02**	2.6	**0.83**	2.5	537	224
Steel - rebar	7.85	1,050	134	17	**0.01**	n/a	**n/a**	5	53	7
Steel - structural	7.85	1,250	159	17	**0.01**	n/a	**n/a**	0	-	-
Asphalt	2.4	1,554	648	25.4	**0.01**	4.9	**0.03**	2.5	39	16
Aggregates - gravel	1.9	950	500	250.9	**0.0004**	46.4	**0.002**	5	48	25
Aggregates - fill material	1.9	-	-	250.9	-	46.4	-	5	-	-
Total material construction waste based on wastage									676	272

Table 20.22: Estimated Construction Material Quantities and Wastage – Jetty

Material	Material Density (t/m^3)	Quantity (tonnes)	Quantity (m^3)	National Material Consumption (million tonnes)	% of National Material Consumption	Regional Material Consumption (million tonnes)	% of Regional Material Consumption	Wastage Rate (%)	Waste Quantity (tonnes)	Waste Quantity (m^3)
Concrete	2.4	58,206	24,253	86.2	**0.07**	2.6	**2.24**	2.5	1,455	606
Steel - rebar	7.85	4,714	601	17	**0.03**	n/a	**n/a**	5.0	236	30
Steel - piles	7.85	14,947	1,904	17	**0.09**	n/a	**n/a**	0	-	-
Total material construction waste based on wastage									1,691	636

20.7.8 On a national scale during the Terminal Phase 1 construction phase no individual construction material requirement is equal to or greater than 1% by weight of the baseline national consumption (UK/GB) (i.e. concrete 0.15%, steel 0.08%, asphalt 0.03% and aggregates 0.042% as shown in **Table 20.20**).

20.7.9 Materials required for Project construction are determined to be receptors of low sensitivity (in accordance with **Table 20.3**).

20.7.10 The magnitude of impact is considered to be negligible (in accordance with **Table 20.5**). The overall effect is therefore assessed to be neutral which is not significant.

20.7.11 On a regional scale during Terminal Phase 1 construction, asphalt and aggregates requirements are less than 1% by weight of the baseline regional consumption (i.e. asphalt 0.13% and aggregates 0.22% as shown in **Table 20.20**). Concrete requirements represent between 1-5% of the baseline regional consumption (i.e. concrete 4.96% as shown in **Table 20.20**). The effect is therefore assessed to be neutral which is not significant. The magnitude of impact for concrete is considered to be minor. The effect is therefore assessed to be slight adverse which is not significant.

20.7.12 Since material quantity requirements for subsequent Project phases (2-6) are lower than those required during Phase 1 and no individual construction material requirement is equal or greater than 1% at a national or regional scale (as outlined in **Table 20.21**) no significant effects are anticipated.

20.7.13 At a national scale during jetty construction, no individual construction material requirements are equal to or greater than 1% by weight of the baseline national consumption (UK/GB) (i.e. concrete 0.07% and steel 0.12% as outlined in **Table 20.22**). The magnitude of impact is considered to be negligible. The effect is therefore assessed to be neutral which is not significant.

20.7.14 At a regional scale during jetty construction, concrete requirements are between 1-5% of the baseline regional consumption (i.e. concrete 2.24% as outlined in **Table 20.22**). The magnitude of impact is considered to be minor. The effect is therefore assessed to be slight adverse which is not significant.

20.7.15 At a national scale in a worst-case scenario that Terminal Phase 1, Phase 2-6 and the jetty are constructed within a single year no individual construction material requirement is equal to or greater than 1% by weight of the baseline national consumption (UK/GB) (i.e. concrete 0.34%, steel 0.26%, asphalt 0.06% and aggregates 0.04%). The magnitude of impact is considered to be negligible. The overall effect is therefore assessed to be neutral which is not significant.

20.7.16 At a regional scale in a worst-case scenario that Terminal Phase 1, Phase 2-6 and the jetty are constructed within a single year asphalt and aggregates requirements are less than 1% by weight of the baseline regional consumption (as outlined in **Table 20.23**). Concrete requirements represent more than 10% of the baseline regional consumption (i.e. concrete 11.3% as outlined in **Table 20.23**).

20.7.17 For asphalt and aggregates the magnitude of impact is considered to be negligible. The overall effect is therefore assessed as neutral which is not significant. For concrete the magnitude of impact is considered to be major,

sensitivity is low. The effect is therefore assessed to be slight which is not significant. Slight adverse is selected rather than moderate since 11.3% is just over 10% of the baseline regional consumption.

Table 20.23: Estimated Construction Material Quantities and Wastage – Terminal Phase 1, Five Subsequent Phases and Jetty Total

Material	Material density (t/m^3)	Quantity (tonnes)	Quantity (m^3)	National material consumption (million tonnes)	% of National Material Consumption	Regional Material Consumption (million tonnes)	% of Regional Material Consumption	Wastage rate (%)	Quantity (tonnes)	Quantity (m^3)
Concrete	2.4	294,486	122,703	86.2	**0.34**	2.6	**11.3**	2.5	7,362	3,068
Steel	7.85	44,962	5,728	17	**0.26**	n/a	**n/a**	5.0	2,248	286
Asphalt	2.4	14,249	5,937	25.4	**0.06**	4.9	**0.29**	2.5	356	148
Aggregates	1.9	109,040	57,389	250.9	**0.04**	46.4	**0.24**	5.0	5,452	2,869
Total material construction waste based on wastage									**15,418**	**6,372**

Construction Waste

20.7.18 The construction waste estimates based upon wastage from construction material is likely to be an underestimation of total construction waste (i.e. 4,198 m^3 for terminal Phase 1, 272 m^3 for each subsequent terminal phase and 636 m^3 for the jetty) as this does not include worker waste, waste from vehicles etc. Therefore, construction waste volumes have also been estimated at a high-level based on the Project construction value.

20.7.19 The construction waste estimates (excluding demolition and excavation) have been calculated based on the construction value (£250 million for terminal Phase 1, £80 million for subsequent terminal phases and £60 million for the jetty) and published standard, good and best practice benchmarks for industrial buildings of 20.9m^3, 8.6m^3 and 5.5 m^3 waste per £100,000 respectively (Ref 20-35).

20.7.20 Construction waste volumes for terminal Phase 1 are estimated to be between 13,750 m^3 and 52,250 m^3, for subsequent terminal phases at between 4,400 m^3 and 16,720 m^3, and for the jetty at between 3,300 to 12,540 m^3. In a worst case that Terminal Phase 1, Phase 2-6 and the jetty are constructed within a single year construction waste volume is estimated to be between 38,500 m^3 and 148,390 m^3. These standard benchmark construction waste estimates have been used in the assessment as a worst case (148,390 m^3)

20.7.21 A worst-case scenario where all waste is disposed of to landfill has been applied. During construction this equates to 0.12% of the 127 million m^3 of inert and non-hazardous landfill capacity within the waste management study area (East Midlands and Yorkshire and the Humber). In practice a large proportion of non-hazardous and inert waste from the Project would likely to be recovered rather than disposed of to landfill, further reducing the overall quantities of waste requiring disposal.

20.7.22 Based on the above, construction of the Project is likely to result in less than a 1% (1,267,500 m^3) reduction of landfill capacity within the waste management study area, thus representing a negligible magnitude of impact.

20.7.23 Waste receptors of relevance to the Project are determined to have a very high sensitivity. Therefore, a negligible magnitude of impact is assessed to result in a slight adverse effect which is not significant.

20.7.24 At this stage no estimates of hazardous waste generation during Project construction are available. The quantities of hazardous waste (e.g. oils, batteries, aerosol cans etc.) are currently anticipated to be small compared to the overall construction waste arisings and anticipated to be less than 0.1% of the hazardous waste landfill capacity in England (12,107 m^3) – as such the magnitude of impact is anticipated to be negligible.

20.7.25 Many hazardous waste types have well defined waste management routes, including recovery and are unlikely to be sent directly to landfill. Procedures for the storage and management of these wastes will be set out in the OSWMP which will accompany the DCO application, and further detailed in the Contractor's SWMP. Hazardous waste receptors have a very high sensitivity'. Therefore, a negligible magnitude of impact would result in a slight adverse effect which is not significant.

Demolition and Clearance Waste

20.7.26 Demolition works during the construction phase are not anticipated given that the Project site comprises hardstanding, brownfield and agricultural field. Therefore, quantities of waste generated during site clearance activities are anticipated to be small.

20.7.27 The quantity of waste estimated to arise from vegetation clearance for Phase 1 is based on the number of hectares (ha) expected to be cleared (approximately 45 ha), the vegetation type (heavily wooded, medium wood or open field) and a benchmark for m^3 and tonnes of waste per ha. The vegetation type is not yet confirmed so all three benchmarks have been applied to provide a range. The benchmarks are:

a. Heavily wooded - 429 m^3 per ha, 300 tonnes per ha.

b. Medium wooded – 250 m^3 per ha, 175 tonnes per ha.

c. Open field – 9 m^3 per ha, 6 tonnes per ha.

20.7.28 Taking into account the above, during vegetation clearance works it is estimated that between 405 and 19,305 m^3 of material would be generated. It is anticipated that all of this waste would be composted or recovered on or off site with a 100% recovery rate and therefore would not impact landfill void capacity.

Excavated Material

20.7.29 The Project design is currently being progressed to optimise the requirements for cut and fill and where possible this will be minimised to reduce the import and export of materials and waste. The Project design team aim is to achieve a cut-fill balance, however predicted cut and fill for the Project is currently imbalanced with import required i.e. cut volume of approximately 45,000 m^3 and a fill volume of approximately 100,000 m^3.

20.7.30 The use of site-sourced excavated material within the Project engineering works activities would be undertaken in accordance with the MMP. This would be prepared by the Contractor in accordance with the CL:AIRE DoW CoP (Ref 20-21) with the material not being classified as waste.

20.7.31 Under a worst-case scenario where all approximately 45,000 m^3 of excavated material is sent to landfill has been applied. It is currently assumed that this material is non-hazardous. This equates to 0.04% of the 127 million m^3 of inert and non-hazardous landfill capacity within the waste management study area (East Midlands and Yorkshire and the Humber). When this is added to the construction waste estimate this equates to 0.15% of the 127 million m^3 of inert and non-hazardous landfill capacity within the waste management study area (East Midlands and Yorkshire and the Humber).

20.7.32 In practice, it is likely that some of the excavated material could be reused on-site or recovered, rather than being disposed of to landfill. Information on previously developed land and potential sources of contamination that could give rise to materials and waste that require specific handling, storage and management arrangements, are set out in **Chapter 21: Ground Conditions and Land Quality**.

20.7.33 Based on the above, construction of the Project is estimated to result in less than a 1% (1,040,110 m^3) reduction of landfill capacity within the waste management study area, representing a negligible magnitude of impact.

20.7.34 Waste receptors of relevance to the Project are determined to have a very high sensitivity. Therefore, a negligible magnitude of impact would result in a slight adverse effect which is **not significant**.

Impacts on Safeguarded Waste Sites

20.7.35 An access road to a permitted (allocated/ safeguarded) landfill is located within the Project site, whilst an allocated/ safeguarded waste site is located adjacent to the Project site. Consultation in relation to the safeguarding of allocated/ safeguarded waste sites in the vicinity of the Project would be required. However, permanent impacts are not anticipated given that any impacts on site access would be of limited duration (during construction only), whilst alternative access arrangements would be put in place during this time in order to avoid significant effects.

Operation

20.7.36 Effects associated with the availability of materials during Project operation have been scoped out of the assessment.

20.7.37 Details of operational waste are not yet finalised; however, it is anticipated that operation of the Project is likely to result in less than a 1% (1,267,500 m^3) reduction of landfill capacity within the waste management study area, representing a negligible magnitude of impact.

20.7.38 Waste receptors of relevance to the Project are determined to have a very high sensitivity. Therefore, a negligible magnitude of impact would result in a slight adverse effect which is **not significant**.

Residual Effects

20.7.39 Based upon the assessment as detailed above, no significant residual effects with regard to materials and waste are anticipated.

20.8 Summary of Preliminary Assessment

20.8.1 Based on the current understanding of material and waste quantities associated with the Project, no significant effects are anticipated. Estimates of material and waste quantities will be further refined as the Project design progresses, therefore, the likely effects of the Project on materials and waste will be reconsidered and reported within the ES.

20.8.2 A summary of potential materials and waste impacts, mitigation measures and residual effects is presented in **Table 20.24**.

Table 20.24: Summary of Potential Impact, Mitigation Measures and Residual Effects

Receptor	Impact Pathway	Effect Significance	Mitigation Measures	Residual Effect	Confidence
Construction Phase					
Waste - Non-hazardous landfill void capacity in the expansive study area of East Midlands and Yorkshire and the Humber.	Changes in available landfill capacity.	The sensitivity of the receptor is classified as very high, with a negligible magnitude of impact resulting in a slight adverse effect which is not significant.	Mitigation outlined in **Section 20.6**.	'Slight adverse' effect which is not significant.	Confidence level of significance of effects prediction is moderate-high.
Waste - Hazardous landfill void capacity in the expansive study area England.	Changes in available landfill capacity.	The sensitivity of the receptor is classified as very high, with a negligible magnitude of impact resulting in a slight adverse effect which is not significant.	Mitigation outlined in **Section 20.6**.	'Slight adverse' effect which is not significant.	Confidence level of significance of effects prediction is moderate-high.
Materials - national and regional consumption of key construction materials.	Changes in demand for materials.	The sensitivity of the receptor is classified as low, with a minor or negligible (dependent on material type) magnitude of impact resulting in a neutral adverse or slight adverse effect (dependent on material type) which is not significant.	Mitigation outlined in **Section 20.6**.	'Neutral adverse' or 'slight adverse' effect (dependent on material type) which is considered to be not significant.	Confidence level of significance of effects prediction is moderate-high.

Receptor	Impact Pathway	Effect Significance	Mitigation Measures	Residual Effect	Confidence
Waste – Safeguarded waste sites.	Impacts on safeguarded waste sites and associated access.	Impacts on safeguarded waste sites and associated access are to be confirmed. Safeguarded waste sites will be considered further in the ES however permeant impacts are not anticipated.	Mitigation outlined in **Section 20.6**.	Impacts on safeguarded waste sites and associated access are to be confirmed. Safeguarded waste sites will be considered further in the ES however permeant impacts are not anticipated.	Confidence level of significance of effects prediction is low since impacts on safeguarded waste sites and associated access are to be confirmed.
Operational Phase					
Waste - Non-hazardous landfill void capacity in the expansive study area of East Midlands and Yorkshire and the Humber.	Changes in available landfill capacity.	The sensitivity of the receptor is classified as very high, with a negligible magnitude of impact resulting in a slight adverse effect which is not significant.	Mitigation outlined in **Section 20.6**.	Slight adverse' effect which is not significant.	Confidence level of significance of effects prediction is low since operational waste quantities are not yet known.
Waste - Hazardous landfill void capacity in the expansive study area England.	Changes in available landfill capacity.	The sensitivity of the receptor is classified as very high, with a negligible magnitude of impact resulting in a slight adverse effect which is not significant.	Mitigation outlined in **Section 20.6**.	Slight adverse' effect which is not significant.	Confidence level of significance of effects prediction is low since operational waste quantities are not yet known.

20.9 References

Ref 20-1 IEMA, (2020), Guide to: Materials and Waste in Environment Impact Assessment, Guidance for a Proportionate Approach.

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Ref 20-6 HMSO, (2016), The Environmental Permitting (England and Wales) Regulations 2016.

Ref 20-7 HMSO, (2005), Hazardous Waste (England and Wales) Regulations 2005 as amended.

Ref 20-8 European Union, (1991), Directive 91/689/EEC of the European Parliament and of the Council of 12 December 1991 on Hazardous Waste.

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Ref 20-25 Defra, (2010), The Strategy for Hazardous Waste Management in England.

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Ref 20-33 WRAP, (2007), Waste Recovery Quick Wins. Improving Recovery Rates without Increasing Costs.

Ref 20-34 Department for Environment, Food & Rural Affairs, (2011), Guidance on Applying the Waste Hierarchy.

Ref 20-35 WRAP, (undated), SMARTWaste Data and Reporting (projects completed at the end of November 2012).

20.10 Abbreviations and Glossary of Terms

Table 20.25: Glossary and Abbreviations

Term	Acronym	Meaning
Air Products BR Ltd	AP	A world-leading industrial gases company that develops, engineers, builds, owns and operates some of the world's largest industrial gas projects.
Construction & Demolition waste	C&D waste	A wide variety of materials such as concrete, bricks, wood, glass, metals, and plastic. It includes all the waste produced by the construction and demolition of buildings and infrastructure.
Construction Environmental Management Plan	CEMP	A Construction Environmental Management Plan describes the specific mitigation measures to be followed by the appointed construction contractor to reduce potential nuisance impacts.
Contaminated Land: Applications in Real Environments	CL:AIRE	A UK charity which develops training resources, disseminates information, and acts as a resource for those involved in sustainable land reuse.
Definition of Waste: Code of Practice	DoW:CoP	Following the code of practice enables the direct transfer and reuse of clean naturally occurring soil materials between sites.
Development Consent Order	DCO	The consent for a Nationally Significant Infrastructure Project required under the Planning Act 2008.
Department of Environment and Rural Affairs	Defra	The Government department responsible for policy and regulations on environmental, food and rural issues.
Environment Agency	EA	Government agency established to protect and improve the environment and contribute to sustainable development in England. Responsibilities include: water quality and resources, flooding and coastal risk management and contaminated land.
Environmental Impact Assessment	EIA	The statutory process through which the likely significant effects of a development project on the environment are identified and assessed.
Environmental Statement	ES	A statutory document which reports the EIA process, produced in accordance with the EIA Directive as transposed into UK law by the EIA Regulations.
European Waste Catalogue	EWC	The European Waste Catalogue is a hierarchical list of waste descriptions established by Commission Decision 2000/532/EC.

Term	Acronym	Meaning
Framework Directive	FD	A European Directive which sets the basic concepts and definitions related to waste management, including definitions of waste, recycling, and recovery.
Great Britain	GB	The nations of England, Scotland, and Wales.
Hectare	ha	Unit of area equal to 10,000 square metres.
Institute of Environmental Management and Assessment	IEMA	A professional body for practitioners working in the fields of environmental management and assessment.
Materials Management Plan	MMP	A mechanism by which those who are developing a site can comply with EA regulations for excavated ground materials.
Mineral Planning Authority	MPA	Typically, the county council (in two-tier parts of the country), the unitary authority, or the national park authority that deal with mineral planning issues within their area.
Mineral Safeguarding Area	MSA	An area designated by MPAs which covers known deposits of minerals, which are desired to be kept safeguarded from unnecessary sterilisation by non-mineral development.
National Planning Policy Framework	NPPF	A planning framework which sets out the Government's planning policies for England and how these are expected to be applied.
National Planning Practice Guidance	NPPG	This is a web-based resource used to support the National Planning Policy Framework.
National Policy Statement for Ports	NPSfP	The National Policy Statement for Ports provides the framework for decisions on proposals for new port development,
Outline Environmental Management Plan	OEMP	Outlines how actions might impact on the natural environment in which they occur and sets out commitments from the person taking the actions on how those impacts will be avoided, minimised, and managed.
Outline Site Waste Management Plan	OSWMP	Outlines the procedures for managing hazardous and non-hazardous waste on a construction site.
Preliminary Environmental Information	PEI	The information referred to in Part 1 of Schedule 4 of the EIA Regulations that has been reasonably compiled by the applicant and is reasonably required to assess the environmental effects of a project.

Term	Acronym	Meaning
Stabilised Non-Reactive Hazardous Waste	SNRHW	A range of solidified hazardous wastes (such as those that have been mixed with cement or Pulverised Fuel Ash) or granular solid wastes produced by a variety of treatment plants.
Site Waste Management Plan	SWMP	Details and confirms the procedures for managing hazardous and non-hazardous waste on a construction site.
United Kingdom	UK	-
Waste Framework Directive	Waste FD	The Waste Framework Directive sets the basic concepts and definitions related to waste management, including definitions of waste, recycling and recovery.
Waste Planning Authority	WPA	Typically, the county council (in two-tier parts of the country) or the unitary authority that deal with waste planning issues within their area.
Waste & Resources Action Programme	WRAP	A charity which works with businesses, individuals, and communities to achieve a circular economy, by helping them reduce waste, develop sustainable products, and use resources in an efficient way.