

REPORT

Boston Alternative Energy Facility – Environmental Statement

Chapter 23 Waste

Client: Alternative Use Boston Projects Ltd
Planning Inspectorate Reference: EN010095
Document Reference: 6.2.23
Pursuant to: APFP Regulation: 5(2)(a)
Reference: PB6934-RHD-01-ZZ-RP-N-3023
Status: 0.0/Final
Date: 23 March 2021





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Document title: Boston Alternative Energy Facility – Environmental Statement

Document short title: Waste Assessment Report
Reference: PB6934-RHD-01-ZZ-RP-N-3023
Status: 0.0/Final
Date: 23 March 2021
Project name: Boston Alternative Energy Facility
Project number: PB6934-RHD-01-ZZ-RP-N-3023
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Date: 22/10/2020 GB

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Date: 21/03/21 PS

Classification

Project related

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Executive Summary

This chapter has been completed as part of the Environmental Statement (ES). It provides a preliminary report of waste generation during the construction, operation and decommissioning phases, considering the proposed options for recycling, recovery or disposal of waste in accordance with the Waste Hierarchy, and the capability of the existing local or regional waste management facilities to manage the waste.

Institute of Environmental Management & Assessment (IEMA) guide to: Materials and Waste in Environmental Impact Assessment (IEMA, 2020) provides guidance for assessing the impacts for waste. This assessment is also based on professional judgement, relevant policy, legislation, relevant technical guidance associated waste management and the requirements of the Waste Hierarchy.

The baseline data on existing waste management infrastructure shows that there are numerous waste management facilities providing a wide variety of waste management options at a regional scale, including provision for hazardous waste landfill, however, options are limited at a local level.

The Building Research Establishment (BRE) SMART Waste Data Report (2013) was used to estimate volumes of waste arisings from the construction phase. The predicted arisings are:

Cumulative arisings by category	Predicted arisings (tonnes)	Averaged monthly arisings	%
Inert	17,076	356	12.9 %
Non-hazardous	110,779	2,308	83.5 %
Hazardous	4,851	101	3.7 %
Total	132,706	2,765	

Waste management measures will be implemented as mitigation to eliminate or reduce the anticipated quantity of waste sent to landfill by implementing the Waste Hierarchy. These measures would increase reuse; recycling or recovery opportunities.

No significant impacts associated with waste management are predicted for the construction or operation of the Facility.

A Site Waste Management Plan (SWMP) will be prepared prior to construction to record any decisions given to materials resource efficiency when designing and planning the works. Any assumptions on the nature of the project; its design; the construction method

or materials employed, to minimise the quantity of waste produced on-site; or maximise the amount of waste reused, recycled or recovered, will be captured within the SWMP.

The main operational arisings are predicted to be:

Element	Waste Stream	Amount (per annum)	Management in accordance with the Waste Hierarchy
Wharf	Damaged Refuse Derived Fuel (RDF) bales	Covered in the RDF total below	Recovery - Re-baled on-site and processed with other RDF for energy recovery in the gasifier. The plant is Waste Framework Directive R1 compliant and therefore a recovery process
RDF storage area	RDF	1,200,000 tonnes	Recovery – energy from waste recovery. The plant is Waste Framework Directive R1 compliant and therefore a recovery process
Three thermal treatment units, turbine hall and air cooled condenser	Non-hazardous ash	198,242 tonnes	Recycled in the Lightweight Aggregates Facility (LWA) to a market specification product.
	Air pollution control residues	16,664 tonnes	Recycled in the LWA to a market specification product.
Carbon capture facility	Hazardous liquid waste 40 % Monoethanolamine (MEA) / 60 % water	120,000 litres	Disposal via Liquid hazardous waste treatment
Associated infrastructure	Mixed municipal waste from site workers	Approximately 34 tonnes (based on 0.31 tonnes per worker per year).	Recycled – source segregation of metal, paper and card, plastics and glass. Recovered – residual waste that cannot be recycled will be collected for recovery.

Element	Waste Stream	Amount (per annum)	Management in accordance with the Waste Hierarchy
Thermal treatment Facility	Segregated large particles	5,000 tonnes	Mainly comprises ferrous metal. Recycled locally.
Ash Processing	Recovered metal		

The operation of the Facility will be governed by the Conditions associated with an Environmental Permit issued by the Environment Agency. This will set specific standard associated with the management of wastes produced on-site (amongst other things) to ensure the wastes are handled in accordance with Best Available Techniques.

The measures proposed for waste management during the construction phase of the works will be adhered to during decommissioning, in accordance with a decommissioning plan that will accord with relevant policy, legislation and guidance relevant at the time. The decommissioning plan will be agreed with relevant authorities prior to the decommissioning starts and will contain relevant measures to manage waste.

23 Waste

23.1 Introduction

23.1.1 This Waste Assessment forms part of the Environmental Statement (ES) for the proposed Boston Alternative Energy Facility ('the Facility').

23.1.2 This chapter provides an assessment of waste generation during the construction, operation and decommissioning phases, considering the proposed options for recycling, recovery or disposal of waste in accordance with the Waste Hierarchy, and the capability of the existing local or regional waste management facilities to manage the waste.

The Facility

23.1.3 The full description of the Facility is provided in **Chapter 5 Project Description**.

23.1.4 The Facility will comprise:

- A wharf and associated infrastructure (including re-baling facility, workshop, transformer pen and welfare facilities);
- A Refuse Derived Fuel (RDF) bale contingency storage area, including sealed drainage, with automated crane system for transferring bales;
- Conveyor system running in parallel to the wharf between the RDF storage area and the RDF bale shredding plant. Part of the conveyor system is open and part of which is under cover (including thermal cameras);
- Bale shredding plant;
- RDF bunker building;
- Thermal Treatment plant comprising three nominal 34 megawatt electric (MWe) combustion lines (circa 120 megawatt thermal (MWth)) and associated ductwork and piping, transformer pens, diesel generators, three stacks, ash silos and ash transfer network; and air pollution control residues (APCr) silo and transfer network;
- Turbine plant comprising three steam turbine generators, make-up water facility and associated piping and ductwork;
- Air-cooled condenser structure, transformer pen and associated piping and ductwork;

- Lightweight Aggregate (LWA) manufacturing plant comprising four kiln lines, two filter banks with stacks, storage silos for incoming ash, APCr, and binder material (clay and silt), a dedicated berthing point at the wharf, silt storage and drainage facility, clay storage and drainage facility, LWA workshop, interceptor tank, LWA control room, aggregate storage facility and plant for loading aggregate / offloading clay or silt;
- Electrical export infrastructure;
- Two carbon dioxide (CO₂) recovery plants and associated infrastructure, including chiller units; and
- Associated site infrastructure, including site roads, pedestrian routes, car parking, site workshop and storage, security gate, control room with visitor centre and site weighbridge.

23.1.5 The construction and operation of these facilities will produce a variety of wastes that fall within the control requirements of English waste legislation.

23.2 Waste Planning Policy Context

23.2.1 This section presents a summary of the key waste planning policy that is associated with the Facility.

National Planning Policy

National Policy Statement (NPS)

23.2.2 The policy framework for examining and determining applications for Nationally Significant Infrastructure Projects (NSIPs) is provided by National Policy Statements (NPSs). Section 104 of the Planning Act 2008 requires the Secretary of State to determine applications for NSIPs in accordance with any relevant NPS, unless:

- it would lead to the UK being in breach of its international obligations;
- it would be in breach of any statutory duty that applies to the Secretary of State;
- it would be unlawful;
- the adverse impacts of the development outweigh its benefits; or
- it would be contrary to any Regulations that may be made prescribing other relevant conditions.

23.2.3 In July 2011, the Secretary of State for the Department of Energy and Climate

Change ('DECC' who's functions were replaced by the Department for Business, Energy and Industrial Strategy (BEIS)) designated several NPSs relating to nationally significant energy infrastructure.

23.2.4 The assessment of waste has been made with specific reference to the relevant NPS. These are the principal decision-making documents for Nationally Significant Infrastructure Projects (NSIP). Those relevant to the Facility are:

- Overarching NPS for Energy (EN-1) (DECC 2011a);
- NPS for Renewable Energy Infrastructure (EN-3) (DECC 2011b).

23.2.5 The specific assessment requirements for waste, as detailed in the NPSs are summarised in **Table 23-1**, together with an indication of where each is addressed within the ES.

Table 23-1 Summary of NPS Requirements

NPS Requirement	NPS Reference	Chapter Section Where Consultation Comment is Addressed
<p>Sustainable waste management is implemented through the "waste hierarchy", which sets out the priorities that must be applied when managing waste.</p> <p>Disposal of waste should only be considered where other waste management options are not available or where it is the best overall environmental outcome.</p>	<p>EN-1, Paragraph 5.14.2, 5.14.3</p>	<p>Refer to Section 23.6, 23.7 of this chapter and Chapter 2 Project Need, Section 2.3 and 2.4</p>
<p>The applicant should set out the arrangements that are proposed for managing any waste produced and prepare a Site Waste Management Plan (SWMP). The arrangements described and Management Plan should include information on the proposed waste recovery and disposal system for all waste generated by the development, 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.</p>	<p>EN-1, Paragraph 5.14.6</p>	<p>Refer to Section 23.6 of this chapter.</p> <p>A SWMP will be prepared prior to construction.</p>
<p>Government policy encourages multi-modal transport and the IPC (now the Planning Inspectorate) should expect materials (fuel and residues) to be transported by water or rail routes where possible. (See Section 5.13 of EN-1 on transport impacts). Applicants should locate new biomass or waste combustion generating stations in</p>	<p>EN-3, Paragraph 2.5.25</p>	<p>Refer to Chapter 5 Project Description – all source RDF will be delivered to site by vessel. All aggregate produced at the site from the residues of the thermal treatment process will be</p>

NPS Requirement	NPS Reference	Chapter Section Where Consultation Comment is Addressed
the vicinity of existing transport routes wherever possible.		removed from site by vessel.
An assessment of the proposed waste combustion generating station should be undertaken that examines the conformity of the scheme with the waste hierarchy and the effect of the scheme on the relevant waste plan or plans where a proposal is likely to involve more than one local authority.	EN-3, Paragraph 2.5.66	Refer to Section 23.6, 23.7 of this chapter and Chapter 2 Project Need, Section 2.3 and 2.4
The application should set out the extent to which the generating station and capacity proposed contributes to the recovery targets set out in relevant strategies and plans, taking into account existing capacity	EN-3, Paragraph 2.5.66	<p>The Facility will receive waste from the UK, so is a national-scale Facility, therefore, targets at a National level are considered. Refer to Chapter 2 Project Need; Chapter 3 Policy and Legislation; Chapter 5 Project Description; and Sections 23.2, 23.4 and 23.6 and 23.7 of this chapter.</p> <p>The Facility will not take or divert waste out of any local household source-segregated recycling scheme and therefore will not affect local or regional targets for municipal waste.</p> <p>The Facility will increase the recovery of residues from the thermal process (which is not subject to any target in local or regional policy) and prevent residues from being landfill by turning them into aggregate, thus meeting the waste hierarchy – see Chapter 5 Project Description</p>
The results of the assessment of the conformity with the waste hierarchy and the effect on relevant waste plans should be presented in a separate document to accompany the application to the IPC (now the Planning Inspectorate)	EN-3, Paragraph 2.5.69	See Fuel Availability and Waste Hierarchy Statement (document reference 5.8)

A Green Future: Our 25 Year Plan to Improve the Environment (Defra, 2018)

23.2.6 The Government's environment plan sets out goals for improving the environment within a generation and leaving it in a better state. In terms of waste management, it seeks to minimise waste, reuse materials and manage materials

at the end of their life to minimise the impact on the environment, by:

- Working towards the ambition of zero avoidable waste by 2050.
- Working to a target of eliminating avoidable plastic waste by end of 2042.
- Meeting all existing waste targets – including those on landfill, reuse and recycling – and developing ambitious new future targets and milestones.
- Seeking to eliminate waste crime and illegal waste sites over the lifetime of this Plan, prioritising those of highest risk. Delivering a substantial reduction in litter and littering behaviour.
- Significantly reducing and where possible preventing all kinds of marine plastic pollution – in particular material that came originally from land.

Our Waste, Our Resources (Defra, 2018)

- 23.2.7 Defra launched its strategy for waste and resources – Our Waste, Our Resources: A Strategy for England in December 2018. The Strategy provides a focus on solutions that will reduce the country’s reliance on single-use plastics, provide clarity on household recycling, and provides measures to manage packaging and food waste. Its purpose is to provide policy direction in line with the Government’s 25 Year Environment Plan (see above).
- 23.2.8 The Strategy’s timeline of targets shows those on recycling household waste and disposal to landfill remain pegged to the EU’s Circular Economy Package of legislation (see below).
- 23.2.9 An aim of the Strategy is to focus on resource recovery and waste management. Part of this involves the promotion of UK-based recycling. Furthermore, the Strategy aims to implement the waste hierarchy for hazardous wastes.

EU Action Plan for the Circular Economy

- 23.2.10 The revised legislative framework on waste in the EU’s Circular Economy Package (CEP) entered into force at the start of July 2018 through Directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018, by amending Directive 2008/98/EC on waste.
- 23.2.11 Member states have 24 months to transpose it into national legislation. The implementation of CEP in the UK will be subject to the UK Withdrawal Agreement. The UK’s own Circular Economy Package was published on 30 July 2020 by the UK, Welsh, Scottish and Northern Ireland Governments and is

predominantly the same as the European CEP. The Government states (at the time of writing) that it is looking to lay legislation in the autumn (of 2020) to transpose the relevant CEP regulations into UK law.

- 23.2.12 The CEP extends targets for municipal waste recycling. A target of 55 % by 2025 will be introduced, with a 60 % goal for 2030, then a subsequent 65 % target being set for 2035. EU member states are currently working towards a 50 % target for 2020.
- 23.2.13 Additionally, the CEP proposes a binding landfill target to reduce landfill to maximum of 10 % of municipal waste by 2035.
- 23.2.14 The CEP will also provide concrete measures to promote re-use and stimulate industrial symbiosis where one industry's by-product is reused as another industry's raw material.

National Planning Policy Framework

- 23.2.15 The National Planning Policy Framework (NPPF), which was updated in February 2019 (Ministry of Housing, Communities & Local Government (MHCLG), 2019), does not contain specific waste policies. In terms of achieving sustainable development, the NPPF identifies that minimising waste and pollution is a fundamental part of the environmental role of the planning system.
- 23.2.16 The NPPF encourages Planning Authorities to prepare Local Plans that, 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 materials, whilst aiming to source minerals supplies indigenously. The Facility should therefore have regard to the requirements of the relevant Local Plan in terms of waste management. This is discussed further below in the context of the South-East Lincolnshire Local Plan.

National Planning Policy for Waste 2014

- 23.2.17 The Government has published the National Waste Planning Policy 2014 for England (MHCLG, 2014) as a replacement of Planning Policy Statement 10: Planning for Sustainable Waste Management (PPS 10) 2011 (DCLG, 2011). The updated policy maintains the core principles of the 'plan led' approach, with a continued focus of moving waste up the Waste Hierarchy.
- 23.2.18 It requires local planning authorities to "have regard to its policies when discharging their responsibilities to the extent that they are appropriate to waste

management”. Increasingly local authorities are working together in partnerships to deliver full and efficient waste services; a requirement of the duty to cooperate in section 110 of the Localism Act 2011. The document sets out detailed waste planning policies to facilitate a “more sustainable and efficient approach to resource use and management”, for example by ensuring the design and layout of new infrastructure complements sustainable waste management.

23.2.19 When determining planning applications for non-waste development, the Policy requires that 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.”*

23.2.20 The Facility is a waste-related development, however, the relevant principles described above will be relevant to the management of waste during the construction phase. The operation phase of the Facility would be authorised by an environmental permit that requires efficient management of waste.

National Waste Management Plan for England 2013

23.2.21 Defra published a National Waste Management Plan for England in July 2013 (Defra, 2013a). The key aim of the Waste Management Plan for England was to set a direction towards a zero-waste economy as part of the transition to a sustainable economy. In particular, this means using the “waste hierarchy” (waste prevention, re-use, recycling, recovery and finally disposal as a last option) as a guide to sustainable waste management.

23.2.22 The Waste Management Plan for England was a high-level document which is non–site specific. It evaluated how it would support implementation of the objectives and provisions of the revised Waste Framework Directive (rWFD)

(2008/98/EC; European Parliament, 2008).

- 23.2.23 The rWFD established the principle of ‘proximity’. This is within the context of the requirement on Member States to establish an integrated and adequate network of waste disposal facilities for recovery of mixed municipal waste collected from private households. The requirement included where such collection also covers waste from other producers.
- 23.2.24 The plan identified the measures to be taken to ensure that by 2020 at least 70 % by weight of construction and demolition waste is subjected to material recovery.
- 23.2.25 Note: The construction, demolition and excavation sector is the largest contributing sector to the total waste generation. The UK generated 222.9 million tonnes of total waste in 2016. 66.2 million tonnes of this was non-hazardous construction and demolition waste. The Government keeps progress towards the 2020 targets under review by monitoring actual recycling rates and by modelling future recycling. The recovery rate from non-hazardous construction and demolition waste in the UK in 2016 was 91.0 %. This already exceeds the 2020 target of recovering at least 70 % by weight, of non-hazardous construction and demolition waste (Defra & Government Statistical Service, 2020).

Waste Prevention Programme for England 2013

- 23.2.26 The Government developed Waste Prevention Programme for England in 2013 (Defra, 2013b) to set out the key roles and actions which should be taken to move towards a more resource efficient economy. As well as describing the actions the Government is taking to support this move, it also highlights actions businesses, the wider public sector, the civil society and consumers can take to benefit from preventing waste. Using resources more efficiently, designing and manufacturing products for optimum life and repairing and reusing more items could save money and provide opportunities for economic growth at the same time as improving the environment.
- 23.2.27 The waste prevention programme is a requirement of the rWFD. It sets out detailed actions to:
- Encourage businesses to contribute to a more sustainable economy by building waste reduction into design, offering alternative business models and delivering new and improved products and services;

- Encourage a culture of valuing resources by making it easier for people and businesses to find out how to reduce their waste, to use products for longer, repair broken items, and enable reuse of items by others;
- Help businesses recognise and act upon potential savings through better resource efficiency and preventing waste, to realise opportunities for growth; and
- Support action by central and local Government, businesses and civil society to capitalise on these opportunities.

23.2.28 To measure progress against the aim of the programme, the Government measures changes in overall waste arising, assesses the environmental impacts of this waste and considers how these factors relate to changes in the resource efficiency of the economy.

Local and Regional Planning Policy

South-East Lincolnshire Local Plan

23.2.29 The South-East Lincolnshire Local Plan (SELLP) was adopted in March 2019 (South East Lincolnshire Joint Strategic Planning Committee, 2019). It was produced jointly by Boston Borough Council (BBC), Lincolnshire County Council (LCC) and South Holland District Council (SHDC).

23.2.30 The SELLP guides development in South East Lincolnshire over the next twenty years and will identify opportunities for growth and will set out clear guidance on what planning applications will be permitted.

23.2.31 The Riverside Industrial Estate is identified as site BO006 in the SELLP. The allocations for the site are identified below in **Plate 23-1**.

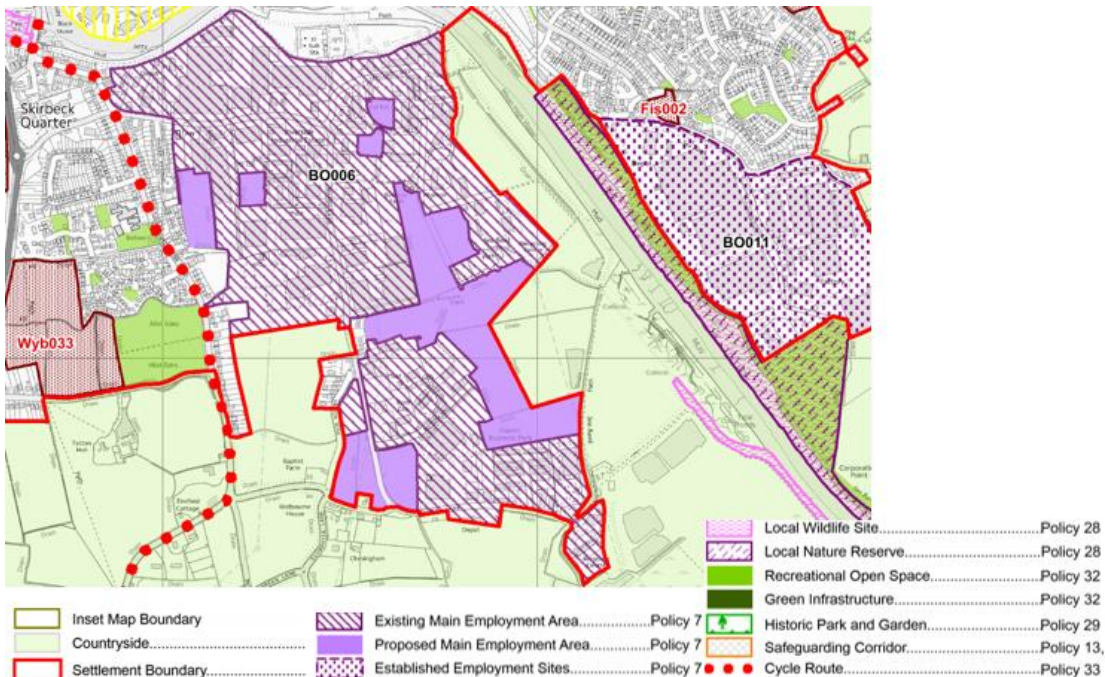


Plate 23-1 SELLP Allocation for Riverside Industrial Estate, BO006, (South East Lincolnshire Joint Strategic Planning Committee, 2019)

23.2.32 Part of the proposed Application Site is included within proposed or existing Employment Areas.

23.2.33 The SELLP deals with all land use and development issues affecting South East Lincolnshire, except for minerals and waste development – these are covered in the Lincolnshire Minerals and Waste Local Plan (see below).

23.2.34 However, the SELLP refers to principles that the Development Consent Order (DCO) application for the Facility can take into account. Policy 3: Design of New Development, seeks to ensure that development would not be wasteful in its use of energy or in its depletion of natural resources. Policy 3 provides guidance about waste minimisation, utilising renewable energy, and the sustainable use of existing materials on-site (e.g. reuse of excavated materials for landscaping or raising ground levels).

Lincolnshire Minerals and Waste Local Plan (2016)

23.2.35 The Lincolnshire Minerals and Waste Local Plan (LMWLP) (LCC, 2016) is made up of two documents – the Core Strategy and Development Management Policies (2016) and Site Locations (2017) documents.

23.2.36 The Core Strategy and Development Management Policies (CSDMP) document was adopted in June 2016 and replaced the Lincolnshire Minerals Local Plan (1991) and the Lincolnshire Waste Local Plan (2006) (with the exceptions of Policies WLP2, WLP6 and WLP12). The CSDMP document outlines the future of waste management in the Lincolnshire up to 2031, as well as a guide to future winning and working of materials. The criteria against which waste planning applications are considered are also set out in the CSDMP document.

23.2.37 The policies contained within the CSDMP document that are applicable to waste developments are explained in **Chapter 3 Policy and Legislation**. They include:

- **Policy W1: Future requirement for new waste facilities**, which states:

“The County Council will, through the Site Location document, identify locations for a range of new or extended waste management facilities within Lincolnshire where these are necessary to meet the predicted capacity gaps for waste arisings in the County up to and including 2031

[...]

subject to any new forecasts published in the Council’s Annual Monitoring Reports.”

- **Policy W3: Spatial Strategy for New Waste Facilities**, which states:

“Proposals for new waste facilities, including extensions to existing waste facilities, will be permitted in and around the following main urban areas as indicated on the key diagram subject to the criteria of Policy W4:

- *Lincoln;*
- ***Boston;***
- *Grantham;*
- *Spalding;*
- *Bourne;*
- *Gainsborough;*
- *Louth;*
- *Skegness;*
- *Sleaford; and*
- *Stamford.”*

- **Policy W4: Locational Criteria for New Waste Facilities in and around main urban areas**, which states:

“Proposals for new waste facilities, including extensions to existing waste facilities, in and around the main urban areas set out in Policy W3 will be permitted provided that they would be located on:

- *previously developed and/or contaminated land; or*
- *existing or planned industrial/employment land and buildings; or*
- *land already in waste management use; or*
- *sites allocated in the Site Locations Document; or*
- *in the case of biological treatment the land identified in Policy W5.*

[...]

Proposals must accord with all relevant Development Management Policies set out in the Plan.”

23.2.38 The Site Locations document was adopted in December 2017 and outlines specific proposals and policies for land provision for waste (and mineral) developments.

23.2.39 The policies contained within the Site Locations document that are applicable to waste for the Facility include:

- **Policy SL3: Waste Site and Area Allocations**, which states:

“Future requirements for new waste facilities in order to meet capacity gaps, in accordance with Policy W1 of the Core Strategy and Development Management Policies document, will be provided through:

[...]

- *the granting of planning permission for waste uses within the following areas where the applicant can demonstrate that the proposal is in accordance with the development plan:*

[...]

Site Reference	Name	Town	Area
WA22-BO	Riverside Industrial Estate	Boston	119 ha

[...]

The allocated site and areas shall be developed in accordance with the Development Briefs in Appendix 1 of this plan.”

23.2.40 The Site Locations Document identifies that the Application Site is located in WA22-BO Riverside Industrial Estate, Boston. The allocation designates land allocated for industrial use, including Resource Recovery Park, Treatment Facility, Waste Transfer, Materials Recycling Facility, Household Waste Recycling Centre, Metal Recycling / End of Life Vehicles, Re-Use Facility, C&D Recycling, Energy Recovery. Therefore, the criteria for Policies SL3, W1, W2 and W4 are met.

- **DM1 Presumption in favour of sustainable development**

“7.22 Waste management is significant in tackling greenhouse gas emissions because the treatment and disposal of waste generates carbon dioxide and methane. Methane emissions from biodegradable waste in landfill accounts for around 40% of all UK methane emissions. This equals about 3% of UK greenhouse gas emissions. Methane is more damaging than carbon dioxide as a greenhouse gas. Waste management therefore has an important role in mitigating the levels of greenhouse gases emitted into the atmosphere.

7.23 The Waste Hierarchy is a key policy objective in terms of mitigating impacts on climate change by focusing on reducing the amount of waste produced, and increasing the amount of waste that is reused, recycled, composted or has energy recovered. This is important in terms of diverting biodegradable waste from landfill and reducing associated methane emissions. In addition, in terms of maximising the potential for reuse, recycling and recovery of resources, it also helps to minimise the demand for new resources and the greenhouse gases generated in their production.

7.24 Maintaining high recycling rates is therefore a key part of the Council’s climate change strategy in order to divert as much biodegradable waste away from landfill as possible to lower methane emissions. The Council will also encourage proposals for new waste technologies/processes which bring about reduced levels of biodegradable waste being disposed of to landfill.

7.25 The objective of minimising impacts on climate change will be focused on carbon reduction/capture measures, efficient use of

resources and renewable energy (where practicable and viable), and on minimising traffic generation. It will be important that proposals demonstrate how these factors have been taken into account in their design.

7.26 The objective of reducing greenhouse gas emissions will be achieved by encouraging:

- waste treatment processes that reduce the amount of waste going to landfill (with all waste management facilities being required to provide evidence of how much waste will be diverted from landfill);*
- decentralised, low-carbon/renewable energy generation and carbon reduction measures at new mineral working sites and waste management developments (including landfill gas collection);*
- low carbon energy recovery facilities, such as combined heat and power (CHP), where possible, to be suitably sited in close proximity to suitable potential heat customers to enable the utilisation of the heat produced as an energy source;*
- increased energy efficiency measures in plant, buildings and operations; and*
- good practice in transport related matters to reduce vehicle miles.”*

Legislation

23.2.41 In terms of waste, UK legislation is underpinned by several international (e.g. European Union (EU)) agreements. Since 1 February 2020, the United Kingdom has withdrawn from the European Union and has become a “third country”, which means it is not part of the EU. The Withdrawal Agreement provides for a transition period ending on 31 December 2020. Until that date, EU law in its entirety applies to and in the United Kingdom.

23.2.42 Most EU waste management law was implemented into UK legislation by way of statutory instrument. This means that the relevant legislation will not be automatically or immediately affected by the UK’s exit from the EU as the legislation will remain in place in the UK.

23.2.43 The Government has decided that at the point at which the UK leaves the EU, all EU legislation which had not already been transposed into UK law will be

transferred to UK statute. From then on all the EU environmental legislation will remain in force as part of UK law but (unless the UK has made specific commitments to apply such law as part of negotiating a new arrangement with the EU), it can then be repealed or amended according to the policy drivers of the UK Parliament (or the devolved parliaments where they have power to do so).

Waste Framework Directive

23.2.44 The key European legislation is the revised Waste Framework Directive (2008/98/EC) ('rWFD') (2008/98/EC; European Parliament, 2008), which consolidates several separate waste Directives and amendments. It establishes the basis for the management of wastes across the European Union (EU). It defines certain terms, such as "waste", "recovery" and "disposal", to ensure that a uniform approach is taken across the EU.

23.2.45 UK legislation is underpinned by several international (e.g. EU agreements). Following the 2016 referendum on UK withdrawal from the EU, the UK will continue to be committed to EU agreements until finalisation of the Withdrawal Agreement and / or until two years after initiation of Article 50 of the Treaty on European Union (TEU). Following withdrawal, the exact nature of amendments to UK legislation which had an origin in EU law will depend on the agreements made with the EU and the extent to which EU measures continue to apply (e.g. achieve trading agreements) as well as the ongoing political agendas of the UK Government.

Duty of Care

23.2.46 The waste duty of care is a legal requirement, originally implemented by Section 34 of the Environmental Protection Act 1990, to ensure that producers and holders handle their waste safely and in compliance with the appropriate regulations. One of the fundamental aspects of duty of care requires the holder of waste to make sure that anyone else dealing with their waste has the necessary authorisation to do so. If the holder does not do this and their waste is subsequently found to have been illegally disposed, the holder could be held responsible and may face prosecution.

23.2.47 The provisions for the waste duty of care are provided in the Waste (England & Wales) Regulations 2011 SI 2011 (No. 988).

The Waste (England and Wales) Regulations 2011

23.2.48 The 2011 Waste Regulations transposes the rWFD in England and Wales. In

addition, it reduced the fragmentation of waste legislation to some extent and so it streamlines and replaces some waste regulation, in particular the subordinate legislation relating to the registration of waste carriers and brokers and to the “duty of care”.

23.2.49 Key provisions in the rWFD were implemented by the Waste Regulations:

- Waste hierarchy: legal requirement the waste hierarchy for waste prevention and management in legislation and policy (see below).
- Separate collections (private companies): From 1 January 2015: (1) businesses which collect waste paper, metal, plastic or glass need to collect such waste separately; and (2) businesses which collect, transport or receive separately collected waste paper, metal, plastic or glass should ensure that such waste is not mixed with other waste.

23.2.50 Waste carrier and broker registration: Registration is required for all those that “normally and regularly transport waste, whether the waste is produced by them or others”. The Regulations introduced a new two-tier system for registration.

The Waste Hierarchy

23.2.51 The Waste Hierarchy is set out at Article 4 of the rWFD and has been implemented by The Waste (England and Wales) Regulations 2011.

23.2.52 The Waste Hierarchy requires the producer/holder of a waste to demonstrate that the priorities identified in **Table 23-2** have been considered in the priority order, to determine the most suitable waste management option for all wastes prior to removal from site.

Table 23-2 The Waste Hierarchy*

Waste Hierarchy	Relevant activity
Prevention	Using less material in design and manufacture, keeping products for longer, re-use, using less hazardous materials.
Preparing for re-use	Checking, cleaning, repairing, refurbishing, whole items or spare parts.
Recycling	Turning waste into a new substance or product, includes composting if it meets quality protocols
Other recovery	Includes anaerobic digestion, incineration with energy recovery, gasification and pyrolysis which produce energy (fuels, heat and power) and materials from waste, some backfilling.
Disposal	Landfill and incineration without energy recovery.

*Table reproduced from Defra website: <https://www.gov.uk/waste-legislation-and-regulations>

23.2.53 It is a legal requirement for waste producers/holders to follow the Waste Hierarchy when making decisions about waste management options. Waste holders must demonstrate the highest possible hierarchical option for their wastes. Lower hierarchical options cannot be justified by cost alone. They require environmental justification over available higher options, for example the location of a site may justify sending waste to a lower hierarchical option (e.g. local landfill), rather than sending it hundreds of miles to the nearest facility that could provide a higher option.

Hazardous Waste

23.2.54 Waste is generally considered hazardous if it (or the material or substances it contains) are harmful to humans or the environment. All producers and holders of hazardous waste are obliged to ensure that the hazardous waste does not cause harm or damage. All producers and holders of waste are obliged to know whether their waste is classified as hazardous or non-hazardous.

23.2.55 The Hazardous Waste Regulations (HWR) (Hazardous Waste (England and Wales) Regulations 2005 SI 894 as amended) provide the rules for assessing if a waste is hazardous or not. The HWR refer to the List of Wastes (which is often referred to as the European Waste Catalogue (EWC)) for the relevant thresholds for some of the hazardous properties; and to assign the formal description and code for the waste.

23.2.56 The HWR identify the administrative provisions for handling hazardous waste. The regulations also make it illegal to mix a hazardous waste with non-hazardous waste; or another type of hazardous waste; or material that is not waste.

23.2.57 Detailed technical guidance on the hazardous waste assessment process is provided by 'Waste Classification and Assessment (Technical Guidance WM3)' issued in July 2015 and updated in May 2018 (EA, 2018a).

23.2.58 This document is jointly approved by all the UK environmental regulators. It provides thresholds and criteria for assessing each of the 15 hazardous properties and Persistent Organic Pollutants (POPs).

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

23.2.59 The Environmental Permitting (England and Wales) Regulations 2016 ("the Environmental Permitting Regulations") consolidate earlier amendments to the Environmental Permitting (England and Wales) Regulations 2010 (S.I. 2010/675). They set out an environmental permitting and compliance regime

that applies to various activities and industries, including the management of waste.

- 23.2.60 The environmental permitting regime is a common framework for applying for, receiving, varying, transferring and surrendering permits, along with compliance, enforcement and appeals arrangements. It rationalises the previous permitting and compliance regimes into a common framework that is easier to understand and simpler to use.
- 23.2.61 The framework introduces different levels of control, based on risk: exclusions (very low risk activities which may be undertaken without any permit), exemptions (lower risk activities which may be undertaken after registering, which is free), standard rules permits (standard requirements and conditions for the relevant activities are set out so that applicants can determine in advance whether the permit is applicable to their proposals) and bespoke permits (permits written specifically for activities which are unique or of higher risk).

Waste Standards and Guidance

- 23.2.62 The waste assessment has also been guided and informed by additional standards and guidance documents, including:
- Institute of Environmental Management & Assessment (IEMA) guide to: Materials and Waste in Environmental Impact Assessment (IEMA, 2020);
 - The Definition of Waste: Development Industry Code of Practice (The CoP) (Version 2) (CL:AIRE, 2011);
 - Defra's Guidance on applying the waste hierarchy (Defra, 2011);
 - Technical Guidance WM3: Waste Classification – Guidance on the classification and assessment of waste (Joint Agencies, 2018);
 - EA Guidance on Waste recovery plans and permits (EA, 2016);
 - EA Waste & Resources Action Programme (WRAP) Aggregates Quality Protocol (EA, 2015); and
 - EA Land Contamination Risk Management guidance (EA, 2020a) (this is an update to the former Environment Agency Model Procedures for the Management of Land Contamination, Contaminated Land Report 11 (CLR11)).

23.3 Consultation

- 23.3.1 Consultation undertaken throughout the pre-application phase informed the

approach and the information provided in this chapter. A summary of the consultation of particular relevance to Waste is detailed in **Table 23-3**.

Table 23-3 Consultation and Responses

Consultee and Date	Response	Chapter Section Where Consultation Comment is Addressed
The Planning Inspectorate Scoping Opinion, July 2018	The EIA Regulations require an estimate, by type and quantity, of expected residues and emissions. Specific reference should be made to ... quantities and types of waste produced during the construction and operation phases, where relevant. This information should be provided in a clear and consistent fashion and may be integrated into the relevant aspect assessments.	Sections 23.6 and 23.7
	Baseline Any assumptions made in predicting the quantity and type of waste arising generated from the Proposed Development should be stated within the ES.	Sections 23.5, 23.6 and 23.7
	Baseline-future capacity The ES should ensure that the future baseline takes into account the availability/ capacity of the waste infrastructure, including from the first year of construction when waste arisings are likely to be at their greatest level. This assessment should include the availability of hazardous waste facilities, if applicable.	Sections 23.5, 23.6 and 23.7
	Mitigation A full description of any measures used to minimise or mitigate waste should be included within the ES.	Sections 23.6 and 23.7
	Potential effects – transportation of waste The Scoping Report does not state how waste will be transported off-site or provide details of the proposed transportation route. The ES should include the transportation route of waste from the Proposed Development to the appropriate waste infrastructure facility and state whether waste will be transported via the road network or by other means e.g. boat from the proposed wharf. Cross reference should be made to the relevant sections of the Transport chapter. The ES should also include an assessment of the anticipated effects resulting from transporting waste from the Proposed Development to existing waste infrastructure facilities. In undertaking the assessment the ES should state if any assumptions have been made, for example the maximum distance waste is likely to be transported.	For transport related assessments, refer to Chapter 19 Traffic and Transport
	The Scoping Report does not refer to contaminated/ hazardous waste. This matter will be relevant to both the construction and operation of the Proposed Development and should be assessed in the ES. The ES and Site Waste	Section 23.6 SWMP will be prepared prior to

Consultee and Date	Response	Chapter Section Where Consultation Comment is Addressed
	Management Plan (SWMP) should include the appropriate protocols for handling, transporting, disposing of contaminated/ hazardous waste with reference to applicable guidance.	construction and included as part of the Code of Construction Practice in accordance with the requirement in the DCO.
Environment Agency meeting, April 2018	<p>A general introduction about the Facility (and what was known at the time) was presented.</p> <p>The Environment Agency raised questions about the permitting of the Facility and who would be the Operator. They questioned the validity of mixing air pollution control residues with gasification ash in the lightweight aggregate plant. This could be seen as dilution.</p> <p>The wanted to know where the waste was coming from. They requested an air quality model for the stack to be included in the application.</p>	<p>The environmental permit application process would follow the DCO application and the application for the permit would clarify whether this would be a single-operator site or multi-operator site. See also Section 23.7.</p> <p>The process for the LWA plant was changed so that air pollution control residues and ash would be processed separately.</p> <p>For source of waste, see Chapter 2 Project Need and Chapter 5 Project Description.</p> <p>For air quality issues, see Chapter 14 Air Quality.</p>
Section 42 Consultation Response – Health and Safety Executive (HSE), 31 st July 2019	<p><u>Hazardous Substance Consent</u></p> <p>The presence of hazardous substances on, over or under land at or above set threshold quantities (Controlled Quantities) will probably require Hazardous Substances Consent (HSC) under Planning (Hazardous Substances) Act A1990 as amended. The substances, alone or when aggregated with others for which HSC is required, the associated Controlled Quantities are set out in The Planning (Hazardous Substances) Regulations 2015.</p>	Noted. The Applicant will continue to engage with HSE alongside the environmental permit application to determine whether Hazardous Substances Consent is required for any materials used at the

Consultee and Date	Response	Chapter Section Where Consultation Comment is Addressed
		Facility.
	Hazardous Substances Consent would be required to store or use any of the Named Hazardous Substances or Categories of Substances at or above the controlled quantities set out in schedule 1 of these Regulations.	Noted.
	Further information on HSC should be sought from the relevant Hazardous Substances Authority.	Noted. The Applicant will continue to engage with the relevant Hazardous Substances Authority.
Section 42 Consultation Response – BBC, 6 th August 2019	What will happen to the type of waste that cannot be recycled, such as batteries. What consideration has been given to pollution of the river.	<p>The RDF that will be sent to the Facility will have been through pre-sorting procedures, so waste batteries should be removed. The Facility is not accepting recyclable waste, only residual waste that has had all recyclate removed either at source or in materials recycling facilities.</p> <p>In terms of managing pollution of the river, procedures will be implemented to re-bale any damaged bales using the on-site baling facility.</p> <p>See Chapter 5 Project Description</p> <p>The site will have a sealed drainage system to prevent any leachate from bales draining into the river. See Chapter 13 Surface Water, Flood Risk and Drainage Strategy.</p>

Consultee and Date	Response	Chapter Section Where Consultation Comment is Addressed
	We would like to see the materials that are removed from the feedstock during the process as unsuitable for gasification and recycled; are recorded and contribute to the county and national recycling targets.	Ferrous material unsuitable for thermal treatment or removed from the bottom ash will be locally recycled as discussed in Section 23.7 . There will be records held as part of the environmental permit that will identify the quantity of this material that is removed from site. These would be made available for the local authority if required.
Section 42 Consultation Response Environment Agency, August 2019	42 – 6 th We support the approach to prepare a Site Waste Management Plan (SWMP), suggested in Section 23.6. SWMPs are no longer a legal requirement, however, in terms of meeting the objectives of the waste hierarchy and your duty of care, they are a useful tool and considered to be best practice.	Noted.
	If materials that are potentially waste are to be used on-site, the applicant will need to ensure they can comply with the exclusion from the Waste Framework Directive (article 2(1) (c)) for the use of, 'uncontaminated soil and other naturally occurring material excavated in the course of construction activities, etc...' in order for the material not to be considered as waste. Meeting these criteria will mean waste permitting requirements do not apply. Where the applicant cannot meet the criteria, they will be required to obtain the appropriate waste permit or exemption from us.	Noted.
	A deposit of waste to land will either be a disposal or a recovery activity. The legal test for recovery is set out in Article 3(15) of the Waste Framework Directive as: <ul style="list-style-type: none"> any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy. We have produced guidance on the recovery test which can be viewed at https://www.gov.uk/guidance/waste-recovery-plans-and-permits#waste-recovery-activities. 	Noted.

Consultee and Date	Response	Chapter Section Where Consultation Comment is Addressed
	<p>You can find more information on the Waste Framework Directive here: https://www.gov.uk/government/publications/environmental-permitting-guidance-the-waste-framework-directive</p> <p>More information on the definition of waste can be found here: https://www.gov.uk/government/publications/legal-definition-of-waste-guidance</p> <p>More information on the use of waste in exempt activities can be found here: https://www.gov.uk/government/collections/waste-exemptions-using-waste</p>	
	<p>Non-waste activities are not regulated by us (i.e. activities carried out under the CL:ARE Code of Practice), however you will need to decide if materials meet End of Waste or By-products criteria (as defined by the Waste Framework Directive). The 'Is it waste' tool, allows you to make an assessment and can be found here: https://www.gov.uk/government/publications/isitwaste-tool-for-advice-on-the-by-products-and-end-of-waste-tests</p>	Noted.

23.4 Assessment Methodology

Methodology Approach

- 23.4.1 IEMA guide to: Materials and Waste in Environmental Impact Assessment (IEMA, 2020) provides guidance for assessing the impacts for waste. This assessment is also based on professional judgement, relevant policy, legislation, relevant technical guidance associated waste management and the requirements of the Waste Hierarchy.
- 23.4.2 The chapter considers the likely quantity and composition of waste materials predicted to be generated during the construction, operation and decommissioning phases. On-site re-use and recovery of the waste in the development are explored, along with the capability for existing local and regional waste management infrastructure to manage the arisings according to the principles of the Waste Hierarchy.
- 23.4.3 Other topic chapters have covered the impacts of waste generated on-site according to relevant receptors for each topic. For example, **Chapter 11 Contaminated Land, Land Use and Hydrogeology** has considered the impact of waste stockpiles during construction; and operational waste arisings on human and environmental receptors. These inter-relationships are identified in

Section 23.11.

Impact Significance

23.4.4 The impact significance guidance is based on the IEMA guide to: Materials and Waste in Environmental Impact Assessment (IEMA, 2020). The guidance suggests assessing both material availability and waste landfill capacity as receptors.

Sensitivity

Materials

23.4.5 The sensitivity of materials relates to the availability and type of resources to be consumed by a development. The sensitivity of materials is determined by identifying where one or more of the criteria from the thresholds in **Table 23-4** are met.

Table 23-4 Sensitivity of Materials

Sensitivity	Definition
Very High	On balance, the key materials required for the construction and/or operation of a development 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.
High	On balance, the key materials required for the construction and/or operation of a development 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.
Medium	On balance, the key materials required for the construction and/or operation of a development 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.
Low	On balance, the key materials required for the construction and/or operation of a development 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.
Negligible	On balance, the key materials required for the construction and/or operation of a development 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.*

* 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.

Waste

23.4.6 The sensitivity of waste relates to the availability of regional landfill void capacity. The sensitivity of landfill void capacity is assessed by assessing:

- The volume of waste for disposal that is expected to be generated within a defined study area (regionally or nationally), calculated by analysing available data and by providing justified forecasts over the construction and/or operational phase of a development; and then
- Comparing the volume of forecast waste for disposal within the study area with the remaining landfill void capacity.

23.4.7 Sensitivity of void capacity is determined as shown in **Table 23-5**

Table 23-5 Sensitivity of landfill void capacity

Sensitivity	Definition
Very High	Across construction and/or operation phases, the baseline/future baseline (i.e. without development) of regional inert and non-hazardous landfill void capacity is expected to reduce very considerably (by >10 %); end during construction or operation; is already known to be unavailable; or, would require new capacity or infrastructure to be put in place to meet forecast demand.
High	Across construction and/or operation phases, the baseline/future baseline (i.e. without development) of regional inert and non-hazardous landfill void capacity is expected to reduce considerably: by 6-10 % as a result of wastes forecast.
Medium	Across construction and/or operation phases, the baseline/future baseline (i.e. without development) of regional inert and non-hazardous landfill void capacity is expected to reduce noticeably: by 1-5 % as a result of wastes forecast.
Low	Across construction and/or operation phases, the baseline/future baseline (i.e. without development) of regional inert and non-hazardous landfill void capacity is expected to reduce minimally: by <1 % as a result of wastes forecast.
Negligible	Across construction and/or operation phases, the baseline/future baseline (i.e. without development) of regional inert and non-hazardous landfill void capacity is expected to remain unchanged or is expected to increase through a committed change in capacity.

Magnitude

Materials

23.4.8 The methodology for assessing magnitude of impact for materials comprises a

percentage-based approach that determines the influence of materials consumption on the baseline market capacity (production, stocks or sales), in construction and/or operation, in combination with the potential to sterilise (substantially) one or more allocated mineral site. Magnitude of effect for materials is determined as shown in **Table 23-6**.

Table 23-6 Magnitude of effect criteria for materials

Magnitude	Definition
Major	The consumption of one or more materials is >10 % by volume of the regional* baseline availability; and/or More than one allocated mineral site is substantially** sterilised by the development rendering it inaccessible for future use.
Moderate	The consumption of one or more materials is between 6-10 % by volume of the regional* baseline availability; and/or One allocated mineral site is substantially** sterilised by the development rendering it inaccessible for future use.
Minor	The consumption of one or more materials is between 1-5 % by volume of the regional* baseline availability; and/or The development has the potential to adversely and substantially** impact access to one or more allocated mineral site (in their entirety), placing their future use at risk.
Negligible	The consumption of no individual material type is equal to or greater than 1 % by volume of the regional* baseline availability.
No change	The consumption of no materials is required.

* or where justified, national.

** justified using professional judgement, based on the scale and nature of the allocated mineral site being assessed.

Waste

23.4.9 In order to assess the magnitude of impact from the generation and disposal of waste from the Facility, the W1 – Void Capacity method (IEMA, 2020) will be used as this is recommended for statutory EIAs and is appropriate for larger and more complex developments. This method determines the magnitude of impact from waste by the percentage of the remaining landfill void capacity that will be depleted by waste produced during the construction and operation phases of the development. Magnitude of effect for inert and non-hazardous waste is determined as shown in **Table 23-7** and for hazardous waste as shown in **Table 23-8**.

Table 23-7 Magnitude of effect criteria for inert and non-hazardous waste

Magnitude	Definition
Major	Waste generated by the development will reduce regional* landfill void capacity baseline** by >10 %.
Moderate	Waste generated by the development will reduce regional* landfill void capacity Baseline** by 6-10 %.
Minor	Waste generated by the development will reduce regional* landfill void capacity baseline** by 1-5 %.
Negligible	Waste generated by the development will reduce regional* landfill void capacity baseline** by <1 %.
No change	Zero waste generation and disposal from the development.

* or where justified, national.

** forecast as the worst-case scenario, during a defined construction and/or operational phase.

Table 23-8 Magnitude of effect criteria for hazardous waste

Magnitude	Definition
Major	Waste generated by the development will reduce national landfill void capacity baseline** by >1 %.
Moderate	Waste generated by the development will reduce national landfill void capacity baseline** by <0.5-1 %.
Minor	Waste generated by the development will reduce national landfill void capacity baseline** by <0.1-0.5 %.
Negligible	Waste generated by the development will reduce national landfill void capacity baseline** by <0.1 %
No change	Zero waste generation and disposal from the development.

** forecast as the worst-case scenario, during a defined construction and/or operational phase.

Evaluation of Significance

23.4.10 The impact significance assessment combined receptor sensitivity (**Table 23-4** and **Table 23-5**) with effect magnitude (**Table 23-6**, **Table 23-7** and **Table 23-8**) Assessment of impact significance is qualitative and reliant on professional experience, interpretation and judgement. The matrix should therefore be viewed as a framework to aid understanding of how a judgement has been reached, rather than as a prescriptive, formulaic tool.

23.4.11 Effects that result in major, moderate or moderate/ major impacts are considered to be 'significant' in EIA terms. The impact significance matrix used in this assessment is shown in **Chapter 6 Approach to EIA**.

Assumptions and Limitations

- 23.4.12 The Application Site is split into two components, the Principal Application Site (which includes the operational infrastructure) and the Habitat Mitigation Area. The Principal Application Site has a construction footprint of approximately 25.3 hectares (ha) and an operational footprint of 15.7 ha. The Habitat Mitigation Area has an area of 1.47 ha.
- 23.4.13 It is estimated that the construction phase would last for 48 months.
- 23.4.14 There are no buildings or structures on-site which will need to be demolished.
- 23.4.15 The amount of excavated material that is anticipated to be required, along with the proposed cut and fill balance for the Principal Application Site has yet to be confirmed. However, it is assumed that excavated material would be reused on-site for regrading, construction and landscaping purposes subject to it being suitable for use.
- 23.4.16 For the Habitat Mitigation Area it is assumed that any material excavated will be retained within this area.
- 23.4.17 The quantity of biodegradable waste from vegetation clearance is currently unknown has yet to be confirmed.
- 23.4.18 Given these uncertainties the Building Research Establishment (BRE) SMART Waste Data Report (2013) was used to estimate volumes of waste arisings from the construction.

Cumulative Impact Assessment

- 23.4.19 Cumulative impacts will be assessed in accordance with the methodology set out in **Chapter 6 Approach to EIA**. For this chapter, these impacts are discussed in **Section 23.10**.

Transboundary Impact Assessment

- 23.4.20 The RDF that will be sent to the Facility will be derived from UK sources. None of the wastes that are created by the Facility in construction or Operation will be exported overseas for disposal or recovery. Therefore, there will be no Transboundary Impacts. As such, Transboundary Impacts are not covered further in this ES.

Study Area

- 23.4.21 The study area related to waste management is dictated by the availability of

relevant waste management infrastructure according to the types of wastes generated. It has the potential to be at a national scale, depending upon the availability of facilities to treat specific types of waste according to the Waste Hierarchy; or for relevant disposal options. There are very few hazardous waste landfills across England, therefore a national scale is considered in these circumstances to be consistent with assessment principles of other major developments in areas that do not have regional hazardous waste landfill capacity.

- 23.4.22 As such, it is not possible to provide a visual representation of the study area for waste assessment. However, data is provided at a local scale (i.e. within 10 km of the Application Site) and at a regional scale (i.e. within the 'East Midlands' area – which is appropriate according to regional groupings of data held by the Environment Agency).

Data Sources

- 23.4.23 The relevant data sources used are identified throughout this document where they are referred to or used.

23.5 Baseline

Existing Conditions at the Application Site

Application Site Location

- 23.5.1 The Application Site is located in Boston, Lincolnshire, within the administrative area of Boston Borough Council (who are the Waste Collection Authority) and Lincolnshire County Council (who are the Waste Disposal Authority). It is located approximately two km south of the town of Boston, to the east of the Riverside Industrial Estate.

Application Site Details

- 23.5.2 The Application Site is accessed from the north via the Riverside Industrial Estate existing road network from Nursery Road; and from the south-west via the industrial estate's road network from Marsh Lane via Bittern Way.
- 23.5.3 The land use on Principal Application Site is predominantly open ground of semi-improved grassland, as the Principal Application Site comprises former agricultural fields bounded by drainage ditches and forms part of a wider emerging industrial / commercial area, as defined by local planning documents. The Habitat Mitigation Area comprises coastal saltmarsh.

- 23.5.4 Large and small industrial business units are located to the north, west and south of the Application Site as well as car parks and storage units.
- 23.5.5 An overhead powerline on pylons traverses the site from north to south and bisects the Principal Application Site.
- 23.5.6 There are no buildings or structures on-site which will need to be demolished.
- 23.5.7 A water main transects the Principal Application Site from the south-west corner to the north-east corner. It is proposed that this water main is diverted to avoid the main footprint of the Facility. This diversion is subject to a separate application and at the time of writing, the application for this diversion had been submitted to Anglian Water. The route for the proposed diversion will be confirmed in accordance with the requirements of Anglian Water.
- 23.5.8 The Preliminary Risk Assessment (PRA) reported in **Chapter 11 Contaminated Land, Land Use and Hydrogeology** was undertaken to identify whether there are potentially unacceptable risks to human health, or the environment posed by the site. Refer to **Chapter 11 Contaminated Land, Land Use and Hydrogeology** for the findings of the PRA.

Waste Management Facilities in the Local Area

- 23.5.9 Local waste management facilities were identified from the Environment Agency Public Register (EA, 2020b). The search radius was limited to 10 km of the Application Site (based on postcode PE21 7RQ).
- 23.5.10 The list of facilities on the Public Register includes all waste management facilities that hold an existing permit within ten km radius. This would include facilities that are not likely to receive waste from the Facility, e.g. Household Waste Recycling Centres (HWRC), etc.
- 23.5.11 The waste management facilities that potentially could receive waste from the Facility are shown in **Table 23-9**. Waste management facilities on the Public Register that are not likely to receive waste from the construction phase or the completed development were not included in the Table.
- 23.5.12 In addition to the facilities presented below, the Environment Agency Public Register identifies that there are >150 registered exemptions for the management of waste recorded within ten km.

Table 23-9 List of Waste Management Facilities within 10 km from the Facility

Name	Permit No.	Address	Distance from site (km)	Facility type
Biomass UK No.3 Limited	UP3131DF	Boston Energy Production Facility, Riverside Industrial Estate, Marsh Lane, Boston, PE21 7TN	0.36	Biomass gasification
Mick George Limited ¹	DB3708GV/T001	Nursery Road Transfer Station, Nursery Road, Marsh Lane Ind Estate, Boston, Lincolnshire, PE21 7TN	0.47	Non-hazardous & Hazardous Household, Commercial and Industrial Waste Transfer Station with Treatment
T Shooter Ltd	GP3198NL/V002	Land / Premises At, Slippery Gowt Lane, Wyberton, Boston, Lincolnshire, PE21 7AA	0.57	Metal Recycling Facility
Silver Skips Lincolnshire Ltd	CP3797EP/V002	The Warehouse, Nursery Road, Riverside Ind Est, Boston, Lincolnshire, PE21 7TN	0.63	S0805 – HCl Waste TS + asbestos
Peterborough Metal Recycling Ltd	KP3495EJ/A001	Port of Boston, The Docks, Boston, Lincolnshire, PE21 6BN	1.52	A20 – Metal Recycling Site (mixed MRS's)
Mid U K Recycling Limited	CB3900KG	Port of Boston, Boston, Lincolnshire, PE21 6BN	1.52	A20 – Metal Recycling Site (mixed MRS's)
Peterborough Metal Recycling Ltd	FP3398NX/V003	Broadfield Lane Industrial Estate, Broadfield Lane, Boston, Lincolnshire, PE21 8DR	2.12	A20 – Metal Recycling Site (mixed MRS's)
E. F. W. Limited	TP3097EL/A001	Holme Farm, Boston Road, Swineshead, Boston, Lincolnshire, PE20 3NL	7.82	SR/04 – Mobile Plant for land spreading

23.5.13 The list identifies that there is a limited availability on a local scale for wastes

¹ Note: this operator is in the process of vacating the site

that are likely to be produced during both construction and operation (although as demonstrated below, the local facilities are likely to be appropriate for most operational arisings). Therefore, a wider scale (regional) requires assessment.

Regional Waste Management Facilities

- 23.5.14 The potential regional waste management capacity was assessed. The Environment Agency publishes waste capacity data on the gov.uk website². The 2018 data set was assessed to identify the remaining capacity according to waste management options in the East Midlands (Lincolnshire is covered by East Midlands data). This provides an indication of whether the predicted waste types from the Facility can be managed within the Region in accordance with the 'Proximity Principle' (i.e. managing wastes as close to the source of production as possible).
- 23.5.15 The rWFD (Article 16) establishes the Principle of Proximity for managing waste as close to the source of production. The Proximity Principle recognises that transporting waste has environmental, social and economic costs so, as a rule, waste should be dealt with as near to the place of production as possible.
- 23.5.16 The data in **Table 23-10** to **Table 23-15** inclusive provides an indication of the widespread availability of a range of types of waste management facilities within the East Midlands (EA, 2018b).
- 23.5.17 Note: the facilities identified in **Table 23-9** would also be included within the summarised data below. There are too many regional sites to list individually.

² <https://data.gov.uk/dataset/312ace0a-ff0a-4f6f-a7ea-f757164cc488/waste-data-interrogator-2018>

Table 23-10 Number of Waste Management Facilities in East Midlands (2018)

England: Permitted waste facilities in 2018

Site type		Former Planning Region									ENGLAND
		North East	North West	Yorkshire & the Humber	East Midlands	West Midlands	East of England	London	South East	South West	
Landfill	Number of sites with an environmental permit at end 2018	26	48	68	64	52	64	45	101	58	526
	Number of sites that accepted waste in 2018	21	32	37	39	30	53	5	57	33	307
Land Disposal	Number of sites with an environmental permit at end 2018	14	48	46	38	33	60	12	82	94	427
	Number of sites that accepted waste in 2018	6	28	27	17	10	29	5	43	61	226
Incineration	Number of sites with an environmental permit at end 2018	11	15	19	19	22	14	12	25	17	154
	Number of sites that accepted waste in 2018	7	9	16	9	14	7	7	18	9	96
Transfer	Number of sites with an environmental permit at end 2018	170	408	391	256	332	356	201	392	342	2,848
	Number of sites that accepted waste in 2018	135	311	284	213	266	287	163	335	280	2,274
Treatment	Number of sites with an environmental permit at end 2018	152	426	375	292	349	388	157	402	355	2,896
	Number of sites that accepted waste in 2018	111	308	287	236	245	292	106	318	265	2,168
Metal Recovery	Number of sites with an environmental permit at end 2018	147	370	405	205	365	281	83	192	260	2,308
	Number of sites that accepted waste in 2018	70	182	195	117	197	164	53	113	151	1,242
Use of Waste	Number of sites with an environmental permit at end 2018	1	1	1	-	4	3	-	1	16	27
	Number of sites that accepted waste in 2018	1	-	-	-	4	-	-	1	5	11
Total	Number of sites with an environmental permit at end 2018	521	1,316	1,305	874	1,157	1,166	510	1,195	1,142	9,186
	Number of sites that accepted waste in 2018	351	870	846	631	766	832	339	885	804	6,324

Table 23-11 Remaining Landfill Capacity East Midlands (2018)

East Midlands: Landfill capacity 2018

All figures are provided in 000s cubic metres

Landfill Type	Sub-Region					EAST MIDLANDS
	Derbyshire	Leicestershire	Lincolnshire	Northamptonshire	Nottinghamshire	
Hazardous Merchant	-	-	-	1,050	-	1,050
Hazardous Restricted	-	-	-	-	-	-
Non Hazardous with SNRHW cell*	184	10,314	-	1,570	-	12,069
Non Hazardous	2,574	81	9,502	200	97	12,454
Non Hazardous Restricted	-	-	114	-	3,446	3,560
Inert	851	2,053	14,126	1,277	3,193	21,499
Total	3,609	12,448	23,741	4,097	6,737	50,632

*Some non-hazardous sites can accept some Stable Non-Reactive Hazardous Wastes (SNRHW) into a dedicated cell, but this is usually a small part of the overall capacity

Table 23-12 Transfer, Treatment and Metal Recycling Volumes in East Midlands (2018)

East Midlands: Transfer, treatment and metal recycling site inputs 2018

All figures are provided in 000s tonnes

Site Type	Sub-Region					EAST MIDLANDS
	Derbyshire	Leicestershire	Lincolnshire	Northamptonshire	Nottinghamshire	
Hazardous waste	168	69	34	105	145	521
HIC	490	723	749	465	281	2,708
Clinical	9	1	-	1	1	11
Civic amenity site	81	87	97	65	93	423
Non Biodegradable	-	5	76	-	74	156
Transfer Total	748	884	956	636	594	3,819
Material recovery	139	221	64	119	135	679
Physical	732	606	329	519	1,296	3,483
Physico-chemical	112	86	148	350	103	799
Chemical	50	-	-	-	-	50
Composting	95	58	103	287	106	649
Biological	75	578	332	278	297	1,560
Treatment Total	1,202	1,550	978	1,552	1,938	7,219
Vehicle depollution	13	10	6	18	30	78
Metal recycling site	308	20	266	47	351	992
Metal Recycling Sector Total	321	31	272	65	381	1,070

Table 23-13 Incineration Capacity in East Midlands (2018)

East Midlands: Incineration capacity 2018

All figures provided in 000s tonnes

Incineration Type	Sub-Region					East Midlands
	Derbyshire	Leicestershire	Lincolnshire	Northamptonshire	Nottinghamshire	
Animal By-Product	-	-	-	-	-	-
Animal Carcasses	-	-	-	-	-	-
Clinical	-	-	-	-	-	-
Co-Incineration of Hazardous Waste	40	-	461	-	-	501
Co-Incineration of Non Hazardous Waste	188	-	-	-	70	258
Hazardous	-	-	-	-	-	-
Municipal and/or Industrial & Commercial	-	-	170	157	260	587
Sewage Sludge	-	-	-	-	-	-
Biomass/Waste Wood	-	-	-	-	-	-
Total	228	-	631	157	330	1,345

*This database is for operational incineration facilities that accepted waste from off-site sources. It does not include facilities that burned waste from their own in-house processes or were non or pre-operational.

Table 23-14 Deposit in Landfill for Recovery Inputs East Midlands (2018)**East Midlands: Deposit in landfill for recovery inputs 2018**

All figures are provided in 000s tonnes

Site Type	Sub-Region					EAST MIDLANDS
	Derbyshire	Leicestershire	Lincolnshire	Northamptonshire	Nottinghamshire	
Deposit in landfill for recovery	1	-	174	83	343	600
Total	1	-	174	83	343	600

*This activity is the deposit of waste in land for benefit and recovery purposes. Landfilling is the deposit in land for the purposes of final disposal. Both activities require an environmental permit under the Environmental Permitting Regulations.

Table 23-15 Use of Waste East Midlands (2018)**East Midlands: Use of waste inputs 2018**

All figures provided in 000s tonnes

Site Type	Sub Region					EAST MIDLANDS
	Derbyshire	Leicestershire	Lincolnshire	Northamptonshire	Nottinghamshire	
Use of waste in construction	-	-	-	-	-	-
Use of waste in reclamation	-	-	-	-	-	-
Use of waste for timber manufacturing	-	-	-	-	-	-
Total	-	-	-	-	-	-

Note: These activities are for use of waste permitted under Standard Rules Permits for waste operations.

Availability and Capacity of Regional Facilities

- 23.5.18 The specific waste streams that are predicted to be generated from the Facility are identified in **Sections 23.6** and **Section 23.7** below. These sections provide a discussion on the types of waste that are predicted to be generated; and whether those wastes would be recovered on-site; or would be recovered or disposed off-site. Off-site management would involve the use of facilities identified in **Table 23-9** and **Table 23-10** to **Table 23-15**.
- 23.5.19 The information shows that there are numerous waste management facilities providing a wide variety of waste management options at a regional scale, including provision for hazardous waste landfill (Augean PLC, Kings Cliffe, Northamptonshire) (**Table 23-10** to **Table 23-15** inclusive), however, options are limited at a local level (**Table 23-9**).

Evolution of Baseline

- 23.5.20 The current level of waste management infrastructure both locally and regionally is dependent upon market forces in the waste sector. It is anticipated that there would be fluctuations in the availability of facilities at both scales, however, it is also anticipated that the distribution of the available types of waste management infrastructure would be largely the same; and are not influenced by the absence or presence of the Facility.

23.6 Construction Waste Assessment

Construction Waste Arisings

- 23.6.1 Waste material will be generated at all stages of the construction. The type of development, ground conditions and on-site waste management practices will influence the composition of the waste.
- 23.6.2 In the absence of site-specific information regarding the potential earthworks cut and fill volumes and quantity, an estimate of the potential quantities was produced from available industry data. The BRE SMART Waste Data Report (2013) was used to estimate volumes of waste arisings from the construction phase of the Facility. BRE produced the SMART Waste data report by assessing actual data from approximately 10,000 completed new build, refurbishment and civil engineering projects (Building Research Establishment, 2013).
- 23.6.3 A detailed breakdown of the predicted composition of construction waste for the Facility is set out in **Table 23-16** below. This represents waste inclusive of the estimated earthworks quantity. The colour coding provided categorises wastes

types as inert (green); non-hazardous (yellow) and hazardous (orange).

- 23.6.4 The predicted waste types and volumes are derived from BRE's SMART Waste Data Report for Industrial Buildings projects according to the approximate tonnes of waste per 100 m², based upon a proposed construction site area of 25.3 ha. This was identified as the most relevant data set to derive the predicted arisings for the Facility across the construction phase. The Habitat Mitigation Area is not anticipated to produce any waste arisings.
- 23.6.5 In addition to the predicted volumes identified for the site construction works, a further 150,000 m³ capital dredged material is anticipated to be created. The sediment will be non-hazardous based upon anticipated levels of contamination being reported at levels below Cefas (Centre for Environment, Fisheries and Aquaculture Science) Action Level 2 thresholds (See **Chapter 15 Marine Water and Sediment Quality**) and Technical Guidance WM3: Waste Classification – Guidance on the classification and assessment of waste (Joint Agencies, 2018).
- 23.6.6 This sediment will not be disposed to sea. Instead it will be brought to land for management in accordance with the Waste Hierarchy. The sediment will be used on-site as part of the site construction works subject to the material being suitable for use; otherwise, it will be removed from site for recovery elsewhere, for example, soil conditioning, or use and restoration material for landfill.

Table 23-16 Estimated Quantity of Construction Waste

Waste Product (European Waste Catalogue number)	BRE data: (m ³ /100m ²)	Predicted volume across full Site	WRAP Conversion factor	Predicted arisings (tonnes)	Averaged monthly arisings (tonnes)
Asphalt (17 03 02)	0.8	2024	0.82	1659.68	34.58
Bricks (17 01 02)	0.5	1265	1.2	1518	31.63
Canteen/office/adhoc waste (20 03 01)	0.4	1012	0.21	212.52	4.43
Concrete (17 01 01)	2.4	6072	1.27	7711.44	160.66
Gypsum (17 08 02)	0.3	759	0.33	250.47	5.22
Hazardous (17 09 03*)	2.5	6325	0.87	5502.75	114.64
Inert (17 01 07)	5.9	14927	1.24	18509.48	385.61
Insulation (17 06 04)	0.2	506	0.25	126.5	2.64
Metals (17 04 07)	0.7	1771	0.42	743.82	15.50
Mixed (17 09 04)	4.6	11638	0.87	10125.06	210.94
Packaging (15 01 06)	0.8	2024	0.21	425.04	8.86
Plastics (17 02 03)	0.2	506	0.23	116.38	2.42
Soils (17 05 04)	47.8	120934	1.25	151167.5	3149.32
Timber (17 02 01)	1.3	3289	0.34	1118.26	23.30
Total	68.4	173,052		199,186.9	4,149.75

23.6.7 The estimated quantity according to the generic category of waste is summarised in **Table 23-17**.

Table 23-17 Summary of the Estimated Total Quantity by Waste Category

Cumulative arisings by category	Predicted arisings (tonnes)	Averaged monthly arisings	%
Inert	27,738	578	13.9 %
Non-hazardous	165,945	3457	83.3 %
Hazardous	5,503	115	2.8 %
Total	199,186	4,150	

Embedded Mitigation

23.6.8 Good environmental practices during construction works will be followed in accordance with Considerate Contractor Scheme (CCS) principles and wastes will be managed in accordance with the Code of Construction Practice (CoCP) which will be submitted prior to construction and secured by a requirement in the DCO.

Construction Waste Management Measures

Construction Phase

23.6.9 This section describes the measures that can be implemented to eliminate or reduce the anticipated quantity of waste sent to landfill by implementing the Waste Hierarchy. These measures would increase reuse; recycling or recovery opportunities, thereby reducing the effect of significant environmental impacts. The waste management measures for the construction phase are split in the section below, into those that can generally be applied to one or more waste type; and those that are applied to specific waste streams.

23.6.10 A SWMP will be prepared prior to construction to record any decisions given to materials resource efficiency when designing and planning the works. Any assumptions on the nature of the project; its design; the construction method or materials employed, to minimise the quantity of waste produced on-site; or maximise the amount of waste reused, recycled or recovered, will be captured within the SWMP. The SWMP will form part of the CoCP.

23.6.11 The SWMP will provide information on each waste type that is expected to be produced in the Facility with the appropriate European Waste Catalogue (EWC) code and description for each waste type. It will provide an estimate of the quantity of each type of waste and the proposed waste management option for

each waste produced (i.e. re-use, recycling, recovery or disposal; on or off-site).

General Waste Management Measures

23.6.12 There are certain principles of waste management that can be applied to most of the wastes that would be created during the construction phase. These are:

- Adhere to waste legislation for storage and handling on-site; and also ensure that the relevant regulatory controls have been applied to the reuse, recycling or recovery of waste on-site.
- No waste from the Facility shall be deposited outside the boundary of the site, unless it is at a facility that holds a valid environmental permit or suitable authorised exemption. Off-site waste management facilities are legally obliged to operate under an environmental permit (or an authorised exemption), which is in place to ensure that the site is operated in a manner to prevent emissions causing harm to human health or the environment.
- Ensure that those who remove waste from Application Site have the appropriate authorisation (i.e. are registered waste carriers); and those facilities that receive waste from the site hold a valid environmental permit or authorised exemption.
- Allocate space on-site for the storage of waste materials and ensure that storage areas and containers are clearly labelled so site workers know which wastes should be put there.
- Hazardous waste must be stored separately from non-hazardous wastes to avoid contamination. The Hazardous Waste Regulations make it illegal to mix hazardous waste with non-hazardous waste.
- Provide separate containers for dry recyclables, such as paper & cardboard, plastic, glass, wood and metal. This would encourage recycling and increase the potential value of the recyclable items by avoiding contamination.
- Monitor the actual quantities of wastes produced during construction and update the SWMP to allow comparison with waste arisings estimated prior to construction. Record the proposed waste management option (e.g. reuse on-site, recycle off-site, or dispose off-site) for each waste produced.
- All wastes that are removed off the Application Site would be described on a waste transfer note or hazardous waste consignment note (as appropriate) that tracks the movement of the waste to the specified disposal or recycling facility.

- The appointed contractors should identify appropriate staff that are responsible for waste management; and ensure that all contractor staff are aware of the appropriate reuse, recycling or disposal routes for each waste.

23.6.13 These measures would promote sustainable waste management practices by maximising waste prevention, re-use and recycling for material destined for offsite waste management. This would actively discourage sending waste to landfill and would promote the Waste Hierarchy, which is a legal requirement. These measures will be incorporated into the CoCP for the Facility.

Waste-Specific Management Measures

Inert Waste

23.6.14 Waste inert materials (for example concrete, bricks, rubble) could be crushed and processed in accordance with the Waste and Resources Action Programme (WRAP) Aggregates Quality Protocol (Environment Agency, 2013). This would allow for on-site reuse as engineering fill material complying with an appropriate engineering standard for fill (for example the Manual of Contract Documents for Highway Works Volume 1 - Specification for Highway Works, Department for Transport (DfT), 2009).

23.6.15 Aggregate will normally be regarded as having ceased to be waste, and therefore no longer subject to waste management controls, provided:

- it conforms to the requirements of the European standard appropriate to the use it is destined for;
- the aggregate is produced under Factory Production Control;
- inputs are limited and controlled within Factory Production Control;
- it requires no further processing, including size reduction, for the use it is destined for;
- it is destined for a use within designated market sectors; and
- it conforms with CE conformity marking requirements contained in the Construction Products Regulations, which applies to all aggregates placed on the market to harmonised European Aggregates Standards from July 2013.

23.6.16 Control procedures must be in place to ensure that only the appropriate types of inert materials are received (these are listed in Appendix C of the Quality Protocol); therefore, waste acceptance criteria and procedures are required.

23.6.17 The acceptance criteria must include:

- a list of the types of waste that are accepted (including waste codes);
- source/place of origin of the waste;
- supplier and transporting agent; and
- method of acceptance.

23.6.18 Every load must be inspected visually, both on initial receipt and after tipping, to ensure compliance with the acceptance criteria. A procedure for dealing with non-conforming incoming waste must be set up, for example, rejection of loads, quarantine or disposal. Records must be kept of how the procedure has been implemented.

23.6.19 The facility that receives the inert waste for processing into the aggregate must have an environmental permit, which can include a mobile plant where appropriate site-specific information has been provided to the Environment Agency and agreed. The processing of the inert waste must be carried out in accordance with the environmental permit and under Factory Control Procedures.

23.6.20 A rigorous sampling and testing regime is required to ensure that the processed material meets the required market specification according to the type of product produced.

23.6.21 To be able to demonstrate compliance with the Quality Protocol, producers must maintain delivery documentation for every load of recycled aggregate despatched.

23.6.22 Delivery documentation must include:

- date of supply;
- customer's name and contact details;
- product description to aggregates standard and customer specification;
- the name and contact details of the producer, including the address of the site of production;
- quantity supplied by weight/volume; and
- a statement that the product was produced in compliance with the Quality Protocol.

23.6.23 Where requested by the purchaser further documentation should also include:

- test results and procedures in accordance with the relevant aggregate industry standard or specification and for any further tests required to assess suitability for a particular end use;
- outline details of the Factory Production Control manual; and
- information on good practice relating to the storage, transportation and handling of aggregate.

23.6.24 For the purposes of the Quality Protocol the producer must keep and retain specified records for a minimum of two years; and make them available for inspection by the regulator (if requested).

23.6.25 It is important to note that even if the Quality Protocol is complied with, the material will become waste again and subject to waste management controls at any stage if it is discarded or there is an intention or requirement to discard. For example, if it is:

- disposed; or
- stored indefinitely with little prospect of being used.

23.6.26 These measures would reduce the amount of waste sent off-site; and promote on-site recycling into engineering-standard product, therefore, reducing the amount of material classed as waste on-site. The remaining surplus inert material would be sent off-site to a local recycling facility for processing into aggregate. This is a waste recycling measure in accordance with the Waste Hierarchy.

Non-hazardous Wastes

Biodegradable Waste from Vegetation Clearance

23.6.27 Some biodegradable waste is anticipated to be generated from the site clearance part of the construction works. This would be effectively managed by being sent for recovery at a local composting or an anaerobic digestion facility. None of this material is anticipated to require landfill disposal.

Excavated Material – non-hazardous

23.6.28 Excavated material would comprise concrete hardstanding, bitumen, made ground and subsoil according to the specific parts of the Application Site. Any inert concrete hardstanding would be dealt with as inert waste (see above).

Although it is unlikely that any contaminated land will be found, the BRE-derived assessment has identified hazardous wastes as a precaution to predict a worst-case approach. Any excavated material that is deemed by ground investigation to be contaminated would require assessment to determine whether the contaminants were present at or above hazardous waste thresholds. Any contaminated excavated material that was hazardous waste would be stockpiled and dealt with separately to other non-hazardous excavated material (see below).

- 23.6.29 It is anticipated that most excavated soil would be retained on-site for reuse as general fill as part of the cut and fill balance associated with the construction process and for moving the flood defence to enable the construction of the wharf. Any excavated soil that is surplus to requirements would be sent to a soil conditioning facility or local landfill for beneficial use as restoration material or daily cover, where possible as a preference over landfill depending upon availability.
- 23.6.30 Effective stockpile management would be essential within the Application Site. It would maximise the amount of material that can be beneficially reused on-site. Where excavated material is proposed to be used on-site for construction purposes (e.g. backfill), the appropriate regulatory mechanism must be followed prior to use to demonstrate that it will not cause unacceptable harm to the environment when used.
- 23.6.31 As the site comprises some areas of greenfield, there are two proposed approaches for the use of excavated material within the development:
- Use of the exclusion from the rWFD; or
 - Use of the Contaminated Land: Applications In Real Environments (CL:AIRE) Definition of Waste: Development Industry Code of Practice (CL:AIRE, 2011) (the CoP).
- 23.6.32 The use of naturally occurring, uncontaminated material is excluded from the scope of the waste regulatory framework according to very specific circumstances. This is because of Article 2(1)(c) of the rWFD, which states that “*uncontaminated soil and other naturally occurring material excavated in the course of construction activities where it is certain that the material will be used for the purposes of construction in its natural state on the site from which it was excavated*” is excluded from the scope of the rWFD. The use is not subject to any waste regulatory controls if it can be demonstrated that the use is recovery. Overarching principles of rWFD must be adhered to. These are:

- *“... take the necessary measures to ensure that waste management is carried out without endangering human health, without harming the environment and, in particular:*
 - a) Without risk to water, air, soil, plants or animals;
 - b) Without causing a nuisance through noise or odours; and
 - c) Without adversely affecting the countryside or places of special interest.”

23.6.33 The exclusion does not apply to material removed from the Application Site.

23.6.34 The rWFD does not define ‘uncontaminated’. However, the Environment Agency has a strict interpretation based on environmental risk:

“At its most basic or general, in this context, ‘contamination’ means the presence of substances in soil that produce a risk of harm or pollution. In the Environment Agency’s opinion, the presence or absence of “contamination” has to be assessed on a site specific basis having regard to a risk assessment e.g. some soil may not be considered contaminated for one land use but may be for another. It is not just a matter of what levels of substances are present within a soil but where and how that soil is used.”

23.6.35 Therefore, a risk assessment would be required, which is one of the fundamental requirements of the CL:AIRE CoP. In using the exclusion, it is recommended that the principles of the CoP are followed (including the use of Materials Management Plans (MMP)) but without the formal signoff procedures required for the CoP.

23.6.36 The CoP is anticipated to provide the framework for the reuse of the remaining excavated material and provides principles that allows the excavated to cease to be waste when used. This would also apply to contaminated material (including excavated material classified as hazardous waste – see below), where the risk assessment demonstrated that there was no unacceptable level of risk to human health or the environment.

23.6.37 The CoP is subject to self-regulation, via the use of an independent assessment by a Qualified Person, who is a person that fulfils the required experience, qualifications and professional membership criteria set by CL:AIRE. The CoP sets out the principles for achieving a non-waste status by setting a risk-based approach when excavated material is used within a development. The principles are:

- **The proposed use of the material must not cause any harm to human health or the environment.**
 - A risk assessment for the specific end use would be required following the principles defined in Environment Agency Land Contamination Risk Management (Environment Agency, 2020a) guidance (this is an update to the former Environment Agency Model Procedures for the Management of Land Contamination, Contaminated Land Report 11 (CLR11)). This would find out whether any contaminants from anthropogenic and/or natural sources present an unacceptable level of risk to human health, controlled waters, ecosystems and/or the built environment, based on the available pathways and receptors. If the level of risk is unacceptable after treatment, the CoP cannot apply to the material, therefore, it would be a waste and an environmental permit would be required to allow the reuse of the material.

- **The excavated material is suitable for its proposed use.**
 - This would take into account the chemical and geotechnical requirements of the material in relation to a specification defined for their end use.

- **The excavated material must not require further treatment prior to use.**
 - The material must be suitable for use in all respects without treatment. If it requires treatment, it is waste.

- **The use of the excavated material is certain.**
 - The holder must be able to demonstrate that all of the material would be used, and that use is a certainty, not a probability. The use of the excavated material must form part of the final design, so it can be clearly identified where in the scheme the material would be used; and how much would be used. This requires a Materials Management Plan to be prepared to show how and where all materials on the ground are to be dealt with; and a tracking system to monitor any waste/material movements; and also contingency measures must be defined, i.e. who takes responsibility and what happens in the event that the material is not suitable for use.

- **Only a sufficient quantity of material would be used.**
 - The material must be destined for a defined purpose, which is defined in the scheme design. The quantity of material required for that purpose must be known prior to construction. If excess material is deposited to

undertake that purpose this is an indication that it is being discarded and it would be waste.

- 23.6.38 The benefit of the CoP is that an environmental permit is not required for the use of excavated material where the principles can be met; and therefore, this promotes waste reduction, because the material ceases to be waste when it is used.
- 23.6.39 These measures would promote on-site recovery and reduce the amount of waste on-site.
- 23.6.40 A proportion of the excavated material may not be suitable for reuse due to the presence of large rocks/stones or fibrous material. This material would be stockpiled separately for off-site management in accordance with the Waste Hierarchy.

Surface Planings – Bitumen

- 23.6.41 It is anticipated that bitumen-based surface planings would be treated at an authorised mobile treatment unit by crushing, grinding and screening, and used again on-site in the construction of paving structures similar to those from which the waste arose, in accordance with a 'U1' Waste Exemption (Use of Waste for Construction).

Dry Recyclables from Site Workers

- 23.6.42 Site workers will create waste produced by themselves, by taking refreshment and from site welfare activities. The most effective waste management solution for waste generated by site workers taking refreshment on-site is to introduce a policy to require them to take their own waste home. This is likely to reduce the amount of waste produced.
- 23.6.43 In terms of the waste that would be produced on-site from site workers in the temporary office locations and in the site temporary works areas, this is similar in composition to mixed municipal waste and is therefore considered to be non-hazardous. Space should be made available to provide receptacles to collect different waste streams and allow the separate collection of dry recyclables from residual waste.
- 23.6.44 Segregation of the different streams of plastic waste (e.g. Polyethylene terephthalate (PET), High-density polyethylene (HDPE) and mixed plastics)

would maximise opportunities for recycling. Some source segregated plastics, particularly PET and HDPE, can generate income. Card and paper should be separately collected as should aluminium and steel cans. Glass should be separated into different receptacles where possible. These measures would ensure that the maximum amount of waste is diverted for reuse, recycling and recovery. The food waste should also be separately collected and sent for anaerobic digestion.

- 23.6.45 All receptacles for contractor waste should be clearly labelled and have lids to prevent wind-blown litter.
- 23.6.46 Frequent collections of waste should be arranged to ensure that quantities on the Application Site are within the capacity of one skip and waste is not retained on the Application Site for long periods to reduce scavengers and vermin; and to reduce odour issues.
- 23.6.47 The remaining residual waste should be sent to an off-site materials recycling facility.
- 23.6.48 It should be noted that the level of recycling / separate collection will be dependent on the amount of space at the site temporary works and availability of different types of container; and waste management and recycling policies introduced by the Contractor. The CoCP will outline minimum standards for waste management and recycling policies.

Excess Construction Materials

- 23.6.49 Timely procurement and buying only the required amount of material should ensure that the material is delivered at the time when it is needed and only in sufficient quantities. This would prevent waste from unused or spoiled items because of bulk purchasing.
- 23.6.50 Ensure that perishable materials are stored so that they are protected from the local climate.
- 23.6.51 All damaged or off-specification material should be immediately returned to the supplier where possible, which would reduce the amount of waste held on the Application Site.
- 23.6.52 These measures are anticipated to reduce the amount of this type of waste on the Application Site at any one time.

Metal Wastes

23.6.53 Metal waste (i.e. from overhead line modifications, off-cuts and scrap metal that cannot be reused) should be collected in containers/skips or stored in an allocated area and removed off-site for recycling. There is an active metal recycling market in the UK to deal with this waste.

Imported Material

23.6.54 Local and sustainable products would be used to minimise the effects on the environment by reducing carbon emissions from transport, promoting local businesses and saving natural resources.

Packaging

23.6.55 To minimise the effects of packaging, suppliers should be required to take back any packaging associated with their products. This would assist the suppliers in fulfilling their own producer responsibility obligations under Packaging Waste Regulations 2007 (as amended) (HMSO, 2007).

23.6.56 Packaging materials that cannot be returned should be kept for on-site use (e.g. use of pallets for storage).

23.6.57 Any residual packing that cannot be used on-site should be segregated into distinct dry recyclable waste streams and sent for recycling off-site. No waste packaging would be landfilled.

Wood

23.6.58 Waste timber will arise from waste packaging e.g. pallets. This should be returned to suppliers as described above.

23.6.59 The condition of any other timber waste would determine whether they can be recycled at a wood processing facility; or whether they would have to be chipped or treated and prepared for recovery at a biological treatment facility, such as composting; or prepared for use as a fuel in an energy from waste facility.

Hazardous Wastes

23.6.60 Empty fuel or oil drums should be retained for reuse on the Application Site for storing waste oil where possible. Those that cannot be retained should be sent to a drum reconditioning facility to enable the container to be prepared for re-use. Damaged drums should be sent for recycling.

- 23.6.61 These measures are anticipated to maximise waste managed at the highest waste hierarchical option and reduce the amount of waste sent off-site.
- 23.6.62 The use of an active maintenance regime on plant and equipment should reduce the potential for machinery to cause leaks. Valves, stopcocks and pipes should be regularly checked for leakages. Fuelling activities should be carried out in banded areas, or off-site.
- 23.6.63 The storage of fuels and liquids should be in accordance with the Oil Storage Regulations 2001 (HMSO, 2001) and the appropriate pollution prevention control guidelines to protect the environment from both storage and spillages of hazardous substances, which can be obtained from the Government archive website³:
- PPG 2 - Choosing and using oil storage tanks;
 - PPG 7 – Operating Refuelling facilities;
 - PPG 8 - Safe storage and disposal of used oils;
 - PPG 22 - Dealing with spills; and
 - PPG 26 – Storage and handling drums and intermediate bulk containers.
- 23.6.64 Although these guidelines are no longer supported by the Environment Agency, they represent good practice. Using these guidelines as good waste management practice against leaks would reduce the potential for leakages, therefore reducing the volume of absorbent required to clean up spillages.
- 23.6.65 Hazardous materials should be stored securely, away from non-hazardous or incompatible materials. Small items of hazardous waste should be prevented from being disposed of in general waste skips to avoid contamination. Hazardous material should be collected frequently to minimise the total volume on-site at any one time.

Contaminated Excavated Material

- 23.6.66 A Land Quality Phase 1 Preliminary Risk Assessment (PRA) was carried out by Royal HaskoningDHV as part of the scoping stage of this Facility. This PRA also included a site walkover in August 2017 to verify the current conditions at the Application Site. Details are provided in **Chapter 11 Contaminated Land, Land Use and Hydrogeology**.

³ <http://www.nationalarchives.gov.uk/>

- 23.6.67 The PRA identified potential sources of contamination, which include the historic landfill site, recycling centre and other historic activities around the Application Site.
- 23.6.68 The Preliminary Conceptual Site Model (PCSM) identified several plausible pollutant linkages that could represent an unacceptable risk to sensitive receptors and suggested potential contaminants of concern at on and off-site locations. Potential contaminants of concern include: metals and metal compounds; petroleum hydrocarbons; Polycyclic Aromatic Hydrocarbons (PAH)s; Volatile Organic Compounds / Semi Volatile Organic Compounds (VOCs/SVOCs); phenols; Polychlorinated Biphenyls (PCBs); and inorganic contaminants (e.g. ammonia, arsenic, cyanides, sulphides, phosphate); and asbestos.
- 23.6.69 Therefore, a precautionary approach should be adopted, which assumes that some contaminated material will be encountered.
- 23.6.70 A watching brief would be maintained during construction, in accordance with the Code of Construction Practice, and any excavated material that is suspected of contamination (e.g. because of staining or odour) would be stockpiled separately and samples taken for analysis.
- 23.6.71 Any excavated material that is found to be contaminated (including material classified as hazardous) would be assessed against the principles of the CL:AIRE CoP and reused where there is a need for the material; and it is demonstrated to be suitable for use. This would reduce the amount of material on-site that is waste.
- 23.6.72 Any material found to be hazardous and unsuitable for reuse on the Application Site would be sent off-site for treatment and/or disposal as appropriate, to a facility holding a valid environmental permit that authorises treatment or disposal of such waste. Surplus hazardous material should be sent to a treatment facility, where it can be treated to remove or reduce the levels of contamination to a level acceptable for recovery of the material. This would reduce the amount of hazardous waste from the facility going to landfill and promotes both the Waste Hierarchy and the Proximity Principle.
- 23.6.73 If any excavated material is classified as hazardous and is required to be landfilled because it cannot be treated at a soil recycling facility, further testing would be carried out to ensure that it meets the Hazardous Waste Acceptance Criteria (WAC) (2003/33/EC; European Council, 2003) prior to landfill disposal –

note that there is an active hazardous waste landfill within the region, in Northamptonshire.

23.7 Operational Waste Composition and Quantities

Operational Waste Arisings

- 23.7.1 The Facility comprises the elements listed in **Section 23.1**, with each considered separately for proposed waste arisings during operation.
- 23.7.2 The operation of these facilities will produce a variety of wastes that fall within the control requirements of English waste legislation.

Embedded Mitigation

- 23.7.3 As part of the Facility design, several embedded mitigation measures have been proposed to reduce potential impacts on waste.

Supply of RDF

- 23.7.4 The supplier of the RDF bales will have several contractual requirements to minimise waste impacts.
- 23.7.5 The supplier will be required to check the bales to ensure that there are no unacceptable wastes (for example hazardous wastes, gas cannisters, infectious wastes etc.) baled along with the RDF. This is to ensure bales are not rejected at the Facility.
- 23.7.6 The supplier of the RDF will not be permitted to load any damaged bales onto the vessels prior to shipping to the Application Site. This will be confirmed in the contractual arrangements between the Applicant and the RDF supplier.
- 23.7.7 At the wharf, it is proposed that there would be a cover underneath the swept path of the mobile crane arm whilst bales are off-loaded from the vessel. This is to prevent litter from damaged bales falling into The Haven.

Wharf and RDF Storage

- 23.7.8 Any bale that is damaged whilst in transit to the storage area, or whilst being loaded onto the conveyors will be removed and taken to the re-baling facility behind the wharf.
- 23.7.9 Thermal cameras and thermal lances will be used to monitor temperature of bales and bale stockpiles. Thermal cameras will also be located along the sealed conveyor lines. Any bale that is detected to be increasing in temperature to

unacceptable levels will be removed and dealt with in accordance with a Fire Prevention Plan, which will be developed in accordance with Environment Agency guidelines and form part of the environmental permit.

RDF Shredding Facility

23.7.10 The feedstock bales will be loaded onto a conveyor and transported into a shredder from the conveyor lines inside the building. The shredder will chop and shred the plastic wrap and the contents of the bale to a reduced maximum particle size of less than 300 mm with no large metal pieces. There will be some segregation of large particles which will be stored in a skip.

Thermal Treatment Facility

23.7.11 Following thermal treatment, the residual ash and APCr will be collected separately and conveyed to further processing (ferrous metal removal and screening, followed by a grinding process to reduce the particle size of the remaining ash) prior to being used in the production of LWA. Material that is suitable for the LWA plant will be transferred via sealed conveyor to storage silos at the LWA plant. Material that is not suitable will be assessed for potential off-site recycling opportunities in accordance with the waste hierarchy.

23.7.12 The two residues (ash and APCr) will be processed separately in the LWA to avoid mixing the residues prior to treatment in the LWA. Separate streams of aggregate will be produced from each residue stream.

Lightweight Aggregate (LWA) Facility

23.7.13 The LWA will use maintenance dredge material from maintaining the berthing pocket at the wharf as binding material for manufacturing the aggregate. This will avoid disposal at sea; or recovery or disposal of this material off-site on land.

23.7.14 In operation, the main types of waste produced and the proposed means of managing these wastes in accordance with the Waste Hierarchy for each element are provided below (see **Table 23-18** for typical amounts):

Table 23-18 Typical Wastes Produced over 12 Months per Element

Element	Waste Stream	Amount (per annum)	Management in accordance with the Waste Hierarchy
Wharf	Damaged RDF bales	Covered in the RDF total below	Recovery - Re-baled on-site and processed with other RDF for energy recovery in the gasifier. The plant is Waste Framework Directive R1 compliant and therefore a recovery process
RDF storage area	RDF	1,200,000 tonnes	Recovery – energy from waste recovery. The plant is Waste Framework Directive R1 compliant and therefore a recovery process
Three thermal treatment units, turbine hall and air cooled condenser	Non-hazardous ash	198,242 tonnes	Recycled in the LWA to a market specification product.
	Air pollution control residues	16,664 tonnes	Recycled in the LWA to a market specification product.
Carbon capture facility	Hazardous liquid waste 40 % Monoethanolamine (MEA) / 60 % water	120,000 litres	Disposal via Liquid hazardous waste treatment

Element	Waste Stream	Amount (per annum)	Management in accordance with the Waste Hierarchy
Associated infrastructure	Mixed municipal waste from site workers	Approximately 34 tonnes (based on 0.31 tonnes per worker per year).	Recycled – source segregation of metal, paper and card, plastics and glass. Recovered – residual waste that cannot be recycled will be collected for recovery.
Thermal treatment Facility	Segregated large particles	5,000 tonnes	Mainly comprises ferrous metal. Recycled locally.
Ash Processing	Recovered metal		

¹: not applicable is set here to avoid double counting, because this waste will eventually be returned back to the Facility for processing.

23.7.15 The Operation of the Facility will be governed by the Conditions imposed by the Environmental Permit(s) issued by the Environment Agency. This will set specific standards associated with the management of wastes produced on-site (amongst other things) to ensure the wastes are handled in accordance with Best Available Techniques. The Facility cannot be operated without an environmental permit. As such, these specific requirements are not explored further in this ES. General waste management provisions are identified below.

Operational Waste Management Measures

23.7.16 The operation of the Facility will produce conventional wastes, such as metals, plastics and waste electrical and electronic equipment (WEEE). Small quantities of hazardous wastes will also be produced, for example, waste oil and waste process and cleaning chemicals.

23.7.17 There are general principles that would need to be followed to ensure effective management of conventional waste arisings. These are provided below.

Duty of Care

23.7.18 The operators of the Facility would be under a legal obligation to comply with the waste duty of care to ensure that they handle waste safely and in compliance with the appropriate regulations.

23.7.19 The duty of care involves making sure that the waste has been described properly and that all of the properties associated with the waste are known; and to ensure that persons involved in the transfer of waste hold the necessary authorisation to do so.

23.7.20 The basic responsibilities that the commercial occupiers would be expected to follow are:

- Know whether waste is hazardous or non-hazardous;
- Store waste in suitable containers at a secure location, in a manner that prevents releases of the waste;
- Label the waste containers so that it is clear what is in them;
- Check that the waste is subsequently handled by those who hold an appropriate environmental authorisation. This means checking that the waste carrier is registered (or is exempt from having to be a registered waste carrier). It is also good practice to check that the facility that will receive the waste holds

a suitable environmental permit that allows the waste to be handled on their site;

- Provide documentation with any waste transfer that accurately describes the waste and contains the relevant code for the waste; and
- Keep records of all waste transfers in a register.

Hazardous Waste

23.7.21 Servicing and maintenance personnel would be required to know the difference between hazardous waste and non-hazardous waste. The controls that are applied to hazardous waste are stricter. All hazardous waste must be segregated from non-hazardous wastes or other non-waste materials. All hazardous wastes must be accompanied by a hazardous waste consignment note when removed from site.

Producer Responsibility

23.7.22 Producer responsibility requires businesses to:

- Minimise waste arising and promote their re-use.
- Ensure the waste products are treated and meet recovery and recycling targets for the waste materials.
- Design products by reducing material use and enhancing reusability and recyclability.

23.7.23 The key requirements of the Facility in terms of producer responsibility would be to ensure batteries, WEEE and packaging wastes are managed appropriately.

WEEE

23.7.24 WEEE must be collected separately from other wastes and sent to the appropriate recycling facilities. If a business does have WEEE to recycle, it has a Duty of Care to act responsibly and ensure that the contractor it appoints to collect it is legitimate and has the appropriate licences and permits.

23.7.25 A business should ensure that the waste is taken to a suitable facility to be treated and recycled. The site must have a permit or licence that allows them to accept trade waste. For WEEE waste, it must obtain and keep proof that WEEE was given or sold to a waste management (or asset management) business and was treated and recycled appropriately.

23.7.26 All WEEE from a business should go through Approved/Authorised Treatment Facilities for treatment and recycling.

23.7.27 In June 2020 the Environment Agency produced a revised classification of waste electrical and electronic equipment (WEEE). This will apply to items of WEEE and other components removed from the Facility. WEEE often has components that contain hazardous substances or persistent organic pollutants (POPs). These could include:

- printed circuit boards;
- plastic casings, cables and other components;
- insulation foam;
- cooling agents;
- flame retardants;
- activated glass and screen phosphors;
- cathode ray tubes;
- capacitors; and,
- Ni-Cd batteries.

23.7.28 If the levels of hazardous substances or POPs are over a certain amount the item will be classified as hazardous or POPs waste. If the item contains any POPs above the relevant threshold then it will affect future waste management options for it. The POPs must be destroyed. This means that it cannot be recycled or turned into a product for reuse. It must remain waste and waste controls will apply until it is destroyed.

23.7.29 The advice from the Environment Agency is that electrical and electronic equipment (EEE) manufactured before 1 January 2009, is more likely to contain penta-bromodiphenyl ether (PBDE) POPs. Therefore, this should be viewed as a cut-off date and any WEEE removed from the substation that was manufactured before this should be assumed to contain at least POPs unless there is evidence to the contrary and should be dealt with as such, i.e. must be destroyed. Furthermore, they advise that if a producer has assessed their waste and is still not sure if an item is hazardous or POPs waste, then it should be treated as hazardous and POPs waste as a precaution.

Storage

23.7.30 The design and location of waste storage areas would be confirmed at detailed design stage.

23.7.31 The required storage provision for the Facility would ensure that:

- The space would be adequate to store the predicted accumulation of waste between waste collections;
- The bin storage would be easily accessible to users of the facility;
- Waste collected from the bins would be accumulated in a waste compound for temporary storage prior to collection;
- The waste compound storage would be easily accessible to waste collectors; and
- The storage would be adequate to accommodate all of the different types of storage containers to meet current and proposed residual waste and waste recycling regimes by waste management companies collecting the waste.

23.7.32 Consideration would be given to vehicle access and egress to ensure the facilities can be easily serviced; and that waste compound areas are secure and can be accessed by waste collection vehicles.

23.7.33 All wastes shall be stored in dedicated areas which should be:

- Identified by appropriate signage;
- Paved or protected from direct contact with the ground; and
- Protected from bad weather conditions (rain, wind, extreme temperatures).

Packaging

23.7.34 The Packaging Waste Regulations 2007 (as amended) (HMSO, 2007) require businesses or organisations to:

- Reduce packaging;
- Reduce how much waste packaging goes to landfill; and
- Increase the amount of packaging waste that is recycled and recovered.

23.7.35 Compliance is facilitated by the segregation of packaging from other waste; and the segregation of different types of packaging from each other (e.g. separating plastic packaging from paper and cardboard packaging).

23.7.36 The amount of packaging waste held by a business or organisation can be reduced by returning as much packaging back to the supplier as possible. This in turn will help suppliers achieve their obligations under the Packaging Waste regulations.

Batteries

23.7.37 The Waste Batteries and Accumulators Regulations 2009 (as amended) (HMSO,

2009) impose obligations on the producers and distributors of batteries to ensure that batteries are appropriately treated or recycled using compliance schemes that are financed by producers and distributors of batteries.

23.7.38 It is illegal to send waste industrial or vehicle and other automotive batteries for incineration or to landfill. Maintenance operatives must ensure that all batteries are sent to an Approved Battery Treatment Operator (ABTO) or an Approved Battery Exporter (ABE) for treatment and recycling.

Landfill Disposal

23.7.39 Before any waste can be sent to landfill, the waste producer/holder must ensure that the option for landfill has been justified in accordance with the Waste Hierarchy.

23.7.40 It is a legal requirement that all wastes going for landfill must be pre-treated, unless treatment is not technically possible (note, this applies to inert wastes only); or if treatment would not reduce the quantity or the hazards that it poses to human health or the environment. The proposed pre-treatment option must comply with the definition of 'treatment'. This involves a 'three-point test':

- It must be a physical, thermal, chemical or biological process including sorting.
- It must change the characteristics of the waste.
- It must do so to:
 - Reduce its volume; or
 - Reduce its hazardous nature; or
 - Facilitate its handling; or
 - Enhance its recovery.

23.7.41 If the waste is classified as hazardous waste and landfill has been determined as a suitable option in accordance with the Waste Hierarchy, it can only be disposed in a hazardous class of landfill and must pass the hazardous WAC. This must be confirmed through chemical WAC testing.

23.7.42 If the waste is inert, it can only be deposited in an inert class of landfill if it can be demonstrated that it meets the inert WAC.

23.8 Decommissioning Waste Composition and Quantities

Decommissioning Waste Arisings

23.8.1 It is anticipated that the waste arisings during decommissioning will be similar to those of construction, as discussed in **Section 23.6**.

Decommissioning Waste Management Measures

23.8.2 The measures proposed for waste management during the construction phase of the works will be adhered to during decommissioning.

23.9 Potential Impacts

Potential Impacts during Construction

Impact 1: Impacts associated with inert waste from construction

23.9.1 In order to calculate the sensitivity of the inert waste landfill capacity, the volume of inert waste for disposal which is expected to be generated in the East Midlands region has been forecast from the EA Waste Data (EA, 2018b) using the Microsoft Excel “Forecast Sheet” function. As construction is proposed to be from around 2022 to 2026 the forecast is up to and including 2026 as shown in **Plate 23-2**. The average rate of increase in inert waste input is forecast to be 4.6 % between 2018 and 2026. The forecast for inert landfill capacity in the East Midlands is predicted to increase from 21,499,400 m³ in 2018, to approximately 33,313,078 m³ in 2026 (**Plate 23-3**), this has an average rate of increase of 5.9 %. Therefore, as the rate of increase in capacity is greater than the increase in input, the landfill void capacity is expected to be sufficient for the forecast input of inert waste.

23.9.2 This is supported by the strategies which are in place throughout the region for new and extended waste disposal facilities. According to the Lincolnshire Minerals and Waste Local Plan, the council stated it would provide for the current inert landfill capacity (but not any new capacity). The plan states that there are a number of inert waste landfill sites which have end dates extending beyond the Plan which have no planning restrictions on the rate of infilling, and therefore the rates could be increased to meet demand and reduce the identified capacity gap (LCC, 2016), this was also confirmed in the authority monitoring report, revised in February 2020 (LCC, 2020).

23.9.3 Overall, the inert landfill capacity is expected to remain unchanged due to the policies within regional plans, such as within the Lincolnshire Minerals and Waste Local Plan. The landfill void capacity sensitivity is therefore **negligible**.

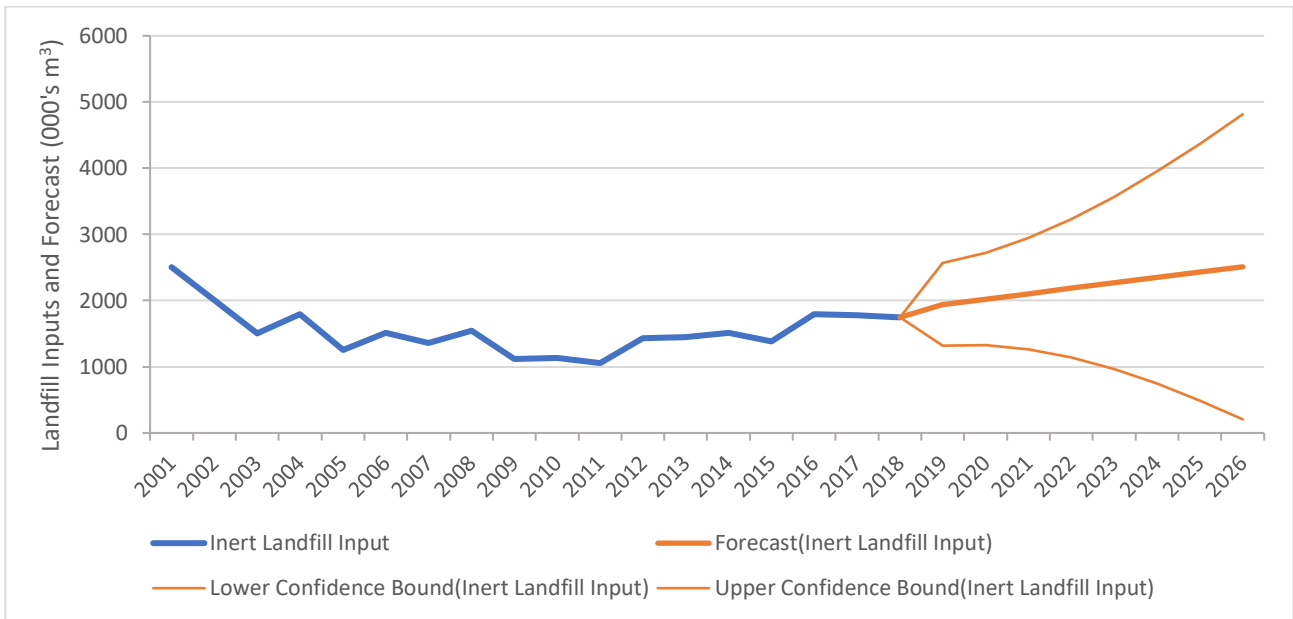


Plate 23-2 Inert Landfill Input Forecast (EA, 2018b)

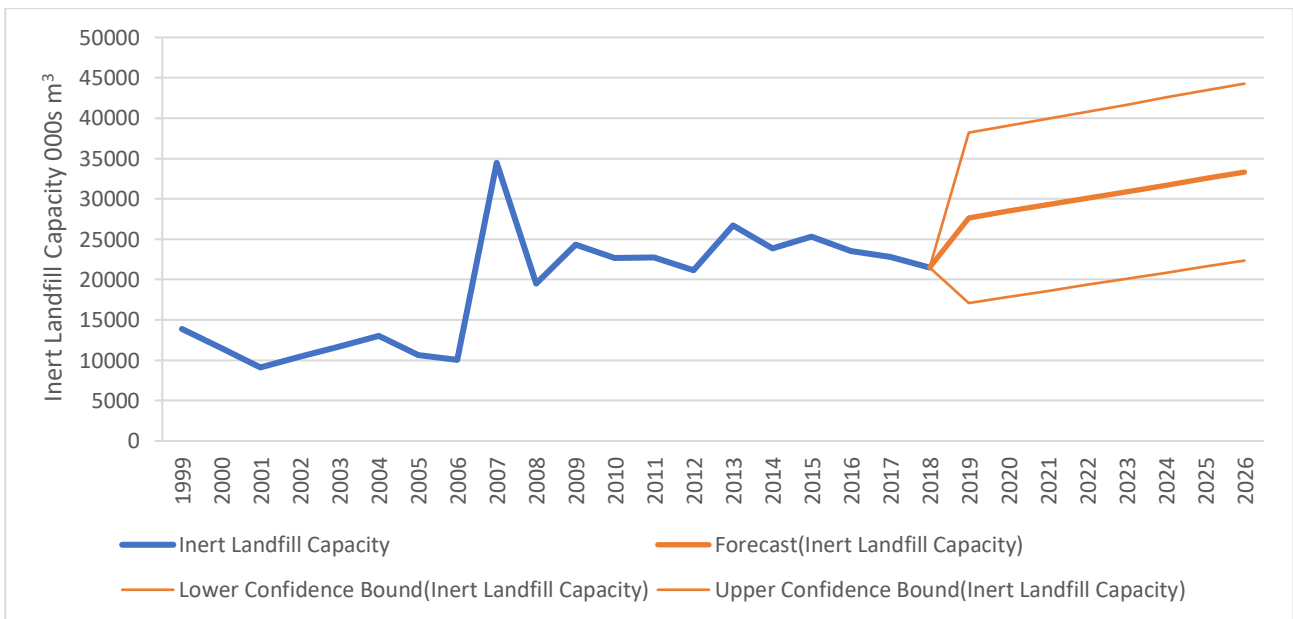


Plate 23-3 Inert Landfill Capacity Forecast (EA, 2018b)

23.9.4 A total of 27,738 tonnes, or 22,264 m³ of inert waste is predicted. In 2022, the expected start date of construction, the forecasted available total inert landfill capacity in the region is 30,081,341 m³. The proportion of inert waste from the construction of the Facility represents <0.1 % of the available inert landfill capacity. The magnitude of impact from waste associated with the construction phase of the Facility is therefore expected to be **negligible**.

23.9.5 Overall, the potential effect on the inert landfill void capacity would be of **negligible** significance.

Impact 2: Impacts associated with non-hazardous waste from construction

23.9.6 The forecasted volume of non-hazardous waste input in the East Midlands from 2018 - 2026 is shown to be relatively stable, as shown in **Plate 23-4**, with an average rate of decrease of -1.3 %. The non-hazardous landfill capacity is forecast to decrease from 24,522,400 m³ in 2018 to 16,937,908 m³ in 2026, with the average rate of decrease of - 4.3 % (**Plate 23-5**). Therefore, non-hazardous landfill capacity has a medium sensitivity.

23.9.7 A total of 165,945 tonnes, or 144,463 m³ of non-hazardous waste is predicted to arise from construction of the Facility. At the start of the construction period (2022) the non-hazardous landfill capacity is forecast to be 23,102,374 m³. The proportion of non-hazardous waste from the construction of the Facility represents 0.63 % of the available non-hazardous landfill capacity. The magnitude of impact from waste associated with the construction phase of the Facility is therefore expected to be **negligible** even on a worst-case basis assuming that all this material would be disposed to landfill. This is unlikely to be the case given the ample opportunities for more hierarchical options as described previously.

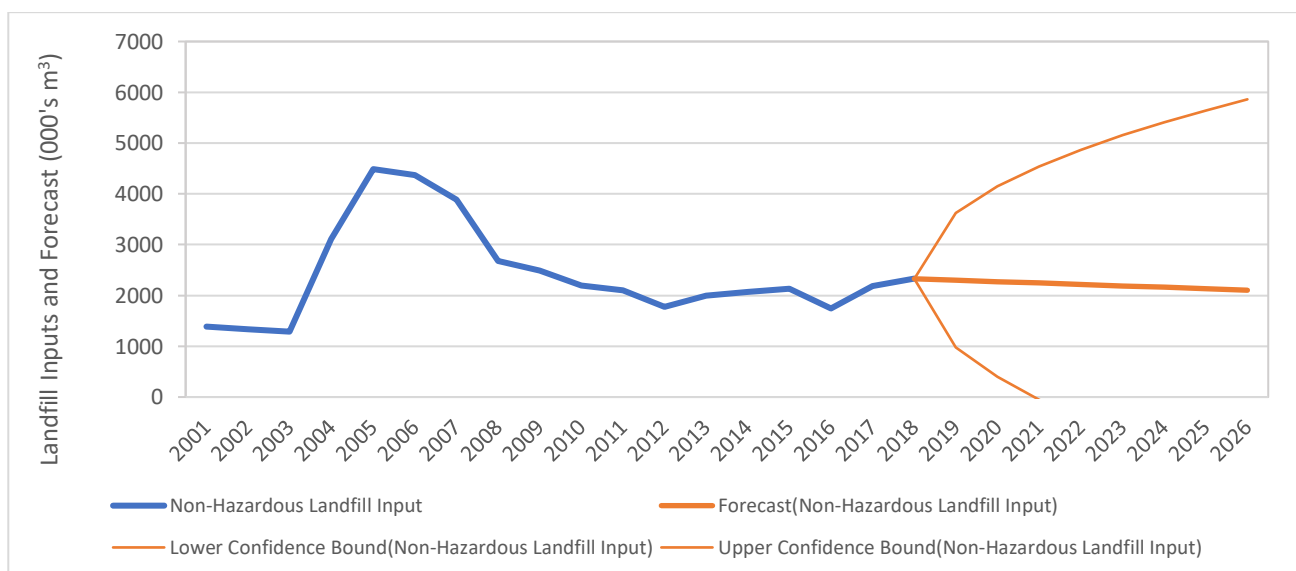


Plate 23-4 Non-Hazardous Landfill Input Forecast (EA, 2018b)

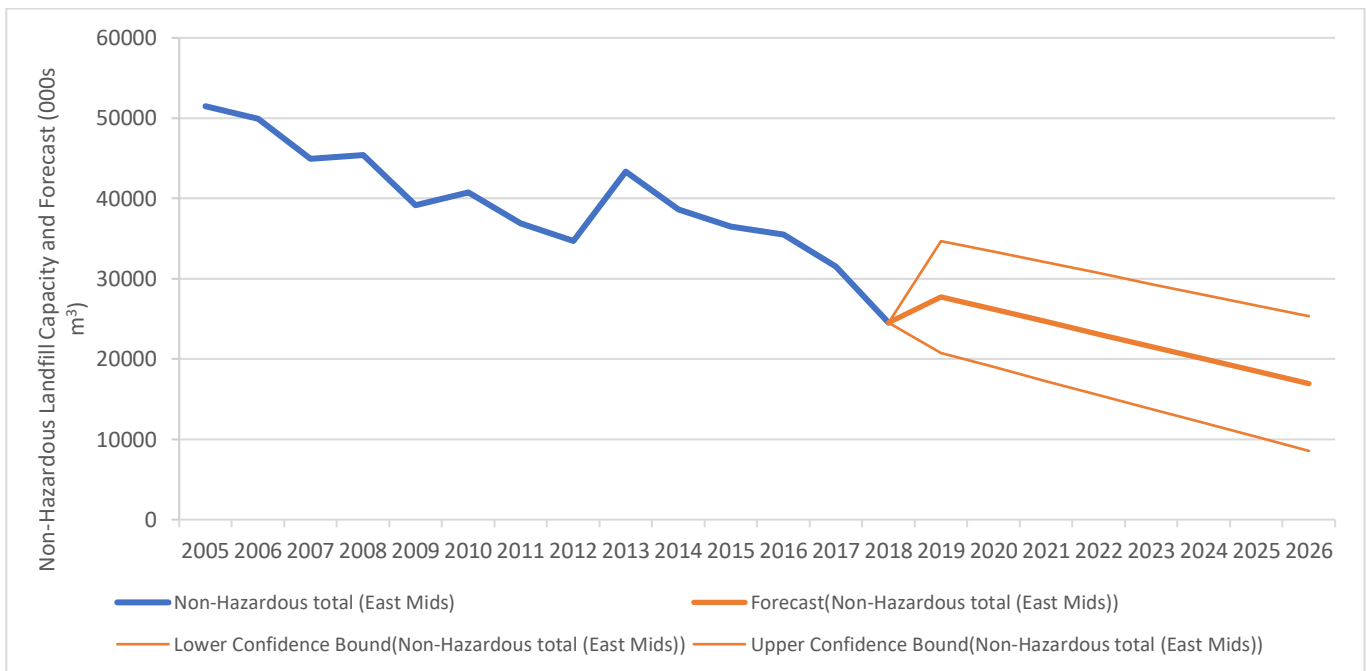


Plate 23-5 Non-Hazardous Landfill Capacity Forecast (including both non-hazardous landfill, and non-hazardous landfill with a stable non-reactive hazardous waste cell) (EA, 2019)

23.9.8 The potential effect of construction of the Facility on non-hazardous landfill capacity in the region is expected to be **minor adverse**.

Impact 3: Impacts associated with hazardous waste from construction

23.9.9 The forecasted volume of hazardous waste input in England from 2018 - 2026 is gradually decreasing, as shown in **Plate 23-6**, with an average rate of decrease of -4.8 %. The hazardous landfill capacity in England is forecast to increase from 19,122,000 m³ in 2018 to 21,382,105 m³ in 2026, with the average rate of increase of 1.4 % (**Plate 23-7**). Therefore, the national hazardous landfill capacity has a negligible sensitivity.

23.9.10 Approximately 5,503 tonnes or 6,325 m³ of hazardous waste is predicted from construction of the Facility. The available total hazardous landfill capacity nationally at the beginning of construction is forecast to be 20,392,309 m³. The proportion of hazardous waste anticipated from construction of the Facility is 0.03 % of the available national hazardous landfill capacity. The magnitude of impact from waste associated with the construction phase of the Facility is therefore expected to be **negligible**.

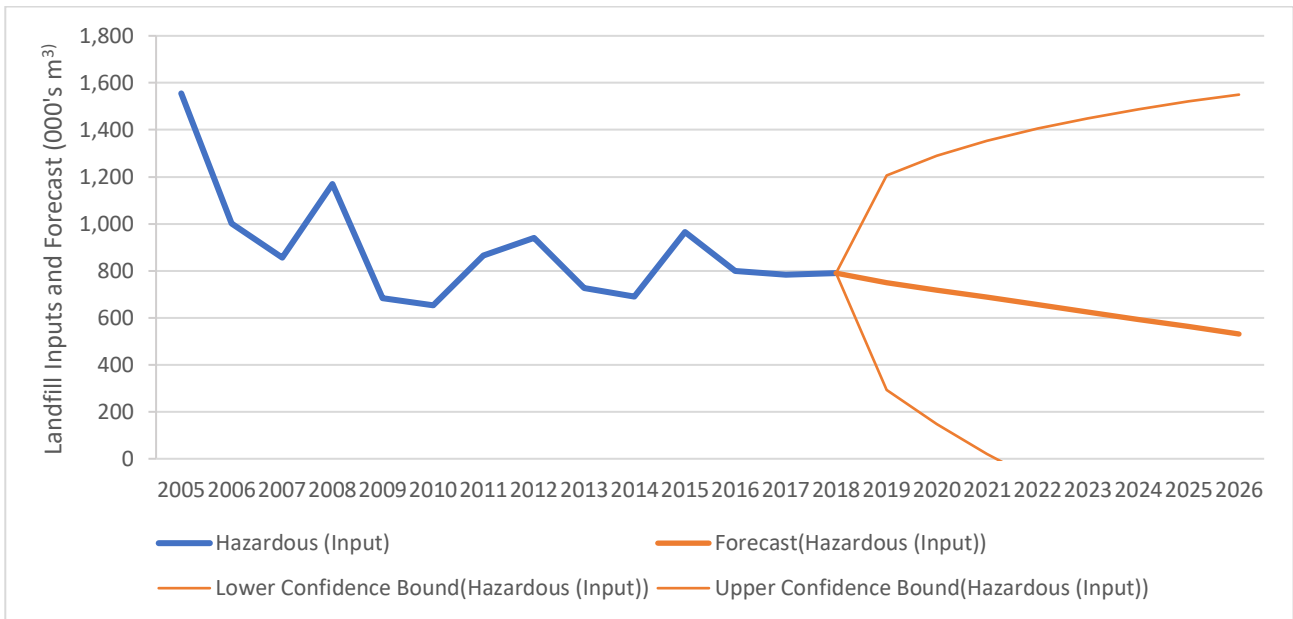


Plate 23-6 Hazardous Landfill Input Forecast (National) (EA, 2018b)

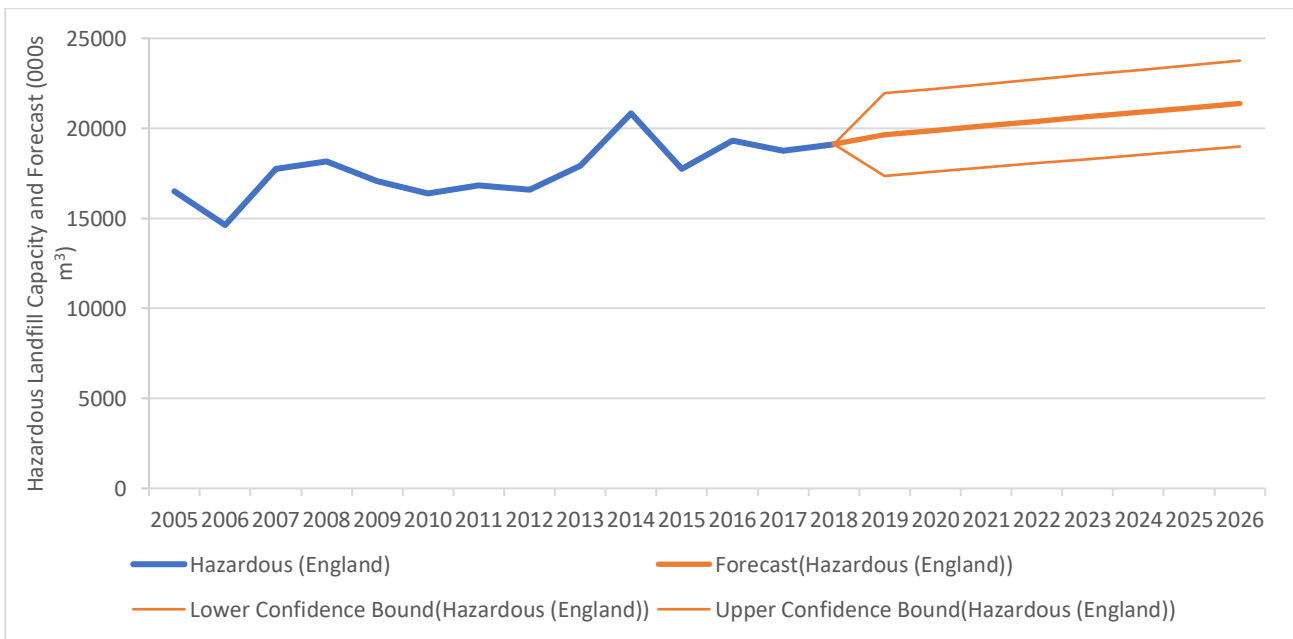


Plate 23-7 Hazardous Landfill Capacity Forecast (National) (EA, 2019)

23.9.11 The potential effect of construction of the Facility on hazardous landfill capacity nationally, is expected to be **negligible**.

Potential Impacts during Operation

Impact 1: Impacts associated with residual non-hazardous material during operation

- 23.9.12 As discussed in **Chapter 5 Project Description**, approximately 5,000 tonnes per year reject material of ferrous metal would be screened from the ash (see **Table 23-18**). This material will all be recycled locally. In addition to this there will be a small amount of mixed municipal waste from site workers which will either be recycled or recovered. Therefore, there will be **no effect** on the regional landfill capacity.
- 23.9.13 In addition, there will be approximately 200,000 tonnes of non-hazardous ash which will become residual material to be removed from the combustion plant. The residual ash will be processed on-site into a marketable LWA construction product. This ensures compliance with the waste hierarchy at the best level possible for the RDF and for the residual ash. Further detail on this is provided in **Chapter 5 Project Description**.

Impact 2: Impacts associated with residual hazardous material during operation

- 23.9.14 As shown in **Table 23-18** there will be approximately 120,000 litres or 120 m³ of monoethanolamine liquid per year to be disposed of. As discussed above the available total hazardous landfill capacity nationally at the beginning of construction is forecast to be 20,392,309 m³. The proportion of hazardous waste anticipated from the operation of the Facility is <0.1 % of the available national hazardous landfill capacity.
- 23.9.15 In addition, there will be approximately 17,000 tonnes of APCr which will become residual material to be removed from the combustion plant. APCr are classed as hazardous waste. The APCr will be processed on-site into a marketable ILWA construction product (as a separate product to the LWA produced from the residual non-hazardous ash). Further detail on this is provided in **Chapter 5 Project Description**.

23.10 Cumulative Impacts

- 23.10.1 The assessment of cumulative impact will be undertaken as a two stage process. Firstly, all the impacts from the previous section will be assessed for potential to act cumulatively with other projects. This summary assessment is set out in **Table 23-19**.

Table 23-19 Potential Cumulative Impacts

Impact	Potential for cumulative impact	Rationale
Construction		
Impact 1: Impacts associated with inert waste from construction	No	The majority of inert wastes are proposed to be recycled or reused within the construction of the Facility. This is likely to be reflected in other schemes where the inert waste is also likely to be reused to fulfil targets set by the rWFD and local policy. As such, residual inert waste is likely to be negligible in terms of capacity within the region.
Impact 2: Impacts associated with non-hazardous waste from construction	Yes	Non-hazardous excavated material from other large-scale developments is likely to be competing for the same recovery or disposal facilities where off-site waste management is required.
Impact 3: Impacts associated with hazardous waste from construction	Yes	Hazardous excavated material from other large-scale developments is likely to be competing for the same recovery or disposal facilities where off-site waste management is required.
Operation		
Impact 1: Impacts associated with residual non-hazardous material during operation	No	As the non-hazardous waste associated with the Facility is proposed to be recycled locally and small volumes recovered, there will be no cumulative impacts on landfill capacity associated with other developments.
Impact 2: Impacts associated with residual hazardous material during operation	No	The hazardous waste produced during the operation of the Facility will comprise mainly of monoethanolamine liquid waste. This is used specifically in the CO ₂ capture process to absorb the CO ₂ ; therefore, it is unlikely there would be other developments producing this waste and competing for the same hazardous waste treatment facilities.
Decommissioning		
The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time of decommissioning and agreed with the relevant authorities. A decommissioning plan will be provided. As such, cumulative impacts during the decommissioning stage are assumed to be no worse than those identified during the construction stage.		

23.10.2 The assessment of Cumulative Impact Assessment (CIA) with the relevant cumulative schemes that have been determined in discussion with Boston Borough Council (BBC) will be provided in the ES.

23.10.3 The waste capacity CIA considers the effects of the Facility cumulatively with other development proposals. This has not included housing which is adopted by the South-East Lincolnshire Local Plan (SELLP) because this would have already been accounted for by Boston Borough Council and would be inherent in the waste impact assessment carried out as part of the assessment for the SELLP.



23.10.4 A summary of projects considered for the CIA in relation to waste is provided below in **Table 23-20**. A full list of all schemes considered is provided in **Appendix 6.1 List of Cumulative Schemes**.

Table 23-20 Summary of Projects considered for the CIA in Relation to Waste

Project	Status	Development Period	Distance from the Application Site	Project Definition	Project Data Status	Include d in CIA	Rationale
Boston Barrier Flood Defence	Application approved Construction started	2017 – ongoing (completed August 2021)	Boston Barrier at closest point to the Application Site is 500 m.	Environmental Statement	Complete / high	No	Based on the latest Boston Barrier Flood Defence timescales It is determined that the scheme will complete by August 2021 ahead of the planned earliest start date (October 2021) of construction of the Facility.
The Quadrant Mixed-use development of 502 dwellings and commercial/ leisure uses B/14/0165	Application approved Construction started	2014 - ongoing	Quadrant 1 1.2 km from the Application Site	Details within Environmental Statement	Quadrant 1 – Complete/ high Quadrant 2 - Incomplete/ low	No	This mixed-use development is accounted for in the South-East Lincolnshire Local Plan.
Triton Knoll Offshore Wind Farm	DCO consented	2008 - 2021	Onshore cable corridor and Construction compound at Langrick 9.7 km from the Application Site	Environmental Statement	Complete/ high	No	Construction is expected to be completed in 2021.
Viking Link Interconnector B/17/0340	Application approved	2014 - 2023	Bicker Fen substation	Environmental Statement	Incomplete / low	Yes	The converter station is planned to be completed in 2023

Project Related



Project	Status	Development Period	Distance from the Application Site	Project Definition	Project Data Status	Include d in CIA	Rationale
			14.4 km from the Application Site				therefore there is likely to be some overlap in construction timescales.
Land south of Endeavour Way, PE20 0JA Erection of 14,655sq.m Class B2 (general industrial) floor space B/15/0506	Application Approved	2015 – ongoing	10 km south west of the Application Site	Detailed application	Complete / high	No	Development at Endeavour Park is accounted for in the South-East Lincolnshire Local Plan.
The Junction Community Hall, PE20 1QJ Construction of community building B/16/0062	Application approved	2016 – ongoing	4 km south west of the Application Site	Detailed application	Complete / high	No	Low quantities of estimated arisings during construction phase.
Plots C and D, The Quadrant, Land adjacent to A16, Wyberton, Boston For approval of reserved matters (appearance, layout and scale) for the construction of hotel,	Application approved	2018 – ongoing	1 km south west of the Application Site	Application for approval of reserved matters	Complete / high	No	This mixed-use development is accounted for in the South-East Lincolnshire Local Plan.

Project Related



Project	Status	Development Period	Distance from the Application Site	Project Definition	Project Data Status	Include d in CIA	Rationale
public restaurant and drive-thru B/18/0413							
The Quadrant, PE21 7HT Application for approval of reserved matters from application B/14/0165 (roads 6, 7 and 8) B/19/0027	Application approved	2018 – ongoing	1 km south west of the Application Site	Application for approval of reserved matters	Complete / high	No	This mixed-use development is accounted for in the South-East Lincolnshire Local Plan.
Howards Tenens Ltd, Riverside Industrial Estate, Marsh Lane, Boston, Lincolnshire PE21 7SZ Erection of a storage and distribution building. B/18/0063	Application approved	2018 – ongoing	500 m north west of the Application Site	Detailed application	Complete / high	No	Low quantities of estimated arisings during construction phase.
Land off Wash Road, Kirton, Boston Storage and distribution park comprising of approximately	Application approved	2005 - 2006	3.8 km south west of the Application Site	Detailed application	Complete / high	No	Kirton Distribution Park is accounted for in the South-East Lincolnshire Local Plan.

Project Related



Project	Status	Development Period	Distance from the Application Site	Project Definition	Project Data Status	Include d in CIA	Rationale
58,000sq.m of B8, B2 and B1. B/05/0562							
Land adjacent to Murlec Avalon Road, Kirton Distribution Park, Kirton, Boston, Lincolnshire, PE20 1QR Construction of 4 no. detached buildings comprising 16 no. industrial units. B/18/0057	Application approved	2018 – ongoing	3.8 km south west of the Application Site	Detailed application	Complete / high	No	Kirton Distribution Park is accounted for in the South-East Lincolnshire Local Plan.
Land off Enterprise Way, Boston, PE21 7TW Proposed mixed use commercial development (A2/A3/B1/B8/D2) including associated access, parking and landscaping (3,460 sq.m). B/18/0357	Application approved	2018 - ongoing	Approximately 3.5 km north west of the Application Site	Detailed application	Complete / high	No	Development at Endeavour Park is accounted for in the South-East Lincolnshire Local Plan.

Project Related



Project	Status	Development Period	Distance from the Application Site	Project Definition	Project Data Status	Include d in CIA	Rationale
Land adjacent to J T Friskney, Boardsides, Wyberton Fen, Boston, PE21 7NY Erection of single storey storage unit and associated car parking B/18/0433	Application approved	2018 - ongoing	Approximately 5 km north west of the Application Site	Detailed application	Complete / high	No	Low quantities of estimated arisings during construction phase.
Land between Wide Bargate and Red Lion Street, Boston, Lincolnshire (site area 6,064 sq.m) Demolition of 36 Strait Bargate and 2 Wide Bargate and part of the boundary wall to the Methodist Church. Refurbishment and extension of Grade II listed 4 Wide Bargate. Erection of 14 no. retail units (A1); 2 no. retail units (A3/A5); and 15 no. residential apartments, with	Application approved	2018 - ongoing	Approximately 2.1 km north west of the Application Site	Detailed application	Complete / high	No	Low quantities of estimated arisings during construction phase.

Project Related



Project	Status	Development Period	Distance from the Application Site	Project Definition	Project Data Status	Include d in CIA	Rationale
associated car parking. Creation of a new pedestrian (and delivery/service vehicle) link connecting Wide Bargate to Red Lion Street B/18/0060							
Land off Lealand Way, Marsh Lane Industrial Estate, Boston, PE21 7SW Installation of a 6.0 MW Gas Fired Power Generation Site, associated infrastructure and new means of access B/19/0474	Application approved	2019 – ongoing	422 m north of the Application Site	Detailed Application	Incomplete / low	Yes	Excavation and demolition waste that cannot be used on-site and require off-site management are likely to compete for the same disposal or recovery facilities.
Boston West Golf Centre, Langrick Road, Hubberts Bridge, Boston, Lincolnshire, PE20 3SG	Application not yet determined	2020 – ongoing	7 km north west of the Application Site.	Detailed application	Complete / high	Yes	Excavation and demolition waste that cannot be used on-site and require off-site management are likely to compete for the

Project Related



Project	Status	Development Period	Distance from the Application Site	Project Definition	Project Data Status	Included in CIA	Rationale
<p>Full planning permission for the part change of use of the golf course for the siting of caravans with associated works.</p> <p>Outline planning permission (all matters reserved) for the development of a "hub" building of up to 12,000sqm total floorspace.</p> <p>B/19/0520</p>							same disposal or recovery facilities.

23.10.5 In summary, the following projects will be assessed for potential direct cumulative impacts:

- Viking Link Interconnector;
- Installation of a 6.0 MW Gas Fired Power Generation Site; and
- Boston West Golf Centre part change of use of the golf course for the siting of caravans and development of a "hub" building.

Cumulative Effects during Construction

23.10.6 Where the construction phases of the above schemes overlap with the construction of the Facility, they will be competing for similar off-site recovery and disposal facilities for management of construction, demolition and excavation wastes that cannot be managed on-site.

23.10.7 The impact assessment for the Facility identified that the effects for non-hazardous and hazardous construction waste are **minor adverse** and **negligible**. It is unlikely that the developments detailed above would cause significant volumes of construction waste. The Viking Link Interconnector intends to appropriately re-use the majority of excavated soil for the cable route therefore it is not anticipated that there will be significant surplus waste soil associated with this development (National Grid, 2017). The 6.0 MW gas fired power generation site and Boston West Golf Centre developments are relatively small developments and are unlikely to produce significant quantities of waste which will change the level of significance previously assessed.

23.11 Inter-Relationships with Other Topics

23.11.1 This chapter has inter-relationships with **Chapter 11 Contaminated Land, Land Use and Hydrogeology**. **Chapter 11 Contaminated Land, Land Use and Hydrogeology**, which has considered the impact of waste during construction associated with the potential excavation of contaminated ground and storage of waste material in stockpiles; and storage of operational waste arisings on human and environmental receptors.

23.11.2 The transport of materials to and from the Application Site (including waste materials) is considered within **Chapter 19 Traffic and Transport**.

23.11.3 The impacts associated with waste received by or produced by the Facility on the marine environment, including water and sediment quality and marine ecology is provided in **Chapter 15 Marine Water and Sediment Quality**, **Chapter 16**

Estuarine Processes and Chapter 17 Marine and Coastal Ecology.

23.12 Interactions

23.12.1 The impacts identified are unlikely to interact with each other as landfill void capacity is different for the different categories of waste, therefore this has not been considered further.

23.13 Summary

23.13.1 The assessment of the construction and operational phases of the Facility could cause a range of effects on landfill void capacity. The magnitude of these effects has been assessed using expert assessment in line with the IEMA guide to: Materials and Waste in Environmental Impact Assessment (IEMA, 2020). In all cases, the effects that have been assessed resulted in no significant impact to landfill void capacity. A summary of impacts to these receptors are listed in **Table 23-21**.

23.13.2 A summary of the predicted waste arisings and proposed waste management measures during construction, operation and decommissioning is provided below.

Construction Phase

23.13.3 The table below provides a summary of the predicted waste arisings during construction.

Cumulative arisings by category	Predicted arisings (tonnes)	Averaged monthly arisings	%
Inert	27,738	578	13.9 %
Non-hazardous	165,945	3457	83.3 %
Hazardous	5,503	115	2.8 %
Total	199,186	4,150	

Inert wastes

23.13.4 The proposed waste management measures would reduce the amount of inert wastes by recycling the maximum amount of this material into an engineering standard product in accordance with the Aggregates Quality Protocol for use.

23.13.5 Where this cannot be achieved, other on-site uses such as recovery in the construction of site access tracks or backfill would be prioritised over any off-site options. Therefore, the measures would reduce the amount of material requiring

off-site management to a minimum; and there are sufficient facilities within the region to recycle this material. This promotes the Waste Hierarchy and the Proximity Principle.

Non-hazardous wastes

- 23.13.6 Most of the excavated material is likely to be non-hazardous because the Application Site is largely greenfield. The waste management measures proposed for excavated material would promote the reuse of this material in accordance with the rWFD exclusion or CoP, where possible. The proposed use on-site would be considered a justifiable option under the Waste Hierarchy and the Proximity Principle, because the retention of the material on-site would prevent emissions as a consequence of removal from the site. Therefore, the use of the CoP would reduce the quantity waste being managed, because if the principles of the CoP are followed, the excavated material ceases to be waste when used.
- 23.13.7 Any excavated material that is not suitable for use on-site or is surplus to requirements for use for construction purposes would be sent off-site in accordance with the Waste Hierarchy. Options for reuse or recovery, for example to a soil conditioning facility; or beneficial use as restoration material at a local landfill, would be prioritised to ensure that the amount of waste excavated material being disposed to landfill is reduced to an absolute minimum.
- 23.13.8 Biodegradable waste generated from site clearance would be managed by being sent for recovery at a regional composting or an anaerobic digestion facility.
- 23.13.9 Waste produced by site workers in site welfare facilities can be dealt with by introducing a policy to require workers to take their own waste home. Receptacles should also be provided within the site compound areas to collect different waste streams and allow the separate collection of dry recyclables from residual waste. Segregation of the different waste streams would ensure that the maximum amount of waste is diverted for reuse, recycling and recovery. The food waste should also be separately collected and sent for anaerobic digestion.
- 23.13.10 Metal waste should be collected in containers/skips and removed off-site for recycling at local facilities.
- 23.13.11 Suppliers should be required to take back any packaging associated with their products. Packaging materials that cannot be returned should be kept for on-site use (e.g. use of pallets for storage). Any residual packing that cannot be used on-site should be segregated into distinct dry recyclable waste streams and sent for recycling off-site. No waste packaging would be landfilled.

23.13.12 Wood should either be recycled at a wood processing facility; or be chipped or treated and prepared for recovery at a biological treatment facility, such as composting; or prepared for use as a fuel in a biomass energy from waste facility.

23.13.13 Bitumen based surface planings would be treated at an authorised mobile treatment unit by crushing, grinding and screening, and used again on-site in the construction of paving structures similar to those from which the waste arose, in accordance with a 'U1' Waste Exemption (Use of Waste for Construction).

Hazardous wastes

23.13.14 The waste management measures proposed would effectively reduce the amount of hazardous excavation waste on-site because of the material ceasing to be waste when reused under the CoP. This would also reduce the amount that requires off-site disposal.

23.13.15 Off-site options for surplus material or material that would not be suitable for use would be prioritised towards soil treatment to reduce or remove contaminants to a level that would facilitate the reuse or recovery of the treated material; thereby promoting the Waste Hierarchy.

23.13.16 The region has one hazardous waste landfill facilities in Northamptonshire. The use of regional treatment facilities to treat any hazardous soil as an alternative to landfill would promote the Proximity Principle by avoiding the need to export the material out of the region.

23.13.17 There are sufficient facilities within the region to recycle or treat ad hoc hazardous wastes (such as waste oils, etc.).

Operational Phase

23.13.18 The table below provides a summary of the predicted main waste arisings during operation.

Element	Waste Stream	Amount (per annum)	Management in accordance with the Waste Hierarchy
Wharf	Damaged RDF bales	Covered in the RDF total below	Recovery - Re-baled on-site and processed with other RDF for energy recovery in the gasifier. The plant is Waste Framework Directive R1 compliant and therefore a recovery process
RDF storage area	RDF	1,200,000 tonnes	Recovery – energy from waste recovery. The plant is Waste Framework Directive R1 compliant and therefore a recovery process
Three thermal treatment units, turbine hall and air cooled condenser	Non-hazardous ash	198,242 tonnes	Recycled in the LWA to a market specification product.
	Air pollution control residues	16,664 tonnes	Recycled in the LWA to a market specification product.
Carbon capture facility	Hazardous liquid waste 40 % Monoethanolamine (MEA) / 60 % water	120,000 litres	Disposal via Liquid hazardous waste treatment
Associated infrastructure	Mixed municipal waste from site workers	Approximately 34 tonnes (based on 0.31 tonnes per worker per year).	Recycled – source segregation of metal, paper and card, plastics and glass. Recovered – residual waste that cannot be recycled will be collected for recovery.
Thermal treatment Facility	Segregated large particles	5,000 tonnes	Mainly comprises ferrous metal. Recycled locally.
Ash Processing	Recovered metal		

23.13.19 The Operation of the Facility will be governed by the Conditions associated with an Environmental Permit issued by the Environment Agency. This will set specific

standard associated with the management of wastes (amongst other things) arising from the processes at the Facility to ensure the wastes are handled in accordance with Best Available Techniques.

- 23.13.20 The operation of the Facility will also produce conventional wastes, such as metals, office and 'household' type waste, plastics and waste electrical and electronic equipment (WEEE). Small quantities of hazardous wastes will also be produced, for example, waste oil and waste process and cleaning chemicals.
- 23.13.21 Separate receptacles should be provided for dry recyclables, such as paper and cardboard, plastic, glass, wood and metal. This would facilitate the most appropriate reuse, recycling or recovery option in accordance with the Waste Hierarchy.
- 23.13.22 There are general principles that would need to be followed to ensure effective management of conventional waste arisings.
- 23.13.23 The operators of the Facility would be under a legal obligation to comply with the waste duty of care to ensure that they handle waste safely and in compliance with the appropriate regulations.
- 23.13.24 Servicing and maintenance personnel would be required to know the difference between hazardous waste and non-hazardous waste. The controls that are applied to hazardous waste are stricter. All hazardous waste must be segregated from non-hazardous wastes or other non-waste materials. All hazardous wastes must be accompanied by a hazardous waste consignment note when removed from site.
- 23.13.25 The key requirements of the Facility in terms of producer responsibility would be to ensure batteries, WEEE and packaging wastes are managed appropriately. Producer responsibility requires businesses to:
- Minimise waste arising and promote their re-use.
 - Ensure the waste products are treated and meet recovery and recycling targets for the waste materials.
 - Design products by reducing material use and enhancing reusability and recyclability.

Decommissioning Phase

- 23.13.26 No decision has been made regarding the final decommissioning policy for the Facility, as it is recognised that industry best practice, rules and legislation change over time.

23.13.27 Decommissioning of the Facility is likely to create significant quantities of waste.

23.13.28 The measures proposed for waste management during the construction phase of the works will be adhered to during decommissioning, in accordance with a decommissioning plan that will accord with relevant policy, legislation and guidance relevant at the time. The Decommissioning Plan will be agreed with relevant authorities prior to the decommissioning starts and will contain relevant measures to manage waste.

Table 23-21 Impact Summary

Potential Impact	Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Effect
Construction						
Impact 1: Impacts associated with inert waste from construction	East Midlands inert waste landfill capacity	Negligible	Negligible	Negligible (No effect)	N/A	No effect
Impact 2: Impacts associated with non-hazardous waste from construction	East Midlands non-hazardous landfill capacity	Medium	Negligible	Minor adverse (No effect)	N/A	No effect
Impact 3: Impacts associated with hazardous waste from construction	National (England) hazardous Landfill Capacity	Negligible	Negligible	Negligible (No effect)	N/A	No effect
Operation						
Impact 1: Impacts associated with residual non-hazardous material during operation	N/A	N/A	N/A	No Impact	N/A	No effect
Impact 2: Impacts associated with residual hazardous material during operation	National (England) hazardous Landfill Capacity	Negligible	Negligible	Negligible (No effect)	N/A	No effect

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