REPORT

Boston Alternative Energy Facility

Non-Technical Summary

Client: Alternative Use Boston Projects Ltd

Reference: PB6934-RHD-01-ZZ-RP-N-2026
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Boston Alternative Energy Facility

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1 Introduction

1.1 About this Document

1.1.1 This Document is the Non-Technical Summary (NTS) of the Preliminary Environmental Information Report (PEIR) for the proposed Boston Alternative Energy Facility, a land-based power generation facility.

1.1.2 This document provides a summary of the project, the site selection process and the key preliminary findings of the Environmental Impact Assessment (EIA). The Facility is considered to be an 'EIA development' for the purposes of the 'The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017' ('the EIA Regulations').

1.1.3 The purpose of the PEIR is to provide the preliminary environmental information which has been gathered to carry out an assessment of the key likely significant effects of the project, from construction through to decommissioning.

1.1.4 The Facility is a National Significant Infrastructure Project (NSIP) under the Planning Act 2008. This is because it is a land-based power generation facility generating more than 50 Megawatts (MWe). Consent for the Facility would therefore require a Development Consent Order (DCO) to be submitted to the Planning Inspectorate, who will determine the application on behalf of the Secretary of State.

1.1.5 The Environmental Statement (ES) which will outline the full EIA for the project, will be informed by stakeholder responses to the PEIR. The ES will accompany the DCO application for development consent and will be submitted to the Planning Inspectorate in late 2019.

1.2 Next Steps

1.2.1 The PEIR will be subject to statutory consultation in accordance with Section 42 'Duty to Consult' of the Planning Act 2008 and Regulation 13 of the EIA Regulations. The consultation will start on 25 June 2019 and will close on 6 August 2019. We'd like to hear what you think, so please share any concerns, ideas or local knowledge that you may have.

1.2.2 AUBP Ltd will further refine the project design and EIA based upon the consultation responses received in relation to the PEIR. The final results of the EIA will be presented in an Environmental Statement and a summary of all the consultation responses received will be presented in a Consultation Report, both of which will accompany the DCO application to be submitted in circa late 2019.

1.3 The Proposed Development

1.3.1 The Facility is to be located at the Riverside Industrial Estate, Boston, Lincolnshire. The Riverside Industrial Estate is adjacent to the tidal River Witham (known as The Haven) and down-river from the Port of Boston. The location and indicative ‘red line’ boundary of the Facility is shown in **Plate 1** below.

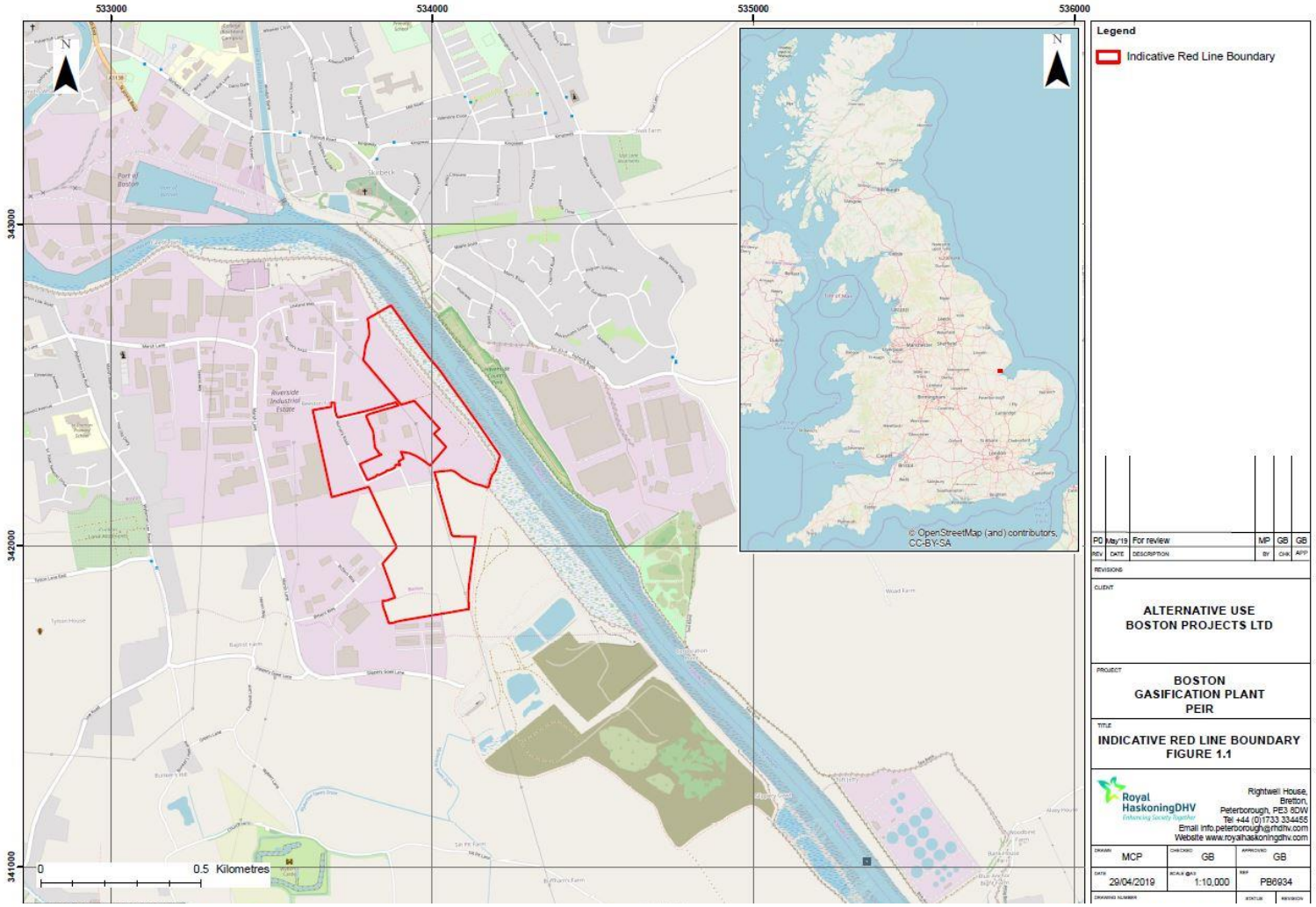

Plate 1 Indicative Red Line Boundary

1.3.2 The Facility will have a total generating capacity of 102 MWe (gross) of renewable energy and it will deliver approximately 80 MWe (net) to the National Grid. The Facility will use the sort of waste that the householder separates from their recyclable waste. This is called 'residual' waste. This can be used as a fuel. This is called refuse derived fuel (RDF) and this will be sent to the Facility to be used to generate the energy to generate energy. The process for generating power is called gasification, and this document explains this process later.

1.3.3 The Facility will comprise the following main elements:

- A wharf and associated infrastructure (including re-baling facility, workshop, transformer pen and welfare facilities);
- A RDF bale storage areas, including sealed drainage with mobile plant for transferring bales;
- Conveyor system between the RDF storage area and the RDF processing building part of which is open and part of which is under cover (including thermal cameras);
- RDF processing building and associated infrastructure (including photo-voltaic roof panels, conveyor system to storage silos, 'fines' de-stoning plant, water tanks and transformer pen);
- Processed RDF storage silos and 'metered' conveyor system into the gasification plant and liquid nitrogen silos;
- Gasification plant comprising three separate 34 MW_e gasification lines and associated ductwork and piping, transformer pens, diesel generators and stack;
- Turbine plant comprising three steam turbine engines, 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, 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;
- Carbon dioxide (CO_2) recovery plant and associated infrastructure, including chiller unit; 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.

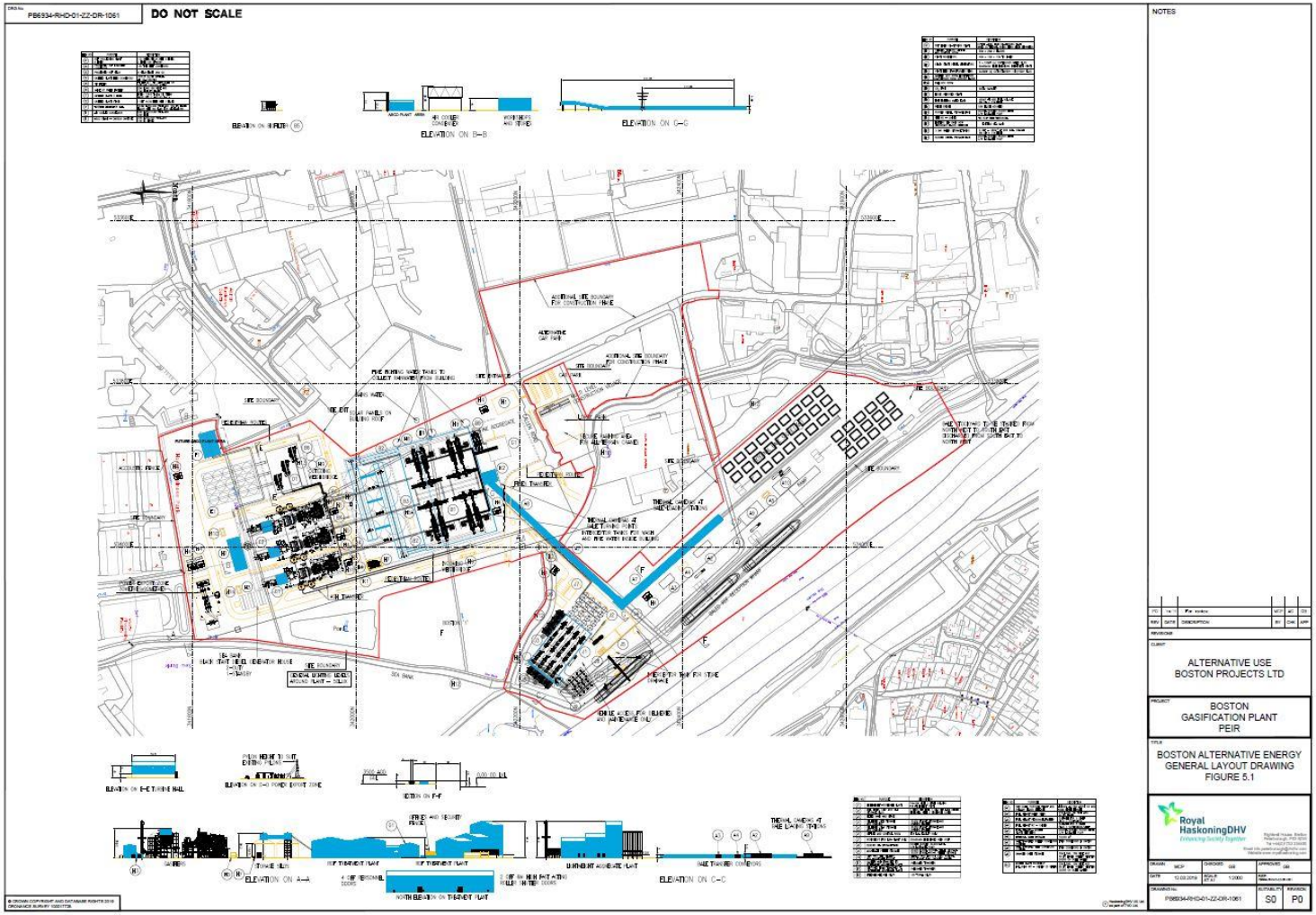

Plate 2 General Layout

1.3.4 The elements of the Facility are shown in **Plate 2**. The construction period for the whole development is anticipated to be up to 48 months.

1.3.5 The Facility will be designed to operate for an expected period of at least 25 years, after which it may be decommissioned. The wharf structure will replace a section of the current primary flood defence bank and will form a permanent structure that is not anticipated to be decommissioned.

1.3.6 This NTS is intended to act as a high-level, stand-alone document to provide an overview of the environmental impacts of the proposed project in non-technical language. For further detailed information, the full PEIR should be referred to. This can be found at:

- https://www.bostonaef.co.uk/ or
- https://infrastructure.planninginspectorate.gov.uk

1.4 The Developer

1.4.1 Alternative Use Boston Projects Ltd (AUBP Ltd) is the Applicant undertaking the development and securing funding for the Facility. AUBP Ltd is a privately-owned company with core business in Energy from Waste, specifically renewable electricity projects producing “Green Energy”.

1.4.2 Royal HaskoningDHV was commissioned by AUBP Ltd to coordinate the DCO process and produce the environmental documentation necessary to consider the Facility’s impacts on all environmental receptors.

1.4.3 Royal HaskoningDHV is supported through the EIA process by several additional consultants who are responsible for particular specialist topics.

1.5 Project Need

1.5.1 The ‘need’ that exists for new power generating infrastructure, such as the proposed Boston Alternative Energy Facility (‘the Facility’), is confirmed in National Policy Statements (NPS). These NPSs are used by the Secretary of State on to make decisions on nationally significant energy infrastructure like the Facility.

1.5.2 The relevant NPSs (EN-1 and EN-3) establish an urgent and substantial need for new energy generation infrastructure, with the desire for it to be renewable or low carbon, to achieve climate change targets.

1.5.3 The Applicant is mindful of the current waste situation in respect of UK waste being treated overseas, the impact of the restriction on waste imports into far eastern countries and dwindling UK landfill capacity. These factors were key drivers for the Applicant to seek

to capture as much currently exported or landfilled RDF as possible, and to develop the cleanest, most efficient plant possible.

1.5.4 There were many reasons for choosing gasification as the technology process for the Facility

including economies of scale; diversion of waste from landfill and abroad and the potential for carbon dioxide capture for reuse.

1.5.5 The 'Do Nothing' scenario is not considered appropriate given the established need for new low carbon energy generation in the UK and doing nothing would prevent this significant investment in the local economy and employment.

1.6 Site Selection and Consideration of Alternatives

1.6.1 The site of the Facility is considered appropriate for the following reasons:

1.6.1.1 the site is identified as appropriate site for this kind of facility in Lincolnshire County Council's planning allocation policies as well as having other local planning policy support:

- The location directly adjacent to a navigable watercourse provides a means of delivery of RDF and export of materials, which significantly reduces the amount of road vehicle trips;
- There is sufficient footprint to accommodate the required plant and equipment for the Facility;
- It is considered technically feasible to connect to the electricity distribution network on site;
- The site is not directly situated within any environmental designation. It is within a flood zone, however it benefits from flood defences; and
- It is located within an existing urban/industrialised environment, with an existing biomass gasification plant located next door.

1.7 The Environmental Impact Assessment Process

1.7.1 The Environmental Impact Assessment (EIA) considers all relevant topics covered under the three general areas of physical environment, biological environment and human environment. The topics to be included in the EIA were agreed with the Planning Inspectorate and other stakeholders.

1.7.2 As part of the process, a detailed description of the current baseline environmental conditions has been identified, through a combination of desk-based studies, consultation and on-site surveys.

1.7.3 Impacts associated with the construction, operation or decommissioning of the project have been identified, and an assessment made on the significance of potential impacts using appropriate methodologies.

1.7.4 Where it has been identified that the development is likely to give rise to 'significant environmental impacts', specified 'mitigation' measures have been proposed to avoid impacts or reduce them to acceptable levels and, if possible, to enhance the environment. Mitigation will be agreed through ongoing consultation with the relevant authorities.

1.7.5 The process also considers:

- Inter-relationships, where impacts to one receptor can influence another (for example an impact on a fish population may lead to reduced prey for birds and marine mammals);
- Cumulative impacts, where the project will be considered alongside the predicted impacts of other sizable construction projects in the nearby area; and
- Trans-boundary impacts, where activities in other countries may be impacted.

1.8 Structure and Content of the PEIR

1.8.1 The PEIR comprises three volumes:

- Volume 1: Preliminary Environmental Information Report chapters (chapter list shown in **Table 1**);
- Volume 2: Appendices; and
- Volume 3: Figures

Table 1 PEIR Chapter List

Chapter Type	Chapter Number	Title
Introductory	1	Introduction
	2	Project Need
	3	Policy and Legislative Context
	4	Site Selection and Assessment of Alternatives
	5	Project Description

	6	EIA Methodology
	7	Consultation
Topic-specific Scheme Wide Aspects	8	Cultural Heritage
	9	Landscape and Visual Impact
	10	Noise and Vibration
	11	Contaminated Land, Land Use and Hydrogeology
	12	Terrestrial Ecology
	13	Surface Water, Flood Risk and Drainage Strategy
	14	Air Quality and Odour
	15	Marine Water and Sediment Quality
	16	Estuarine Processes
	17	Marine and Coastal Ecology
	18	Navigational Issues
	19	Transport
	20	Socio-Economics
	21	Climate Change
	22	Health Impacts
	23	Waste
	24	Transboundary Impacts
	25	Summary
		Non-Technical Summary

2 Project Description

2.1 Construction

2.1.1 The overall construction period will be at worst case 48 months from 2021 to 2025. It is expected that there will be between 250-300 construction workers at peak construction. Construction activities will take place six days a week (Monday to Saturday) between 8am and 8pm (with an option of 7am to 7pm), with no bank holiday or public holiday working.

2.1.2 Details of construction phasing and proposed construction methods are in the process of being developed.. The outline process for each element is below.

Wharf

2.1.3 The wharf will be built, replacing sections of the current flood defence bank and will comprise the quay wall, the main area of the wharf (which will provide the flood defence line), and an area behind the wharf for associated infrastructure.

2.1.4 The wharf facility will include a berthing pocket to allow ships to safely dock at the wharf without restricting the navigable channel of The Haven. The berthing pocket will be constructed by dredging and excavation of the mud flats and land to the edge of the proposed wharf. Most of these construction works would be carried out by land-based equipment, because floating plant moored within the main channel could obstruct

2.1.5 The deck structure would be constructed by first driving the piles and then constructing the deck. The Contractor would work from the shore outwards, using the installed piles as part of the temporary works for construction of the structure further offshore.

RDF Silo

2.1.6 The RDF silo bases will be piled and concrete poured for the base and then the silos will be constructed via slip forming concrete. Slip forming is a continuous process and 24 hour working is required for this. Roofs will be constructed and lifted onto the silos. The six silos will be constructed in pairs taking approximately 35 days per pair.

RDF Processing

2.1.7 Following construction of the silos the RDF feedstock processing plant will begin construction. The foundations will be piled and concrete will be poured to form the hall base. Commissioning will take around 100 days. Overall from piling to commissioning will take approximately 28 months.

Gasifiers

2.1.8 The three gasifiers will have staggered start dates. Line 1 (western most gasifier), will begin construction first, then line 3 (eastern most gasifier) approximately two months later and line 2 approximately one month after that.

2.1.9 Following installation there will be commissioning for around four months, after which there will be a stage of de-snagging before further commissioning for another four months (approximately) with another period of de-snagging for each line after this.

2.1.10 Overall from the beginning of line one to the end of commissioning and de-snagging, construction of the three lines of gasification plant will take approximately 43 months.

Lightweight Aggregate Facility

2.1.11 Foundations for the lightweight aggregate facility building will be piled before the base slab is cast. The four kilns will be produced off-site (taking around five months each to be produced) and then shipped to site. The lightweight aggregate forming equipment will then be procured (also taking around five months) and then shipped to site.

2.1.12 Overall, the LWA facility will take approximately 19 months to be constructed (including detailed design).

General

2.1.13 Top soil will be removed across the site and the site will be graded using imported stone. The proposed cut and fill balance for the site has yet to be determined.

2.1.14 HERAS-style fencing will be erected around the site (an estimated fence distance of 4 km).

2.1.15 The site incorporates areas of temporary use during the construction phase. There are two areas shown on **Plate 2** one to the west of Nursery Road and the other to the east of it.

2.1.16 These are provided to accommodate all construction laydown, and fabrication; with welfare provision and construction site offices within the Application Site boundary. On completion of the construction phase these laydown areas will not be used for any operating plant. However, the site car park is likely to be located in the western laydown area.

2.1.17 Contracts with companies involved in the construction works will incorporate environmental control, health and safety regulations and current guidance with the intention that construction activities are sustainable and that all contractors involved with the construction stages are committed to agreed best practice and meet relevant environmental legislation.

2.2 Operation

2.2.1 **Plate 3** provides a summary of the operational processes:

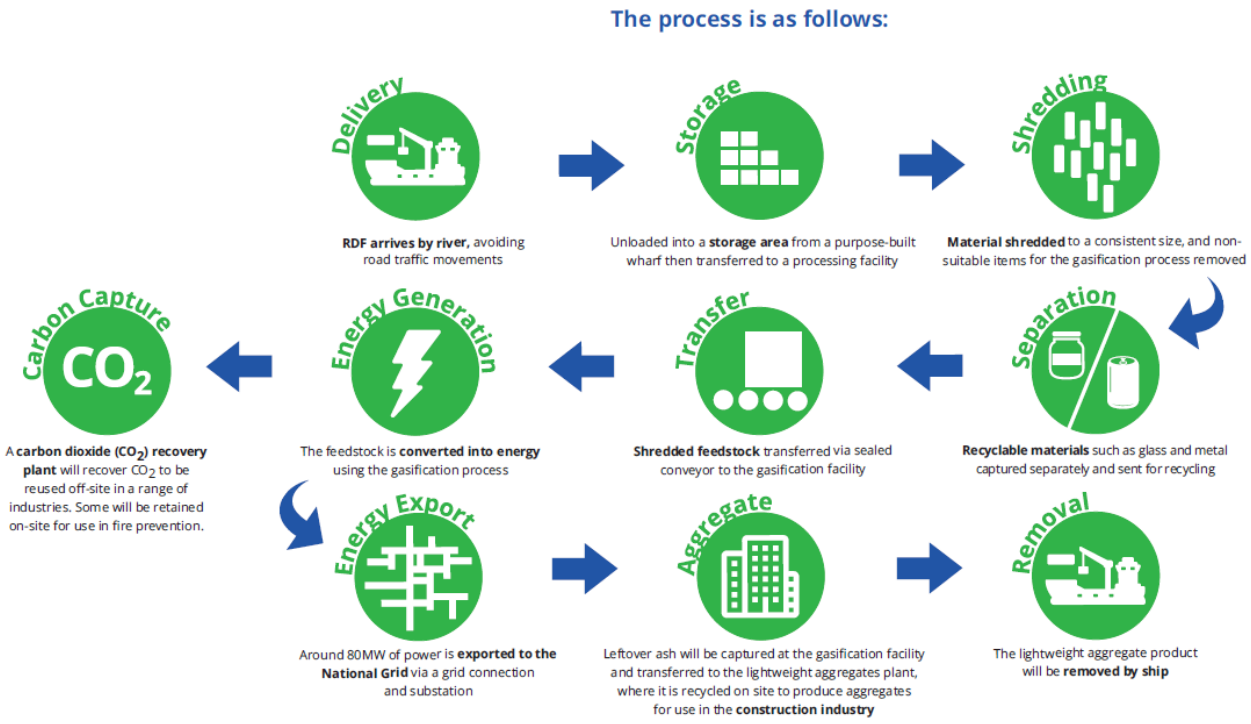

Plate 3 Operational process of the Facility

Refuse Derived Fuel Supply

2.2.2 The Facility will receive up to approximately 1,300,000 tonnes of RDF per year. The RDF will be shipped in plastic wrapped bales. The RDF will comprise of residual waste collections from householders. The bales will be labelled to identify the source of the RDF and the location and date of baling.

2.2.3 The material will be sent to the Facility from ports most likely located on the East coast of the UK. The specific departure locations will be dictated by market conditions at the time of supply.

2.2.4 The bales will be brick-shaped and have an anticipated volume of 1.85 m^3, weighing approximately 1.3 to 1.5 tonnes.

Wharf

2.2.5 Arriving vessels must navigate up The Haven to the proposed berth over high tide, and leave over the next high tide. The river is not wide enough to turn a vessel at the proposed wharf. It is anticipated that vessels will be turned at the Port of Boston, either at the 'Knuckle' point turning circle outside of the Wet Dock, or within the Wet Dock.

2.2.6 The proposed wharf will comprise a 400 metre long docking facility, loading and offloading equipment and access / egress ramp. The wharf will have two berths for

receiving RDF feedstock, and one berth for loading aggregate and receiving sediment and clay (which are required by the LWA plant).

2.2.7 Approximately 624 ships per year will be required, which represents 12 per week.

Temporary RDF Storage Area

2.2.8 Bales will be removed from the vessels using mobile cranes with clamps. Any bales that have been damaged in transit will remain in the hold and will not be unloaded from the ship. This is to prevent the scatter of litter whilst offloading a damaged bale.

2.2.9 The RDF bales will be transferred to a storage area and stacked in stockpiles for short-term storage (four to five days)

2.2.10 The storage area will be in the open and will accommodate approximately four days-worth of RDF (approximately 12,600 tonnes), based upon the rate of daily flow of processed feedstock through the gasification facility.

2.2.11 There would not be significant odour issues when the RDF is temporarily stored because the bales are tightly wrapped in plastic and are only stored for a short period.

2.2.12 The RDF would be transferred for processing on a 'first in first out' basis. All bales will be processed in the feedstock processing facility within three months of first being baled and wrapped.

RDF Bale Conveyors

2.2.13 The two RDF conveyors, each approximately 600m long will transport sealed bales from the temporary storage area to the RDF feedstock processing building.

RDF Feedstock Processing

2.2.14 It is anticipated that over 20% of the RDF is material that is not suitable for gasification (such as metals, stones, glass). This will be segregated out in the RDF feedstock processing building, leaving 1,000,000 tonnes of processed RDF that is suitable to generate energy.

2.2.15 The RDF processing building will operate in an closed environment using odour control measures to ensure no unacceptable odour is released.

2.2.16 Ferrous and non-ferrous metals will be removed. These will be collected in separate skips at each processing line and will be sent for recycling off-site.

2.2.17 Medium and heavy inert materials such as stones and glass will also be removed. Some of this material is suitable for processing in the lightweight aggregate plant. The

remainder will be sent off-site for recycling.

Silos

2.2.18 The processed RDF will be transferred via sealed conveyor to the storage silos. There are six large storage silos, each capable of storing approximately 48,000 m^3 processed RDF. The processed RDF is transferred from the silos into the gasification plant in measured quantities.

Gasification Plant

2.2.19 Gasification is a method of generating energy that can be converted into power. It does not involve direct combustion of the processed RDF; the Facility is not a traditional incinerator.

2.2.20 An indicative conceptual image of the gasification plant is shown in **Plate 4**.

Plate 4 Indicative Image of the Gasification Plant

2.2.21 In the gasification zone, the processed RDF will be broken down in a hot

(approximately 800°C) environment which has limited oxygen. This prevents the processed RDF from combusting (burning). Instead the processed RDF is converted into a gas.

2.2.22 This gas then flows to a hotter part of the plant called the thermal oxidation zone. At this point more air is injected, which causes the gas to ignite. In the thermal oxidation zone, the temperature of the gas is over 950°C, which cause potential contaminants to break down.

2.2.23 The hot gas is sent to the boiler section of the plant for heat recovery where steam is generated.

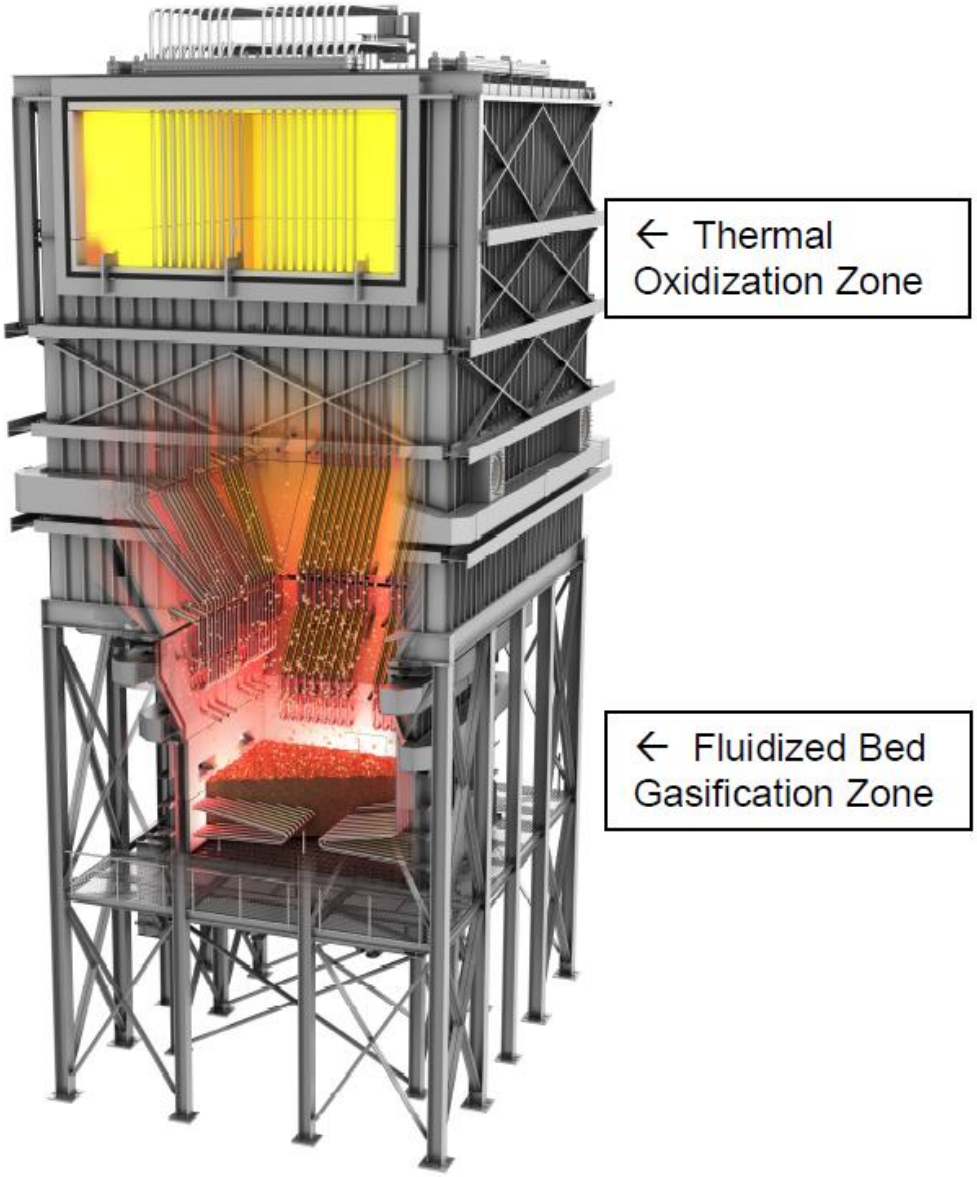

Plate 5 Concept Image of Internal Elements of the Gasifier

2.2.24 The steam is routed to the turbines to generate power.

2.2.25 The cooled exhaust gas will go to the pollution control system where chemicals will be injected to capture any residual emissions. The final treatment stage is a bag filter, which will filter the last ash / dust emissions from the combusted waste gas. The residual air pollution control residues (APC residues) will be collected in a hopper and are used on site to make aggregate.

2.2.26 The cleaned gases will flow to the stack (there will be one stack for the three

gasification units), where an on-line Continuous Emission Monitoring System (CEMS) will provide continual monitoring to ensure emission limits are not exceeded. The height of the stack was provisionally determined to be 70 m to ensure effective dispersion.

2.2.27 After the energy in the steam turbine is released for electricity production, the cooled steam will be routed to the air-cooled condenser, where the steam will be cooled further and turned back to water.

Lightweight Aggregate Plant

2.2.28 The ash and APC residues from the gasification plant will be processed on site to produce a lightweight construction aggregate pellet which is a marketable product. This will be exported via ship at a dedicated berth at the wharf.

2.2.29 Clay and / or silt will be used in the process primarily as a binder to give strength to the pellet.

2.2.30 Clay sourced from the south-east of England will be the primary binder source. This will be delivered by ship. The same ships can be used to remove the aggregate after they have been washed out.

2.2.31 Where silt is used, this will be from dredged material obtained from The Haven from dredging of the wharf berthing pocket, or from other maintenance dredging on The Haven (subject to the relevant permissions).

2.2.32 The LWA plant will have four lines.

CO_2 Recovery Plant

2.2.33 The Facility will include the connection of the flue-gas system to a carbon dioxide (CO_2) recovery plant, which will recover CO_2 (to food-grade) for off-site reuse in various industries. Some of the CO_2 will also be retained on-site for use in fire prevention.

3 Environmental Impact Assessment Methodology

3.1.1 An EIA is being undertaken for the project. The objective of the PEIR is to set out the project environmental data and proposed approach to assessment to be presented in the final Environmental Statement (ES), which will be submitted with the application for a DCO.

3.2 Impact Assessment

3.2.1 The impact assessment considers the potential for impacts during construction, operation and maintenance, and decommissioning phases of the Facility.

3.2.2 Impacts can be classified as follows:

- **Direct Impacts**: these can arise from impacts associated with the construction, operation and maintenance, or decommissioning of the project;
- **Indirect impacts**: these may be experienced by a receptor that is removed (in space or time) from the direct impact (e.g. noise impacts upon fish which are a prey resource for fish or mammals). These equate to inter-relationships highlighted by the Planning Inspectorate guidance (Advice note 17); or
- **Cumulative impacts**: these can occur because of the Facility in conjunction with other operating or planned offshore wind farms or other relevant projects in existence or planned within the study area for each receptor.

3.2.3 Data collected during project-specific desk studies and surveys are used to inform the impact assessments. This allows site-specific issues to be identified and addressed. Experience and evidence are used to inform the assessment of impacts. The magnitude of the effect (which is defined by the spatial and temporal extent, frequency and how reversible the impact is) is then identified along with the sensitivity of each receptor to that effect (e.g. a particular species or population). Sensitivity is dependent on the recoverability, value and vulnerability of the receptor. For each topic, the most relevant and latest guidance or best practice have been used and therefore definitions of sensitivity and magnitude of impact are tailored to each receptor and these are detailed in each technical chapter.

3.2.4 Finally, the overall significance of the impact is determined using a matrix approach that considers both magnitude of effect and sensitivity of receptor. Example significance definitions are given in **Table 2.**

Table 2 Impact Significance Definitions

Impact Significance	Definition

Major adverse	Very large or large change in receptor condition, both adverse or beneficial, which are likely to be important considerations at a regional or district level because they contribute to achieving national, regional or local objectives, or, could result in exceedance of statutory objectives and/or breaches of legislation.
Moderate adverse	Intermediate change in receptor condition, which are likely to be important considerations at a local level.
Minor adverse	Small change in receptor condition, which may be raised as local issues but are unlikely to be important in the decision making process.
Negligible	No discernible change in receptor condition.
Minor beneficial	The impact is of minor significance, but has been assessed as having some environmental benefit.
Moderate beneficial	The impact is assessed as providing a moderate gain to the environment.
Major beneficial	The impact is assessed as providing a significant positive gain to the environment.

3.2.5 Only those impacts which are assessed as being of moderate significance and greater are considered 'significant' in EIA terms. Where significant impacts are identified, this will result in further analysis and consultation, and suggestions of mitigation measures where practicable.

3.3 Embedded Mitigation

3.3.1 The EIA process takes account of a series of embedded mitigation measures which AUBP Ltd has committed to during the design of the Facility. Adverse impacts have been minimised through the evolution of the project design through the following processes:

- Site selection (to avoid key designated or sensitive areas); and
- Operational process requirements (e.g. the use of ash in the lightweight aggregate facility rather than off-site disposal).

3.3.2 Several plans and strategies (including landscape, navigation, traffic and access and general construction practices) will be produced which will explain how the project will be constructed and operated in an agreed and acceptable manner. These plans and strategies will be subject to on-going consultation and will be submitted with the DCO application.

3.3.3 Additional mitigation will be employed as necessary to further reduce any significant impacts.

4 Consultation

4.1.1 AUBP Ltd is conducting a comprehensive and transparent pre-application consultation in relation to the EIA process, with a wide range of stakeholders. The aim of

the consultation process is to meet and exceed the requirements of the Planning Act and EIA Regulations and has considered relevant advice and guidance published by the Planning Inspectorate and relevant United Kingdom Government departments.

4.1.2 Stakeholders have been engaged in the development process from an early stage which has influenced the design of the project and the EIA wider aspects of consultation associated with the project, including community and landowner consultation will be detailed in a Consultation Report which will be submitted with the DCO application.

4.1.3 In June 2018, AUBP Ltd submitted a Scoping Report to the Planning Inspectorate. The Scoping Opinion was issued in July 2018. Since scoping, AUBP Ltd has continued to engage in technical consultation as well as undertaking two rounds of community consultation.

5 Potential Environmental Effects

5.1 Cultural Heritage

5.1.1 This Cultural Heritage assessment considers the impact of the proposed Facility' upon cultural heritage within a 3 km Study Area. The baseline data was used to assess the significance of heritage assets within the area, how their setting affects their significance and how the Facility may impact upon these assets or their setting.

5.1.2 The assessment provides all relevant baseline information regarding the heritage assets, their setting and predicted impacts and. discusses both temporary and permanent impacts deemed significant under EIA regulations.

5.1.3 The baseline data indicated that the surrounding environs to the Application Site consist of thick alluvial clay deposits formed by water inundation throughout prehistoric and historic periods. There is evidence that these deposits can seal organic remains (peat) of early prehistoric date as well as enabling the preservation of other organic remains (e.g. wood, cloth, vegetation) which may have been deposited within the clay.

5.1.4 There are no designated assets within the Application Site. A total of six Listed Buildings are within 1 km, whilst four Scheduled Monuments and a further 22 Grade II* and I Listed structures are found within 3 km. Non-designated assets within 1 km are predominantly medieval to modern in date, mostly in the form of buried deposits associated with farmsteads. The most notable non-designated asset is the 'Roman Bank'. This extant earthwork passes through the centre of the Application Site, consisting of a c.2 m high earthen flood bank, currently undated, although research suggests it could be of Anglo-Saxon origin. A public right of way follows the length of the bank through the Application Site and an access road for a neighbouring facility passes over the top of it.

Plate 6 View of the Roman Bank and New Road Traversing over it, Looking East

5.1.5 The site walkover results suggested that there are no (visible) wrecks within the section of The Haven to be affected by the Facility. Some foreshore structures were evident on the northern bank, but none on the wharf-side. This does not preclude their survival deeper within the mud bank.

5.1.6 The significance of impacts upon identified assets by the Facility was identified as **negligible** or **minor** following mitigation. These impacts were mostly in the form of changes of setting for designated assets, whilst a direct impact will be made upon a short section of the 'Roman Bank', and upon potential buried preserved organic remains and archaeological deposits within the central Application Site and within / adjacent to The Haven.

5.1.7 Proposed mitigation measures are mostly related to the construction phase and consist of archaeological evaluation and monitoring works to ensure any potential archaeological remains are preserved by record.

5.2 Landscape and Visual Impact

5.2.1 This Landscape and Visual Impact Assessment (LVIA) assessment considers the predicted landscape and visual effects that would result from development of the Facility. The LVIA assessment follows recognised guidance and is written by a landscape architect, expert in LVIA.

5.2.2 The assessment describes the existing characteristics of the landscape and views

within the Study Area, through desk top research, site survey and analysis. This establishes the 'baseline' from which the effects of the Facility can be determined. Landscape effects include both physical effects on features (for example loss of existing trees) and effects on the character of the landscape. Visual effects relate to the effect on views and visual amenity experienced by people, including residents, users of public rights of way, road users and recreational users. Visual effects are assessed from a series of viewpoints, selected to represent the range of views people experience within the Study Area.

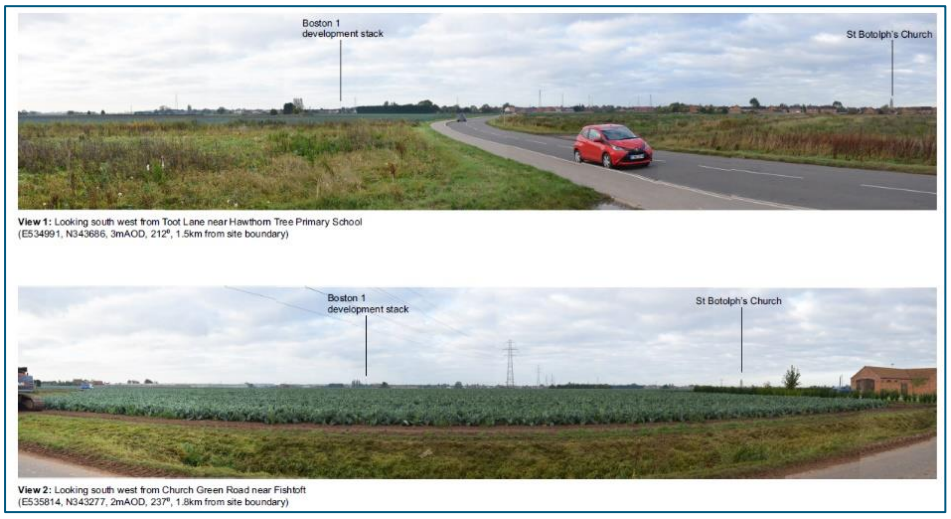

Plate 7 Example viewpoints from the LVIA Assessment

5.2.3 The Facility lies within the existing Riverside Industrial Estate, on land designated under local plans as a Proposed / Existing Employment Area and an Allocated Waste Area. As such the site, surrounding landscape and associated views are strongly influenced by existing large industrial buildings, busy roads, commercial vessels using The Haven and other features, including very tall electricity pylons that often dominate local views. Views towards the site are across a flat landscape and are often limited by tree belts, hedgerows and existing buildings. Flood defence banks alongside The Haven help screen views from residential properties to the east but also provide open, close range views from footpaths that follow the tops of the banks.

5.2.4 The Facility is an extensive development and includes several large-scale industrial buildings, structures, stacks and a riverside wharf. The LWA Plant is the tallest proposed building, located alongside The Haven. The Facility will be seen in context of the existing Biomass UK No. 3 Ltd facility, also comprising of tall buildings and a stack.

5.2.5 Given the existing industrial context of the site and surrounding area the Facility will not cause significant effects to landscape character. Effects are predicted to be **minor adverse** during construction and operation. There will be no significant physical landscape effects.

5.2.6 Effects to views during the construction stage are predicted to be the worst case scenario. Views from footpaths along the eastern bank of The Haven will be most affected with close range, open views to construction of the wharf and LWA Plant being most prominent. Effects may be **moderate major adverse**. Views from certain residential properties to the west of the site are predicted to be moderate adverse, with views of tall cranes and emerging buildings. These visual effects are significant. Visual effects during operation will be slightly less adverse, although close range views of the Facility from The Haven corridor to the east will remain **moderate adverse**.

5.2.7 Mitigation measures to reduce landscape and visual effects will include additional tree and shrub planting within existing, established belts of vegetation and planting of new belts of dense tree and shrubs, where space allows, around the Facility. Long term establishment of tree and shrub planting will provide some screening to lower sections of buildings in certain views but will not reach sufficient height to fully screen tall buildings and structures.

5.3 Noise and Vibration

5.3.1 The construction, operation and decommissioning of the proposed Facility has the potential to result in impacts from noise and vibration (including human health and the environment). To appropriately and proportionately assess the significance of potential noise and vibration impacts, a Noise and Vibration Assessment has been undertaken in consultation with key stakeholders in the area, including Boston Borough Council (BBC).

5.3.2 An assessment of noise and vibration from off-site construction phase traffic was undertaken for average and peak construction traffic scenarios. Noise receptor locations are shown in **Plate 8** below. For the average construction traffic scenario, a minor adverse significance was determined at a medium sensitivity receptor. For the peak construction traffic the range of impact significance was negligible adverse to **major adverse**. Mitigation is required during the peak scenario, however; the impact is temporary, short-term, infrequent and local.

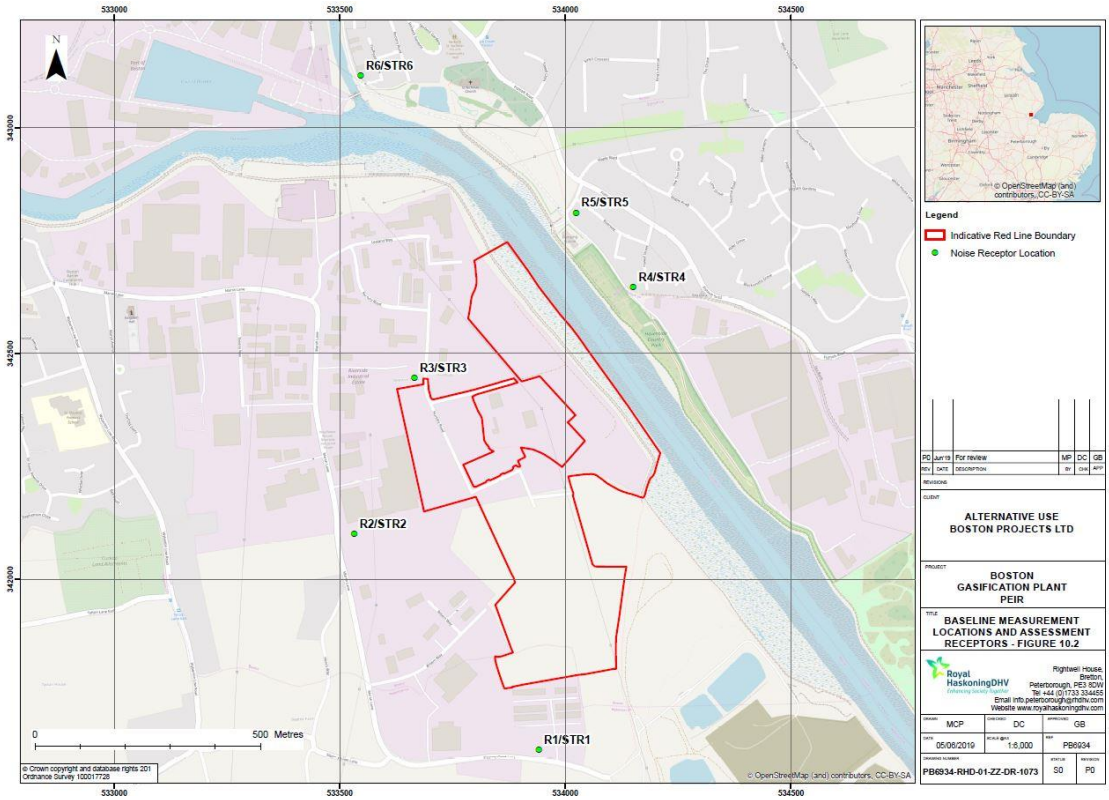

Plate 8 Baseline Measurement Locations and Assessment Receptors

5.3.3 An assessment of on-site construction phase noise will be carried out in accordance with relevant British Standards guidance for the Environmental Statement once further phasing details are specified. Vibration impacts from construction works were determined to be of **minor adverse** significance. Therefore, no additional mitigation is required.

5.3.4 Operational noise levels at nearby receptors due to the Facility were predicted to be above background noise levels at some receptors and the impacts were therefore considered to be moderate adverse. Mitigation was proposed and with the incorporation of these measures, noise levels at nearby receptors due to operation of the Facility were predicted to be negligible above background noise levels at some receptors and the residual impacts were therefore considered to be **minor adverse**.

5.3.5 Vehicle movements generated by transportation of materials to and from the Facility during the operational phase were assessed in the context of the site and surrounding road network and residual impacts were considered to **be negligible adverse**.

5.3.6 Decommissioning impacts are anticipated to be similar to those experienced during construction and were therefore considered to be **minor adverse** during the peak traffic period.

5.4 Contaminated Land, Land Use and Hydrogeology

5.4.1 This assessment focused on the potential environmental impacts associated with the interaction of the Facility with potential contaminated land and the subsequent impacts to sensitive receptors, as well the direct impacts on land use including the degradation of soil resources An assessment of the potential impacts during the construction, operation, and decommissioning phases of the Facility was carried out, and sensitive receptors (hydrology, hydrogeology, human health, land use and soil quality as an agricultural resource) were considered in relation to potential impacts arising from the Facility. This assessment identified mitigation measures required to eliminate or reduce predicted impacts.

5.4.2 The assessment sets out the required embedded mitigation measures for the Facility to minimise potential impacts. The impacts identified will require further investigation of contaminated land sources and nature of the soils present at the Application site, to develop appropriate mitigation measures if required prior to development of the Facility.

5.4.3 The following impacts for the construction phase of the Facility were identified:

- Impact on human health, including construction workers and general public during any excavations and construction related activities;
- Impact on groundwater quality from construction related activities;
- Impact on surface water quality from construction related activities;
- Impacts to soil quality because of degradation; and
- Impacts to land use from loss of best most versatile (BMV) agricultural land.

5.4.4 The following impacts were identified for the operation phase of the facility:

- Impact on human health and controlled waters including workers and public during operational and maintenance activities because of residual contaminants present within the ground

- Impact on human health and controlled waters during operation of the facility from new sources of contamination being introduced

5.4.5 The impacts identified for the Facility were not considered to be significant.

5.5 Terrestrial Ecology

5.5.1 This assessment considered the potential impacts of the Facility on terrestrial ecology. The baseline (existing) environment is described, and has been informed through a desktop study, consultation with stakeholders and on-site surveys. **Plate 9** shows the habitat types within the indicative red line boundary.

5.5.2 All potential impacts during construction and operation of the Facility are identified and significance assessed.

5.5.3 The key ecological considerations and in turn the potential construction and operational related impacts are:

- Permanent loss of terrestrial habitats;
- Loss of foraging and commuting bats;
- Displacement of common reptile species; and
- Loss of habitats;
- Indirect impacts from lighting and noise to bat and common bird species populations; and
- Disturbance effects on species from maintenance activities.

5.5.4 Mitigation has been applied to the Ecological Impact Assessment (EcIA) for both the construction and operational phase, to reduce the significance of some impacts. These mitigation measures will be secured through the adherence to an Ecological Management Plan during the construction phase of the Facility.

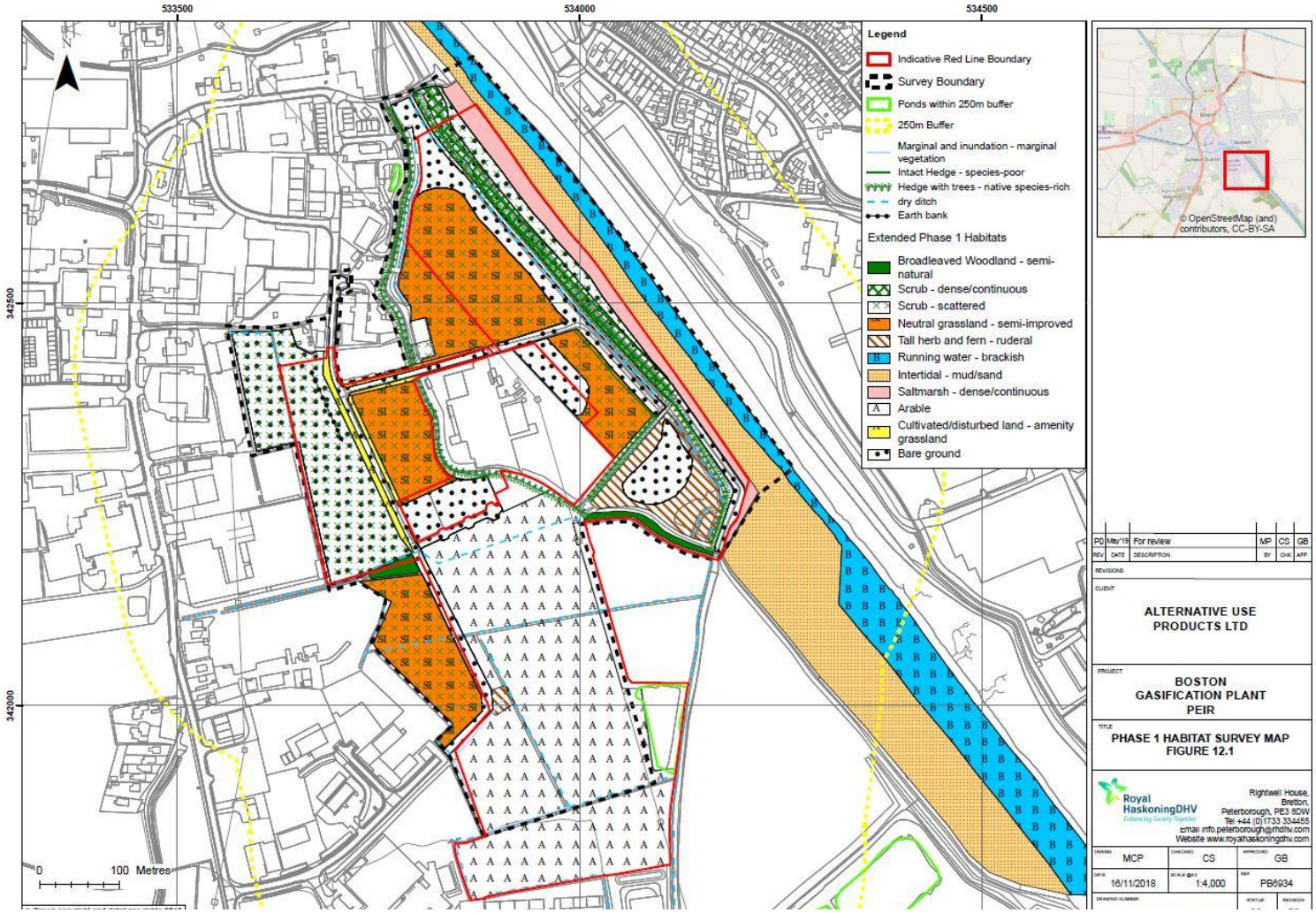

Plate 9 Habitat Survey Map

5.6 Surface Water, Flood Risk and Drainage Strategy

5.6.1 This assessment considered the potential impacts of the Facility of surface water and flood risk. It was supported by a separate Flood Risk Assessment, which assesses the flood risk implications of the Facility in detail, and a Water Framework Directive (WFD) Compliance Assessment, which determines whether the Facility is compliant with the objectives of the WFD.

5.6.2 The Facility would be located in the lower catchment of the River Witham and is drained by a number of ordinary watercourses that are maintained by the Black Sluice IDB. The watercourses have been extensively modified or are largely artificial, and the drainage catchment discharges into the tidal Witham (known as The Haven) through a pumping station. Water quality in the catchment is adversely affected by pressures from sewage discharges, agricultural and rural land management, and industrial discharges. Although the site is at risk from tidal flooding, it currently benefits from primary flood defences which provide a 1 in 150-year standard of protection. Flood risk from fluvial, surface water, groundwater and sewer flooding is low.

5.6.3 The potential impacts of the construction and operation of the Facility on water resources and flood risk receptors are identified in this chapter, and their significance is assessed. The following key potential impacts are described for the construction stage:

- Direct impacts on drainage systems.
- Increased sediment supply.
- Accidental release of contaminants.
- Changes to surface water runoff and flood risk.

5.6.4 In addition, the following impacts are described for the operation stage:

- Changes to surface water runoff and flood risk.
- Supply of fine sediment and other contaminants.

5.6.5 Following the application of embedded measures to manage sediment, pollution and drainage, none of these potential impacts were determined to be significant in EIA terms. The Facility is also compliant with the WFD, and would not result in increased flood risk on or off the site.

5.7 Air Quality Assessment

5.7.1 A preliminary air quality assessment of impacts during the construction and operational of the Facility was carried out. It provided an overview of existing air quality

within the Study Area. Human and ecological receptor locations used in the assessment are shown in **Plate 10.**

5.7.2 A construction phase dust assessment was undertaken in accordance with relevant guidance. Appropriate mitigation was recommended based on the level of risk determined in the assessment. With the effective implementation of the mitigation recommended, the residual impact of construction phase dust emissions is considered to be not significant.

5.7.3 The air quality impact of road traffic emissions during construction of the Facility was predicted to be 'minor adverse', in accordance with relevant guidance and is negligible at all but one receptor location.

5.7.4 The process contribution from the operation of the Facility were predicted to be below all of the relevant Environmental Assessment Levels at human receptor locations. With the inclusion of existing background pollutant concentrations, Predicted Environmental Concentration values for chromium, nickel and benzo [a] pyrene were predicted to be above the relevant Levels. However, the exceedance was due to background concentrations used in the assessment.

5.7.5 There were predicted to be exceedances of the oxides of nitrogen (NOx) 24 hour and hydrogen fluoride (HF) weekly mean Critical Level values at the Havenside LNR site at the closest point of the Facility, although it is anticipated that the HF levels are over-estimated.

5.7.6 Concentrations of nutrient nitrogen were above the lowest indicative threshold value for habitats within the Wash and North Norfolk SAC, and the Wash SPA. Predicted concentrations of acid deposition were above the lowest threshold for the Wash SPA. An exceedance of the threshold does not necessarily indicate that an adverse impact from pollutant deposition will be experienced at the habitat. Further analysis will be carried out at the ES stage to determine the significance of nutrient nitrogen and acid deposition arising from the Facility operations at The Wash and North Norfolk SAC and The Wash SPA.

5.7.7 The preliminary air quality assessment was based on an assumed stack height of 70m. The ES stage will include the following:

- A stack height sensitivity analysis;
- A qualitative assessment of potential odour emissions; and
- A detailed study of potential impacts at the designated ecological sites.

5.7.8 The significance of the operational phase air quality impacts in EIA terms will be identified at the Environmental Statement (ES) stage of the project.

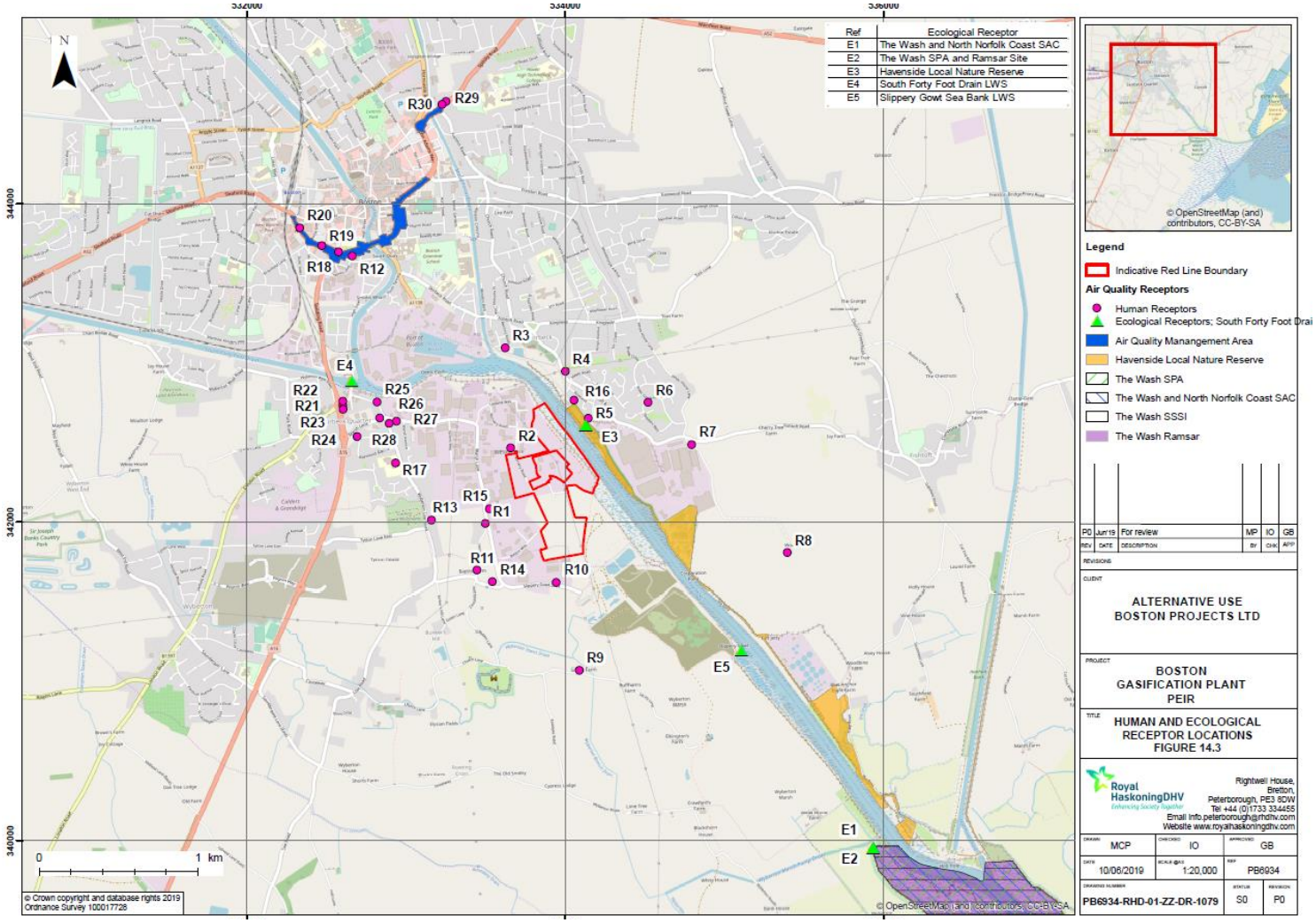

Plate 10 Human and Ecological Receptor Locations

5.8 Marine Sediment and Water Quality

5.8.1 This assessment considers marine sediment and water quality. A description of the baseline was described using site information, desk-based studies and the information provided in the Estuarine Processes assessment, because the two are linked. The potential impacts associated with construction, operation and decommissioning of the Facility are identified and an assessment made on the severity of each impact. The assessment also considers cumulative impacts where the Facility is considered alongside the predicted impacts of other plans and projects within the Study Area.

5.8.2 The outcome of the assessment is that all impacts are predicted to temporary and be **minor adverse** on marine sediment and water quality for both the construction and operational phase.

5.8.3 No impacts during decommissioning are anticipated with relation to marine water and sediment quality considered to be within the range of impacts identified during construction and therefore the conclusions reached for decommissioning are similar to those identified for construction.

5.8.4 In relation to cumulative effects, the only project identified to have the potential to interact with the works to construct the Facility is the Boston Tidal Barrier. This is in relation to the sediment plumes created during simultaneous dredging campaigns (capital or maintenance). Overall it is concluded that the cumulative impact of suspended sediment concentrations from the plume of the two projects being dredged at the same time is **negligible**. Furthermore, this represents the worst case position because it is likely that the construction of the Boston Barrier will be completed before any construction starts on the Facility.

5.9 Estuarine Processes

5.9.1 A detailed description of the current baseline was determined, through a combination of desk-based studies, consultation and on-site surveys. All potential impacts of the construction, operation and decommissioning of the Facility were identified, and an assessment made on the severity of each potential impact using a standardised approach, by an estuarine process's specialist. The assessment also considers cumulative impacts, where the Facility is considered alongside the predicted impacts of the Boston Tidal Barrier.

5.9.2 Expert geomorphological assessment has been used to assess the potential effects of the Facility. Considerations of these effects on the wave, tidal current and sediment transport regimes have been made followed by the potential impacts on two

receptor groups which contain valuable designated features. These are The Wash Ramsar / Site of Special Scientific Interest (SSSI) and the Havenside Local Nature Reserve (LNR). The impacts have been assessed using the worst-case characteristics of the proposed Facility.

5.9.3 In all cases for construction and operation, the impact of the worst-case scenario for the Facility on estuarine processes for the identified receptor groups is no impact. **Table 3** below describes the impact significance for the environmental factors related to estuarine processes during construction and operation of the Facility.

Table 3 Impact significance for environmental factors.

Phase	Environmental Factor	Impact Significance
Construction	Changes in suspended sediment concentrations due to capital dredging of the berthing areas	No Impact
	Changes in estuary-bed level due to capital dredging of the berthing areas	No Impact
Operation	Changes to the tidal current regime and erosion/accretion patterns due to the presence of the wharf and berthing areas	No Impact
	Changes to the wave regime (ship wash) due to the increase in vessel traffic	No Impact
	Changes in suspended sediment concentrations due to maintenance dredging of the berthing areas	No Impact
	Changes in estuary-bed level due to maintenance dredging of the berthing areas	No Impact

5.9.4 Cumulative effects with the Boston Tidal Barrier have been considered with respect to sediment plume interaction during simultaneous capital or maintenance dredging campaigns. It is concluded that the cumulative impact of suspended sediment concentrations and deposition from the plume of the two projects being dredged at the same time is negligible.

5.10 Marine and Coastal Ecology

5.10.1 baseline (existing) environment was informed through a desktop study comprising of existing data relevant to the Study Area for the Application Site, relating to the Environment Agency's Boston Barrier project, additional data from other sources, consultation and on-site surveys.

5.10.2 Using a standardised approach, all potential impacts during construction, operation and decommissioning of the Facility are identified and significance assessed. The Facility near the Boston Barrier, with which any potential cumulative impacts are considered. Any other schemes that may have the potential to have cumulative impacts were also agreed with Boston Borough Council and have been included in this chapter.

5.10.3 The worst case scenario was considered when assessing the potential impacts. The main potential impacts arising from the construction period are habitat loss/alteration, increased suspended sediment concentrations and increased noise and vibration caused by piling and ship movements. The sensitive receptors include fish, benthic communities, birds, marine mammals, saltmarsh and mudflats.

Plate 11 Saltmarshes adjacent to The Haven and the site of the proposed Facility

5.10.4 For the operational phase, the key potential impacts are changes in vessel traffic and movement leading to increased ship wash, underwater noise, disturbance and collision risk with marine mammals. The potential impact of an increase in operational air emissions on habitats is also considered. Mitigation has been applied to the impact assessment for both the construction and operational phase, to reduce the significance of some impacts.

5.10.5 Potential effects of the Facility on European protected sites were assessed in the Habitats Regulations Assessment (HRA). The scope of the HRA identified that the following European sites were relevant:

- The Wash SPA.
- The Wash Ramsar site.
- The Wash and North Norfolk Coast SAC.

5.10.6 A summary table is included below, describing the potential significance of each impact identified during the construction, operation and decommissioning of the Facility, any proposed mitigation and the residual impact. No significant impacts on marine and coastal ecology are predicted for the decommissioning phase.

5.10.7 Cumulative impacts were only considered with the Boston Barrier, with respect to simultaneous maintenance dredging and operation activities, leading to increased human activity in The Haven. The cumulative impact of suspended sediment concentrations and consequent smothering from the plume from dredging for both projects being operated at the same time is considered **negligible.** Although the Environment Agency's Haven

Banks project has the potential for cumulative impacts to arise with the Facility, it was not considered any further in the cumulative impact assessment, as it is planned to be completed prior to the beginning of the Facility's construction works.

5.11 Navigational Issues

5.11.1 The proposed Facility is located on The Haven which is a tidally restricted waterway where vessel movement and size are restricted.

5.11.2 Part of the infrastructure for the Facility will be a new 400 metre wharf, which will have three berthing points to receive vessels that will visit the Facility. Two of the berths will be dedicated to the delivery of refuse derived fuel (RDF); one berth will be dedicated to the loading of lightweight aggregate produced by the lightweight aggregate (LWA) plant within the Facility and also for the receipt of dredged material and / or clay, which is used as a binder in the production of the lightweight aggregate.

5.11.3 The anticipated size of vessels used for the handling of materials to / from the proposed Facility will be similar to commercial vessels that currently use The Haven and visit the Port; with an anticipated length of 100 m, bearing a load of approximately 2,500 tonnes. All vessels will be required to access the Facility at or around the high tide. It is anticipated that vessels will depart on the following high tide. All vessels will require a pilot to guide the vessel to the berth from The Wash and return.

Table 4 Typical and Maximum Dimensions of Vessels Visiting the Port of Boston

Dimensions	Typical vessel (m)	Maximum vessel (m)
Length Overall (LOA)	90	119
Beam	13.6	13.6
Draft	5.5	6.4

5.11.4 There is no means of turning the vessels at the proposed Facility, therefore, there will be a requirement to turn vessels either in the Wet Dock, or at the Knuckle point just outside of the Wet Dock, of the Port of Boston.

5.11.5 The construction, operation and decommissioning of the proposed Facility have the potential to result in impacts to existing users of The Haven from a navigation perspective.

5.11.6 A Navigation Risk Assessment (NRA) is to be undertaken in consultation with key stakeholders in the area, including the Port of Boston, the local fishing fleet and other river users to appropriately and proportionately assess the significance of potential impacts.

5.11.7 The impact assessment will be informed by the findings of the final Navigation Risk Assessment (which will be appended to the Environmental Statement (ES)), which will be informed and updated by consultation with the key stakeholders and the results will be presented in the ES.

5.12 Traffic and Transport

5.12.1 The construction, operation and decommissioning of the proposed Facility has the potential to result in Traffic and Transport impacts for the effects of pedestrian severance, pedestrian amenity, road safety and driver delay.

5.12.2 An Assessment was undertaken in conformance with recognised environmental guidelines and in accordance with relevant national, regional and local policy.

5.12.3 The Assessment provides a review of the existing traffic and transport baseline within the study area and has been informed through, desktop studies, site visits, consultation with stakeholders and on-site surveys.

5.12.4 The Facility's traffic demand has been calculated using material and personnel information supplied by industry expertise. During construction, a peak worst-case traffic demand scenario and average worst case scenario has been established and assigned to the highway network.

5.12.5 Where appropriate, mitigation has been proposed to reduce the significance of moderate and major impacts (most notably it is proposed to divert traffic away from the A52 Liquorpond Street during peak construction). Mitigation measures will be secured through commitments contained in a Construction Traffic Management Plan to be submitted in support of the DCO application.

5.12.6 The assessment concludes a predicted residual impact of negligible to minor adverse for the effects of pedestrian severance, pedestrian amenity during construction.

5.12.7 Regarding Road Safety and Driver Delay impact, details are presented on the construction traffic demand impacting on collision sites and congested junctions respectively, to contextualise potential impacts and facilitate and further engagement with key stakeholders.

5.12.8 The operational traffic demand has been determined and assessed with input from industry expertise. The assessment concludes a predicted residual impact of negligible to minor adverse for the effects of pedestrian severance, pedestrian amenity, road safety and driver delay.

5.12.9 Impacts during decommissioning are assumed to be no worse to those predicted

for the construction phase.

5.12.10 The projects that could cumulatively impact with the Facility have been identified and the potential traffic and transport interactions discussed. A detailed Cumulative Impact Assessment will be contained in the Environmental Statement that accompanies the DCO application.

5.13 Socio-Economics

5.13.1 Socio-economics considers many aspects, which in relation to this chapter included employment, housing market, community infrastructure (including primary and secondary education and health) and tourism during both the construction and operational phases of the Facility. Additionally, the assessment considered the impacts on energy security/reliability as part of the operational phase.

5.13.2 The potential impacts were agreed through consultation with the Planning Inspectorate whose Scoping Opinion provided guidance on which potential impacts should be covered as part of the assessment.

5.13.3 Given the broad spread of topics included within socio-economics, the sources of information to describe the baseline were extensive, with the assessment drawing on a desk-based study of publicly available data.

5.13.4 The assessment has considered the potential for impact, including cumulative effects, finding that for the majority these will be of negligible significance. The assessment considered the potential for some positive impacts, including: moderate and minor positive impacts in construction and operational employment respectively; and, a moderate-substantial impact in relation to energy security/reliability.

5.14 Climate Change

5.14.1 This climate change assessment considers Greenhouse Gas (GHG) emissions and the resilience of the Facility to the projected effects of climate change. As part of the assessment, a description of the current baseline GHG emissions within the Boston region is provided, along with current climate in the region. Potential impacts during construction and operation of the Facility are considered.

5.14.2 A GHG assessment of construction phase emissions will be carried out at the Environmental Statement (ES) stage. The operational phase assessment considered two ‘existing’ pathways for the treatment of waste that would be processed at the Facility, compared to the anticipated GHG emissions arising from the operation of the Facility. GHG emissions were quantified from the gasification process, marine vessels and road vehicles going to and from the site, and consumption of fuel by on-site equipment. The

results of the assessment show that the Facility will increase GHG emissions from the existing 'Do Nothing' scenarios, but this will be offset by GHG savings elsewhere in the UK energy generation sector. The impact of the Facility was therefore considered not to have a significant impact on regional and national GHG emissions.

5.14.3 The climate resilience assessment identified that the development would be most vulnerable to an increase in flooding because of increased heavy rainfall events due to the projected effects of climate change. There are ongoing improvements to the flood defences in the vicinity of the site through the Boston Combined Strategy, which will reduce the flood risk to the site (. Additional flood defences will be included as part of the design of the Facility. The risks of the design of the Facility to the potential for an increase in flood events because of climate change will be considered at the ES stage.

5.15 Health Impact Assessment

5.15.1 The preliminary results of the Human Impact Assessment (HIA) for the proposed Boston Alternative Energy Facility (the Facility) are presented below. The full HIA will be completed in the Environmental Statement (ES).

5.15.2 The Facility has the potential to disrupt existing walking routes during construction and some footpaths will be permanently closed. However, the diversion for these route closures would follow the route of an existing footpath, see **Plate 12** below.

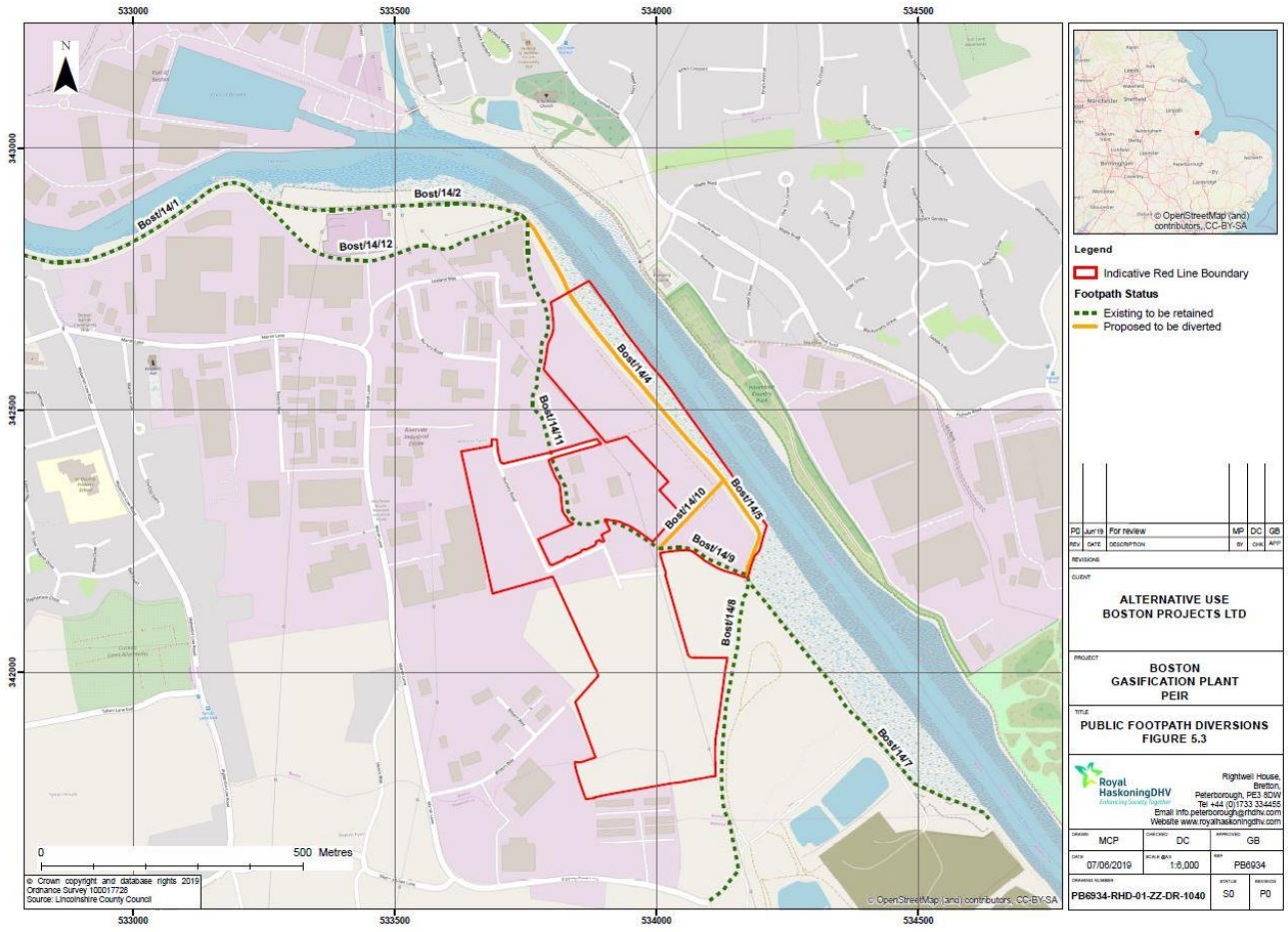

Plate 12 Public Footpath Diversions

5.15.3 Air pollution can have adverse effects on the health of humans. Poor air quality is the largest environmental risk to public health in the UK. During the construction phase, the Facility has the potential to pose a human health risk from inhalation or ingestion of pollutants in the emissions from vehicles (both light- and heavy-duty vehicles) travelling to and from the Facility on local road networks, vessels visiting the Facility and non-road mobile machinery (NRMM) working on the Application Site. A preliminary assessment was carried out to consider the potential impacts associated with the Facility on air quality, during its construction and operation. The indicative results of this assessment are described below.

5.15.4 The Facility was determined to have a medium risk of generation of dust during construction. With implementation of effective mitigation measures, generation of construction phase dust and particulate matter will be minimised such that the residual impacts can be considered to be **not significant**.

5.15.5 The impact significance of construction phase road traffic emissions was determined to be **minor adverse**.

5.15.6 In operation, there were predicted to be exceedances of the relevant Environmental Assessment Level for benzo [a] pyrene (BaP). However, the background concentrations used in the assessment were in exceedance of the Environmental Assessment Level without the effect of the Facility. The maximum predicted concentrations of all other pollutants at human receptors were below the relevant Objectives.

5.15.7 Further work will be carried out at the ES stage with regard to operational phase stack, road traffic and vessel emissions, following refinement of the Facility design. The significance of operational phase impacts will therefore be presented in the ES.

5.15.8 Operational phase noise emissions were considered to be **minor adverse**.

5.15.9 Vehicle movements generated by transportation of materials to and from the Facility during the operational phase were assessed in the context of the Application Site and surrounding road network and residual noise impacts were considered to be **negligible adverse**.

5.16 Waste Assessment Report

5.16.1 The assessment 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.

5.16.2 There are no formal guidelines for assessing the impacts for waste. The preliminary assessment for waste management were derived based on professional judgement, relevant policy, legislation, relevant technical guidance associated waste management and the requirements of the waste hierarchy.

5.16.3 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. A formal assessment of the significance of waste impacts on waste management infrastructure at a local, regional and national scale will be provided in the Environmental Statement (ES).

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

Cumulative arisings by category	Predicted arisings (tonnes)	Averaged monthly arisings	%
Inert	22948	478	13.9%
Non-hazardous	137282	2860	83.3%
Hazardous	4552	95	2.8%

Table 5 The main operational arisings are predicted to be:

Element	Waste Stream	Amount	Management in accordance with the waste hierarchy
Wharf	Damaged RDF bales on the vessel	n/a[1]	Rejected – Not removed from the vessel and sent back on the vessel to the supplier for re-baling. These will then be returned for energy recovery to the Facility
	Damaged RDF bales on land	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	1,300,000 tonnes	Recovery - energy recovery in the gasifier. The plant is Waste Framework Directive R1 compliant and therefore a recovery process
Three gasification units, turbine hall and air cooled condenser	Gasification ash	248,000 tonnes	Recycled in the LWA to a market specification product.
	Air pollution control residues	63,500 tonnes	Recycled in the LWA to a market specification product.
Carbon capture facility	Hazardous liquid waste 40 % Monoethanolamine (MEA) / 60 % water	60,000 litres	Disposal via Liquid hazardous waste treatment
	Water dosed with sodium hydroxide (pH 7.5-9.0)	11,000 litres	Discharge to sewer in accordance with an agreed trade effluent agreement with the sewerage undertaker
Associated infrastructure	Mixed municipal waste from site workers	To be confirmed in the ES	Recycled – source segregation of metal, paper and card, plastics and glass Recovered – residual waste that cannot be recycled will be collected for recovery.
RDF Processing Facility	Non-ferrous metal	9,000	Recycled off-site
	Ferrous metal	33,000 tonnes	Recycled off-site
	Medium / heavy inert material	90,000 tonnes	Recycled off-site

Element	Waste Stream	Amount	Management in accordance with the waste hierarchy
	Light inert material (e.g. glass) suitable for LWA	60,000 tonnes	Recycled in the LWA to a market specification product
	Light inert material (e.g. glass) not suitable for LWA	60,000 tonnes	Recycled off-site
	Processed RDF	1,000,000 tonnes	Recovery - energy recovery in the gasifier. The plant is Waste Framework Directive R1 compliant and therefore a recovery process

5.16.5 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.

5.16.6 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.

5.17 Transboundary Impacts

5.17.1 Transboundary impacts look at how a project might have an impact across borders. As the Facility is located within the UK and is far removed from any international boundaries it is not anticipated that there will be any transboundary impacts.

6 Conclusions

6.1.1 **Table 6** below summaries the impacts during the construction, operational and decommissioning phases of the Facility.

Table 6 Summary of PEIR Topic Impacts

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
Construction							
Chapter 8 Cultural Heritage	Direct impact to potential buried archaeological remains.	66: Prehistoric peat deposits and historic alluvium	High	High negative	Major adverse	Archaeological evaluation and recording.	Minor adverse
		90: The Haven Mudbanks	Low	High negative	Major adverse	Archaeological evaluation and recording.	Minor adverse
		91: Foreshore remains	High	High negative	Major adverse	Archaeological evaluation and recording.	Minor adverse
		96: Buried archaeological features	High	High negative	Major adverse	Archaeological evaluation and recording.	Minor adverse
	Indirect impact upon setting of designated heritage assets	1: Wybert's Castle	High	Negligible negative	Moderate adverse	Standard construction hours & practices	Minor adverse
		5: Slippery Gowt Sluice	High	Negligible negative	Minor adverse	Standard construction hours & practices	Minor adverse
		6: Maud Foster Sluice	High	Negligible negative	Minor adverse	Standard construction hours & practices	Minor adverse
		7: Parish Church of St Nicholas	High	Negligible negative	Minor adverse	Standard construction hours & practices	Minor adverse

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
		26: St Botolph's Church	High	Negligible negative	Minor adverse	Standard construction hours & practices	Minor adverse
		31: Skirbeck Conservation Area	Medium	Low negative	Minor adverse	Standard construction hours & practices	Minor adverse
		33: Wyberton Conservation Area	Medium	Negligible negative	Minor adverse	Standard construction hours & practices	Negligible adverse
	Direct impact upon above ground heritage asset	65: The 'Roman Bank'	Medium	Medium negative	Moderate adverse	Archaeological survey and excavation	Neutral
	Indirect impact upon setting of recorded non-designated assets	65: The 'Roman Bank'	Medium	Medium negative	Moderate adverse	Public information board (enhancement)	Minor adverse
Chapter 9 Landscape and Visual Impact	Landscape Character	Proposed Site and Environs	Low	Low medium	Minor negligible adverse	Embedded mitigation	Minor negligible adverse
	Landscape Character	B1 - Bicker to Wyberton Settled Fen	Medium	Low medium	Minor adverse	Embedded mitigation	Minor adverse

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
	Landscape Character	B3 - Wrangle to Cowbridge Settled Fen	Medium	Low medium	Minor adverse	Embedded mitigation	Minor adverse
	Landscape Character	C1 – Welland to Haven Reclaimed Saltmarsh	Medium	Low medium	Minor adverse	Embedded mitigation	Minor adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis)	View 2; Looking south west from Church Green Road near Fishtoft.	High	Negligible	Minor negligible adverse	Embedded mitigation	Minor negligible adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis)	View 3; Looking west from Footpath (Fish/3/1) at Fishtoft.	High	Negligible	Minor negligible adverse	Embedded mitigation	Minor negligible adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis)	View 4; Looking north west from Scalp Road, near property Appleside.	High	Negligible	Minor negligible adverse	Embedded mitigation	Minor negligible adverse
	Visual Receptors (Summary of Representative Viewpoint	View 6; Looking north west from Footpath Fish/13/10 at junction with	High	Low	Minor adverse	Embedded mitigation	Minor adverse

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
	Analysis)	Footpath Fish/13/9 on the north bank of The Haven.					
	Visual Receptors (Summary of Representative Viewpoint Analysis)	View 7; Looking north west from the junction of Footpaths Fish/13/2, Fish/13/5 and Fish/13/7 on the north bank of The Haven.	High	Low medium	Minor moderate adverse	Embedded mitigation	Minor moderate adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis)	View 8; Looking south from Footpath Bost/13/3 near St Nicholas's Church, Skirbeck Conservation Area and properties off The Featherworks / Skirbeck Gardens.	High	Medium high adverse	Moderate major adverse	Embedded mitigation	Moderate major adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis)	View 9; Looking north from Footpath Bost/14/8.	High	Medium adverse	Moderate adverse	Embedded mitigation	Moderate adverse

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
	Visual Receptors (Summary of Representative Viewpoint Analysis)	View 10; Looking east from Marsh Lane near property Cremorne and opposite property Coronation Villa.	High	Medium adverse	Moderate adverse	Embedded mitigation	Moderate adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis)	View 11; Looking east from near properties along Wyberton Low Road (also Sustrans Route 1 / North Sea Cycle Route).	High	Medium adverse	Moderate adverse	Embedded mitigation	Moderate adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis)	View 13; Looking north from Silt Pit Lane near property Silt Pit Farm.	High	Low medium adverse	Minor moderate adverse	Embedded mitigation	Minor moderate adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis)	View 14; Looking north east from Church Lane at Wyberton Park near property Denemere	High	Low medium adverse	Minor moderate adverse	Embedded mitigation	Minor moderate adverse
	Visual Receptors (Summary of Representative Viewpoint	View 15; Looking north from near properties off Rowdyke Road.	High	Low medium adverse	Minor moderate adverse	Embedded mitigation	Minor moderate adverse

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
	Analysis)						
	Visual Receptors (Summary of Representative Viewpoint Analysis)	View 16; Looking north east from properties off Causeway.	High	Low adverse	Minor adverse	Embedded mitigation	Minor adverse
Chapter 10 Noise and Vibration	Increased Noise on Sensitive Receptors from On-Site Construction	Residential	Medium	To be assessed during ES stage.			
	Increased Noise on Sensitive Receptors from Off-Site Construction Traffic	Residential	Medium	No Impact to Major Adverse	Negligible to Major Adverse	Traffic Management Plan	Minor Adverse
	Construction Vibration	Residential	Medium	No Impact	Negligible to Minor Adverse	Best Practice Measures (BPM)	Negligible Adverse
Chapter 11 Contaminated Land, Land Use and Hydrogeology	Impact 1 – Impact on Human Health, Including Construction	Human Health	High	Low	Minor	Further investigation to assess ground gas risk and embedded mitigation	Minor Adverse

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
	Workers and General Public During Any Excavations and Construction Related Activities						
	Impact 2 – Impact on Groundwater Quality from construction related activities	Groundwaters	Medium	Negligible	Minor	Embedded mitigation	Minor Adverse
	Impact 3 – Impact on Groundwater Quantity from construction related activities	Groundwaters	Medium	Negligible	Minor	Embedded mitigation	Minor Adverse
	Impact 4 – Impact on Surface Water Quality from general earthworks and	Surface waters	Medium	Negligible	Minor	Embedded mitigation	Minor Adverse

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
	construction related activities						
	Impact 5 – Impact on soil quality	Soils quality	High	Moderate	Moderate	Embedded mitigation	Minor Adverse
	Impact 6 – Loss of Best Most Versatile (BMV) agricultural land	Land Use	High	Negligible	Minor	Embedded mitigation	Minor Adverse
Chapter 12 Terrestrial Ecology	Statutory Designated Sites	Havenside LNR	High	No impact	-	-	No impact
	Non-statutory Designated Sites	LWS' (Havenside, South Forty Drain and Slippery Gowt Sea Bank)	Medium	No impact	-	-	No impact
	Impacts to habitats	All types	Low	High	Minor adverse	Implementation of landscape mitigation planting. Minimal loss of habitats through site design.	Minor adverse
	Impact to badgers	Badgers	Low	No impact	-	Pre-construction surveys to confirm badgers remain absent.	No impact

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
	Impact to water voles	Water voles	High	No impact	-	Updated surveys to confirm water voles remain absent.	No impact
	Impact to otters	Otters	High	No impact	-	Updated surveys to confirm otters remain absent.	No impact
	Impact to foraging and commuting bats	Bats (foraging and commuting only)	High	High	Major adverse	Pre-construction survey to confirm the presence of bats. Replacement planting of hedgerows that require removal, as part of the landscape mitigation planting strategy. All temporary lighting to be designed line with the BCT Bats and Lighting in the UK guidance (2018). This to include the use of directional	Moderate adverse

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
						lighting during construction; Construction phase lighting will be limited to between 7am-7pm in low light conditions, with lower-level security lighting outside of these times; Ensure that dark corridors remain in place during the construction phase.	
	Impacts to reptiles	Reptiles	Medium	High	Moderate adverse	Precautionary methods of working during construction, including tool box talk, habitat manipulation and ecological supervision.	Minor adverse
	Impact to bird populations	Bird populations (loss of habitat and in turn loss of	Medium	High	Moderate adverse	Removal of vegetation outside	Minor adverse

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
		nesting opportunities)				of nesting bird season. Pre-work checks for nesting sites if vegetation requires removal during nesting bird season.	
	Impact to terrestrial invertebrates	Terrestrial invertebrates	Low	Low	Minor adverse	Integration of habitat for invertebrate species into Facility design (e.g. varied planting regime to provide sheltered elevated temperatures for invertebrates, foraging areas and nectar and pollen for flower-dependent invertebrates	Minor adverse
Chapter 13 Surface Water, Flood Risk and Drainage Strategy	Direct disturbance of surface watercourses	IDB drains	Low	Negligible	Negligible	Embedded mitigation measures only	Negligible
	Increased sediment supply	IDB drains	Low	Negligible	Negligible	Embedded mitigation measures only	Negligible

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
	Accidental release of contaminants	IDB drains	Low	Negligible	Negligible	Embedded mitigation measures only	Negligible
	Changes to surface water runoff and flood risk	IDB drains	Low	Low	Minor adverse	An existing attenuation pond will be used before discharging via surface water ditches at a controlled rate into the IDB drain adjacent to the Site.	Negligible
Chapter 14 Air Quality Assessment	Construction phase dust and particulate matter	Human receptors	Dust soiling: low Human health: low	Large	Assessment methodology does not assign significance before mitigation	Best practice mitigation measures to be detailed within a CEMP	Not significant
	Road traffic emissions	Human receptors	High	Moderate adverse at one receptor and negligible at 29 receptors	Minor adverse	To be reported at ES stage	To be determined
Chapter 15 Marine Sediment and Water Quality	Impacts on suspended solids concentrations associated with capital dredging	Water Quality	Medium	Low	Minor Adverse	None required	Minor Adverse
	Impacts on water quality associated with release of	Water Quality	Medium	Low	Minor Adverse	None required	Minor Adverse

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
	sediment contamination						
	Impacts on water quality associated with using concrete in the marine environment	Water Quality	Medium	No Impact			
Chapter 16 Estuarine Processes	Changes in suspended sediment concentrations due to capital dredging of the berthing areas	The Wash group and Havenside LNR	N/A	N/A	No impact	N/A	No impact
	Changes in estuary-bed level due to capital dredging of the berthing areas	The Wash group and Havenside LNR	N/A	N/A	No impact	N/A	No impact
Chapter 17 Marine and Coastal Ecology	Loss of and/or change to estuarine habitats and associated species within the footprint of the wharf and dredging area	Mudflats	Medium	Low	Minor adverse	Material removed to be restricted to minimum. The design of the quay wall and wharf has been set to minimise the volume of capital dredging required.	Minor adverse
		Saltmarshes	Medium	Low	Minor adverse		Minor adverse

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
	Increased suspended sediment concentrations from capital dredging, with potential for sediment-bound contaminants to be released	Fish	Medium	Medium	Moderate adverse	Material removed to be restricted to minimum. The design of the quay wall and wharf has been set to minimise the volume of capital dredging required.	Minor adverse
		Benthic fauna	Low	Low	Minor adverse		Minor adverse
	Disturbance due to human activity/increased human presence (excluding underwater noise, but including airborne noise)	Birds	To be assessed when predictions of noise generation during construction have been undertaken			The need for, and nature of mitigation will be considered when the predicted construction noise levels have been confirmed.	-
	Underwater noise (piling and vessel movements)	Fish	Medium	Medium	Moderate adverse	The need for, and nature of mitigation will be considered when the impact assessment is further progressed and the potential for underwater noise generation is better understood.	Moderate adverse
		Marine mammals	High	Negligible	Minor adverse		Minor adverse

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
Chapter 18 Navigational Issues	The outcomes of the NRA will be presented in the ES						
Chapter 19 Traffic and Transport	Peak WCS - Impact Pedestrian Severance	1, 2, 3, 4, 5, 6, 7.	Low to High	Very Low	Negligible - Minor	N/A	Negligible - Minor
		10.	Low	Medium	Minor	N/A	Minor
	Peak WCS Pedestrian Amenity	7	Medium	Very Low	Minor	N/A	Minor
		1, 3, 4, 5.	Low – Medium	Low - Medium	Minor	N/A	Minor
		2, 10.	Low - Medium	Medium - High	Minor	N/A	Minor
		6.	High	Medium	Major	HGV diversion to alternative route (Link 3)	Minor
	Peak WCS PRoW Closures	Boston Public Footpath No. 14.	High	Low	Moderate	Utilise traffic lights or banksmen to monitor crossing of section 14/3 during construction period.	Minor
	Peak WCS Road Safety	Clusters 1, 2, 3.	TBD in the ES	TBD in the ES	TBD in the ES	TBD in the ES	TBD in the ES
	Peak WCS Driver Delay	Junctions 1, 2, 3, 4.	TBD in the ES	TBD in the ES	TBD in the ES	TBD in the ES	TBD in the ES

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
	Average WCS Pedestrian Severance	1, 2, 6, 10.	Low to High	Very Low	Negligible - Minor	N/A	Negligible - Minor
	Average WCS Pedestrian Amenity	1, 2, 6.	Low to High	Very Low	Negligible - Minor	N/A	Negligible - Minor
		10	Low	Low	Minor	N/A	Minor
	Average WCS PRoW Closures	Boston Public Footpath No. 14	High	Low	Moderate	Utilise traffic lights or banksmen to monitor crossing of section 14/3 during construction period.	Minor
	Average WCS Road Safety	Clusters 1, 2, 3.	TBD in the ES	TBD in the ES	TBD in the ES	TBD in the ES	TBD in the ES
	Average WCS Driver Delay	Junctions 1, 2, 3, 4.	TBD in the ES	TBD in the ES	TBD in the ES	TBD in the ES	TBD in the ES
Chapter 20 Socio-Economics	Employment	AOI	Medium	Beneficial	Moderate	n/a	Beneficial, Moderate
	Housing Market	AOI	Low	Negligible	Negligible	n/a	Negligible
	Primary Education	3 km of Application Site	Medium	Negligible	Negligible	n/a	Negligible
	Secondary Education	5 km of Application Site	Medium	Adverse	Minor	Effective mitigation through the commitment of BBC to deliver a new secondary	Negligible

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
						school in Boston, as identified in the SEELP Infrastructure Delivery Plan	
	Health	5 km of Application Site	Medium	Negligible	Negligible	n/a	Negligible
	Tourism	AOI	Low	Negligible	Negligible	n/a	Negligible
Chapter 21 Climate Change	No significant effects.						
Chapter 22 Health Impact Assessment	To be assessed in the ES.						
Chapter 23 Waste Assessment Report	To be assessed in the ES.						
Operation							
Chapter 8 Cultural Heritage	Direct impact to potential buried archaeological remains	No further impact					
	Indirect impact upon setting of designated heritage	1: Wybert's Castle	High	Negligible negative	Minor adverse	n/a	Minor adverse
		5: Slippery Gowt Sluice	High	Negligible negative	Minor adverse	n/a	Minor adverse
		6: Maud Foster	High	Negligible negative	Minor adverse	n/a	Minor adverse

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
	assets	Sluice					
		7: Parish Church of St Nicholas	High	Negligible negative	Minor adverse	n/a	Minor adverse
		26: St Botolph's Church	High	Negligible negative	Minor adverse	n/a	Minor adverse
		31: Skirbeck Conservation Area	Medium	Minor negative	Minor Adverse	n/a	Minor adverse
		33: Wyberton Conservation Area	Medium	Negligible negative	Negligible Adverse	n/a	Minor adverse
	Direct impact upon above ground heritage asset	No further impact					
	Indirect impact upon setting of recorded non-designated assets	65: The 'Roman Bank'	Medium	Medium negative	Moderate adverse	Public information board (enhancement)	Minor adverse
Chapter 9 Landscape and Visual Impact	Landscape Character – Year 1	Proposed Site and Environs	Low	Low medium	Minor negligible adverse	Embedded mitigation	Minor negligible adverse
	Landscape Character – Year 1	B1 - Bicker to Wyberton Settled Fen	Medium	Low medium	Minor adverse	Embedded mitigation	Minor adverse

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
	Landscape Character – Year 1	B3 - Wrangle to Cowbridge Settled Fen	Medium	Low medium	Minor adverse	Embedded mitigation	Minor adverse
	Landscape Character – Year 1	C1 – Welland to Haven Reclaimed Saltmarsh	Medium	Low medium	Minor adverse	Embedded mitigation	Minor adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 2; Looking south west from Church Green Road near Fishtoft.	High	Negligible adverse	Minor negligible adverse	Embedded mitigation	Minor negligible adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 3; Looking west from Footpath (Fish/3/1) at Fishtoft.	High	Negligible adverse	Minor negligible adverse	Embedded mitigation	Minor negligible adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 4; Looking north west from Scalp Road, near property Appleside.	High	Negligible adverse	Minor negligible adverse	Embedded mitigation	Minor negligible adverse

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 6; Looking north west from Footpath Fish/13/10 at junction with Footpath Fish/13/9 on the north bank of The Haven.	High	Low adverse	Minor adverse	Embedded mitigation	Minor adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 7; Looking north west from the junction of Footpaths Fish/13/2, Fish/13/5 and Fish/13/7 on the north bank of The Haven.	High	Low medium adverse	Minor moderate adverse	Embedded mitigation	Minor moderate adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 8; Looking south from Footpath Bost/13/3 near St Nicholas's Church, Skirbeck Conservation Area and properties off The Featherworks / Skirbeck Gardens.	High	Medium adverse	Moderate adverse	Embedded mitigation	Moderate adverse

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 9; Looking north from Footpath Bost/14/8.	High	Low medium adverse	Minor moderate adverse	Embedded mitigation	Minor moderate adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 10; Looking east from Marsh Lane near property Cremorne and opposite property Coronation Villa.	High	Low medium adverse	Minor moderate adverse	Embedded mitigation	Minor moderate adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 11; Looking east from near properties along Wyberton Low Road (also Sustrans Route 1 / North Sea Cycle Route).	High	Low medium adverse	Minor moderate adverse	Embedded mitigation	Minor moderate adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 13; Looking north from Silt Pit Lane near property Silt Pit Farm.	High	Low medium adverse	Minor moderate adverse	Embedded mitigation	Minor moderate adverse

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 14; Looking north east from Church Lane at Wyberton Park near property Denemere	High	Low adverse	Minor adverse	Embedded mitigation	Minor adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 15; Looking north from near properties off Rowdyke Road.	High	Low adverse	Minor adverse	Embedded mitigation	Minor adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 16; Looking north east from properties off Causeway.	High	Low adverse	Minor adverse	Embedded mitigation	Minor adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 16; Looking north east from properties off Causeway.	High	Low adverse	Minor adverse	Embedded mitigation	Minor adverse

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 16; Looking north east from properties off Causeway.	High	Low adverse	Minor adverse	Embedded mitigation	Minor adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 16; Looking north east from properties off Causeway.	High	Low adverse	Minor adverse	Embedded mitigation	Minor adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 16; Looking north east from properties off Causeway.	High	Low adverse	Minor adverse	Embedded mitigation	Minor adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 16; Looking north east from properties off Causeway.	High	Low adverse	Minor adverse	Embedded mitigation	Minor adverse

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 16; Looking north east from properties off Causeway.	High	Low adverse	Minor adverse	Embedded mitigation	Minor adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 16; Looking north east from properties off Causeway.	High	Low adverse	Minor adverse	Embedded mitigation	Minor adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 16; Looking north east from properties off Causeway.	High	Low adverse	Minor adverse	Embedded mitigation	Minor adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 16; Looking north east from properties off Causeway.	High	Low adverse	Minor adverse	Embedded mitigation	Minor adverse

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 16; Looking north east from properties off Causeway.	High	Low adverse	Minor adverse	Embedded mitigation	Minor adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 16; Looking north east from properties off Causeway.	High	Low adverse	Minor adverse	Embedded mitigation	Minor adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 16; Looking north east from properties off Causeway.	High	Low adverse	Minor adverse	Embedded mitigation	Minor adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 16; Looking north east from properties off Causeway.	High	Low adverse	Minor adverse	Embedded mitigation	Minor adverse

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 16; Looking north east from properties off Causeway.	High	Low adverse	Minor adverse	Embedded mitigation	Minor adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 16; Looking north east from properties off Causeway.	High	Low adverse	Minor adverse	Embedded mitigation	Minor adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 16; Looking north east from properties off Causeway.	High	Low adverse	Minor adverse	Embedded mitigation	Minor adverse
	Visual Receptors (Summary of Representative Viewpoint Analysis) – Year 1	View 16; Looking north east from properties off Causeway.	High	Low adverse	Minor adverse	Embedded mitigation	Minor adverse

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
Chapter 10 Noise and Vibration	Increased Daytime Noise on Sensitive Receptors from The Boston Alternative Energy Facility	Residential	Medium	No Impact to Major	Negligible to Major Adverse	BPM, Noise attenuation from engineering, enhanced cladding and enclosure design, procurement of quieter design plant,	Negligible to Minor Adverse
	Increased Night time Noise on Sensitive Receptors from The Boston Alternative Energy Facility	Residential	Medium	No Impact to Moderate	Negligible to Moderate Adverse	BPM, Noise attenuation from engineering, enhanced cladding and enclosure design, procurement of quieter design plant,	Negligible to Minor Adverse
	Increased Noise on Sensitive Receptors from Off-Site Operational Traffic	Residential	Medium	No Impact to Negligible	Negligible Adverse	n/a	Negligible Adverse
	Operational Vessel Movements	Residential	Medium	No Impact to Negligible	Negligible Adverse	n/a	Negligible Adverse
	Operational Vibration	Residential	Medium	No Impact to Negligible	Negligible Adverse	n/a	Negligible Adverse

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
Chapter 11 Contaminated Land, Land Use and Hydrogeology	Impact 1 - Impact on Human Health and Controlled waters Including Workers and Public During Operation as a result of residual contaminants present within the ground	Human Health Groundwater Surface waters	High	Negligible	Minor	Embedded mitigation	Minor Adverse
	Impact 2 - Impact on human health and controlled waters during Operation from as a result of new sources of contamination being introduced	Human Health Groundwater Surface waters	High	Negligible	Minor	Embedded mitigation	Minor Adverse
Chapter 12 Terrestrial Ecology	Disturbance effects associated Maintenance Activities	Disturbance to Habitats and Species from Maintenance Activities	High	Negligible	Minor adverse	-	Minor adverse

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
	Disturbance to Fauna from Operational Lighting and Noise	Disturbance to Fauna from Operational Lighting and Noise	High	Negligible	Minor adverse	Production and implementation of an Operational Lighting Scheme	Minor adverse
Chapter 13 Surface Water, Flood Risk and Drainage Strategy	Changes to surface water runoff and flood risk	IDB drains	Low	Low	Minor adverse	An existing attenuation pond will be used before discharging via surface water ditches at a controlled rate into the IDB drain adjacent to the Site.	Negligible
	Supply of fine sediment and other contaminants	IDB drains	Low	Negligible	Negligible	Embedded mitigation measures only	Negligible
Chapter 14 Air Quality Assessment	Stack, road traffic and vessel emissions	Human and ecological receptors	To be determined	To be determined	To be reported at ES stage	To be determined	To be determined
Chapter 15 Marine Sediment and Water Quality	Impacts on suspended solids concentrations and chemical contaminants associated with maintenance dredging	Water Quality	Medium	Low	Minor Adverse	None required	Minor Adverse

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
Chapter 16 Estuarine Processes	Changes to the tidal current regime and erosion/accretion patterns due to the presence of the wharf and berthing areas	The Wash group and Havenside LNR	N/A	N/A	No impact	N/A	No impact
	Changes to the wave regime (ship wash) due to the increase in vessel traffic	The Wash group and Havenside LNR	N/A	N/A	No impact	N/A	No impact
	Changes in suspended sediment concentrations due to maintenance dredging of the berthing areas	The Wash group and Havenside LNR	N/A	N/A	No impact	N/A	No impact
	Changes in estuary-bed level due to maintenance dredging of the berthing areas	The Wash group and Havenside LNR	N/A	N/A	No impact	N/A	No impact

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
Chapter 17 Marine and Coastal Ecology	Habitat alteration due to hydrodynamic changes	Intertidal and subtidal habitats	Low	Medium	Minor adverse	Dredging works to be minimised according to best practice and monitor the seabed and habitat level through regular bathymetric and habitat surveys.	Minor adverse
	Changes in vessel traffic and movement leading to increased ship wash, underwater noise, disturbance and collision risk	Increased risk of invasive species with ballast water	Negligible	Negligible	Negligible	Shipping to be kept to a minimum, as necessary. Slow speed (max. 4 knots) to be kept for all vessels.	Negligible
		Intertidal habitats (increased ship wash)	Negligible	Negligible	Negligible		Negligible
		Birds and marine mammals (visual disturbance)	Low	Low	Minor adverse		Minor adverse
		Fish, birds and marine mammals (increased underwater noise)	Medium	Low	Minor adverse		Minor adverse
		Marine mammals (vessel collision)	Low	Medium	Minor adverse	Slow speed (max. 4 knots) to be kept for all vessels. Vessel movements to be incorporated in to recognised vessel routes.	Minor adverse
	Increased levels of	Fish (migration and behaviour)	Medium	Negligible	Minor adverse	Given that the maintenance	Minor adverse

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
	suspended sediments due to maintenance dredging	Benthic fauna	Low	Negligible	Negligible	dredging will form part of the existing wider maintenance programme, and the nature of the predicted impacts, no specific measures are considered necessary.	Negligible
	Beaching of vessels at low tide	Benthic fauna	Low	Minor	Minor adverse	No mitigation was deemed necessary	Minor adverse
	Increased emissions to air and deposition on marine and estuarine habitats	Marine and coastal habitats	Potential impacts will be assessed when the results of the air quality assessment are available				
Chapter 18 Navigational Issues	The outcomes of the NRA will be presented in the ES						
Chapter 19 Traffic and Transport	Impact 1: Pedestrian Severance	10	Low	Low	Negligible	N/A	Negligible
	Impact 2: Pedestrian Amenity	10	Low	Very Low	Negligible	N/A	Negligible
	Impact 2: PRoW Closures	Boston Public Footpath No. 14	High	Low	Moderate	Utilise traffic lights or banksmen to monitor crossing of	Minor

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
						section 14/3 during construction period.	
	Impact 3: Road Safety	Clusters 1, 2, 3.	TBD in the ES	TBD in the ES	TBD in the ES	TBD in the ES	TBD in the ES
	Impact 4: Driver Delay	Junctions 1, 2, 3, 4.	High	Very Low	Minor	N/A	Minor
Chapter 20 Socio-Economics	Employment	AOI	Medium			n/a	Beneficial, Minor
	Housing Market	AOI	Low	Negligible	Negligible	n/a	Negligible
	Primary Education	3 km of Application Site	Medium	Negligible	Negligible	n/a	Negligible
	Secondary Education	5 km of Application Site	Medium	Negligible	Negligible	n/a	Negligible
	Health	5 km of Application Site	Medium	Negligible	Negligible	n/a	Negligible
	Tourism	AOI	Low	Negligible	Negligible	n/a	Negligible
	Energy Security/Reliability	AOI	Medium/High	Beneficial	Moderate-Substantial	n/a	Beneficial, Moderate-Substantial
Chapter 21 Climate Change	GHG emissions from the Facility	Global atmosphere	The assessment approach does not consider the sensitivity of the receptor, which is the global atmosphere.	N/A	Not likely to represent a significant net CO2 emissions contribution	The proposed Facility represents an opportunity to increase renewable energy generation and avoid emissions associated with current 'baseline' operations.	Not significant
	Impact of	The vulnerability	The site is	Moderate risk	To be addressed at the ES stage		

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
	climate change on the Facility	of the Facility and associated infrastructure to increased flood risk as a result of potential climate change.	considered to have a high sensitivity				
Chapter 22 Health Impact Assessment	To be assessed in the ES.						
Chapter 23 Waste Assessment Report	To be assessed in the ES.						
Decommissioning							
Chapter 8 Cultural Heritage	Direct impact to potential buried archaeological remains	66: Prehistoric peat deposits and historic alluvium	High	Negligible negative	Minor adverse	Previous works during construction will have mitigated	Minor adverse
		90: The Haven Mudbanks	High	Negligible negative	Minor adverse	Previous works during construction will have mitigated	Minor adverse
		91: Foreshore remains	High	Negligible negative	Minor adverse	Previous works during construction will have mitigated	Minor adverse
		96: Buried archaeological features	High	Negligible negative	Minor adverse	Previous works during construction will have mitigated	Minor adverse
	Indirect impact upon setting of designated	1: Wybert's Castle	High	Minor positive	Minor beneficial	n/a	Minor beneficial
		5: Slippery Gowt Sluice	High	Negligible positive	Negligible beneficial	n/a	Negligible beneficial

Potential Impact		Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
	heritage assets	6: Maud Foster Sluice	High	Low positive	Minor beneficial	n/a	Minor beneficial
		7: Parish Church of St Nicholas	High	Low positive	Negligible beneficial	n/a	Negligible beneficial
		26: St Botolph's Church	High	Low positive	Negligible beneficial	n/a	Negligible beneficial
		31: Skirbeck Conservation Area	Medium	Low positive	Negligible beneficial	n/a	Negligible beneficial
		33: Wyberton Conservation Area	Medium	Low positive	Negligible beneficial	n/a	Negligible beneficial
	Direct impact upon above ground heritage asset	No impact					
	Indirect impact upon setting of recorded non-designated assets	65: The 'Roman Bank'	Medium	Low positive	Minor beneficial	n/a	Minor beneficial
Chapter 9 Landscape and Visual Impact	Impacts will be the same as during construction.						
Chapter 10 Noise and Vibration	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. However, the Facility will likely be removed or retro-fitted to continue use. 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 appropriate authority. A decommissioning plan will be provided. As such, for the purposes of a worst case scenario, impacts no greater than those identified for the construction phase are expected for the decommissioning phase						
Chapter 11 Contaminated	It is anticipated that the decommissioning impacts will be similar in nature to those of construction.						

Potential Impact	Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
Land, Land Use and Hydrogeology						
Chapter 12 Terrestrial Ecology	No additional impacts on terrestrial ecology are anticipated during the decommissioning phase than those identified during construction.					
Chapter 13 Surface Water, Flood Risk and Drainage Strategy	It is anticipated that impacts on surface water and flood risk receptors resulting from decommissioning stage activities will be similar in nature to those resulting from construction stage activities.					
Chapter 14 Air Quality Assessment	Decommissioning phase dust emissions	Human receptors	Dust soiling: low Human health: low	Large	Assessment methodology does not assign significance before mitigation	Best practice mitigation measures to be detailed within a CEMP	Not significant
Chapter 15 Marine Sediment and Water Quality	No impacts on marine water and sediment quality are anticipated during the decommissioning phase					
Chapter 16 Estuarine Processes	As the wharf structure is not anticipated to be decommissioned therefore decommissioning impacts have not been assessed.					
Chapter 17 Marine and Coastal Ecology	No impacts on marine and coastal ecology are anticipated during the decommissioning phase.					
Chapter 18 Navigational Issues	The outcomes of the NRA will be presented in the ES.					

Potential Impact	Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
Chapter 19 Traffic and Transport	Whilst details regarding the decommissioning of the Facility are currently unknown, considering the worst case scenario which would be the removal and reinstatement of the current land use at the site, it is anticipated that the impacts would be no worse than those during construction. It is anticipated that the impacts during decommissioning will be similar in nature to those of construction with reduced traffic generation.					
Chapter 20 Socio-Economics	Impact Summary during decommissioning will be the same as during construction					

7 Contact Us

7.1.1 This document provides a brief summary of the kinds of issues which have been considered as part of our Environmental Impact Assessment for the Facility. If you wish to see more detailed information, the Boston Alternative Energy Facility PEI Report is available online on the Boston Alternative Energy Facility website.