

The Lighthouse Green Fuels Order

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Abbreviations

Acronym	In Full / Term
APIS	Air Pollution Information System
ASU	Air Separation Unit
BAT	Best Available Techniques
BAT-AEL	Best Available Technique – Associated Emission Level
CEMP	Construction Environmental Management Plan
CHP	Combined Heat and Power
DCO	Development Consent Order
Defra	Department for Environment, Food and Rural Affairs
DMP	Dust Management Plan
EA	Environment Agency
ECOW	Ecological Clerk of Works
EPUK	Environmental Protection UK
ES	Environmental Statement
fCEMP	Framework Construction Environmental Management Plan
FID	Final Investment Decision
fLBMES	Framework Landscape and Biodiversity Mitigation and Enhancement Strategy
FLH	Functionally Linked Habitat
FLL	Functionally Linked Land
FLS	Framework Lighting Strategy
GIS	Geographic Information System
HF	Hydrogen fluoride
HRA	Habitats Regulations Assessment
IAQM	Institute of Air Quality Management
IED	Industrial Emissions Directive
INNS	Invasive Non-Native Species
JNCC	Joint Nature Conservation Committee
LAQM	Local Air Quality Management
LGF	Lighthouse Green Fuels
LPA	Local Planning Authority
MAGIC	Multi-Agency Geographic Information for the Countryside
MMO	Marine Management Organisation
NERC Act	Natural Environment and Rural Communities Act
NMP	Noise Management Plan

NO ₂	Nitrogen Dioxide
NOx	Nitrogen Oxides
NRMM	Non-Road Mobile Machinery
NSIP	Nationally Significant Infrastructure Project
PEIR	Preliminary Environmental Information Report
PINS	Planning Inspectorate
RCBC	Redcar and Cleveland Borough Council
RSPB	Royal Society for the Protection of Birds
SAF	Sustainable Aviation Fuel
SCR	Selective Catalytic Reduction
SNCR	Selective Non-Catalytic Reduction
SO ₂	Sulphur dioxide
SSSI	Site of Special Scientific Interest
STBC	Stockton-on-Tees Borough Council
WCA	Wildlife and Countryside Act 1981
ZoI	Zone of Influence

1 Introduction

1.1 Overview

- 1.1.1 This report has been prepared by Arup on behalf of LGF Projects Limited (hereafter referred to as 'the Applicant'). It presents the findings of a Site of Special Scientific Interest (SSSI) Assessment for the proposed Lighthouse Green Fuels (LGF) project and should be read in conjunction with the information provided in **Chapter 10: Terrestrial Ecology (ES Volume I, Application Document Ref. 6.1)**.

1.2 Project overview

- 1.2.1 The LGF project comprises the construction, operation and decommissioning of what is anticipated to be the UK's first commercial-scale second generation Sustainable Aviation Fuel (SAF) production facility to be constructed at Seal Sands Road, Seal Sands, Stockton-on-Tees, Teesside, TS2 1UB (hereafter referred to as 'the Proposed Development'). The Main Site lies approximately 4km north-east of Middlesbrough town centre and approximately 5km east of Billingham town centre and within a predominantly industrial landscape.

1.3 Purpose of the report

- 1.3.1 This report presents the findings of the SSSI Assessment of impacts. The SSSI Assessment has considered all potential effects on the special interest features of the relevant SSSIs.

1.4 Legislative and policy context

Legislation

- 1.4.1 SSSIs are primarily governed by the Wildlife and Countryside Act 1981 (WCA) [Ref 1], which establishes the process for designation, notification, and protection of these sites. Natural England is obligated to notify landowners, occupiers, and local planning authorities when land is identified as an SSSI under WCA.
- 1.4.2 The Natural Environment and Rural Communities (NERC) Act 2006 [Ref 2] further strengthened SSSI protections by consolidating responsibilities and creating Natural England as the main authority in England. Public bodies and statutory agencies are legally required to consider biodiversity and take positive steps to conserve SSSIs in their operations and decision-making.

Policy

- 1.4.3 Relevant policy includes the following local plans.

Stockton-on-Tees Borough Council (STBC) Local Plan [Ref 3]:

1.4.4 Policy ENV5 – *“Nationally designated sites - Development that is likely to have an adverse effect on a site, including broader impacts on the national network of Sites of Special Scientific Interest (SSSI) and combined effects with other development, will not normally be allowed. Where an adverse effect on the site’s notified interest features is likely, a development will only be allowed where:*

- *the benefits of the development, at this site, clearly outweigh both any adverse impact on the sites notified interest features, and any broader impacts on the national network of SSSI’s;*
- *no reasonable alternatives are available; and*
- *mitigation, or where necessary compensation, is provided for the impact.”*

Redcar and Cleveland Borough Council (RCBC) Local Plan [Ref 4]:

1.4.5 Policy LS2 – *“promote and support the sustainable use of the foreshore and dunes in the South Gare and Coatham Sands Site of Special Scientific Interest (SSSI), Redcar Rocks SSSI and the Coatham Marsh Nature Reserve whilst protecting and enhancing the features of the Teesmouth and Cleveland Coast SPA/Ramsar site.”*

1.4.6 Policy N4 – *“Development that is likely to have an adverse effect on a site, including broader impacts on the national network and combined effects with other development, will not normally be allowed. Where an adverse effect on the site’s notified interest features is likely, an exception will only be made where:*

- *the benefits of the development, at this site, clearly outweigh both any adverse impact on the features of the site that makes it of special scientific interest, and any broader impacts on the network of SSSI’s;*
- *no reasonable alternatives are available; and*
- *mitigation, or where necessary compensation, is provided for the impact.”*

Consultation

- 1.4.7 The Preliminary Environmental Information Report (PEIR) for the Proposed Development was published for statutory consultation on 2 December 2025 and the consultation period ended on 13 January 2026.
- 1.4.8 Natural England responded as part of this consultation with the following comments regarding a SSSI assessment:
- 1.4.9 *“Natural England welcomes discussion at the earliest stage about a draft Habitats Regulations Assessment (HRA) and Site of Special Scientific Interest (SSSI) Assessment. We strongly recommend that a separate assessment is provided for both, alongside the ES (i.e. not simply included across various chapters of the ES).”*
- 1.4.10 *“The SSSI Assessment should consider all potential effects on the special interest features of the relevant SSSIs. We recommend that a similar approach is taken for the SSSI Assessment as for the HRA, where each special interest feature is screened impacts and assessed in more detail if impacts cannot be screened out.”*
- 1.4.11 This SSSI Assessment has been prepared in response to Natural England’s comments.
- 1.4.12 A **Report to Inform HRA (Application Document Ref. 5.11)** has also been prepared.

2 Proposed Development

2.1 Location and context

- 2.1.1 The Site is split into two constituent parts: the 'Main Site' and the 'Wider Site'. The Main Site is where the SAF production facility (including the Combined Heat and Power (CHP) plant and Air Separation Unit (ASU)) and new quay will be located. The Main Site was formed from reclaimed land and the portion south of Seal Sands Road was largely previously developed while the north portion was not. There are existing jetties at the Main Site, within the boundary of the Teesmouth and Cleveland Coast SSSI, which are to be replaced. The SSSI boundary follows the existing jetty wall.
- 2.1.2 The 'Wider Site' is where pipeline corridors and access routes (temporary and permanent) will be located, and includes a section of existing tunnel and pipeline beneath the Tees which works will be within.
- 2.1.3 refer to **Figure 4.2: Main Site and Wider Site (ES Volume II, Application Document Ref. 6.2)**. The Site is within the administrative boundaries of STBC and RCBC.

2.2 Proposed Development description

- 2.2.1 The Applicant has submitted an application for a Development Consent Order (DCO) to construct, operate, maintain and decommission the Proposed Development. Refer to **Chapter 4: Proposed Development (ES Volume I, Application Document Ref. 6.1)** for further information on the components within the Main Site and Wider Site.
- 2.2.2 The Proposed Development includes several elements that may give rise to impact pathways to SSSIs, including emissions to air, construction and operational disturbance, hydrological discharges, and direct habitat loss.

2.3 Construction methods and timing

- 2.3.1 The Proposed Development construction programme is anticipated to commence shortly after the DCO decision (projected to be by end of 2027) and after the Final Investment Decision (FID). The construction phase is therefore likely to be approximately three to four years in duration lasting from 2028 to 2031.
- 2.3.2 The key stages of the construction programme are currently expected to be:
- 2028 – preliminary works, site establishment, site preparation, commencement of quay construction, commencement of civils works;
 - 2029-30 – site preparation, civils works, construction of the SAF production facility, CHP plant and infrastructure including utilities; and

- 2030-2031 – mechanical installation and commissioning.
- 2.3.3 A more detailed construction programme and description of the construction plant is provided in **Chapter 5: Construction Programme and Management (ES Volume I, Application Document Ref. 6.1)**.
- 2.3.4 Construction activities have the potential to result in disturbance, emissions, and hydrological effects, which are assessed in Section 5.
- 2.4 Operation and maintenance**
- 2.4.1 The Proposed Development will be capable of operating for 24 hours a day, 7 days a week. Following start-up, it is envisaged that the plant will remain in continuous operation for a period of up to 36 months before the first maintenance shut-down. There will be scheduled, routine maintenance periods approximately every 36 months to ensure that the Proposed Development, including corridor connections, operates safely and reliably.
- 2.4.2 Refer to **Chapter 4: Proposed Development (ES Volume I, Application Document Ref. 6.1)** for further information on the operational phase of the Proposed Development.
- 2.4.3 A **Framework Lighting Strategy** is provided in **Appendix 13C (ES Volume III, Application Document Ref. 6.3)**. The external lighting scheme will be designed to provide safe working conditions in all relevant areas of the Proposed Development whilst reducing light pollution and the visual impact on the local environment. These measures include that lighting will be designed to include shielded and directional luminaires to limit the amount of light spill. However, these measures are not relied upon to exclude the potential for significant effects.
- 2.4.4 During operation there will be emissions of combustion products from the pre-treatment units and CHP Plant as well as process emissions from the SAF Production Facility. These emissions will be directed via flue gas treatment systems and dispersed to atmosphere via single stacks. Refer to **Chapter 4: Proposed Development and Chapter 8: Air Quality (ES Volume I, Application Document Ref. 6.1)** for further information on operational emissions.
- 2.4.5 Noise emission limits have been defined for the **Chapter 9: Noise and Vibration (ES Volume I, Application Document Ref. 6.1)**. It is assumed that operational noise sources will be controlled through design to ensure compliance with local authority criteria, guidance from BS4142 [Ref 4] and using Best Available Techniques (BAT). As the detailed design is still ongoing, further mitigation measures for noise and vibration which can be

implemented as part of the design are being explored. Therefore, these measures are not relied upon to exclude the potential for significant effects.

- 2.4.6 When operational, the Long Sea Outfall (LSO) will discharge treated effluent from industries within Teesside including the Proposed Development. The Proposed Development will be served by a drainage system for the management of surface, foul and effluent drainage. Site drainage systems will collect surface water and direct it to series of balancing ponds where it will be tested prior to being pumped and discharged to the Tees via a new extension of the existing outfall incorporated into the quay. In the event of contamination, the water will either be treated locally, directed to the onsite treatment plant and managed as per the industrial wastewater stream (LSO) or tankered off site for treatment or disposal.
- 2.4.7 Operational activities have the potential to result in disturbance, emissions, and hydrological effects, which are assessed in Section 5.

2.5 Decommissioning

- 2.5.1 At the end of its operating life, the most likely scenario is that the Proposed Development would be decommissioned. It is anticipated that it would take up to a year to decommission the Main Site, with demolition following thereafter, taking at least two years to complete. The quay and associated infrastructure are expected to be retained for future use by third parties and not decommissioned at the same time as the rest of Proposed Development.
- 2.5.2 Refer to **Chapter 4: Proposed Development (ES Volume I, Application Document Ref. 6.1)** for further information on the decommissioning phase of the Proposed Development.

3 Methodology

3.1 Overview

- 3.1.1 This assessment considers all potential effects on the special interest features of relevant SSSIs and broadly follows relevant Government and Natural England advice [Ref 5] as set out in section 10.2 of **Chapter 10 Terrestrial Ecology (ES Volume I, Application Document Ref. 6.1.10)**.

3.2 Data sources and evidence base

- 3.2.1 The screening has been informed by publicly available datasets and relevant project information:
- Multi-Agency Geographic Information for the Countryside (MAGIC) Map [Ref 6]: for identification and mapping of SSSIs within the study area;
 - Natural England's Designated Sites View [Ref 7]: for site citations, qualifying features and Supplementary Advice on Conservation Objectives;
 - Air Pollution Information System (APIS) [Ref 8]: to identify air quality sensitivities and critical loads for designated features;
 - Joint Nature Conservation Committee (JNCC) website [Ref 9]: for site citations, qualifying features and Supplementary Advice on Conservation Objectives;
 - STBC planning portal [Ref 10]: for information on planning applications within the local planning authority area;
 - RCBC planning portal [Ref 11]: for information on planning applications within the local planning authority area;
 - Ordnance Survey base mapping: for spatial context; and
 - Project-specific information: including site layout drawings and environmental data provided by the Applicant.
- 3.2.2 All datasets are the best available at the time of assessment. Site boundaries and features are indicative and may be refined by Natural England as part of ongoing dataset updates.
- ### 3.3 Identification of national sites considered
- 3.3.1 National sites (i.e. SSSIs) with potential connectivity to the Proposed Development were identified using Geographic Information System (GIS) analysis and a review of published datasets listed in Section 3.2.

- 3.3.2 The following search parameters were applied to identify relevant sites within a precautionary screening area:
- Sites within or immediately adjacent to the Proposed Development boundary;
 - Sites within 20km of the Proposed Development where qualifying features may be sensitive to air quality or atmospheric nitrogen deposition; and
 - Sites supporting mobile qualifying species (e.g. birds, bats, fish) that may use functionally linked land (FLL) or functionally linked habitat (FLH) within approximately 10km of the Proposed Development.
- 3.3.3 These search distances reflect standard professional practice for screening SSSIs, confirmed as appropriate through statutory consultation with Natural England and Planning Inspectorate.
- 3.3.4 The identified sites are listed in Section 4 and shown in **Figure 10.3: National Statutory Designated Sites within 20km (ES Volume II, Application Document Ref. 6.2)**.

3.4 [Consideration of the Significance of Potential Effects](#)

- 3.4.1 Potential effects were assessed in the absence of mitigation, using professional ecological judgement informed by the best available data and the conservation objectives for each site.
- 3.4.2 At the screening stage, assessment against specific conservation objectives is not required; rather, the question is whether it can be excluded, on the basis of objective information, that the proposal will have an effect on the integrity of a nationally designated site that is more than trivial or inconsequential.
- 3.4.3 Professional judgement was applied with reference to:
- the vulnerability and sensitivity of qualifying features;
 - the phase and duration of potential effects (e.g. construction and/or operation);
 - the likely geographical extent of potential effects; and
 - the probability of effects occurring, based on comparable experience and evidence.

- 3.4.4 Where uncertainty remained, the precautionary principle was applied such that the project was assumed to have the potential for significant effect unless there was no reasonable scientific doubt that it would not.

3.5 In-combination assessment approach

- 3.5.1 This assessment also considers whether the Proposed Development could have effects in-combination with other plans or projects.
- 3.5.2 Where a potential impact pathway was identified, the assessment considered whether the Proposed Development could contribute to in-combination effects with other relevant plans or projects. Only those with potential spatial or temporal overlap and a shared impact pathway were included.
- 3.5.3 Relevant plans and projects were identified through a review of:
- current and emerging Local Plans and major planning applications as outlined within Table 22.1 Summary of Indicative Zones of Influence (Zols) (**Chapter 22: Cumulative and Combined Effects, ES Volume I, Application Document Ref. 6.1**);
 - infrastructure or utility schemes known to be under development; and
 - other relevant information from the Environment Agency (EA) and Natural England.
- 3.5.4 Only those plans or projects with a realistic potential to act cumulatively on the same qualifying features were taken forward for in-combination consideration. This proportional approach is consistent with Natural England [Ref 12] and Planning Inspectorate [Ref 13] guidance for European designated sites.
- 3.5.5 A full list of in-combination projects considered is provided in **Appendix 22A: Long List of Other Developments (ES Volume III, Application Document Ref. 6.3)**.

3.6 Limitations

- 3.6.1 This SSSI Assessment has been undertaken using the best available information at the time of writing. Should project design, construction methods or programme change, or if additional information on site sensitivities becomes available, the assessment should be revisited to confirm that the conclusions remain valid.
- 3.6.2 Information obtained from third-party and publicly available sources is considered accurate and up to date at the time of publication. However, due to the dynamic nature of the environment, local conditions and datasets

may change between completion of this report and the construction or operation of the Proposed Development.

- 3.6.3 The assessment is therefore subject to limitations inherent in the age, resolution, coverage, and availability of source data. Designated site information is sourced primarily from MAGIC [Ref 6] and Natural England's Designated Sites View [Ref 7], which are periodically updated; users of this report should ensure they refer to the latest datasets at the time of decision-making.
- 3.6.4 The conclusions of this screening are based on the design information (Section 2) and scope defined (Section 3). Should the design, footprint or construction methods change materially, the assessment may need to be revisited to confirm that its conclusions remain valid.
- 3.6.5 Where uncertainty remains, professional ecological judgement has been applied in accordance with recognised guidance and the precautionary principle. Any such uncertainties that could influence the conclusions have been identified and acknowledged where relevant within this assessment.

4 National sites considered

4.1 Overview

- 4.1.1 Using the search parameters outlined in Section 3.3, a total of 27 SSSIs were identified within the defined screening area. **Figure 10.3: National Statutory Designated Sites within 20km (ES Volume II, Application Document Ref. 6.2)** illustrates their locations in relation to the Proposed Development.

4.2 Summary of Sites identified

- 4.2.1 Table 4.1 summarises the SSSIs identified within the defined screening area and considers the potential impact pathways from the Proposed Development.

Table 4.1 Summary of SSSIs considered and potential impact pathways

Designated Site	Distance and direction from the Site	Reason for designation	Potential connectivity/impact pathway	Screen in/out for assessment
Teesmouth and Cleveland Coast SSSI	Within Proposed Development (12.72 ha 0.42% of designation)	The Teesmouth and Cleveland Coast SSSI is of special interest for the following nationally important features that occur within and are supported by the wider mosaic of coastal and freshwater habitats: • Jurassic geology; • quaternary geology; • sand dunes; • saltmarshes; • breeding harbour seals (<i>Phoca vitulina</i>); • breeding pied avocet (<i>Recurvirostra avosetta</i>), little tern (<i>Sternula albifrons</i>) and common tern (<i>Sterna hirundo</i>); • a diverse assemblage of breeding birds of sand dunes, saltmarsh and lowland open waters and their margins; • non-breeding shelduck (<i>Tadorna tadorna</i>), shoveler (<i>Spatula clypeata</i>), gadwall (<i>Mareca strepera</i>), ringed plover (<i>Charadrius hiaticula</i>), red knot (<i>Calidris canutus</i>), ruff (<i>Calidris pugnax</i>), sanderling (<i>Calidris alba</i>), purple sandpiper (<i>Calidris maritima</i>), common redshank (<i>Tringa totanus</i>) and sandwich tern (<i>Thalasseus sandvicensis</i>); • an assemblage of more than 20,000 waterbirds during the non-breeding season; and • a diverse assemblage of invertebrates associated with sand dunes.	• direct habitat loss as the designated site is located within the Proposed Development; • indirect habitat degradation due to pollution pathways; • hydrological changes as Proposed Development directly includes construction and operation in the River Tees channel and the SSSI falls within this operating waterbody; • hydrodynamic changes due to alteration of flood defences on the River Tees; • air quality impacts from works in construction and operation, particularly nitrogen deposition; • disturbance from noise and vibration to qualifying bird species due to construction and operation works;	Screened in

Designated Site	Distance direction and from the Site	Reason for designation	Potential connectivity/impact pathway	Screen in/out for assessment
			- visual disturbance to qualifying bird species due to artificial lighting and loss of sightlines; - loss of FLL/FLH as areas of the SSSI lie directly within and adjacent to the Proposed Development; and - the spread and introduction of invasive non-native species (INNS) due to transport of materials and vessels with potentially contaminated material.	
Lovell Hill Pools SSSI	4.92km south east	Lovell Hill Pools is set within an undulating, well-wooded agricultural landscape to the north of the North York Moors. The site supports an outstanding assemblage of dragonflies and damselflies as well as populations of both great crested newt and smooth newt (<i>Lissotriton vulgaris</i>).	no credible impact pathway exists (see Paragraph 4.2.6).	Screened out
Saltburn Gill SSSI	9.68km east	Saltburn Gill is a steep sided coastal dene, incised into glacial clays, shales and sandstones of the Lower Jurassic period. The site comprises the eastern slopes of the gill which are of particular importance in supporting one of the few relatively undisturbed areas of mixed deciduous woodland in Cleveland.	- indirect habitat degradation due to pollution pathways; - air quality impacts from operational works, particularly nitrogen deposition;	Screened in

Designated Site	Distance and direction from the Site	Reason for designation	Potential connectivity/impact pathway	Screen in/out for assessment
Briarcroft pasture SSSI	11.76km south west	Briarcroft pasture is nationally important for its area of species rich unimproved neutral grassland. The relatively level site sits adjacent to a stream and overlays glacial tills and sands resulting in the majority of the grassland being characterised by a more acidic heath-grass (<i>Danthonia decumbens</i>) sub-community. The species-rich grassland exists in a mosaic with moist tussocky stands of the Yorkshire fog (<i>Holcus lanatus</i>) and tufted hair-grass (<i>Deschampsia cespitosa</i>) community. This site is one of two remaining examples of this habitat in the Natural Area.	- indirect habitat degradation due to pollution pathways; and - air quality impacts from operational works, particularly nitrogen deposition.	Screened in
Roseberry Topping SSSI	9.97km south	Roseberry Topping is a nationally important palaeobotanical site. The site is known for its middle Jurassic plant bed dating back 170 million years ago, which has yielded fossils from seventy plant species.	no credible impact pathway exists (see Paragraph 4.2.4).	Screened out
North York Moors SSSI	10.01km south	The North York Moors contain the largest continuous tract of heather moorland in England and as such hold national importance for its mire and heather moorland vegetation communities. The site also holds international importance for its breeding bird populations, particularly merlin and golden plover. The vegetation displays a transition between blanket bog and dry heath land and supports diverse and extensive upland plant communities. The site supports a nationally important assemblage of moorland breeding birds including - Merlin (<i>Falco columbarius</i>); - Golden plover (<i>Pluvialis apricaria</i>); - Snipe (<i>Gallinago gallinago</i>);	- indirect habitat degradation due to pollution pathways; and - air quality impacts from operational works, particularly nitrogen deposition.	Screened in

Designated Site	Distance direction and from the Site	Reason for designation	Potential connectivity/impact pathway	Screen in/out for assessment
		• Curlew (<i>Numenius arquata</i>); • Common redshank; • Whinchat (<i>Saxicola rubetra</i>); • Ring ouzel (<i>Turdus torquatus</i>); • Hen harrier (<i>Circus cyaneus</i>); • Peregrine (<i>Falco peregrinus</i>); and • Short-eared owl (<i>Asio flammeus</i>).		
Whitton Bridge Pasture SSSI	12.05km west	Whitton Bridge Pasture is nationally important for its areas of species-rich unimproved neutral grassland. The gently sloping site sits adjacent to a stream and is situated on glacial tills and sands, contributing to most of the grassland to be characterised as the more acidic heath-grass sub-community. The species-rich grasslands occupy a continuous belt which grades into a community dominated by coarser false oat-grass (<i>Arrhenatherum elatius</i>) swards on alluvial soils on the northern edge.	• indirect habitat degradation due to pollution pathways; and • air quality impacts from operational works, particularly nitrogen deposition.	Screened in
Langbaugh Ridge SSSI	10.04km south	Langbaugh Ridge is identified as of national importance in the Geological Conservation Review as the best known and furthest travelled member of an unusually persistent dyke swarm.	• no credible impact pathway exists (see Paragraph 4.2.4).	Screened out
Cliff Ridge SSSI	10.84km south	Cliff Ridge is identified as of national importance in the Geological Conservation Review. Through small exposures in the upper quarries of Cliff Ridge a full cross-section of Cleveland Dyke can be seen, showing where the dyke encounters thermally altered metamorphosed sediments.	• no credible impact pathway exists (see Paragraph 4.2.4).	Screened out

Designated Site	Distance direction and from the Site	Reason for designation	Potential connectivity/impact pathway	Screen in/out for assessment
Durham Coast SSSI	11.92km north	The Durham Coast is of considerable biological, geological and physiographic interest. The site contains most of the paramaritime Magnesian Limestone vegetation in Britain, as well as supporting a species-rich dune system, and nationally important numbers of Wintering shore birds and breeding little terns which contribute to the internationally important populations of the north east coast. The paramaritime Magnesian Limestone vegetation consists of a mix of plants unique from the other lowland areas of the Magnesian Limestone grassland found in County Durham. The site supports nationally important numbers of Wintering birds including; • Purple sandpiper; • Sanderling; • Red knot; and • Turnstone (<i>Arenaria interpres</i>). In addition to Marsden bay having an established seabird colony of kittiwake (<i>Rissa tridactyla</i>), fulmar (<i>Fulmarus glacialis</i>) and cormorant (<i>Phalacrocorax carbo</i>). The coast is also entomologically rich, supporting colonies of the Durham Argus butterfly (<i>Aricia artaxerxes salmacis</i>) and the least minor moth (<i>Photedes captiuncula</i>).	• indirect habitat degradation due to pollution pathways; and • air quality impacts from operational works, particularly nitrogen deposition.	Screened in
Hart Bog SSSI	12.91km north west	Hart Bog is of particular botanical, invertebrate and palaeobotanical interest. The site consists of a small topogenous mire sitting within a steep-sided hollow cut into glacial clays of a morainic mound. There is no inflow or outflow to the mire and whilst its core is	• indirect habitat degradation due to pollution pathways; and	Screened in

Designated Site	Distance direction and from the Site	Reason for designation	Potential connectivity/impact pathway	Screen in/out for assessment
		relatively dry, composed of consolidated peat, the surrounding mire edge 'lagg' of semi-floating vegetation is exceedingly wet and 'quakes' in places. Four distinct types of plant community are identifiable; a bog mosses, species-poor fen, species-rich fen and scrub. The Bog is of invertebrate interest and supports one nationally rare species of water beetle and three locally rare species of harvestmen.	air quality impacts from operational works, particularly nitrogen deposition.	
Pike Whin Bog SSSI	13.47km north west	Pike Whin Bog is one of the few surviving wetlands in the lowlands of East Durham. The bog lies in a natural basin, in which the water level is at or above the ground surface for most of the year. Over majority of the site species-poor sedge fen has developed however among the sedge there is a small area dominated by great willow-herb (<i>Epilobium hirsutum</i>) and a stand of grey willow (<i>Salix cinerea</i>) scrub. Grassland dominated by tufted hair grass sits at the margin of the site. Due to the scarcity of wetland sites in East Durham, many of the species which occur are now very local, but of note are greater spearwort (<i>Ranunculus lingua</i>), slender tufted sedge (<i>Carex acuta</i>), marsh stitchwort (<i>Stellaria palustris</i>) and a small population of bog bean (<i>Menyanthes trifoliata</i>).	- indirect habitat degradation due to pollution pathway; and - air quality impacts from operational works, particularly nitrogen deposition.	Screened in
Kildale Hall SSSI	13.83km south east	Kildale Hall is listed as of national importance in the Geological Conservation Review, due to its sequence of minerogenic and organic deposits in filling a former kettle hole.	no credible impact pathway exists (see Paragraph 4.2.4).	Screened out

Designated Site	Distance direction and from the Site	Reason for designation	Potential connectivity/impact pathway	Screen in/out for assessment
Hulam Fen SSSI	15.27km north west	Hulam Fen is a small site which supports a range of wetland and grassland vegetation developed over and around a hydrostatic Spring-head, fed from the underlying Magnesian Limestone aquifer in an otherwise arable landscape. The fen consists of base-rich soligenous mire (comprising of a small sedge fen developed over peat), tall fen, marshy grassland and semi-improved neutral grassland. Within the mire a large population of the rare bird's-eye primrose (<i>Primula farinose</i>) is particularly noteworthy. Soligenous mire, tall fen and marshy grassland are all rare habitats in East Durham due to agricultural intensification and urban development.	- indirect habitat degradation due to pollution pathways; and - air quality impacts from operational works, particularly nitrogen deposition.	Screened in
Castle Eden Dene SSSI	16.82km north west	Castle Eden Dene is the largest and biologically the richest of a series of steep-sided wooded denes, formed as deep ravines in the Magnesian Limestone and boulder clay of the Durham Coast. Due to difficult terrain, large parts of the woodland remain free from human disturbance. The majority of the woodland is on base-rich soils with ash (<i>Fraxinus excelsior</i>) and wych elm (<i>Ulmus glabra</i>) as the main canopy species. The boulder clay slopes of the dene are unstable and prone to land slips which become colonised with a wide range of ruderal and wetland plants with giant horsetail (<i>Equisetum telmateia</i>) often abundant. However, in time willow (<i>Salix</i> sp.) scrub becomes established. At the western end of the dene is a small grassland containing species such as blue moor-grass (<i>Sesleria</i>	- indirect habitat degradation due to pollution pathways; and - air quality impacts from operational works, particularly nitrogen deposition.	Screened in

Designated Site	Distance direction and from the Site	Reason for designation	Potential connectivity/impact pathway	Screen in/out for assessment
		<i>albicans</i>), rock rose (<i>Helianthemum nummularium</i>) and fragrant orchid (<i>Gymnadenia conopsea</i>). The site is rich in insects with a large population of nationally and regionally rare species including the elm feeding moth, Blomer's rivulet (<i>Discoloxia blomeri</i>).		
Pinkney And Gerrick SSSI	15.66km south east	Pinkney and Gerrick Woods is an area of deciduous woodland on the steep slopes of Kilton Beck. It is of importance as one of the few ancient woodland sites in Cleveland which remains in a largely semi-natural condition. The woodland canopy consists mainly of oak (<i>Quercus petraea</i>) type, ash and downy birch (<i>Betula pubescens</i>) whilst damp soils support Alder (<i>Alnus glutinosa</i>). The ground flora comprises of a mosaic of plant communities which reflect local variations in soil conditions. On well-drained slopes creeping soft-grass (<i>Holcus mollis</i>) and bramble (<i>Rubus fruticosus</i>) are dominant, more base-rich soils support dog's mercury (<i>Mercurialis nerennis</i>) and bluebell (<i>Hyacinthoides non-scripta</i>) whilst wet areas beneath alder are dominated by tufted hair-grass. Within the wood there are areas of flushes where giant horsetail and hemp-agrimony (<i>Eupatorium cannabinum</i>) are present, as well as several small streams where opposite-leaved golden-saxifrage (<i>Chrysosplenium oppositifolium</i>) and large bitter-cress (<i>Cardamine amara</i>) can be seen in abundance on the banks.	- indirect habitat degradation due to pollution pathways; and - air quality impacts from operational works, particularly nitrogen deposition.	Screened in

Designated Site	Distance and direction from the Site	Reason for designation	Potential connectivity/impact pathway	Screen in/out for assessment
Fishburn Grassland SSSI	17.00km north west	Fishburn Grassland comprises of nationally rare species-rich calcareous grassland developed over magnesian limestone. On-site the grassland is composed of two distinct communities. The first occurs exclusively in East Durham and is dominated by blue moor-grass and small scabious (<i>Scabiosa columbaria</i>) and the second is dominated by upright brome (<i>Bromus erectus</i>). Scrub communities form the remainder of the site.	- indirect habitat degradation due to pollution pathways; and - air quality impacts from operational works, particularly nitrogen deposition.	Screened in
Boulby Quarries SSSI	16.39km east	Boulby Quarries is identified as being of national importance in the Geological Conservation Review. The site provides a series of highly important cliff-top exposures which cut through the base of the mid-Jurassic Ravenscar Group into Upper Lias deposits of the Lower Jurassic Period.	no credible impact pathway exists (see Paragraph 4.2.4).	Screened out
Charity Land SSSI	17.09km north west	Charity Land is nationally important for its species-rich unimproved neutral grassland which remains one of the few unfragmented examples on the plateau of eastern Durham. The fields also support wetland and marshy grassland. Parts of the site have a rigg-and-furrow structure with plants characteristic of less well-drained soils such as meadowsweet (<i>Filipendula ulmaria</i>), tufted hair-grass and lady's smock (<i>Cardamine pratensis</i>) prominent in the furrows. Flooding of the River Skerne has led to the development of open water with species-poor swamps of reedmace (<i>Typha latifolia</i>), branched bur-reed (<i>Sparganium erectum</i>) and floating sweet-grass (<i>Glyceria fluitans</i>). In areas where seasonal flooding occurs there is a well-marked zone of inundation grassland with an abundance of common sedge	- indirect habitat degradation due to pollution pathways; and - air quality impacts from operational works, particularly nitrogen deposition.	Screened in

Designated Site	Distance direction and from the Site	Reason for designation	Potential connectivity/impact pathway	Screen in/out for assessment
		(<i>Carex nigra</i>) and Autumn hawkbit (<i>Scorzoneroide autumnalis</i>) amongst other species. There are two small fields on the eastern margin that support species-poor marsh vegetation and derelict hedgerows through and around the periphery of the site.		
Newton Ketton Meadow SSSI	18.51km west	Newton Ketton Meadow is nationally important as it is one of very few surviving unimproved hay meadows in the coastal plain between the Rivers Tyne and Tees. The dominant feature of this meadow is the characteristic abundance of great burnet (<i>Sanguisorba officinalis</i>). The meadow is rich in grasses and herbs but of particular note are the variety of sedges within the sward including, glaucous sedge (<i>Carex flacca</i>), hairy sedge (<i>Carex hirta</i>), tawny sedge (<i>Carex hostiana</i>), carnation sedge (<i>Carex panicea</i>) and flea sedge (<i>Carex pulicaris</i>). On the northern edge of the site a small patch of fen vegetation merges gradually into the meadow.	- indirect habitat degradation due to pollution pathways; and - air quality impacts from operational works, particularly nitrogen deposition.	Screened in
Trimdon Limestone Quarry SSSI	18.60km north west	Trimdon Limestone Quarry exhibits features of both geological and botanical interest. The geological features are of national importance whilst an area of magnesian limestone grassland occurring in the abandoned quarry workings forms part of a nationally scarce habitat which is under threat from a cessation of grazing management.	- indirect habitat degradation due to pollution pathways; and - air quality impacts from operational works, particularly nitrogen deposition.	Screened in
Wingate Quarry SSSI	18.80km north west	Wingate Quarry was worked for Magnesian Limestone between the mid 18th century and the mid 1930's and is one of the largest and most varied examples of magnesian limestone grassland in County Durham.	indirect habitat degradation due to pollution pathways; and	Screened in

Designated Site	Distance direction and from the Site	Reason for designation	Potential connectivity/impact pathway	Screen in/out for assessment
		This grassland type is now nationally scarce due to agricultural land improvements and quarrying activities.	air quality impacts from operational works, particularly nitrogen deposition.	
Raisby Hill Quarry SSSI	19.01km north west	Raisby Hill Quarry uniquely exposes the complete thickness of the Upper Permian Raisby Formation and provides its 'Type' or 'Reference' section. It is nationally important and forms part of the Durham Province of the Marine Permian network of sites.	no credible impact pathway exists (see Paragraph 4.2.4).	Screened out
Yoden Village Quarry SSSI	19.19km north west	Yoden Village Quarry is identified of national importance in the Geological Conservation review as a key site for the study of Magnesium Limestone facies and faunas.	no credible impact pathway exists (see Paragraph 4.2.4).	Screened out
Railway Stell West SSSI	19.20km north west	Railway Stell West, a length of ditch beside the East Coast Main Line, is the only ditch known to support a typical fenland flora in the once extensive wetland of Bradbury, Morden and Preston Carrs. This ditch exhibits a range of community types including open water, tail fen and tall herb maintained by occasional ditch clearance.	- indirect habitat degradation due to pollution pathways; and - air quality impacts from operational works, particularly nitrogen deposition.	Screened in
Bishop Middleham Quarry SSSI	19.46km north west	Bishop Middleham Quarry contains a disused Magnesian Limestone quarry which, since it was abandoned, has been recolonised by a wide range of plant and animal species characteristic of limestone soils, several of which are rare or local. The site is known to have a diverse invertebrate fauna which includes the rare Durham Argus butterfly.	- indirect habitat degradation due to pollution pathways; and - air quality impacts from operational works, particularly nitrogen deposition.	Screened in

Designated Site	Distance and direction from the Site	Reason for designation	Potential connectivity/impact pathway	Screen in/out for assessment
Town Kelloe Bank SSSI	19.90km north west	Town Kelloe Bank contains one of the most extensive areas of primary Magnesian Limestone grassland in Britain. The site also has a varied invertebrate fauna, a species of particular interest being the Durham Argus butterfly which occurs here at one of its few known inland localities.	no credible impact pathway exists (see Paragraph 4.2.5).	Screened out

Sites screened in

4.2.2 18 SSSIs were scoped in for further assessment:

- Teesmouth and Cleveland Coast;
- Saltburn Gill;
- Briarcroft Pasture;
- North York Moors;
- Whitton Bridge Pasture;
- Durham Coast;
- Hart Bog;
- Pike Whin Bog;
- Hulam Fen;
- Castle Eden Dene;
- Pinkney and Gerrick;
- Fishburn Grassland;
- Charity Land;
- Newton Ketton Meadow;
- Trimdon Limestone Quarry;
- Wingate Quarry;
- Railway Stell West; and
- Bishop Middleham Quarry.

Sites Screened Out

- 4.2.3 Nine SSSIs were scoped out of further assessment as no credible impact pathway exists between them and the Proposed Development.
- 4.2.4 Seven of these SSSIs are located at least 9km and up to 19.19km from the Proposed Development as well as being designated for geological interest(s) which are not susceptible to any of the potential impacts as a result of the Proposed Development. These SSSIs were therefore scoped out of this assessment.
- 4.2.5 Town Kelloe Bank SSSI is located 19.90km from the Proposed development and is designated for invertebrate species which are unlikely to utilise the Proposed Development due to poor connectivity. The habitats within the SSSI are also not susceptible to potential impacts from air pollution. It was therefore scoped out of this assessment.
- 4.2.6 Lovel Hill Pond SSSI is located 4.92km from the Proposed Development and is designated for invertebrate and amphibian species which are unlikely to utilise the Proposed Development due to poor connectivity. The habitats within the SSSI are also not susceptible to potential impacts from air pollution. It was therefore scoped out of this assessment.

Summary of Screening Scope

- 4.2.7 In summary, of the 27 SSSIs identified within the initial search area, 18 have been screened in for further assessment and nine have been screened out at this stage.

5 Assessment of likely impacts and effects

5.1 Overview

5.1.1 The following assessment considers whether the Proposed Development could result in likely impacts and significant effects on the 18 SSSIs identified in Section 4. The assessment has been undertaken using a pathway-based approach, examining each plausible source–pathway–receptor linkage between the Proposed Development and the 18 screened-in SSSIs.

5.1.2 The potential impact pathways and likely significant effects have been assessed in Table 4.2 below for each designated site screened in (see Section 4).

5.2 Identification of potential impact pathways

5.2.1 Potential impact pathways have been identified based on the characteristics of the Proposed Development, its location and the sensitivities of the screened-in SSSIs.

5.2.2 The following potential pathways were considered, reflecting standard professional practice confirmed as appropriate through statutory consultation with Natural England and Planning Inspectorate:

- direct habitat loss or physical damage to designated sites or supporting habitats;
- indirect habitat degradation effects such as edge effects;
- hydrological change and water quality effects arising from surface or groundwater flows;
- hydrodynamic changes from alterations to flood defences;
- air quality and atmospheric deposition associated with construction or operational emissions;
- disturbance from noise, vibration, or human activity;
- visual disturbance from artificial lighting, or loss of sightlines;
- loss or fragmentation of FLL or FLH used by mobile qualifying species; and
- introduction or spread of invasive species through material handling, site runoff or vessel movements.

5.3 Assessment of likely significant effects

- 5.3.1 Likely significant effects have been assessed where potential impact pathways have been identified by considering the implications of these impact pathways on qualifying features of the SSSIs.
- 5.3.2 Embedded mitigation as part of the Proposed Development has also been considered alongside the impact pathways to determine whether adverse effects on the integrity of these qualifying features can be excluded.
- 5.3.3 Further information on the embedded mitigation considered in this assessment are provided in **Chapters 8 to 12 (ES Volume I, Application Document Ref. 6.1)** and the **Framework Construction Environmental Management Plan (fCEMP) (Appendix 5A, ES Volume III, Application Document Ref. 6.3)**.

Table 4.2 Potential impact pathways and likely significant effects for Sites screened in

Designated Site	Impact pathway	Phase	Source (activity)	Potential pathway / mechanism	Assessment summary	Likely significant effects
Teesmouth and Cleveland Coast SSSI	Direct Habitat Loss Damage	Construction	Construction of infrastructure within SSSI	Potential for direct loss of habitat within SSSI	The Proposed Development includes an area (12.72 ha, 0.42% of designation) of the Teesmouth and Cleveland Coast SSSI. This includes both terrestrial and marine habitats. Therefore, there is a direct potential land-take pathway expected for Teesmouth and Cleveland Coast SSSI. Based on currently available information, it is anticipated that habitats at the proposed quay location, above the mean high-water mark, will be permanently lost. These habitats include 'artificial intertidal structures', made up of gabion baskets, and 'developed land' which are not a qualifying feature and support limited biodiversity value for qualifying features of the designated site. Capital dredging and associated marine construction works (including jetty demolition, quay construction and vessel anchoring) have the potential to cause direct loss and disturbance of subtidal habitats and benthic communities within the footprint of the works. Dredging of approximately 500,000–1,000,000 m³ of sediment will remove seabed material and generate temporary sediment plumes that may smother benthic organisms and alter habitat conditions, although effects are expected to be largely localised and reversible. Sediment modelling for the Proposed Development indicates that most sediment is deposited within the dredged area, with only minor deposition (typically <5 cm) beyond this zone, suggesting limited spatial extent of impacts. However, as the existing communities are not considered of conservation interest, and the SSSI designation relates to habitats not present in the marine construction area, impacts are expected to be minor and not significant. Therefore, the effects of the Proposed Development relating to direct habitat loss on the Teesmouth and Cleveland Coast SSSI during construction are considered to be negligible and not significant.	No – negligible impact
Teesmouth and Cleveland Coast SSSI	Indirect Habitat Degradation (Edge Effects)	Construction	Earthworks, excavation and traffic in proximity to SSSI	Potential dispersal of dust emission and pollution and shading from constructed structures	The Proposed Development lies within and directly adjacent to the Teesmouth and Cleveland Coast SSSI. Therefore, the designated site are within the Zol for construction dust and non-road mobile machinery set by the Institute of Air Quality Management (IAQM) [Ref 14]. This dust may settle on habitats within the designated site, smothering vegetation and potentially polluting the soil/vegetation if the dust is contaminated. This may lead to a temporary or permanent impact on habitats within the designated sites, causing habitat degradation. The fCEMP (Appendix 5A, ES Volume III, Application Document Ref. 6.3) sets out best practice mitigation measures to be incorporated into the Proposed Development during the construction phase. The final CEMP will include a Dust Management Plan (DMP) and the best practice measures such as those detailed in the IAQM Construction Dust Guidance [Ref 14]. This mitigation means that there are no pathways expected for indirect habitat degradation. Therefore, the effects of the Proposed Development relating to indirect habitat degradation on the Teesmouth and Cleveland Coast SSSI during construction are considered to be negligible and not significant.	No – negligible impact

Designated Site	Impact pathway	Phase	Source (activity)	Potential pathway / mechanism	Assessment summary	Likely significant effects
Teesmouth and Cleveland Coast SSSI	Hydrological Change and Water-Quality	Construction	Construction runoff, piling, capital dredging, spillage	Potential entry of silt, sediment, or pollutants to surface water draining into the receiving waterbody	The Proposed Development will be located partly within the River Tees channel and therefore is directly hydrologically connected to the Teesmouth and Cleveland Coast SSSI. Works will take place within the River Tees itself, including the decommissioning and removal of existing jetties, new quay construction and dredging for the berthing pocket and access channel. This could result in the removal of potentially contaminated material which will be disposed of at designated and licensed offshore disposal sites, under a Deemed Marine Licence within the draft DCO (Application Document Ref. 3.1). However, this could also result in the dispersal of potentially contaminated sediment in the River Tees estuary which could cause a negative change in water quality. In construction there is also a risk of discharge of sediment-laden run-off into the River Tees and the spillage of pollutants from plant or vessels. This could decrease water quality in the estuary, but there will be mitigation and best practice as outlined in the fCEMP (Appendix 5A, ES Volume III, Application Document Ref. 6.3) and Framework Drainage Strategy (appended to the Flood Risk Assessment, Application Document Ref. 5.7) to prevent such occurrences. Therefore, with embedded mitigation, the effects of the Proposed Development relating to water pollution on the Teesmouth and Cleveland Coast SSSI during the construction phase are considered to be negligible and not significant.	No – negligible impact
		Operation	Increased navigation traffic, maintenance dredging, discharge of effluent water	Potential for increased suspension of sediment and degradation of water quality in the receiving waterbody	The Proposed Development will operate partly within the River Tees channel and therefore is directly hydrologically connected to the Teesmouth and Cleveland Coast SSSI. This area of the River Tees is already subject to maintenance dredging and river traffic. Appropriate mitigation will also be implemented during operational activities and therefore an impact pathway for the increase in suspended sediment in the River Tees estuary is excluded. The Proposed Development will pipe wastewater under the River Tees to the Bran Sands Wastewater Treatment Plant. Bran Sands Wastewater Treatment Plant currently discharges treated wastewater into Dabholm Gut however, a new Long Sea Outfall proposed by Northumbrian Water Limited will discharge wastewater into Tees Bay in the future. If required, the Proposed Development could also discharge wastewater to the Long Sea Outfall directly. Therefore, the effects of the Proposed Development relating to hydrological change and water quality on the Teesmouth and Cleveland Coast SSSI during operation are considered to be negligible and not significant.	No - negligible impact

Designated Site	Impact pathway	Phase	Source (activity)	Potential pathway / mechanism	Assessment summary	Likely significant effects
Teesmouth and Cleveland Coast SSSI	Hydrodynamic changes	Operation	Alteration of flood defences, including the increase in artificial flood banks as mitigation to accommodate the new quay	Potential to impact hydrodynamics and increase erosion up and/or downstream	The Proposed Development will operate within the River Tees channel and catchment and therefore is directly hydrologically connected to the Teesmouth and Cleveland Coast SSSI. An assessment of impacts on hydrodynamics/sediment is available in Appendix 12A: Coastal and Estuary Processes (ES Volume III, Application Document Ref. 6.3). Results from the hydrodynamic modelling show that the Proposed Development causes generally small impacts to the flow regime, confined predominantly to the vicinity of the development. The predicted impacts on hydrodynamics within the Proposed Development are generally small in magnitude and limited in extent, mainly constrained to within the proposed berth and changes are of less than ± 0.1 m/s. An assessment of significance of effect has not been undertaken however, the magnitude and extent of impact is generally small, resulting in an overall Low magnitude of impact in the vicinity of the Proposed Development and Very Low (effectively 'no impact') across the wider estuary. Any effects to the Tees water body are thus expected to be negligible and not significant.	No - negligible impact
		Construction	Construction dust and construction traffic	Potential dispersal of dust and air pollution	The Proposed Development lies within and directly adjacent to Teesmouth and Cleveland Coast SSSI. Therefore, the designated site is within the ZOI for construction dust and non-road mobile machinery as outlined by IAQM [Ref 14] (up to 50m from the Proposed Development and construction traffic route (up to 250m from the Site entrance)); traffic emissions as set out by Environmental Protection UK (EPUK)/IAQM guidance [Ref 17]; and shipping traffic outlined in Local Air Quality Management (LAQM) Technical Guidance (TG) [Ref 18]. During the construction phase, local air pollution (nitrogen dioxide (NO₂), ammonia (NH₃), acid deposition, particulates) may be increased by increased road and sea movements associated with the Proposed Development. These movements may cause a temporary or permanent impact on habitats within the designated sites, causing habitat degradation. Most ecological receptors are considered to have negligible impacts as the change in air pollutant deposition is below the 1% critical level. Ten receptors located within the Teesmouth and Cleveland Coast SSSI will see changes in nitrogen deposition over the critical level. However, changes in vegetation because of deposition impacts are a function of long-term exposure (years) rather than short term exposure. It is therefore considered unlikely that impacts from construction traffic would result in significant impacts. The fCEMP (Appendix 5A, ES Volume III, Application Document Ref. 6.3) outlines best practice measures such as those detailed in the IAQM Construction Dust Guidance [Ref 14]. This mitigation means that no pathways are expected for air quality impacts from construction dust. Therefore, the effects of the Proposed Development relating to air pollution on the Teesmouth and Cleveland Coast SSSI during construction are considered to be negligible and not significant.	No – negligible impact
Teesmouth and Cleveland Coast SSSI	Air Quality and Atmospheric Deposition	Operation	Operational road traffic, operational shipping traffic, emissions from operational plant	Potential dispersal of dust and air pollution	The Proposed Development lies within or directly adjacent to Teesmouth and Cleveland Coast SSSI. Therefore, the designated sites are within the ZOI from air pollution produced by operational traffic; shipping as defined by LAQM TG) [Ref 18]; and for operational plant emissions as outlined by the EA [Ref 19].	Yes

Designated Site	Impact pathway	Phase	Source (activity)	Potential pathway / mechanism	Assessment summary	Likely significant effects
					The emissions from operational traffic and operational plant have been assessed to have expected negligible impacts on air quality for the designated site. This is based on the modelled concentrations being less than 1% of the relevant critical level or critical load. In relation to operational plant, all air pollutants assessed (nitrogen oxides (NO_x), NH₃, sulphur dioxide (SO₂), hydrogen fluoride (HF), acid deposition and metals) excluding nitrogen deposition, were assessed to have insignificant results on the SSSI. However, impacts from nitrogen deposition cannot be screened out as insignificant as they are over 1% of the lower end of the critical load, in line with EA guidance. The air quality assessment of operational impacts has assumed that the Best Available Technique – Associated Emission Levels (BAT-AELs) will be met for the operational plant as required under the Industrial Emissions Directive (IED) and in accordance with the use of BAT under the Environmental Permitting regime. As a form of embedded mitigation, the emissions of NO_x will be controlled to the required BAT-AELs through the use of low-NO_x burners and Selective Non-Catalytic Reduction/Selective Catalytic Reduction (SNCR/SCR). Therefore, it cannot be excluded that the impact pathway may result in likely significant effect and additional mitigation is required.	
Teesmouth and Cleveland Coast SSSI	Disturbance (Noise, Vibration, Human Activity)	Construction	Construction activities including drilling and piling	Disturbance to birds through noise and vibration	Construction activities such as drilling and piling are expected to occur within the Site and lead to an increase in noise and vibration at land within and functionally linked to the designated sites. A number of noise monitoring locations selected for their importance for ecological receptors were assessed for their baseline noise levels and the predicted impacts of the Proposed Development. Sensitive timing and programming of construction will aim to avoid/minimise impacts upon protected and/or notable species and habitats. Vegetation clearance will occur outside the breeding bird season (March to September inclusive) where possible. Where certain sensitive periods cannot feasibly be avoided a suitability qualified ecologist or ecological clerk of works (ECOW) will conduct nesting checks prior to any construction activities to ensure active nests are not impacted. The use of visual and acoustic screening will also be deployed as required to the north and south of the access track situated on the north bank of Dabholm Gut during construction to avoid disturbance to nearby bird assemblages during sensitive periods (e.g. breeding season, winter high tide roosting, winter low tide foraging). The fCEMP (Appendix 5A, ES Volume III, Application Document Ref. 6.3) sets out best practice mitigation measures during the construction phase, including a Noise Management Plan (NMP). The construction noise assessment identified one ecological receptor (Dabholm Gut and Bran Sands Lagoon) where the noise levels will increase above the allowed threshold (55 decibels (dB)) and likely have significant effects on ecological features, including qualifying features of the Teesmouth and Cleveland Coast SSSI (Appendix 10H: Noise and Vibration Assessment for Terrestrial Ecological Receptors, ES Volume III, Application Document Ref. 6.3). With embedded mitigation (but no additional mitigation), the effects of the Proposed Development relating to noise and vibration disturbance on the Teesmouth and Cleveland Coast SSSI during the construction phase are considered to be major adverse and significant.	Yes

Designated Site	Impact pathway	Phase	Source (activity)	Potential pathway / mechanism	Assessment summary	Likely significant effects
		Operation	Operational noise	Disturbance to birds through noise	Operational activities are expected to result in increased noise levels at land within and functionally linked to the designated site. This could disturb qualifying species which may then avoid certain habitats, affecting their foraging, commuting, breeding or other activities. The operational noise assessment modelled areas where operational noise would exceed the threshold for impacting ecological features. The assessment found that none of the ecological receptors considered beyond the Site would be significantly affected (see Figure 10.7: Operational Noise Assessment on Terrestrial Ecological Receptors (ES Volume II, Application Document Ref. 6.2))). The assessment concluded that with embedded mitigation, noise levels do not exceed the allowed threshold at sensitive ecological features and therefore it is unlikely the Proposed Development will have significant effects on qualifying features of the SSSI (Appendix 10H: Noise and Vibration Assessment for Terrestrial Ecological Receptors, ES Volume III, Application Document Ref. 6.3).	No – pathway excluded
Teesmouth and Cleveland Coast SSSI	Visual disturbance (artificial lighting and loss of sightlines)	Construction	Artificial lighting used in construction	Disturbance to birds through artificial changes to lighting levels	Artificial lighting used during construction will be focused on works areas or those used by personnel working on the Proposed Development within the Site, in accordance with the Framework Lighting Strategy (Appendix 13C, ES Volume III, Application Document Ref. 6.3). There is the potential that light spill from artificial lighting could impact the land within and functionally linked to the designated site and the consequently the qualifying bird species found there. Artificial lighting can cause birds to avoid certain habitats, affecting their foraging, commuting, breeding or other activities. Alternatively, lighting may illuminate nests making them more prone to predation. The fCEMP (Appendix 5A, ES Volume III, Application Document Ref. 6.3) and the Framework Lighting Strategy (Appendix 13C, ES Volume III, Application Document Ref. 6.3) set out best practice mitigation measures during the construction phase. Therefore, with embedded mitigation, it is assumed that the effects of the Proposed Development relating to artificial lighting on the Teesmouth and Cleveland Coast SSSI during the construction phase are considered to be minor adverse and not significant.	No – negligible impact
		Operation	Proposed Development resulting in operational artificial lighting and loss of sightlines	Visual disturbance to birds	There is the potential that light spill from operational artificial lighting could impact the land within and functionally linked to the designated site and consequently the qualifying bird species found there. Alternatively, lighting may illuminate nests making them more prone to predation. The structures constructed as a part of the Proposed Development could also cause visual disturbance and a loss of sightlines for bird species utilising the Teesmouth and Cleveland Coast SSSI. The Framework Lighting Strategy (Appendix 13C, ES Volume III, Application Document Ref. 6.3) sets out the approach to operational lighting design for the Proposed Development. The sightline distance requirements for wading bird species that form part of the Teesmouth and Cleveland Coast SSSI assemblage vary according to species, behaviour, and habitat context, but typically fall within a broad and well-established range.	No – negligible impact

Designated Site	Impact pathway	Phase	Source (activity)	Potential pathway / mechanism	Assessment summary	Likely significant effects
					The results of the 2025/2026 wintering bird surveys (Appendix 10D: Wintering Birds Survey Report (Confidential) (ES Volume III, Application Document Ref. 6.3)) show that the habitats with closest proximity to the Proposed Development, such as the “northern parcel” support non-significant counts, less than the 1% threshold, of Teesmouth and Cleveland Coast SSSI assemblage species. Habitats further from the Proposed Development such as RSPB Back Saltholme and Port Clarence Pool, RSPB Saltholme East Pool and Saltholme West Pool and Dormans Pool support significant counts of waterfowl, that are more than the 1% threshold of Teesmouth and Cleveland Coast SSSI assemblage species. However, these habitats are between approximately 300m and 1.6km from the Proposed Development. These distances are beyond the sightline line requirements for wading bird and waterfowl species that form part of the Teesmouth and Cleveland Coast SSSI assemblage (see Chapter 10: Terrestrial Ecology, ES Volume I, Application Document Ref. 6.1). Therefore, the effects of the Proposed Development relating to visual disturbance during the operational phase are to be negligible and not significant.	
Teesmouth and Cleveland Coast SSSI	Habitat Fragmentation or Connectivity Loss (Functionally Linked Land)	Construction	Construction of Proposed Development within a designated site and adjacent FLL	Loss of FLH	The Proposed Development lies within or directly adjacent to Teesmouth and Cleveland Coast SSSI. During construction, FLL/FLH may be permanently or temporarily lost due to habitat loss, loss of sightlines, noise pollution or water pollution. Based on the results of the 2025 breeding bird surveys (Appendix 10C: Breeding Birds Survey Report (Confidential) (ES Volume III, Application Document Ref. 6.3)) it is expected that the Proposed Development will result in the loss of breeding habitat for Schedule 1 and SSSI scoring species for sand dunes, saltmarsh, lowland open water and their margins. Based on the results of the 2025/2026 wintering bird surveys (Appendix 10D: Wintering Birds Survey Report (Confidential) (ES Volume III, Application Document Ref. 6.3)) it is expected that the Proposed Development will result in the loss of overwintering habitat for herring gull, a qualifying feature of the Teesmouth and Cleveland Coast SSSI waterbird assemblage. However, counts were below the 1% threshold and does not constitute a significant proportion of the SSSI waterbird assemblage population for it to be considered FLL. Based on the results of the 2025 terrestrial invertebrate surveys (Appendix 10F: Terrestrial Invertebrates Survey Report (ES Volume III, Application Document Ref. 6.3)) it is expected that the Proposed Development will result in the permanent loss of OMH (12.67 ha), reedbed (4.96 ha) and grassland habitat (7.50 ha sparsely vegetated habitat) across the Main Site which supports borough important numbers of grayling butterfly. This is a scoring species for the invertebrate assemblage qualifying feature and therefore considered to provide FLH. Therefore, effects of the Proposed Development relating to the loss of FLH (of the Teesmouth and Cleveland Coast SSSI) during the construction phase are considered to be major adverse (significant) in the absence of additional mitigation.	Yes

Designated Site	Impact pathway	Phase	Source (activity)	Potential pathway / mechanism	Assessment summary	Likely significant effects
Teesmouth and Cleveland Coast SSSI	Introduction or Spread of Non-Native/Invasive Species	Construction	Construction involving contaminated soil or plant material	Transport of propagules or organisms considered to be non-native/invasive	There is evidence of terrestrial INNS on the Site. As set out in the fCEMP (Appendix 5A, ES Volume III, Application Document Ref. 6.3) there will be an invasive species management plan implemented as part of the CEMP during construction to prevent the introduction or spread of these species. The existing aquatic/marine INNS present within the vicinity of the Site are limited and none appear to be detrimental to native species habitats, diversity or ecosystem functioning. With the implementation of the good practice mitigation measures that comply with the International Convention for the Control and Management of Ships' Ballast Water and Sediments with the aim of preventing the spread of marine INNS [Ref 15] and International Maritime Organisation (IMO) Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species (Biofouling Guidelines) [Ref 16], including implementation of a vessel-specific Ballast Water Management Plan, the risk of introduction and spread of INNS through ballast water exchange and biofouling would be reduced. Therefore, there are no pathways to the designated site for the introduction of terrestrial/aquatic/marine INNS.	No – pathway excluded
		Operation	Ballast water exchange and biofouling from vessels	Transport of propagules or organisms considered to be non-native/invasive	The existing aquatic/marine INNS present within the vicinity of the Site are limited and none appear to be detrimental to native species habitats, diversity or ecosystem functioning. With the implementation of the good practice mitigation measures that comply with the IMO Ballast Water Management Convention [Ref 15] and Biofouling Guidelines [Ref 16], including implementation of a vessel-specific Ballast Water Management Plan, the risk of introduction and spread of INNS through ballast water exchange and biofouling would be reduced. Therefore, there are no pathways to the designated site for the introduction of terrestrial/aquatic/marine INNS.	No – pathway excluded

Designated Site	Impact pathway	Phase	Source (activity)	Potential pathway / mechanism	Assessment summary	Likely significant effects
Saltburn Gill SSSI	Air Quality and Atmospheric Deposition	Construction	Construction dust and construction traffic	Potential dispersal of dust and air pollution	The Site is located from 9km to 20km from the other SSSIs screened in. Therefore, the designated site is not within the Zol for construction dust and non-road mobile machinery as outlined by IAQM and by the traffic air pollution assessment by IAQM and Environmental Protection UK (EPUK). Therefore, the effects of the Proposed Development relating to air pollution on these SSSIs during construction are considered to be negligible and not significant .	No – negligible impact
Briarcroft Pasture SSSI		Operation	Operational road traffic, operational shipping traffic, emissions from operational plant	Potential dispersal of dust and air pollution	The Proposed Development is located from 9km to 20km from the other SSSIs screened in. The designated sites have been considered within the Zol from air pollution produced by operational traffic as outlined by IAQM and EPUK and for operational plant emissions as outlined by the Environment Agency (EA). The emissions from operational traffic and operational plant have been assessed to have expected negligible impacts on air quality for these designated sites. In relation to operational plant, this is expected as emissions will be controlled to the required BAT-AEL as a form of embedded mitigation in operation. Therefore, with embedded mitigation, the effects of the Proposed Development relating to air pollution on these SSSIs during operation are considered to be negligible and not significant .	No – negligible impact
North York Moors SSSI						
Whitton Bridge Pasture SSSI						
Durham Coast SSSI						
Hart Bog SSSI						
Pike Whin Bog SSSI						
Hulam Fen SSSI						
Castle Eden Dene SSSI						
Pinkney and Gerrick SSSI						
Fishburn Grassland SSSI						
Charity Land SSSI						
Newton Ketton Meadow SSSI						
Trimdon Limestone Quarry SSSI						
Wingate Quarry SSSI						
Railway Stell West SSSI						
Bishop Middleham Quarry SSSI						

5.4 Additional mitigation

Noise and vibration

- 5.4.1 Additional mitigation for construction noise impacts is required to avoid adverse impacts at the three ecological receptors (Lighthouse Green Fuels Quayside, Dabholm Gut, and Bran Sands Lagoon) where noise levels exceed critical thresholds for qualifying features of Teesmouth and Cleveland Coast SSSI.
- 5.4.2 Acoustic screening (in line with good industry practice and guidance set out in **Chapter 9: Noise and Vibration (ES Volume I, Application Document Ref. 6.1)**) alongside visual screening will be put in place at each location that requires it during the construction period and can provide up to 10 decibel (dB) reduction in construction noise levels while removing line of sight from the construction activities to the ecological receptors (see Tables 6.2 and 6.3 in **Appendix 10H: Noise and Vibration Assessment for Terrestrial Ecological Receptors, (ES Volume III, Application Document Ref. 6.3)**).
- 5.4.3 The locations that require acoustic and visual screening are along the northern and southern boundaries of the access track on the north bank of Dabholm Gut (see **Figure 10.9: Acoustic Screening (ES Volume II, Application Document Ref. 6.2)**). This will provide acoustic and visual screening from construction works to both Dabholm Gut and Bran Sands Lagoon. This reduction ensures that noise levels are maintained below the threshold for impacting bird species. Further information is provided in **Chapter 10: Terrestrial Ecology (ES Volume I, Application Document Ref. 6.1)**.
- 5.4.4 With embedded mitigation and this additional mitigation, potential noise and vibration impacts from the Proposed Development during the construction phase on qualifying features of the Teesmouth and Cleveland Coast SSSI are considered to be negligible and not significant.

Loss of FLL/FLH

- 5.4.5 Offsite compensatory habitat will be created for Schedule 1 species (marsh harrier and Cetti's warbler), Teesmouth and Cleveland Coast SSSI assemblage ground nesting bird species (ringed plover, lapwing, oystercatcher and skylark), and notable terrestrial invertebrate species present that were recorded at the Main Site. The relocation of notable terrestrial invertebrate populations will also be required to mitigate the risk of significantly impacting the wider metapopulation.
- 5.4.6 Further information is provided in **Chapter 10: Terrestrial Ecology (ES Volume I, Application Document Ref. 6.1)**. An outline description of the compensatory habitats required can be found in the **Framework Landscape and Biodiversity Mitigation and Enhancement Strategy (fLBMES) (Application Document Ref. 5.8)**.

- 5.4.7 With the embedded mitigation and this additional mitigation, potential impacts on qualifying features of the Teesmouth and Cleveland Coast SSSI from the loss of FLL/FLH within the Proposed Development during the construction phase are considered to be negligible and not significant.

Air pollution

- 5.4.8 Due to additional emission of NO_x, further abatement in the form of Selective Non-Catalytic Reduction/Selective Catalytic Reduction (SNCR/SCR) to reduce NO_x and wet scrubbing to reduce NH₃ slip will be required to reduce the impacts of annual NO_x and nutrient nitrogen deposition from the Proposed Development.
- 5.4.9 Further information is provided in **Chapter 8: Air Quality (ES Volume I, Application Document Ref. 6.1)**.
- 5.4.10 With the embedded mitigation and this additional mitigation, potential air quality impacts from the Proposed Development during the operational phase on qualifying features of the Teesmouth and Cleveland Coast SSSI are considered to be negligible and not significant.

5.5 In-combination assessment

- 5.5.1 For each relevant pathway identified in Section 5.2, the Proposed Development's contribution to any potential cumulative impacts was examined and summarised in Table 4.3.
- 5.5.2 The Section below Table 4.3 considers the implications of these pathways and potential impacts for the conservation objectives and integrity of the affected SSSIs and assess whether adverse effects can be excluded.
- 5.5.3 The applications in the short-list scoped in for in-combination assessment are outlined in **Chapter 22: Cumulative and Combined Effects (ES Volume I, Application Document Ref. 6.1)**. The long-list of applications considered are outlined in **Appendix 22A: Long List of Other Developments (ES Volume III, Application Document Ref. 6.3)**. The codes in the "Other plans/projects considered" column refer to plans and projects provided in the short and long lists.

Table 4.3 Summary of in-combination assessment

Pathway	Relevant SSSI	Other plans / projects considered	Assessment summary	Potential in-combination effect?
Direct Habitat Loss	Teesmouth and Cleveland Coast SSSI	NSIP1, NSIP3/RCBC41, NSIP8, NSIP9, RCBC24, RCBC40, , MMO10/HBC2	There is the potential for direct loss of habitat within the Teesmouth and Cleveland Coast SSSI as NSIP1, NSIP3/RCBC41, NSIP8, NSIP9, RCBC24, RCBC40, and MMO10 / HBC2 partly lie within the designated site. Without mitigation, this could produce in-combination effects on direct habitat loss with the Proposed Development.	Yes
Indirect Habitat Degradation (Edge Effects)	Teesmouth and Cleveland Coast SSSI	NSIP1, NSIP3/RCBC41, NSIP8, NSIP9, RCBC24, RCBC40, MMO10/HBC2	NSIP1, NSIP3/RCBC41, NSIP8, NSIP9, RCBC24, RCBC40, and MMO10 / HBC2 partly lie within or directly adjacent to Teesmouth and Cleveland Coast SSSI. Therefore, the SSSI is within the ZoI for construction dust and non-road mobile machinery (NRMM) set by the Institute of Air Quality Management (IAQM) [Ref 14]. Dust may settle on habitats within the SSSI, smothering vegetation and potentially polluting the soil/vegetation if the dust is contaminated. This may lead to a temporary or permanent impact on habitats within the SSSI, causing habitat degradation. Without mitigation, this could produce in-combination effects on indirect habitat degradation with the Proposed Development.	Yes
Hydrological Change and Water-Quality	Teesmouth and Cleveland Coast SSSI	NSIP1	NSIP1 operates within the River Tees channel and is partially located within the Teesmouth and Cleveland Coast SSSI. Works will operate within the River Tees itself, including pipeline connections under the River Tees which could increase turbidity. There could be an increase in the amount and/or concentration of pollution entering the water bodies. For example, from mobilised sediment-laden runoff, spillage of fuels or other harmful substances that may enter surface water and/or groundwater receptors. Without mitigation, this could produce in-combination effects on water quality with the Proposed Development.	Yes

Pathway	Relevant SSSI	Other plans / projects considered	Assessment summary	Potential in-combination effect?
		NSIP3/RCBC41	NSIP3/RCBC41 is located within the River Tees channel and partially within or directly adjacent to the Teesmouth and Cleveland Coast SSSI. NSIP3 will involve the installation of wharf/jetty facilities in the River Tees with two ship loaders capable of loading bulk dry material at a rate of 12m tons per annum (dry weight). There will also be associated dredging operations to create berth and associated storage building with conveyor to wharf/jetty. This will include a materials handling facility (if not located at Wilton) served by a pipeline (the subject of a separate application) and conveyor to storage building and jetty. Dredging and dredge spoil disposal for both NSIP3/RCBC41 and the Proposed Development will interact with each other if construction runs in parallel as expected. Water quality will be diminished by dredging activities and potential effluent discharge to Dabholm gut. Therefore, the work could increase turbidity and water quality could also be affected through the release of pre-existing potentially contaminated materials from dredging and increased wave wash from associated works such as navigation. There could be an increase in the amount and/or concentration of pollution entering the water bodies. For example, from mobilised sediment-laden runoff, spillage of fuels or other harmful substances that may enter surface water and/or groundwater receptors. Without mitigation, this could produce in-combination effects on water quality with the Proposed Development.	Yes
		NSIP8	NSIP8 is located within the River Tees channel and partially within or directly adjacent to the Teesmouth and Cleveland Coast SSSI. NSIP8 will involve effluent discharge to Greatham Creek. Without mitigation, this could produce in-combination effects on water quality with the Proposed Development.	Yes
		NSIP9	NSIP9 is located within the River Tees channel and partially within or directly adjacent to the Teesmouth and Cleveland Coast SSSI. Works will	Yes

Pathway	Relevant SSSI	Other plans / projects considered	Assessment summary	Potential in-combination effect?
			operate within the River Tees itself, including pipeline connections under the River Tees which could increase turbidity. There could be an increase in the amount and/or concentration of pollution entering the water bodies. For example, from mobilised sediment-laden runoff, spillage of fuels or other harmful substances that may enter surface water and/or groundwater receptors. Without mitigation, this could produce in-combination effects on water quality with the Proposed Development.	
		RCBC24	RCBC24 is located within the River Tees channel and partially within or directly adjacent to the Teesmouth and Cleveland Coast SSSI. Works will operate within the River Tees itself, including pipeline connections under the River Tees which could increase turbidity. There could be an increase in the amount and/or concentration of pollution entering the water bodies. For example, from mobilised sediment-laden runoff, spillage of fuels or other harmful substances that may enter surface water and/or groundwater receptors. Without mitigation, this could produce in-combination effects on water quality with the Proposed Development.	Yes
		RCBC40	RCBC40 is located partially within the SSSI. Works will operate on the seabed extending over 4km into the North Sea. There could be an increase in the amount and/or concentration of pollution entering the water bodies. For example, from mobilised sediment-laden runoff, spillage of fuels or other harmful substances that may enter surface water and/or groundwater receptors. Without mitigation, this could produce in-combination effects on water quality with the Proposed Development.	Yes
		MMO10/HBC2	MMO10/HBC2 is located within watercourses which are hydrologically connected to the River Tees and partially within or directly adjacent to the Teesmouth and Cleveland Coast SSSI. The application involves the	Yes

Pathway	Relevant SSSI	Other plans / projects considered	Assessment summary	Potential in-combination effect?
			repair of an existing flood embankment north of Greatham Creek and the realignment of the adjoining flood embankment, to create approximately 23 hectares of additional high value intertidal habitat. MMO10/HBC2 will involve capital dredging. Therefore, the work could increase turbidity and water quality could also be affected through the release of pre-existing potentially contaminated materials from dredging. There could be an increase in the amount and/or concentration of pollution entering the water bodies. For example, from mobilised sediment-laden runoff, spillage of fuels or other harmful substances that may enter surface water and/or groundwater receptors. Without mitigation, this could produce in-combination effects on water quality with the Proposed Development.	
		HCB6	HCB6 is located approximately 1.9km from the Teesmouth and Cleveland Coast SSSI. There is the potential that HCB6 could result in wastewater discharge. Without mitigation, this could produce in-combination effects on water quality with the Proposed Development.	Yes
Hydrodynamic changes	Teesmouth and Cleveland Coast SSSI	NSIP3	NSIP3 is located within the River Tees channel and partially within or directly adjacent to the Teesmouth and Cleveland Coast SSSI. Following works within or near water features there is the potential for permanent impact on the hydro-morphological qualities of these features. There is also the potential for changes to surface water and/or groundwater connectivity which could also cause permanent impacts to catchment hydrology. There is also potential to affect flood conveyance as well as channel capacity. Under a precautionary approach, it is identified that there is a potential for in-combination hydrodynamic changes.	Yes
		MMO10/HBC2	MMO10/HBC2 is located partially within or directly adjacent to the Teesmouth and Cleveland Coast SSSI. Following works within or near	Yes

Pathway	Relevant SSSI	Other plans / projects considered	Assessment summary	Potential in-combination effect?
			water features there is the potential for permanent impact on the hydro-morphological qualities of these features. There is also the potential for changes to surface water and/or groundwater connectivity which could also cause permanent impacts to catchment hydrology. There is also a potential to affect flood conveyance and create floodplains. Under a precautionary approach, it is identified that there is a potential for in-combination hydrodynamic changes.	
Disturbance (Noise, Vibration, Human Activity)	Teesmouth and Cleveland Coast SSSI	NSIP1	Given that the NSIP1 site is over 1km away from the Proposed Development, no construction noise cumulative effects are expected, given this is further than the construction noise buffer of 300m. The traffic flows associated with NSIP1 are included as committed development traffic in the traffic data used in the assessment of the Proposed Development. The assessment is therefore inherently cumulative with regards to NSIP1 construction traffic. Much of the Proposed Development site is located on the other side of the River Tees, indicating much of the construction traffic would operate on a different local road network. No cumulative effects are anticipated as a result. An assessment was undertaken as part of the DCO for operational plant noise, which concluded that effects are minor adverse or less. Although the development boundaries of NSIP1 and the Proposed Development overlap, the operational aspects of each development (and therefore point sources) are a considerable distance apart, over 3.5km. The NSIP1 operational noise source is situated on the south of the River Tees, on the coast to the east of the Proposed Development. It is considered that the distance between the two sites' operational noise sources is sufficient such that no cumulative effects would result. An assessment of operational traffic noise was scoped out from the DCO NSIP1 assessment. Given that operational traffic is scoped out, this indicates the potential impacts would be negligible. The operational traffic flows for both schemes are expected to be low and much of the Proposed	No

Pathway	Relevant SSSI	Other plans / projects considered	Assessment summary	Potential in-combination effect?
			Development site is located on the other side of the River Tees, indicating much of the operational traffic would operate on a different local road network. Furthermore, the traffic flows associated with NSIP1 are included as committed development traffic in the traffic data used in the assessment of the Proposed Development. The assessment is therefore inherently cumulative with regards to NSIP1 operational traffic.	
		NSIP3	There is potential for cumulative impacts from NSIP3 and the Proposed Development for disturbance, however the Proposed Development will use mitigation measures in line with best practice guidance. The transport consultants from the Proposed Development have advised that the construction traffic network would not overlap with this site. Construction marine traffic noise was possible from NSIP3 but were discounted from the assessment due to distance. As such, it is considered unlikely that the noise would interact with those of the Proposed Development. The NSIP3 scheme could result in operational noise impacts. The transport consultants from the Proposed Development have advised that the operational traffic network would not overlap with this site. The annual number of anticipated marine transits during operation of the Proposed Development is 0.5% of the baseline traffic movements on the Tees.	No
		NSIP8	NSIP8 is in close proximity to the Proposed Development but as the application is at scoping stage there is no assessment of construction noise, construction traffic noise and operational noise to review against for this cumulative assessment. The NSIP8 scheme could result in noise impacts. Under a precautionary approach, it is identified that there is a potential for in-combination noise and vibration disturbance.	Yes
		NSIP9	NSIP9 is in close proximity to the Proposed Development but as the application is at scoping stage there is no assessment of construction noise, construction traffic noise, operational noise and operational traffic	Yes

Pathway	Relevant SSSI	Other plans / projects considered	Assessment summary	Potential in-combination effect?
			noise to review against for this cumulative assessment. NSIP9 could result in temporary adverse impacts on noise in construction and/or operation. Under a precautionary approach, it is identified that there is a potential for in-combination noise and vibration disturbance.	
		RCBC3	The more recent application for use of the site as a data centre development (R/2025/0382/ESM) does not contain a noise and vibration assessment to determine potential cumulative effects. As part of the reserved matters application, a Transport Impact Assessment (TIA) was completed and indicated that there would be reduced movements and minimal impact on the local highway network. On this basis, it is unlikely that there will be any cumulative operational traffic noise effects. Without mitigation, there is potential that noise breakout from construction and operational areas and laydown areas spill into adjacent habitats and affect qualifying species which may then avoid certain habitats, affecting their foraging, commuting, roosting or other activities in-combination with the Proposed Development.	Yes
		RCBC4	No construction noise assessment was carried out for the RCBC4 site. However, the site is more than 3km from the Proposed Development, which is outside the construction noise study area. The construction traffic volumes associated with the RCBC4 site are very small, and given the site is over 3km from the Proposed Development, it is not considered that the two construction road networks would overlap. The operational noise impact assessment carried out for RCBC4 predicts that significant effects are unlikely. The RCBC4 site is also over 1km away from the operational plant of the Proposed Development, which is outside the operational noise study area. The operational traffic volumes associated with the RCBC4 site are very small, and given the site is over 3km from the Proposed Development, it is not considered that the two	No

Pathway	Relevant SSSI	Other plans / projects considered	Assessment summary	Potential in-combination effect?
			operational road networks would overlap and there would be no cumulative effects from operational traffic noise.	
		RCBC12	No construction noise assessment was carried out for the RCBC12 site. However, the site is approximately 600m from the Wider Site, which is outside the construction noise study area. The outline planning assessment did not contain information about construction traffic noise or operational noise. The reserved matters application contains no further information about construction traffic noise or operational noise, and no cumulative assessment can be carried out. The modelled road network for operational traffic from the RCBC12 site is south of the River Tees, whereas the operational road network for the Proposed Development is north of the River Tees. As such, there is no overlap in the assessment areas. Under a precautionary approach, it is identified that there is a potential for in-combination noise and vibration disturbance.	Yes
		RCBC14	No construction noise assessment was carried out for the RCBC14 site. However, the site is more than 3km from the Wider Site, which is outside the construction noise study area. The assessment for the RCBC14 site notes that construction traffic is screened out. This indicates any potential impacts would be negligible and effects would be not significant. Given the scale of vehicle movements and the distance between the two sites, no cumulative effects for construction traffic is anticipated. The scoping report predicts that operational noise from RCBC14 is likely to have negligible to low impact. The RCBC14 site is also over 4km away from the operational plant of the Proposed Development, which is outside the operational noise study area. The operational traffic flows described in the RCBC14 report are very low and impacts from operational traffic noise are anticipated to be negligible.	No

Pathway	Relevant SSSI	Other plans / projects considered	Assessment summary	Potential in-combination effect?
		RCBC24	The Scoping Report for RCBC24 indicates there is potential for significant effects from construction noise and operational noise. Limited information is available for the development in the scoping report. The development is situated 2.5km away from the Proposed Development and it is unlikely that the Affected Road Networks (ARN) for the two projects would overlap. The RCBC24 scoping report indicates that construction traffic and operational traffic noise is unlikely to be significant. Only six construction shipping movements across the entire construction period and only two two-way operational shipping movements per day in operation are anticipated for the RCBC24 site. It is considered that this low number of ships would not produce cumulative effects.	No
		RCBC40	As RCBC40 operates within the Teesmouth and Cleveland Coast SSSI, there is potential for significant effects from construction noise and operational noise. Limited information is available for the development in the scoping report. Mitigation would likely be required to fully eliminate all uncertainty of impacts. Therefore, as a precaution in-combination effects are considered further.	Yes
		NSIP3/RCBC41	As NSIP3/RCBC41 is in close proximity to the Teesmouth and Cleveland Coast SSSI, there is potential for significant effects from construction noise and operational noise. However, the development's ES reports a minor adverse impact and will use mitigation measures in line with best practice guidance. The transport consultants from the Proposed Development have advised that the construction and operational traffic networks would not overlap with this site. As such, it is considered unlikely that noise from the development would interact cumulatively with those of the Proposed Development.	No
		MMO10/HBC2	Given the distance between MMO10/HBC2 site and the Proposed Development (1.9km), no construction noise cumulative effects are	No

Pathway	Relevant SSSI	Other plans / projects considered	Assessment summary	Potential in-combination effect?
			expected, as the distance is greater than the construction noise study area of 300m. The construction traffic associated with the MMO10/HBC2 site is expected to be small, and few sensitive receptors are located on the limited construction network for that site. As such, it is considered highly unlikely that construction traffic noise impacts from the MMO10/HBC2 site and the Proposed Development would cause cumulative effects. No operational noise or operational traffic noise effects would occur as a result of the MMO10/HBC2 site as it is a managed realignment flood wall scheme.	
		HBC6	Given that the HBC6 site is over 5km from the Proposed Development, no cumulative effects would occur in terms of construction noise, as this is beyond the construction noise study area of 300m. The HBC6 site traffic assessment includes the modelled road network, which does not overlap with that of the Proposed Development. Given the nature of the HBC6 site, no operational plant is expected to be present and no cumulative effects would occur. The HBC6 site traffic assessment includes the modelled road network, which does not overlap with that of the Proposed Development.	No
Visual disturbance (Artificial lighting and loss of sightlines)	Teesmouth and Cleveland Coast SSSI	NSIP1, NSIP3/RCBC41, NSIP8, NSIP9, RCBC3, RCBC12, RCBC24, RCBC40, , MMO10/HBC2	NSIP1, NSIP3/RCBC41, NSIP8, NSIP9, RCBC3, RCBC12, RCBC24, RCBC40, and MMO10/HBC2 lie partially within or within 600m of the Teesmouth and Cleveland Coast SSSI. There is the potential that artificial lighting is used during construction and/or operation. There is the potential that light spill from artificial lighting could impact the land within and functionally linked to the SSSI and consequently the qualifying bird species found there. Without mitigation, artificial lighting can cause birds to avoid certain habitats, affecting their foraging, commuting, breeding or other activities. Alternatively, lighting may illuminate nests making them more prone to predation.	Yes

Pathway	Relevant SSSI	Other plans / projects considered	Assessment summary	Potential in-combination effect?
Habitat Fragmentation or Connectivity Loss (Functionally Linked Land)	Teesmouth and Cleveland Coast SSSI	NSIP1, NSIP3/RCBC41, NSIP8, NSIP9, RCBC3, RCBC4, RCBC12, RCBC14, RCBC24, RCBC40, , MMO10/HBC2, HBC6	NSIP1, NSIP3/RCBC41, NSIP8, NSIP9, RCBC24, RCBC40, and MMO10/HBC2 lie partially within or directly adjacent to Teesmouth and Cleveland Coast SSSI. RCBC3, RCBC4, RCBC12, RCBC14 and HBC6 lie approximately within 0.3km-3.5km of the Teesmouth and Cleveland Coast SSSI. During construction, functionally linked land may be permanently or temporarily lost due to impacts including habitat loss, loss of sightlines, noise pollution or water pollution. Without mitigation, there is a likely significant effect relating to the loss of functionally linked land of the SSSI.	Yes
Introduction or Spread of Non-Native/Invasive Species	Teesmouth and Cleveland Coast SSSI	NSIP1, NSIP3/RCBC41, NSIP8, NSIP9, RCBC3, RCBC4, RCBC12, RCBC14, RCBC24, RCBC40, , MMO10/HBC2, HBC6	There is evidence of terrestrial INNS within the Proposed Development. The existing aquatic/marine INNS present within the vicinity of the Proposed Development are limited and none appear to be detrimental to native species habitats, diversity or ecosystem functioning. Without mitigation there is a potential impact pathway in-combination for the introduction or spread of INNS through construction involving contaminated plant or materials and/or ballast water exchange and biofouling from vessels.	Yes
Air Quality and Atmospheric Deposition	Teesmouth and Cleveland Coast SSSI Saltburn Gill SSSI Briarcroft Pasture SSSI North York Moors SSSI Whitton Bridge Pasture SSSI	NSIP1	NSIP1 is not within 250m of the Proposed Development, which is the IAQM guidance buffer zone for reviewing potential impacts from construction dust. Much of the Proposed Development site is located on the other side of the River Tees, indicating much of the operational traffic would operate on a different local road network. Although the development boundaries of NSIP1 and the Proposed Development overlap, the operational aspects of each development (and therefore point source emissions) are a considerable distance apart, over 3.5km. The NSIP1 emission source is situated on the south of the River Tees, on the coast to the east of the Proposed Development. The predominant wind direction is south-westerly, therefore emissions from the NSIP1 site would be dispersed directly out to sea and away from	Yes

Pathway	Relevant SSSI	Other plans / projects considered	Assessment summary	Potential in-combination effect?
	Durham Coast SSSI Hart Bog SSSI Pike Whin Bog SSSI Hulam Fen SSSI Castle Eden Dene SSSI Pinkney and Gerrick SSSI Fishburn Grassland SSSI Charity Land SSSI Newton Ketton Meadow SSSI Trimdon Limestone Quarry SSSI Wingate Quarry SSSI Railway Stell West SSSI Bishop Middleham Quarry SSSI		sensitive receptors. It is considered that the distance between the two sites' emission sources is sufficient to allow the plumes to disperse fully without prior interaction. It is considered that no cumulative effects would result. An assessment of operational traffic was screened out from the DCO NSIP1 assessment. Given that operational traffic is screened out, this indicates the potential impacts would be negligible. The operational traffic flows for both schemes are expected to be low and much of the Proposed Development site is located on the other side of the River Tees, indicating much of the operational traffic would operate on a different local road network. Furthermore, the traffic flows associated with NSIP1 are included as committed development traffic in the traffic data used in the assessment of the Proposed Development. The assessment is therefore inherently cumulative with regards to NSIP1 operational traffic. However, further mitigation would likely be required to fully eliminate all uncertainty. Therefore, as a precaution in-combination effects are considered further.	
		NSIP3	There is potential for cumulative impacts from NSIP3 and the Proposed Development, however the Proposed Development will use high risk mitigation measures in line with the IAQM best practice guidance. The transport consultants from the Proposed Development have advised that the construction and operational traffic networks would not overlap with this site. As such, there would be no cumulative effects from construction and operational traffic. Construction shipping emissions were possible from NSIP3 but were discounted from the assessment due to distance. As such, it is considered unlikely that the emissions would interact with those of the Proposed Development. Furthermore, the emissions associated with the	Yes

Pathway	Relevant SSSI	Other plans / projects considered	Assessment summary	Potential in-combination effect?
			Proposed Development are not significant, indicating that cumulative impacts are very unlikely to change the conclusions of the assessment. The NSIP3 scheme could result in fugitive dust emissions, however, the Proposed Development is not anticipated to create any fugitive dust emissions. As such, no cumulative effects are anticipated. There would be 191 operational shipping movements per year, which is less than 2 movements per day. It is considered that this low number of ships would not change the conclusions or results of the ES air quality assessment for the Proposed Development. No cumulative effects are anticipated. Further mitigation would likely be required to fully eliminate all uncertainty. Therefore, as a precaution in-combination effects are considered further.	
		NSIP8	As the NSIP8 project is at scoping stage, no assessment of construction dust or construction traffic is provided to review against for this cumulative assessment. The operation of NSIP8 will include emissions from an auxiliary boiler and potentially flaring emissions (although these will be avoided where possible). No emissions from the carbon capture process are expected, as this is a closed system. As the NSIP8 project is at scoping stage, no assessment of operational plant has taken place yet. Mitigation would likely be required to fully eliminate all uncertainty of impacts on air quality and atmospheric deposition. Therefore, as a precaution in-combination effects are considered further.	Yes
		NSIP9	NSIP9 is in close proximity to the Proposed Development, but as the NSIP9 project is at scoping stage, no assessment of construction dust, construction traffic, operational plant and operational traffic is provided. The operation of NSIP9 could potentially include flaring emissions (although these will be avoided where possible). No emissions from the pipeline are expected, as this is a closed system.	Yes

Pathway	Relevant SSSI	Other plans / projects considered	Assessment summary	Potential in-combination effect?
			Mitigation would likely be required to fully eliminate all uncertainty of impacts on air quality and atmospheric deposition. Therefore, as a precaution in-combination effects are considered further.	
		RCBC3	The more recent application for use of the site as a data centre development (R/2025/0382/ESM) does not contain an air quality assessment to determine potential cumulative effects. Mitigation would likely be required to fully eliminate all uncertainty of impacts on air quality and atmospheric deposition. Therefore, as a precaution in-combination effects are considered further.	Yes
		RCBC4	No construction dust assessment was carried out for RCRB4 site given the lack of sensitive receptors. However, the site is more than 250m from the Proposed Development, which is the IAQM buffer zone. The construction traffic volumes associated with the RCBC4 site are very small, and given the site is over 2km from the Proposed Development, it is not considered that the two construction road networks would overlap. For the RCBC4 site, none of the vented releases (oxygen, hydrogen and very small amounts of nitrogen) are harmful to human health nor the environment in the quantities emitted, no assessment of air quality impacts was provided. An emergency diesel generator is proposed; however this will be small in size (approximately 1 MWth) and will only be routinely operated for testing purposes (less than 50 hours per year). The operational traffic volumes associated with the RCBC4 site are very small, and given the site is over 2km from the Proposed Development, it is not considered that the two operational road networks would overlap. Mitigation would likely be required to fully eliminate all uncertainty of impacts on air quality and atmospheric deposition. Therefore, as a precaution in-combination effects are considered further.	Yes

Pathway	Relevant SSSI	Other plans / projects considered	Assessment summary	Potential in-combination effect?
		RCBC12	As the RCBC12 site is located over 800m from the Proposed Development, no cumulative construction dust impacts are expected to occur, as this is beyond the IAQM buffer zone of 250m. The outline planning assessment (R/2020/0357/OOM) did not contain information about construction (R/2025/0607/RMM) traffic emissions. The reserved matters application contains no further information about construction traffic emissions. The outline planning assessment did not contain information about operational plant emissions. The reserved matters application contains no further information about operational plant emissions. The modelled road network for operational traffic from the RCBC12 site is south of the River Tees, whereas the operational road network for the Proposed Development is north of the River Tees. As such, there is no overlap in the assessment areas. Mitigation would likely be required to fully eliminate all uncertainty of impacts on air quality and atmospheric deposition. Therefore, as a precaution in-combination effects are considered further.	Yes
		RCBC14	As the RCBC14 site is located over 1.2km from the Proposed Development, no cumulative construction dust impacts are expected to occur, as this is beyond the IAQM buffer zone of 250m. The assessment for the RCBC14 site notes that construction traffic is screened out. This indicates any potential impacts would be negligible and effects would be not significant. Only a scoping report is available for information at this time, however given the nature of the RCBC14 site operations, it is not considered that cumulative operational plant effects would occur. Vented releases from such plants as RCBC14 are typically oxygen, hydrogen and nitrogen, which are not considered harmful to human health or the environment in the quantities likely to be vented. The only corresponding emissions	Yes

Pathway	Relevant SSSI	Other plans / projects considered	Assessment summary	Potential in-combination effect?
			would be combustion emissions from the testing on an emergency diesel generator, if one is included in the scheme, however this would likely be small in size and only operated routinely for testing purposes (less than 50 hours per year) and therefore given the infrequent emissions and distance from the Proposed Development, no cumulative effects are anticipated to occur. The assessment for the RCBC14 site notes that operational traffic is screened out. This indicates any potential impacts would be negligible and effects would be not significant. The operational traffic flows described in the RCBC14 report are very low. Mitigation would likely be required to fully eliminate all uncertainty of impacts on air quality and atmospheric deposition. Therefore, as a precaution in-combination effects are considered further.	
		RCBC24	The Scoping Report for RCBC24 indicates there is potential for significant effects from operational process emissions and operational traffic movements. Limited information is available for the development in the scoping report and it does not outline any specific mitigation measures. The development is situated further south than the Proposed Development and it is unlikely that the Affected Road Networks (ARN) for the two projects would overlap. Given the distance between the RCB24 site and the Proposed Development (2.6km) no construction dust cumulative effects are expected, given this is greater than the IAQM buffer zone of 250m. Only six construction shipping movements are anticipated for the RCBC24 site and only two two-way operational shipping movements per day are anticipated for the RCBC24 site. Mitigation would likely be required to fully eliminate all uncertainty of impacts on air quality and atmospheric deposition. Therefore, as a precaution in-combination effects are considered further.	Yes

Pathway	Relevant SSSI	Other plans / projects considered	Assessment summary	Potential in-combination effect?
		RCBC40	RCBC40 is in close proximity to the Proposed Development, but as the RCBC40 project is at scoping stage, no assessment of construction dust, construction traffic and operational traffic is provided. As RCBC40 is a wastewater treatment plant, there would be no operational plant emissions and therefore no cumulative effects with the Proposed Development. Mitigation would likely be required to fully eliminate all uncertainty of impacts on air quality and atmospheric deposition. Therefore, as a precaution in-combination effects are considered further.	Yes
		NSIP3/RCBC41	Construction dust is likely to be similar to NSIP3. The Proposed Development will use high risk mitigation measures in line with the IAQM best practice guidance. There are no necessary measures beyond the high risk measures that need to be recommended. The IAQM guidance notes that with the implementation of these measures, the effects would be not significant. Construction traffic effects were concluded to be not significant from the NSIP3/RCBC41 site. The transport consultants on this project have advised that the traffic from the NSIP3/RCBC41 site are not expected to interact with the construction network for the Proposed Development. As such, no cumulative effects are expected to occur. No operational plant emissions are expected from the NSIP3/RCBC41 site so no cumulative effects would occur.	No
		MMO10 / HBC2	Given the distance between MMO10/HBC2 site and the Proposed Development (1.9km), no construction dust cumulative effects are expected, given this is greater than the IAQM buffer zone of 250m. The construction phase and the construction traffic associated with the MMO10/HBC2 site are expected to be small, and few sensitive receptors are located on the limited construction network for that site. No	No

Pathway	Relevant SSSI	Other plans / projects considered	Assessment summary	Potential in-combination effect?
			operational effects would occur as a result of the MMO10/HBC2 site as it is a managed realignment flood wall scheme.	
		HBC6	Given that the HBC6 site is over 5km from the Proposed Development, no cumulative effects would occur in terms of construction dust, as this is beyond the IAQM 250m buffer zone. The HBC6 site air quality assessment includes the modelled road network, which does not overlap with that of the Proposed Development. Given the nature of the HBC6 site, no operational plant is expected to be present. The HBC6 site air quality assessment includes the modelled road network, which does not overlap with that of the Proposed Development. Mitigation would likely be required to fully eliminate all uncertainty of impacts on air quality and atmospheric deposition. Therefore, as a precaution in-combination effects are considered further.	Yes

Teesmouth and Cleveland Coast SSSI

Direct habitat loss

- 5.5.4 As no direct habitat loss that will affect the integrity of the Teesmouth and Cleveland Coast SSSI will occur as a result of the Proposed Development, there is no likelihood on in-combination impacts. Therefore, there would be **no adverse effect** on the integrity of the Teesmouth and Cleveland Coast SSSI.

Indirect habitat degradation

- 5.5.5 Each development listed in Table 4.3 has secured (or will be required to secure) embedded mitigation via a CEMP to mitigate construction dust emissions using IAQM Construction Dust Guidance [Ref 14]. Embedded measures will include (but are not limited to) proposals for good site practice to reduce dust, trackout and emissions from non-road mobile machinery (NRMM), use of sheeting to cover spoil heaps and use of water sprayers to reduce dust clouds. Through the use of the embedded and additional mitigation detailed above for each in-combination project, the likelihood of in-combination impacts is reduced to negligible in relation to indirect habitat degradation. Therefore, there would be **no adverse effect** on the integrity of the Teesmouth and Cleveland Coast SSSI.

Hydrological change and water-quality

- 5.5.6 Each development listed in Table 4.3 has secured (or will secure) embedded mitigation via a CEMP to mitigate emissions to water during construction. For NSIP3/RCBC41, there is the potential for dredging and dredge spoil disposal for all three developments to interact with each other if construction runs in parallel as expected. If construction dredging operations happen in parallel the effect could be magnified despite the embedded mitigation, leading to a **moderate adverse effect** on the integrity of the Teesmouth and Cleveland Coast SSSI.

Hydrodynamic changes

- 5.5.7 For NSIP3/RCBC41, there is the potential for dredging and dredge spoil disposal for all three developments to interact with each other if construction runs in parallel as expected. If construction dredging operations happen in parallel the effect could be magnified despite the embedded mitigation, leading to a **moderate adverse effect** on the integrity of the Teesmouth and Cleveland Coast SSSI.

Disturbance (noise, vibration, human activity)

- 5.5.8 Each development listed in Table 4.3 has secured (or will secure) embedded mitigation via a CEMP to mitigate noise impacts during construction, taking into account best practice guidance, based on BS 5228-1:2009+A1:2014. Where relevant (i.e. for NSIP1, RCBC3, RCBC24, RCBC 40 and RCBC41), operational plant noise will be controlled through BAT in line with the Environmental Permit. Through the use of the embedded and additional mitigation detailed above for each in-combination project, the likelihood of in-combination impacts is reduced to negligible in relation to noise and vibration. Therefore, there would be **no adverse effect** on the integrity of the Teesmouth and Cleveland Coast SSSI.

Visual disturbance (artificial lighting and loss of sightlines)

- 5.5.9 For NSIP1, NSIP3, NSIP8, NSIP9, RCBC3, RCBC12, RCBC24, RCBC40, RCBC41 and MMO10/HBC2 there is potential that construction and operational activities, including artificial lighting, could result in disturbance to functionally linked land for the Teesmouth and Cleveland Coast SSSI and consequently the qualifying bird species found there. If construction programmes for all these developments happen in parallel the effect could be magnified. Each development listed has secured (or will secure) embedded mitigation via a CEMP to mitigate artificial lighting impacts during construction and operation, taking into account best practice guidance. Through the use of the embedded, the likelihood of in-combination impacts is reduced to negligible in relation to noise and vibration. Therefore, there would be **no adverse effect** on the integrity of the Teesmouth and Cleveland Coast SSSI.

- 5.5.10 The construction of buildings and structures associated with the Proposed Development has the potential to alter existing sightlines and introduce visual disturbance. It is expected that the listed developments are beyond the distance that could cause impact to birds. Therefore, there would be **no adverse effect** on the integrity of the Teesmouth and Cleveland Coast SSSI.

Habitat fragmentation or connectivity loss (Functionally Linked Land)

- 5.5.11 For NSIP1, NSIP3, NSIP8, NSIP9, RCBC3, RCBC4, RCBC12, RCBC14, RCBC24, RCBC40, RCBC41, MMO10/HBC2, and HBC6 there is potential for construction works to result in permanent or temporary loss of functionally linked land. If construction programmes for all these developments happen in parallel the effect could be magnified despite any embedded mitigation, leading to a **moderate adverse effect** on the integrity of the Teesmouth and Cleveland Coast SSSI.

Introduction or spread of non-native/invasive species

- 5.5.12 Through the use of best practice embedded mitigation (secured through CEMP(s) as part of the DCO or planning applications), including measures to reduce biofouling from vessels and ballast water management plans, across all in-combination projects listed in Section 5.5; the likelihood of in-combination impacts is reduced to negligible in relation to the introduction or spread of INNS. Therefore, there would be **no adverse effect** on the integrity of the Teesmouth and Cleveland Coast SSSI.

Air Quality and Atmospheric Deposition

- 5.5.13 Each development listed in Table 4.3 has secured (or will secure) embedded mitigation via a CEMP to mitigate construction air quality emissions using IAQM best practice guidance. For projects NSIP8, NSIP9 and RCBC40; the schemes will be designed such that process emissions to air comply with the Emissions Limit Value (ELV) requirements specified in the Industrial Emissions Directive (IED), and the relevant BAT Reference (BREF) Documents. These will be regulated by the EA through their Environmental Permits. For projects NSIP1, RCBC3 and RCBC24; it is expected that the emissions to atmosphere associated with the operational plant will be controlled through BAT in line with the Environmental Permit.
- 5.5.14 Through the use of the embedded and additional mitigation detailed above for each in-combination project, the likelihood of in-combination impacts is reduced to negligible in relation to air pollution. Therefore, there would be **no adverse effect** on the integrity of the Teesmouth and Cleveland Coast SSSI, Saltburn Gill SSSI, Briarcroft Pasture SSSI, North York Moors SSSI, Whitton Bridge Pasture SSSI, Durham Coast SSSI, Hart Bog SSSI, Pike Whin Bog SSSI, Hulam Fen SSSI, Castle Eden Dene SSSI, Pinkney and Gerrick SSSI, Fishburn Grassland SSSI, Charity Land SSSI, Newton Ketton Meadow SSSI, Trimdon Limestone Quarry SSSI, Wingate Quarry SSSI, Railway Stell West SSSI, and Bishop Middleham Quarry SSSI

Air quality and atmospheric deposition

- 5.5.15 Each development listed in Table 4.3 has secured (or will secure) embedded mitigation via a CEMP to mitigate construction air quality emissions using IAQM best practice guidance. For projects NSIP8, NSIP9 and RCBC40; the schemes will be designed such that process emissions to air comply with the Emissions Limit Value (ELV) requirements specified in the Industrial Emissions Directive (IED), and the relevant BAT Reference (BREF) Documents. These will be regulated by the EA through their Environmental Permit. For projects NSIP1, RCBC3 and RCBC24; it is expected that the emissions to atmosphere associated with the operational plant will be controlled through BAT in line with the Environmental Permit.

- 5.5.16 Through the use of the embedded and additional mitigation detailed above for each in-combination project, the likelihood of in-combination impacts is reduced to negligible in relation to air pollution. Therefore, there would be **no adverse effect** on the integrity of these SSSIs.

6 Conclusion

- 6.1.1 This SSSI assessment has considered the potential effects on the special interest features on SSSIs as a result of the Proposed Development. All relevant pathways were reviewed, including direct habitat loss, indirect habitat degradation, hydrological change, hydrodynamic change, air quality, disturbance from noise and vibration, visual disturbance, functional land-take and introduction or spread of invasive species.
- 6.1.2 The assessment has identified a credible source–pathway–receptor linkage between the Proposed Development and qualifying features of the following SSSIs:
- Teesmouth and Cleveland Coast SSSI:
 - noise and vibration disturbance during construction;
 - loss of FLL/FLH during construction; and
 - air pollution during operation.
- 6.1.3 On the basis of the available evidence, and applying the precautionary principle, it cannot be excluded that the Proposed Development, either alone or in-combination with other plans or projects, would have a likely significant effects on Teesmouth and Cleveland Coast SSSI.
- 6.1.4 Additional mitigation will be required as part of the Proposed Development to address these significant impacts during both the construction and operational phases. This includes full acoustic and visual screening of construction activities along Dabholm Gut (refer to **Figure 10.9: Acoustic Screening (ES Volume II, Application Document Ref. 6.2)**), compensatory habitat creation off-site for qualifying features (refer to **Chapter 10: Terrestrial Ecology (ES Volume I, Application Document Ref. 6.1)**), and further emissions abatement measures on the CHP and SAF plants (refer to **Chapter 8: Air Quality (ES Volume I, Application Document Ref. 6.1)**). With the embedded mitigation and this additional mitigation, potential impacts from the Proposed Development on qualifying features of the Teesmouth and Cleveland Coast SSSI are considered to be negligible and not significant.

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