

South Bank Arterial Drainage: Shadow Habitat Regulations Assessment

Final Report

March 2022

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Purpose

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Abbreviations

AA	Appropriate Assessment
EA	Environment Agency
HRA	Habitats Regulations Assessment
IROPI	Imperative Reasons of Overriding Public Interest
LSE	Likely Significant Effect
MMO	Marine Management Organisation
NE	Natural England
SAC	Special Area of Conservation
SIZ	South Industrial Zone
SPA	Special Protection Area
ZoI	Zone of Influence

1 Introduction

1.1 Background

JBA Consulting was commissioned by South Tees Site Company to produce a shadow Habitats Regulations Assessment (HRA) for bank reprofiling works as part of the South Bank arterial drainage project. This drainage work forms part of the larger Teesworks South Industrial Zone (SIZ) for which there is an existing HRA (Arup, 2020). This HRA specifically covers the breaching of approximately 60m the existing estuarine bank along the River Tees as part of a Marine Licence application to the Marine Management Organisation (MMO), Figure 1-1. Details of the site location in the context of the wider development site are shown below in Figure 1-2.

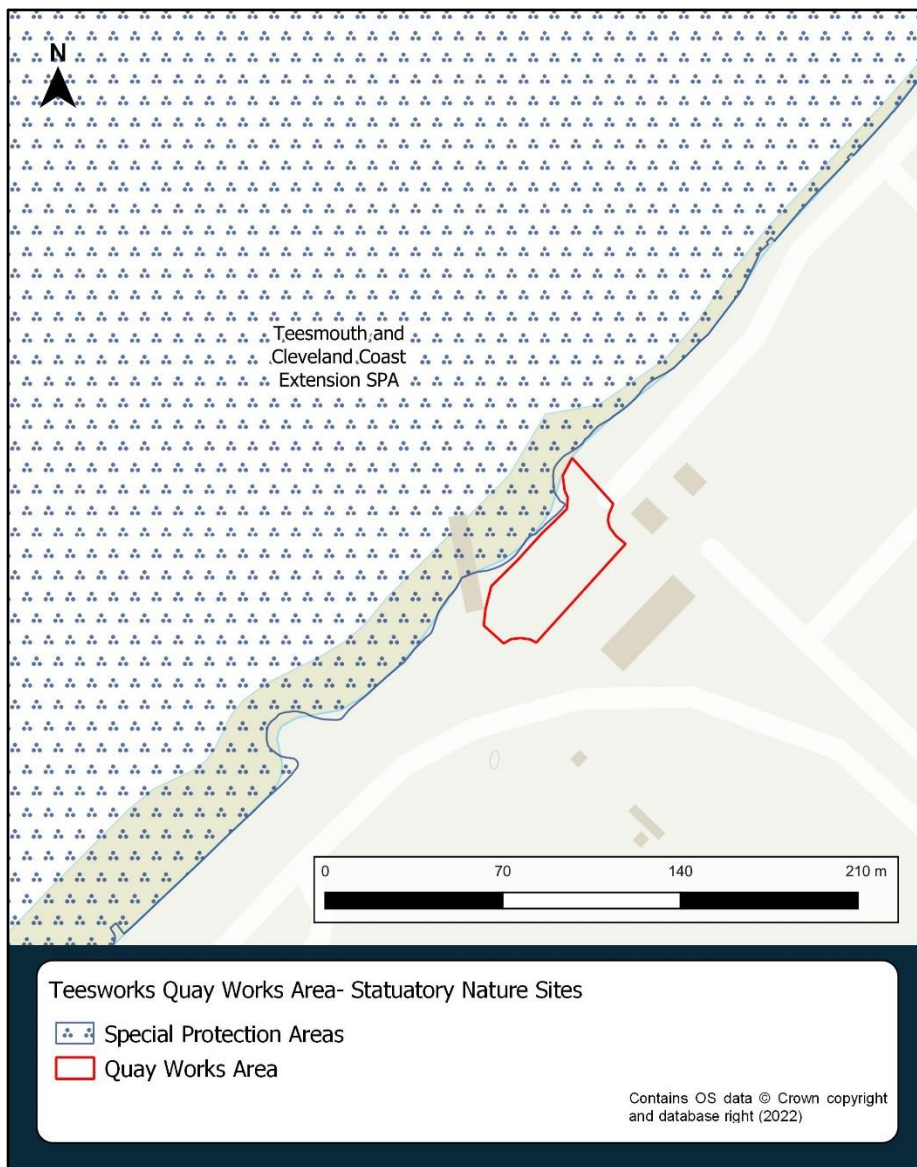


Figure 1-1 Approximate location of South Bank estuarine wall works (works area extracted from Appendix- Detailed Site Plan)



Figure 1-2: South Bank Site and the wider South Industrial Zone

The HRA considers two European sites: The Teesmouth and Cleveland Coast SPA and The Teesmouth and Cleveland Coast Ramsar, which are within and adjacent to the proposed works Figure 1-1.

1.2 Legislative Context

The Conservation of Habitats and Species Regulations 2017 (as amended by the Conservation of Habitats and Species (amendment) (EU Exit) Regulations 2019), also known as the 'Habitats Regulations', provide legal protection to habitats and species of national importance. The regulations also secure an ecological network of protected sites, consisting of SACs and SPAs. Government guidance also requires that Ramsar sites (which support internationally important wetland habitats and are listed under the Convention on Wetlands of International Importance [Ramsar Convention]) are given the same level of protection as SACs and SPAs.

Prior to the UK's withdrawal from the EU, SACs were designated and protected under domestic legislation transposed from European Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna (Habitats Directive), and SPAs under European Directive 2009/147/EC on the Conservation of Wild Birds (Birds Directive). Together these sites formed a European-wide Natura 2000 network of protected sites. Since 31 December 2020, SACs and SPAs within the UK no longer fall within the Natura 2000 network, and instead form a National Site Network. SPAs and SACs continue to be referred to collectively as 'European sites' within the context of the Habitats Regulations, reflecting their international importance for the conservation of biodiversity.

SACs and SPAs within the National Site Network are also still designated for habitats listed on Annex I and for species listed on Annex II of the Habitats Directive, and criteria listed under the Birds Directive, and it is these Annex I habitats, Annex II species and Birds Directive Criteria against which assessments under the Habitats Regulations are still made.

For all plans and projects, which are not wholly directly connected with, or necessary to, the conservation management of the site's qualifying features, a formal screening for any Likely Significant Effects (either alone or in combination with other plans or projects) on a European site(s) is required. The screening assessment is based on available ecological information on the designated site(s), other plans, projects and policies relevant to the area and details of the proposed works.

Following the European Court of Justice (ECJ) judgement in the case of "People over Wind & Sweetman" (Case C-323/17), measures that are necessary to avoid or reduce impacts on the European site, even when considered standard environmental best-practice, cannot be considered at the screening stage.

If the screening assessment concludes that the project may have a significant adverse effect on the conservation objectives of the site(s), or that such an effect cannot be ruled out (adopting a precautionary approach) an Appropriate Assessment must be carried out. An Appropriate Assessment involves an assessment of the potential effects of a project on the conservation objectives of the site(s). If significant adverse effects are identified, mitigation or avoidance measures can be applied.

If it cannot be concluded that the works will not adversely impact upon the integrity of the site(s), the project will not be able to proceed without further conditions and/or assessment.

2 Project Details

2.1 Site Location

The proposed works are located in the Teesworks area at (NZ 53884 23035) and are a part of the South Industrial Zone 1 (SIZ1). The proposed works are within the flood bank on the river Tees, as part of the wider works across the brownfield site. South Bank is a highly industrialised area with two partially culverted watercourses, the Holme Beck and the Knitting Wife Beck. The site of interest which will be defined as the South Bank site is located at Quay on the flood bank to the river Tees in between two current outfalls, the Lackenby outfall and the Holme Beck outfall.

2.2 Project Background and description

South Bank is within the Teesworks South Industrial Zone (SIZ), with an outfall into the Tees estuary. The current water channel is culverted leading to poor biodiversity and water flow, and the proposed project plans to create an open channel with an open outfall into the Tees estuary, generating saltmarsh intertidal habitat.

The works will incorporate two ordinary watercourses (the Holme Beck and Knitting Wife Beck) that are partially culverted. The works will entail establishing a new location for surface water outfall for flows from the two combined watercourses, as well as approximately 1ha of intertidal habitat between the outfall and the Tees main river.

The proposed inter-tidal channel will be approximately 300m in length with an invert which is 20m wide, with a granular aggregate underlay to prevent sediment flow into the estuary and substrate to promote saltmarsh habitat formation. The purpose of the outfall and intertidal area is to set back the hard outfall inland away from the sensitive River Tees. The outfall will dissipate flows, reducing the energy and velocity prior to its confluence with the Tees. For details of the overall proposed drainage scheme, see Appendix 1.

Works will be carried out in two stages, with initial work focusing on the creation of a new open channel. The first stage of works will be isolated from the estuary areas and European sites, with no known watercourses or surface water discharge across the site. The second stage of works will involve the breaching and removal of approximately 60m of the existing estuarine bank to create the tie into the riverbanks to the east and west of the confluence. Further details of the proposed works can be found in the MMO Scope of works: TW-SIZ-XX-JBAU-SB-00-FN-EN-0012-S3-P02-MMO_Application.

The works considered in this HRA, hereafter referred to as "the project", are the breaching and removal of approximately 60m of the existing estuarine bank. At the time of writing, no contractor has been appointed to provide specific details of construction methodology, timings and sequencing. There is no specific construction methodology so it is unknown at this time what machinery will be required, this HRA will assume the need for machinery such as excavators and cranes.

3 Methodology

3.1 Overview

Habitat Regulations Assessment follows a four-stage process as outlined in the Habitats Regulations Assessment Handbook (DTA, 2019) and summarised in Table 3-1 below.

This report provides evidence to support Stage 1 and Stage 2 of the HRA process, to provide the Competent Authority(s) with information to make their assessment.

Table 3-1: The HRA process

HRA stage	Description
Stage 1: Screening	<p>This process identifies the likely significant effects upon a European site of a project or plan, either alone or in-combination with other projects or plans and determines whether these impacts are likely to be significant.</p> <p>Following the recent ECJ judgement in the case of “people over wind” (Case C-323/17). Measures that are necessary to avoid or reduce impacts on the European site, even when considered standard environmental best-practice, can only be at Stage 2.</p> <p>If no likely significant effect is determined, the project or plan can proceed. If a likely significant effect is identified, stage 2 is commenced.</p>
Stage 2: Appropriate Assessment	<p>Stage 2 is subsequent to the identification of likely significant effects upon a European site in stage 1. This assessment determines whether a project or plan would have an adverse impact on the integrity of a European site, either alone or in-combination with other projects or plans.</p> <p>This assessment is confined to the effects on the internationally important habitats and species for which the site is designated (i.e. the interest features of the site).</p> <p>Appropriate Assessments, in line with ECJ Case C-461/17 <i>Holohan v An Bord Pleanála</i>, must also consider impacts upon habitats and species within or outside of a site boundary if they support a qualifying feature and could impact upon the conservation objectives of the site.</p> <p>If no adverse impact is determined, the project or plan can proceed. If an adverse impact is identified, stage 3 is commenced.</p>
Stage 3: Assessment where no alternatives and adverse impacts remain	<p>Where a plan or project has been found to have adverse impacts on the integrity of a European site, potential avoidance/mitigation measures or alternative options should be identified.</p> <p>If suitable avoidance/mitigation or alternative options are identified, that result in there being no adverse impacts from the project or plan on European sites, the project or plan can proceed.</p> <p>If no suitable avoidance/mitigation or alternative options are identified, as a rule the project or plan should not proceed. However, in exceptional circumstances, if there is an 'imperative reason of overriding public interest' for the implementation of the project or plan, consideration can be given to proceeding in the absence of alternative solutions. In these cases, compensatory measures will have to be put in place to offset any negative impacts.</p>
Stage 4: Compensatory measures	<p>Stage 4 comprises an assessment of the compensatory measures where, in light of an assessment of imperative reasons of overriding public interest, it is deemed that the project should proceed.</p>

3.2 Guidance

The methodology used for this assessment is based on guidance in the Habitats Regulations Assessment Handbook (DTA, 2021). In addition, the following guidance documents were also consulted:

- European Commission Notice: Managing Natura 2000 sites. The Provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018)
- UK Government Guidance on the Use of Habitats Regulations Assessment (UK Government, 2019).

In addition, the information provided in the HRA undertaken for the full SIZ scheme (Arup, 2020), has also been used to inform this assessment.

3.3 Personnel

The assessment was undertaken by Joanna Mead BA and Rachael Brady BSc MSc CEcol MCIEEM. The HRA was reviewed by Catherine Rodd BSc MCIEEM, who has undertaken and reviewed HRA for a wide range of plans and projects.

3.4 The Competent Authority

This shadow HRA has been written as a report in support of a Marine Licence application to the MMO. It is expected that the MMO will coordinate the HRA, should multiple Competent Authorities be required to consider the works.

3.5 Consultation

No consultation has been undertaken for this draft Habitats Regulations Assessment. Natural England were consulted regarding the Appropriate Assessment for the wider SIZ scheme (Arup, 2020). It is expected that Natural England will be consulted through the Marine Licence application process.

3.5.1 Assumptions and Limitations

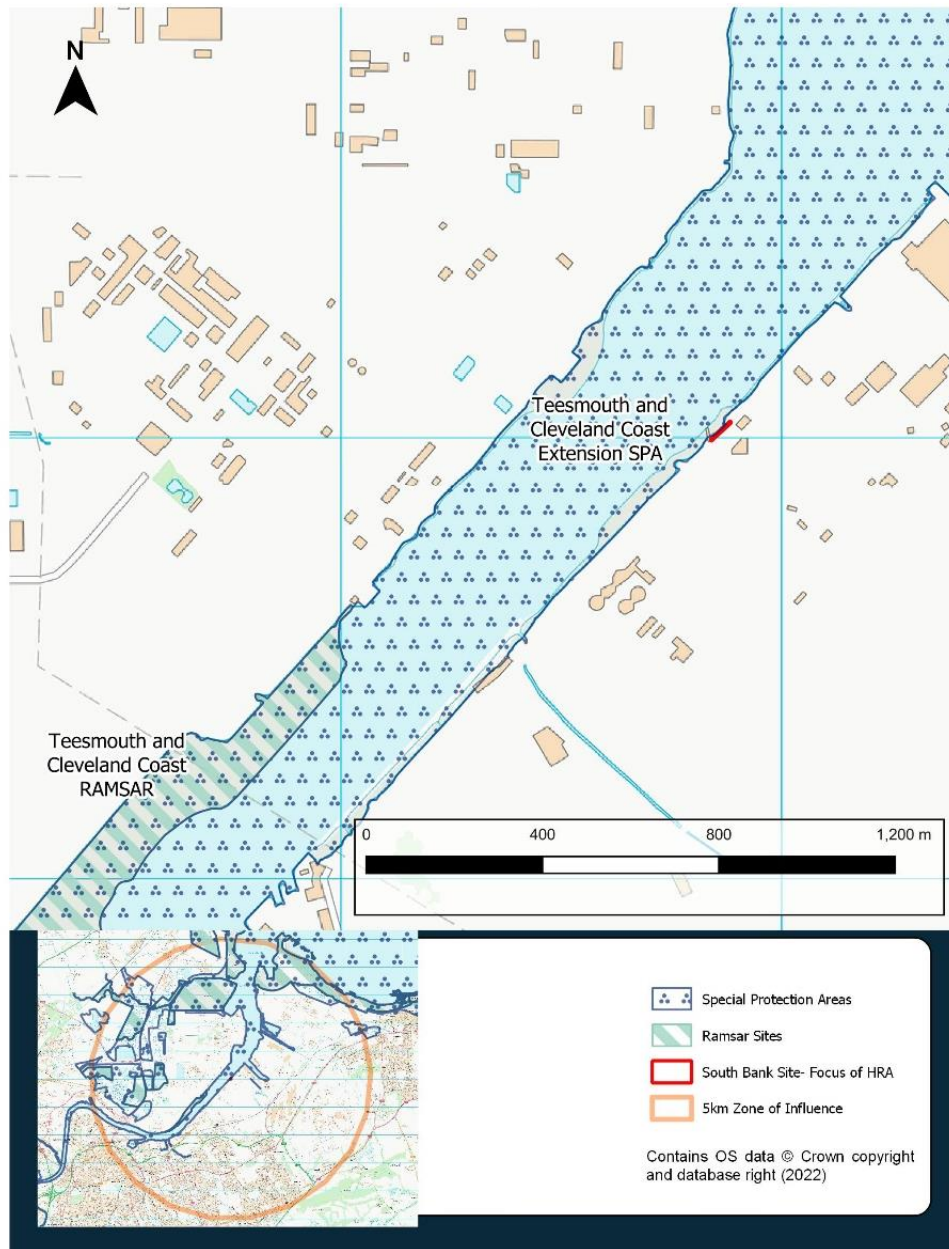
Information on the works and conditions on site are based on current knowledge at the time of writing. The previous HRA (ARUP 2020) carried out a breeding bird survey and waterbird survey, which are considered but not detailed in this HRA. The bird surveys used to inform the surveys are now two years old, however we suspect no significant changes to these results.

Cumulative impacts are based on published documentation. Project information is taken from the HRA Teeswork document (ARUP), which was published on 6th of July 2020. A further search of developments was undertaken on the 8th of March 2022, considering project information from 2020 to 2022. Developments considered to be major applications with potential impacts on the European sites are detailed in Section 7.1.

4 European sites

4.1 Introduction

The Zone of Influence (ZoI) for the assessment was considered to be 5km. There is one Special Protection Area (SPA) within and immediately adjacent to the project site at Teesmouth (Figure 1-1). Within proximity to the works area (5km) is one Ramsar site (Figure 4-1). No other European sites are located within 5km of the works. The Teesmouth and Cleveland Coast SPA lies within the area of South Bank (project area) with the closest part of the Teesmouth and Cleveland Coast Ramsar located ~900m northwest of the proposed works. The SPA and Ramsar forms a network of connected habitats used by the



same bird populations across the Tees estuary area.

Figure 4-1: European site in proximity (5km) to the project site

4.2 European sites: Qualifying Features

Table 4-1, below, details the qualifying features of the European sites in close proximity to the project site.

Table 4-1: European site: Details

European site	Complete list of qualifying features
<p>Teesmouth and Cleveland Coast SPA</p>	<p>Annex I The site regularly supports more than 1% of the Great Britain populations of four species listed in Annex I of the EC Birds Directive.</p> <p>Non-Breeding Redshank, <i>Tringa totanus</i>, 1648 individuals Ruff, <i>Calidris pugnax</i>, 19 individuals Sandwich tern, <i>Thalasseus sandvicensis</i>, 1,900 individuals</p> <p>Breeding Avocet, <i>Recurvirostra avosetta</i>, 18 breeding pairs Common tern, <i>Sterna hirundo</i>, 399 breeding pairs Little Tern, <i>Sternula albifrons</i>, 81 breeding pairs</p> <p>Annex II The site regularly supports more than 1% of the biogeographic population of two regularly occurring migratory species not listed in Annex I of the EC Birds Directive.</p> <p>Non-Breeding: (numbers are 5 year Peak Mean 2009/10 – 2013/14 unless otherwise stated, as per Natural England, 2020) Red Knot, <i>Calidris cantus</i>, 5509 individuals</p> <p>Waterbird assemblage SPA supports 26014 waterbird individuals. The current waterbird assemblage includes the following species: knot, redshank, cormorant <i>Phalacrocorax carbo</i>, shelduck <i>Tadorna tadorna</i>, teal <i>Anas crecca</i>, shoveler <i>Anas clypeata</i> and sanderling <i>Calidris alba</i>.</p>
<p>Teesmouth and Cleveland Coast Ramsar</p>	<p>Ramsar Criterion 5: Assemblages of international important numbers of waterbirds. 9528 waterfowl (5 year peak mean 1998/99-2002/2003)</p> <p>Ramsar Criterion 6: Common redshank, <i>Tringa totanus totanus</i>, 883 individuals, representing an average of 0.7% of the GB population (5 year peak mean 1998/9- 2002/3) Red knot, <i>Calidris canutus islandica</i>, W & Southern Africa (wintering) 2579 individuals, representing an average of 0.9% of the GB population (5 year peak mean 1998/9-2002/3)</p>

4.3 Conservation Objectives

Table 4-2 details the conservation objectives for the designated sites in close proximity to the project site, from Natural England Conservation Advice for Marine Protected Areas (Natural England 2022.)

Table 4-2: Conservation Objectives for identified European sites

European Site	Conservation Objectives
Teesmouth and Cleveland Coast SPA	<p>The objectives are to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:</p> <ul style="list-style-type: none"> • the extent and distribution of the habitats of the qualifying features • the structure and function of the habitats of the qualifying features • the supporting processes on which the habitats of the qualifying features rely • the populations of each of the qualifying features • the distribution of qualifying features within the site
Teesmouth and Cleveland Coast Ramsar	The Ramsar has no conservation objectives, so for the purpose of this report the objectives of the SPA will be applied.

4.4 Key Threats

Table 4-3, below, details the key threats currently facing the European sites from the Natura 2000- Standard data form (JNCC 2020.)

Table 4-3: European site key threats

European Site	Key Threats
Teesmouth and Cleveland Coast SPA	Urbanised area, human habitation; B Outdoor sports and leisure activities, recreational activities; B Roads, paths and railroads; B Renewable abiotic energy use; B Hunting, fishing or collecting activities not referred to above; B Other ecosystem modifications; B Invasive non-native species; B Changes in biotic conditions; B Air pollution, air-borne pollutants; B Other forms of pollution; B Illegal taking/ removal of marine fauna; B Marine water pollution; B Shipping lanes, ports, marine constructions; B Other human intrusions and disturbances; I Changes in abiotic conditions; B
Teesmouth and Cleveland Coast Ramsar	Eutrophication, the origin of which is offsite and is deemed a major impact on Ramsar site.
I = Inside; O = Outside; B = Both	

4.5 Key Vulnerabilities

Table 4-4, below, details the key vulnerabilities, as detailed in the relevant Site Improvement Plans (Natural England 2014), currently facing the European sites within the site boundary.

Table 4-4: European sites key vulnerabilities

European Site	Key Vulnerabilities
Teesmouth and Cleveland Coast SPA	Physical Modification Public Access/Disturbance Direct land take from development Water pollution Fisheries: Commercial marine and estuarine Fisheries: Commercial recreational and estuarine Under grazing Inappropriate water levels Predation Coastal Squeeze Change to site conditions Air Pollution: impact of atmospheric nitrogen deposition

There was no Site Improvement Plan available for Teesmouth and Cleveland Coast Ramsar at the time of writing this HRA.

5 Baseline Information

5.1 Sources

Teesmouth and Cleveland Coast SPA and Ramsar play a critical role in supporting tens of thousands of coastal and estuarine birds, both overwintering and breeding. The high-level baseline of bird populations and locations specific to the Ramsar is taken from relevant sources such as Natural England and the JNCC, detailed above. To further improve the baseline information, we will use previous breeding bird and waterbird surveys undertaken by ARUP for the South Tees Sites company, for the previous HRA (ARUP 2020). The key results from ARUP’s surveys which will be used to inform the baseline for the South bank site are:

- Absence of breeding birds directly within or adjacent to the South Bank site;
- Determination of the intertidal mudflat habitat being of little foraging value and only able to support small numbers of birds; and
- The breeding site locations of breeding birds.

Further information about the methodology and results of these surveys can be found in: 2020_05_xx_STDC SIZ HRA_DRAFT.docx

6 Screening Assessment

6.1 Introduction

The following section identifies potential hazards of the proposed works as described in Section 2. The effects of relevant hazards are then assessed in relation to each of the relevant qualifying features of the screened in European sites. The likelihood of potential exposure to the hazard and the mechanism of effect are also identified where possible. This then allows for likely significant effects on the interest features of the designated sites to be identified.

6.2 Potential Hazards on the European sites

The proposed project, as detailed in Section 2, was assessed in order to identify potential hazards that might arise to the relevant interest features of the European sites detailed in Section 4. The hazards that could be caused by the proposed works are shown in Table 6-1.

Table 6-1: Potential hazards to relevant qualifying features and the project being assessed

Potential Hazards	Birds of Coastal Habitats	Birds of Estuarine Habitats
Water Pollution/Siltation	✓	✓
Noise Pollution	✓	✓
Visual Disturbance	✓	✓
Habitat Loss	✓	✓
Invasive non-native species	X	X
Table key: ✓ = hazard potentially relevant, X = hazard not relevant		

6.3 Assessment of likely significant effects

Assessment of the hazards identified in Table 6-1 was undertaken to determine whether they would be likely to have a significant effect on the relevant qualifying features of the SPA and Ramsar and their supporting habitats, as a consequence of the proposed works. The results of the screening assessment are given in Table 6-2.

The assessment can reach three conclusions:

- No Effect – No interaction, based on the features not being directly affected or areas outside the habitat used by the identified species.
- No Likely Significant Effect – Risk of interaction but the scale / magnitude / timing is not predicted to result in a Significant Effect.
- Likely Significant Effect – Nature of the proposal is predicted to result in a Likely Significant Effect (i.e. taken over into later stages of the HRA).

Where there is no likely significant alone, a hazard is considered in combination with other plans and projects in this assessment. Other plans and projects considered in combination are further detailed in Section 7.3.

Table 6-2: Assessment of likely significant effects for the project

Qualifying Feature(s)	Hazard	Assessment of Likelihood of Significant Effects Alone	In combination
Teesmouth and Cleveland Coast SPA			
Non- Breeding Birds <i>Redshank Tringa tetanus</i> <i>Ruff Calidris pugnax</i>	Water Pollution/Siltation	The proposed works are immediately adjacent to the SPA, so any potential pollution incidents could have direct impacts upon the birds in the absence of suitable pollution prevention measures in place. For siltation, the works to the flood bank could temporarily cause the suspension of sediments in the channel. Contamination caused by the removal of the estuarine bank will be temporary but has the potential to impact upon SPA habitat of non-breeding birds, including foraging and supporting habitats. Likely Significant Effect	N/A – in combination assessment to be undertaken as part of the Appropriate Assessment due to likely significant effects alone.
<i>Sandwich tern Thalasseus sandvicensis</i> <i>Red Knot Calidris cantus</i>	Noise Disturbance	The specific construction methodology is still to be confirmed on appointment of a contractor, but there is the potential for construction activities to cause noise disturbance. Construction work is temporary and will only raise noise levels for a short period of time in an already high noise level area, potentially only having a small effect on bird behaviour. Likely Significant Effect	N/A – in combination assessment to be undertaken as part of the Appropriate Assessment due to likely significant effects alone.
	Visual Disturbance	Visual disturbance could occur due to the presence of machinery and workers on site during construction. The SPA is directly adjacent to the site so there is potential for high impact visual disturbance caused by both machinery and workers. During the later stage of works, the estuarine bank will be removed which will occur directly next to the SPA with workers and machinery on the bank which could directly disturb birds using the mudflat habitat. Likely Significant Effect	N/A – in combination assessment to be undertaken as part of the Appropriate Assessment due to likely significant effects alone.
	Habitat Loss	The SPA is directly adjacent to the proposed South Bank site, with the potentially affected habitat being intertidal mudflat. Construction works include removal of the estuarine bank to create an outfall into the Tees Estuary approximately 60m wide. The outfall will be into the intertidal mud habitat, but the area to be affected is very small and not known to offer any valuable foraging habitat for wintering birds (ARUP, 2020). The construction activity does not directly remove any intertidal mudflat habitat but there is potential for limited scour. During works there will also be habitat creation by realigning two culverted outfalls to create an open outfall with intertidal saltmarsh habitat. Due to works occurring in a small site with no known valuable foraging habitat, there is no direct habitat loss and any loss/degradation of mudflat habitat via siltation will be covered under water pollution. No Likely Significant Effect	No Likely Significant Effect Across the Teesworks site, the previous HRA concluded that there would be no significant loss of habitat within European designated sites (ARUP, 2020).
Breeding Birds <i>Avocet Recurvirostra avosetta</i> <i>Common tern Sterna hirundo</i> <i>Little Tern Sternula albifrons</i>	Water Pollution/Siltation	The proposed works are immediately adjacent to the SPA, so any potential pollution incidents could have direct impacts upon the birds in the absence of suitable pollution prevention measures in place. A previous survey conducted by ARUP found no evidence of SPA breeding birds within the proposed site (ARUP, 2020), so it is likely the SPA habitat adjacent to the site is used for foraging rather than breeding, therefore localised impacts of pollution are likely to have a less significant effect on breeding birds. For siltation, the works to the flood bank could temporarily cause the suspension of sediments in the channel. Contamination caused by the removal of the estuarine bank will be temporary but has the potential to impact upon foraging and supporting habitats Likely Significant Effect	N/A – in combination assessment to be undertaken as part of the Appropriate Assessment due to likely significant effects alone.
	Noise Disturbance	The specific construction methodology is still to be confirmed on appointment of a contractor, but there is the potential for construction activities to cause noise disturbance. Construction work is temporary and will only raise noise levels for a short period of time in an already high noise level area, potentially only having a small effect on bird behaviour.	No Likely Significant Effect Given the lack of breeding

Qualifying Feature(s)	Hazard	Assessment of Likelihood of Significant Effects Alone	In combination
		<p>A previous survey conducted by ARUP found no evidence of SPA breeding birds within the proposed site (ARUP, 2020). It is considered unlikely that the proposed works site would support breeding habitat for the qualifying, breeding features of the SPA (little tern, common tern and avocet). The main breeding ground for little tern is present at Crimdon Denemouth, approximately 14.5km north of the proposed development site (Natural England, 2018). The main common tern breeding colony is located at Saltholme (approximately 1.8km west). The vast majority of common tern utilise marine areas and the Teesmouth area for foraging, specifically the Seaton-on-Tees Channel within Teesmouth (Natural England, 2018). Breeding Avocet are mostly restricted to Greatham Creek (approximately 3.3km north-west) and Greenabella Marsh (approximately 4.4km north-west) (Natural England, 2018).</p> <p>SPA breeding birds are not present within the vicinity of the works and therefore are unlikely to be significantly impacted by short-term temporary disturbance.</p> <p>No Likely Significant Effect</p>	<p>habitat within the vicinity of the works site, no in-combination effects are anticipated.</p>
	Visual Disturbance	<p>Visual disturbance could occur due to the presence of machinery and workers on site during construction. The SPA is directly adjacent to the site so there is potential for high impact visual disturbance caused by both machinery and workers. During the later stage of works, the estuarine bank will be removed which will occur directly next to the SPA with workers and machinery on the bank which could directly disturb birds using the mudflat habitat.</p> <p>A previous survey conducted by ARUP found no evidence of SPA breeding birds within the proposed site (ARUP, 2020). It is considered unlikely that the proposed works site would support breeding habitat for the qualifying, breeding features of the SPA (little tern, common tern and avocet). The main breeding ground for little tern is present at Crimdon Denemouth, approximately 14.5km north of the proposed development site (Natural England, 2018). The main common tern breeding colony is located at Saltholme (approximately 1.8km west). The vast majority of common tern utilise marine areas and the Teesmouth area for foraging, specifically the Seaton-on-Tees Channel within Teesmouth (Natural England, 2018). Breeding Avocet are mostly restricted to Greatham Creek (approximately 3.3km north-west) and Greenabella Marsh (approximately 4.4km north-west) (Natural England, 2018).</p> <p>SPA breeding birds are not present within the vicinity of the works and therefore are unlikely to be impacted by short-term temporary disturbance.</p> <p>No Likely Significant Effect</p>	<p>No Likely Significant Effect</p> <p>Given the lack of breeding habitat within the vicinity of the works site, no in-combination effects are anticipated.</p>
	Habitat Loss	<p>The SPA is directly adjacent to the proposed South Bank site, with the potentially affected habitat being intertidal mudflat. Construction works include removal of the estuarine bank to create an outfall into the Tees Estuary approximately 60m wide. The outfall will be into the intertidal mud habitat, but the area to be affected is very small and does not support SPA breeding birds (ARUP, 2020). The construction activity does not directly remove any intertidal mudflat habitat but there is potential for limited scour. During works there will also be habitat creation by realigning two culverted outfalls to create an open outfall with intertidal saltmarsh habitat. Due to works occurring in a small area with little known valuable foraging or breeding habitat, there is no significant habitat loss and any loss/degradation of mudflat habitat via siltation will be covered under water pollution.</p> <p>No Likely Significant Effect</p>	<p>No Likely Significant Effect</p> <p>Across the Teesworks site, the previous HRA concluded that there would be no significant loss of habitat within European designated sites (ARUP, 2020).</p>
<p>Waterbird Assemblage</p> <p>Bird species of European importance: Gadwall <i>Mareca strepera</i></p> <p>Northern shoveler <i>Spatula clypeata</i></p> <p>Sanderling <i>Calidris alba</i></p>	Water Pollution/Siltation	<p>The proposed works are immediately adjacent to the SPA, so any potential pollution incidents could have direct impacts upon the birds in the absence of suitable pollution prevention measures in place. For siltation, the works to the flood bank could temporarily cause the suspension of sediments in the channel. Contamination caused by the removal of the estuarine bank will be temporary but has the potential to impact upon SPA habitat of non-breeding birds, including foraging and supporting habitats.</p> <p>Likely Significant Effect</p>	<p>N/A – in combination assessment to be undertaken as part of the Appropriate Assessment due to likely significant effects alone.</p>
	Noise Disturbance	<p>The specific construction methodology is still to be confirmed on appointment of a contractor, but there is the potential for construction activities to cause noise disturbance. Construction work is temporary and will only raise noise levels for a short period of time in an already high noise level area, potentially only having a small effect on bird behaviour.</p> <p>Likely Significant Effect</p>	<p>N/A – in combination assessment to be undertaken as part of the Appropriate Assessment due to likely significant effects alone.</p>
	Visual Disturbance	<p>Visual disturbance could occur due to the presence of machinery and workers on site during construction. The SPA is directly adjacent to the site so there is potential for high impact visual disturbance caused by both machinery and</p>	<p>N/A – in combination assessment to be</p>

Qualifying Feature(s)	Hazard	Assessment of Likelihood of Significant Effects Alone	In combination
Knot Redshank		workers. During the later stage of works, the estuarine bank will be removed which will occur directly next to the SPA with workers and machinery on the bank which could directly disturb birds using the mudflat habitat. Likely Significant Effect	undertaken as part of the Appropriate Assessment due to likely significant effects alone.
Major Component species: Eurasian wigeon <i>Mareca penelope</i> Northern lapwing <i>Vanellus vanellus</i> Herring gull <i>Larus argentatus</i> Black-headed gull <i>Chroicocephalus ridibundus</i> Cormorant <i>Phalacrocorax carbo</i> Shelduck <i>Tadorna tadorna</i> Teal <i>Anas crecca</i>	Habitat Loss	The SPA is directly adjacent to the proposed South Bank site, with the potentially affected habitat being intertidal mudflat. Construction works include removal of the estuarine bank to create an outfall into the Tees Estuary approximately 60m wide. The outfall will be into the intertidal mud habitat, but the area to be affected is very small and not known to offer any valuable foraging habitat for wintering birds (ARUP, 2020). The construction activity does not directly remove any intertidal mudflat habitat but there is potential for limited scour. During works there will also be habitat creation by realigning two culverted outfalls to create an open outfall with intertidal saltmarsh habitat. Due to works occurring in a small site with no known valuable foraging or breeding habitat, there is no direct habitat loss and any loss/degradation of mudflat habitat via siltation will be covered under water pollution. No Likely Significant Effect	No Likely Significant Effect Across the Teesworks site, the previous HRA concluded that there would be no significant loss of habitat within European designated sites (ARUP, 2020).
Teesmouth and Cleveland Coast Ramsar			
Ramsar Criterion 6: Common redshank <i>Tringa totanus tetanus</i> Red knot <i>Calidris canutus islandica</i>	Water Pollution/Siltation	The closest area of the Ramsar site is situated 900m upstream of the South Bank site. Downstream, the Ramsar is located ~3km from the South Bank site. Any potential pollution incidents could impact the Ramsar site downstream if contamination of the estuary were to occur, however, at this distance significant impacts are unlikely. No Likely Significant Effect	No Likely Significant Effect Given the distance of the works from the Ramsar site and the low risk of impacts occurring, no in-combination effects are anticipated.
	Noise Disturbance	The specific construction methodology is still to be confirmed on appointment of a contractor, but there is the potential for construction activities to cause noise disturbance. Construction work is temporary and will only raise noise levels for a short period of time in an already high noise level area, potentially only having a small effect on bird behaviour. The nearest area of the Ramsar site is situated ~900m away from the site of the works, and therefore, at this distance noise levels are unlikely to result in significant disturbance to birds associated with the Ramsar site. No Likely Significant Effect	No Likely Significant Effect Given the distance of the works from the Ramsar site and the low risk of impacts occurring, no in-combination effects are anticipated
	Visual Disturbance	Visual disturbance could occur due to the presence of machinery and workers on site during construction. The nearest area of the Ramsar site is located ~900m away from the proposed works, so any birds supported by this Ramsar site are not within range to be affected by visual disturbance. No Likely Significant Effect	No Likely Significant Effect Given the distance of the works from the Ramsar site and the low risk of impacts occurring, no in-combination effects are anticipated.
	Habitat Loss	The closest area of the Ramsar site is situated 900m upstream of the South Bank site. Downstream, the Ramsar is located ~3km from the South Bank site. Works are confined to the site with the removal of the estuarine bank to create an outfall into the Tees estuary, therefore there will be no impacts upon habitats within the Ramsar site.	No Likely Significant Effect Across the Teesworks site,

Qualifying Feature(s)	Hazard	Assessment of Likelihood of Significant Effects Alone	In combination
		No Likely Significant Effect	the previous HRA concluded that there would be no significant loss of habitat within European designated sites (ARUP, 2020).
Ramsar Criterion 5: Assemblages of International Importance: Waterfowl	Water Pollution/Siltation	The closest area of the Ramsar site is situated 900m upstream of the South Bank site. Downstream, the Ramsar is located ~3km from the South Bank site. Any potential pollution incidents could impact the Ramsar site downstream if contamination of the estuary were to occur, however, at this distance significant impacts are unlikely. No Likely Significant Effect	No Likely Significant Effect Given the distance of the works from the Ramsar site and the low risk of impacts occurring, no in-combination effects are anticipated.
	Noise Disturbance	The specific construction methodology is still to be confirmed on appointment of a contractor, but there is the potential for construction activities to cause noise disturbance. Construction work is temporary and will only raise noise levels for a short period of time in an already high noise level area, potentially only having a small effect on bird behaviour. The nearest area of the Ramsar site is situated ~900m away from the site of the works, and therefore, at this distance noise levels are unlikely to result in significant disturbance to birds associated with the Ramsar site. No Likely Significant Effect	No Likely Significant Effect Given the distance of the works from the Ramsar site and the low risk of impacts occurring, no in-combination effects are anticipated.
	Visual Disturbance	Visual disturbance could occur due to the presence of machinery and workers on site during construction. The nearest area of the Ramsar site is located ~900m away from the proposed works, so any birds supported by this Ramsar site are not within range to be affected by visual disturbance. No Likely Significant Effect	No Likely Significant Effect Given the distance of the works from the Ramsar site and the low risk of impacts occurring, no in-combination effects are anticipated.
	Habitat Loss	The closest area of the Ramsar site is situated 900m upstream of the South Bank site. Downstream, the Ramsar is located ~3km from the South Bank site. Works are confined to the site with the removal of the estuarine bank to create an outfall into the Tees estuary, therefore there will be no impacts upon habitats within the Ramsar site. No Likely Significant Effect	No Likely Significant Effect Across the Teesworks site, the previous HRA concluded that there would be no significant loss of habitat within European designated sites (ARUP, 2020).

6.4 Screening Statement and Conclusions

At Stage 1 certain significant effects could not be screened out. Those effects requiring appropriate assessment are summarised in Table 6-3 below.

Table 6-3: Summary of screening conclusions for the project showing all screened in hazards and European sites

Qualifying Feature	Hazard	Likely significant effect alone or in-combination
Teesmouth & Cleveland Coast SPA		
Non-breeding birds	Water Pollution/Siltation	Alone
	Noise Disturbance	Alone
	Visual Disturbance	Alone
Breeding birds	Water Pollution/Siltation	Alone
Waterbird Assemblage	Water Pollution/Siltation	Alone
	Noise Disturbance	Alone
	Visual Disturbance	Alone

7 Information for Appropriate Assessment

7.1 European sites

Table 7-1 below shows the European site that has been screened into the Appropriate Assessment, which is detailed in Table 6-3.

Table 7-1: European sites screened into this assessment

Site Name	Proximity to Site
Teesmouth and Cleveland Coast SPA	Within and adjacent to the project footprint

7.2 Conservation Objectives

Refer to Section 4.3 for the conservation objectives for Teesmouth and Cleveland Coast SPA.

7.3 In-combination Assessment

A series of individually modest effects may in-combination produce effects that are likely to adversely affect the integrity of one or more European sites. The Habitats Regulations try to address this by taking into account the combination of effects from other plans or projects. The Regulations do not explicitly define which other plans and projects are within the scope of the combination provision. In the EU, guidance has been produced on in-combination assessment under Article 6(3) of the Habitats Directive. Guidance in section 4.5.3 of 'Managing Natura 2000 Sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC', published by the European Commission (2018), states:

'When determining likely significant effects, the combination of other plans and/or projects should also be considered to take account of cumulative impacts during the assessment of the plan or project in question. The in-combination provision concerns other plans or projects which have been already completed, approved but uncompleted or actually proposed'.

A number of potentially relevant projects have been identified that could act in-combination. Proposed developments before 2020 were assessed by ARUP in 2020 as part of the previous HRA and are detailed below. Proposed developments after 2020 have been identified from the planning portal of Redcar & Cleveland Council. Relevant proposed developments are detailed below.

7.3.1 Proposed Construction of Wind Turbine Plant (R/2021/0465/FFM)

The proposed development is for the erection of 3,396sqm of B2/B8 Floorspace including waste storage area, installation of sprinkler tank and associated plant, creation of hardstanding and landscaping works. It is located on the edge of the SIZ at NZ 538-226.

The HRA produced for the development concluded that there would be no adverse effect to the integrity of the Teesmouth and Cleveland Coast SPA, either alone or in combination with other plans or projects, provided that the mitigation measures specified in the remediation strategy submitted with the application are satisfactorily delivered. Due to mitigation negating any effects on the European site there is determined to be no likely significant in-combination effects.

7.3.2 Proposed Ground Remediation (R/2021/0405/FFM)

The project involves the remediation of previously developed (industrial) land to provide a stable area of land with appropriate access roads for future development. The site is located in the SIZ at NZ 538-226.

The HRA for the project concluded no adverse effects on the integrity of the Teesmouth and Cleveland Coast SPA, either alone or in combination with other plans or projects. When

consulted, Natural England was in agreement subject to the implementation of a comprehensive Construction Phase Environmental Management Plan. Due to mitigation negating any effects on the European site there is determined to be no likely significant in-combination effects.

7.3.3 Demolition of Existing Redundant Quay and Development of New Quay (R/2020/0684/ESM)

These works occur immediately adjacent to the proposed drainage works at South Bank. They will be undertaken in advance of the drainage works and the flood bank will tie in to the New Quay retaining wall, as shown on the Drawing at Appendix A.

A HRA was undertaken which concluded there would be no adverse impacts on the Teesmouth and Cleveland Coast SPA following the implementation of mitigation. Due to mitigation negating any effects on the European site there is determined to be no likely significant in-combination effects.

7.3.4 Proposed Metal Recovery Facility (R/2020/0465/FFM)

The proposed works would occur within the SIZ adjacent to the South Bank site, covering 22.3 ha.

A HRA was undertaken which concluded there would be no adverse impacts on the Teesmouth and Cleveland Coast SPA following the implementation of mitigation. Due to mitigation negating any effects on the European site there is determined to be no likely significant in-combination effects.

7.3.5 Proposed Energy Recovery Facility (R/2019/0767/OOM)

The proposed ERF development covers an area of approximately 10ha (NGR NZ54312145) and will be capable of processing up to 450,000 tonnes of waste per annum.

A HRA was drafted and with mitigation there was no likely significant effects of pollution to Teesmouth and Cleveland Coast SPA from construction and operation of the proposed development site. Due to mitigation negating any effects on the European site there is determined to be no likely significant in-combination effects.

7.3.6 Land at Former South Bank Works (R/2019/0427/FFM)

Across 6 locations the potential of soil storage was assessed. A HRA was undertaken by INCA determining there was no likely significant effects on the Teesmouth and Cleveland Coast SPA. Natural England confirmed this assessment and determined no further AA was necessary, therefore no likely significant in combination effects are anticipated.

7.4 Appropriate Assessment of Project Impacts

Taking into account the prevailing site conditions, screened in qualifying features, and the typical habitats necessary to the conservation of these features, the proposed works and mitigation measures, and the conservation objectives for the European sites, the following table details the Appropriate Assessment undertaken for the South Bank proposed works.

Further details on mitigation methods including methodologies and sources can be found in the MMO scope: TW-SIZ-XX-JBAU-SB-00-FN-EN-0012-S3-P01-MMO_Application.

Table 7-2: Appropriate Assessment of screened in interest features of the Teesmouth and Cleveland Coast SPA

Interest Feature	Hazard	Scale and seriousness of potential effect	Proposed mitigation and confidence in measures	Residual impacts on site integrity	In Combination Assessment
<p>Non-Breeding Birds</p> <p>Breeding Birds</p> <p>Waterbird Assemblage</p>	<p>Water Pollution/Siltation</p>	<p>The proposed works are immediately adjacent to the SPA. Any non-mitigated pollution incidents could therefore have an almost immediate impact on SPA birds and their supporting habitats.</p> <p>A pollution incident would be a discreet event, although there could be lasting impacts as a result of impacts affecting supporting habitats or species within the estuary.</p> <p>Potential for pollution incidents would remain for the duration of the construction phase.</p> <p>The risk of fuel spills would be a threat for the duration of the project construction phase.</p> <p>Potential for silt mobilisation will be greatest during works to the flood banks and could impact upon intertidal habitats used by SPA birds.</p>	<p>Experienced site staff will following industry-standard proven and effective pollution prevention measures and the undertaking of regular emergency response training sessions during construction works will ensure that there is a high level of certainty that this mitigation will be effective.</p> <p>To control silt mobilisation, all terrestrial work will occur before demolishing the flood defence wall. Excavation of the open channel will occur during low tide to limit suspension of silt. All excavated material will be disposed offsite at a licensed waste facility, following WAC testing. If the excavated material is not taken offsite for disposal immediately, it will be securely stored in a dry enclosure with impermeable bunding to prevent contaminated silt and runoff entering the drainage channel network and the tidal River Tees.</p> <p>The proposed works will abide</p>	<p>No adverse impact on site integrity</p>	<p>No projects have been identified which could act in combination.</p>

Interest Feature	Hazard	Scale and seriousness of potential effect	Proposed mitigation and confidence in measures	Residual impacts on site integrity	In Combination Assessment
			<p>by a Construction Environmental Management Plan (CEMP), which will outline measures to prevent sediment, dust, surface water run-off, or any other substance relating to construction from entering the River Tees. The CEMP will be reviewed by a Suitably Qualified Ecologist (SQE).</p> <p>The excavated channel will be lined and the upstream network effectively sealed with a clay or geosynthetic liner, as such there is no long-term contamination risk from the new channel.</p>		
<p>Non-breeding birds</p> <p>Waterbird Assemblage</p>	<p>Noise Disturbance</p>	<p>Noise disturbance may occur during construction activities, particularly from the use of machinery such as excavators.</p> <p>Disturbance may cause displacement of bird populations using the habitat area surrounding the site. However, this is likely to be limited due to the small-scale, temporary nature of the works and the likely levels of habituation given the industrial nature of the South Bank area.</p> <p>Based on the work of Cutts <i>et al</i> (2013), noise of less than 55dB (at bird) is considered to have little or no</p>	<p>The proposed works will abide by a Construction Environmental Management Plan (CEMP), which will include measures to further reduce the potential noise disturbance effects on qualifying species of the SPA, such as using quieter construction methods and machinery, use of screening where appropriate and programming works to avoid periods of inclement weather (e.g. consecutive days of freezing temperatures) when birds will be most stressed and less readily displaced, The CEMP will be reviewed by a Suitably</p>	<p>No adverse impact on site integrity</p>	<p>No projects have been identified which could act in combination.</p>

Interest Feature	Hazard	Scale and seriousness of potential effect	Proposed mitigation and confidence in measures	Residual impacts on site integrity	In Combination Assessment
		<p>impact on waterbirds as these effects are likely to be masked by background inputs in all but the least disturbed areas and thus would not disturb the birds close by. An assessment of construction noise undertaken by ARUP (2020) in relation to the proposed development of the SIZ determined that construction noise levels in the River Tees (at a distance of approximately 200m from the proposed outfall works on the South Bank site) will be well below 55dB(A) even during hydraulic piling. Therefore, it is considered unlikely that SPA birds utilising the River Tees in proximity to the proposed development site would be disturbed as a result of noise during construction activities.</p> <p>The intertidal habitat in the immediate vicinity of the works i.e. along the South Bank, is considered to be of relatively low value for SPA birds and there are other high-value habitats, such as North Tees Mudflat, Bran Sands, Bran Sands lagoon, Dabholm Gut, Seal Sands and North Gare Sands (Natural England, 2018), within the SPA site that would provide ample alternative intertidal foraging and roosting opportunities for low numbers of birds that could potentially be displaced during</p>	<p>Qualified Ecologist (SQE).</p>		

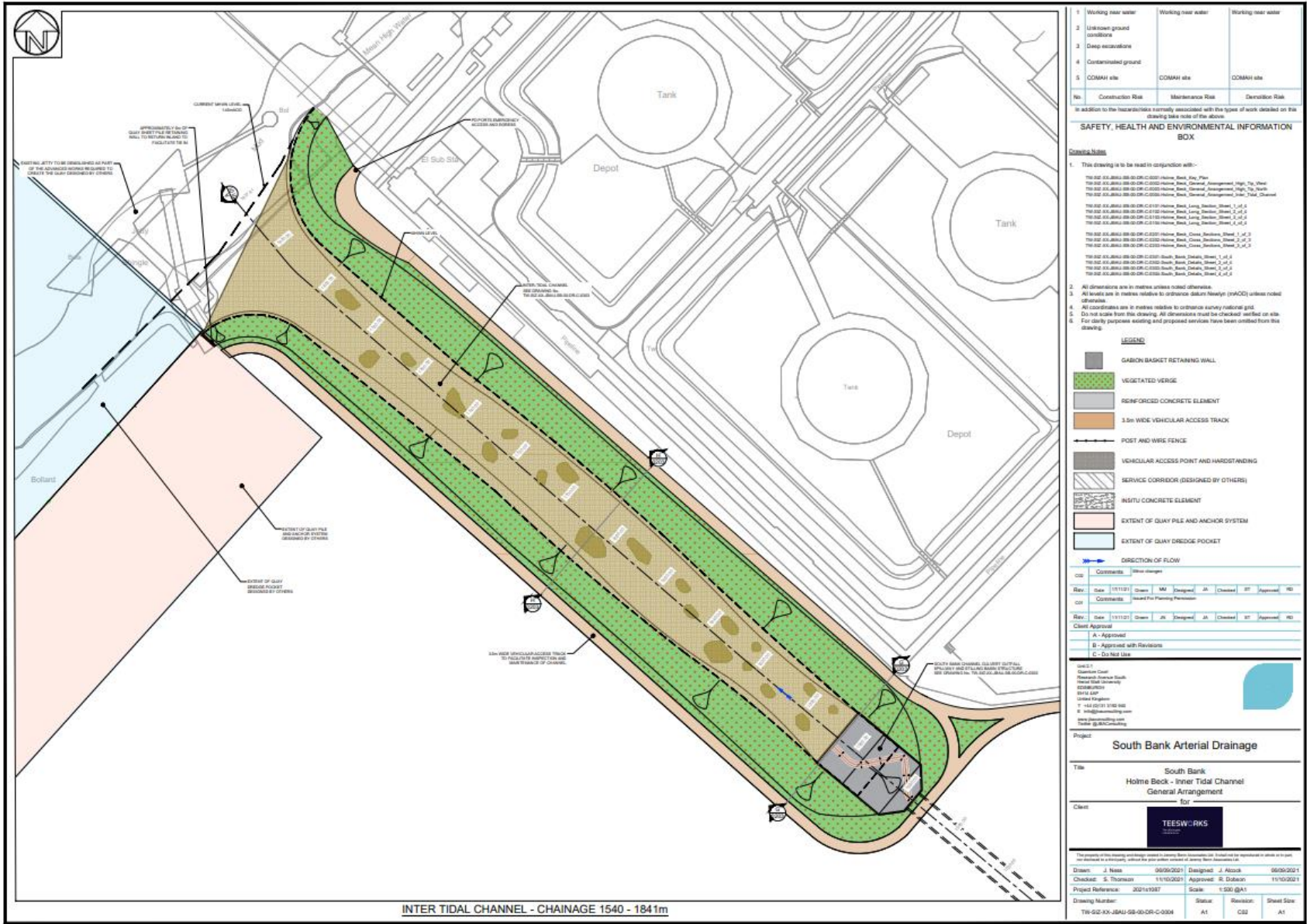
Interest Feature	Hazard	Scale and seriousness of potential effect	Proposed mitigation and confidence in measures	Residual impacts on site integrity	In Combination Assessment
	Visual Disturbance	<p>construction.</p> <p>Visual disturbance could occur during construction from the movement of machinery and personnel. Impacts are likely to be greater if present on the flood bank or inter tidal areas.</p> <p>Disturbance may cause displacement of bird populations using the habitat area surrounding the site. However, this is likely to be limited due to the small-scale, temporary nature of the works and the likely levels of habituation given the industrial nature of the South Bank area.</p> <p>Based on the work of Cutts <i>et al</i> (2013), 300m is considered to be the distance at which the most sensitive waterbirds will be largely unaffected by visual disturbance when feeding and roosting. The intertidal habitat in the immediate vicinity of the works i.e., along the South Bank, is considered to be of relatively low value for SPA birds. The high-value habitats, such as North Tees Mudflat, Bran Sands, Bran Sands lagoon, Dabholm Gut, Seal Sands and North Gare Sands (Natural England, 2018) are located beyond the 300m threshold and would not be affected by visual disturbance at South Bank.</p>	<p>The proposed works will abide by a Construction Environmental Management Plan (CEMP), which will include measures to further reduce the potential visual disturbance effects on qualifying species of the SPA, such as use of screening where appropriate and programming works to avoid periods of inclement weather (e.g. consecutive days of freezing temperatures) when birds will be most stressed and less readily displaced, The CEMP will be reviewed by a Suitably Qualified Ecologist (SQE).</p>	<p>No adverse impact on site integrity</p>	<p>No projects have been identified which could act in combination.</p>

7.5 Appropriate Assessment Conclusion

The proposed South Bank development will not have an adverse impact upon the Teesmouth and Cleveland Coast SPA and Ramsar either alone or in-combination with any other plans or projects, providing the mitigation measures detailed in Table 7-2 are adhered to.

A Appendix- Detailed Site Plan

(TW-SIZ-XX-JBAU-SB-00-DR-C-0004-A1-C03)



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