VPI Immingham OCGT Project

Document Ref: 7.17
PINS Ref: EN010097

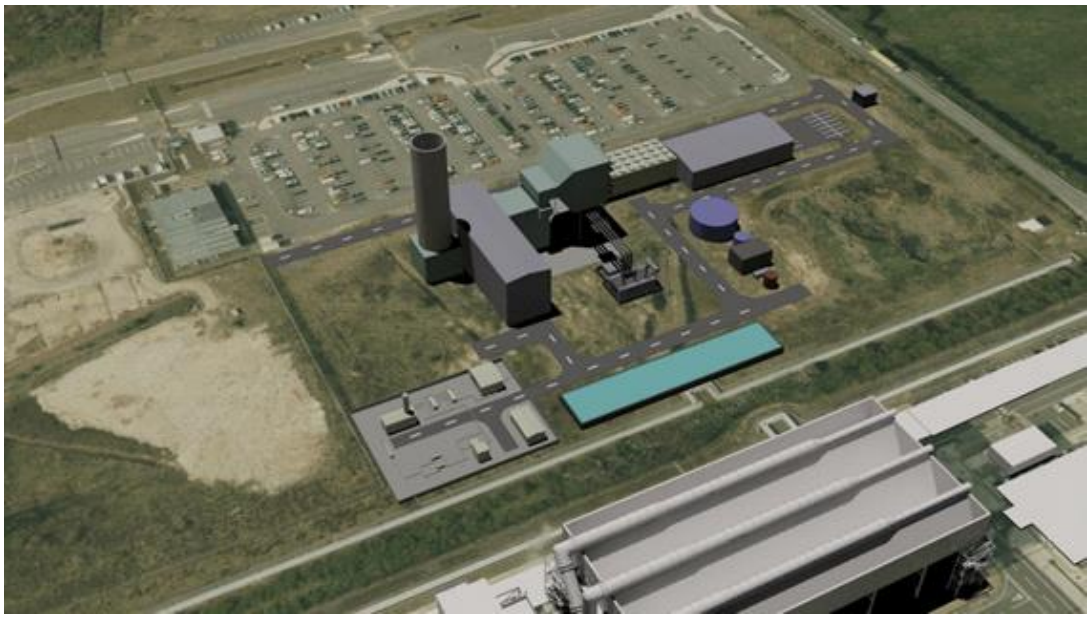
The VPI Immingham OCGT Order

Land to the north of and in the vicinity of the VPI Immingham Power Station, Rosper Road, South Killingholme, Lincolnshire, DN40 3DZ

Statement to Inform Appropriate Assessment

The Planning Act 2008

Applicant: VPI Immingham B Ltd



Date: October 2019

DOCUMENT HISTORY

Document Ref	**7.17**		
Revision	2.0		
Author	TM		
Signed	TM	**Date**	October 2019
Approved By	JR		
Signed	JR	**Date**	October 2019
Document Owner	AECOM		

GLOSSARY

Abbreviation	Description
AMEP	Able Marine Energy Park
CCGT	Combined Cycle Gas Turbine
CEMP	Construction Environmental Management Plan
CHP	Combined Heat and Power
DCO	Development Consent Order
EC	European Commission
EcIA	Ecological Impact Assessment
EIA	Environmental Impact Assessment
ES	Environmental Statement
GWTE	Groundwater Dependent Terrestrial Ecosystem
ha	Hectare
HRA	Habitat Regulations Assessment
HMWGS	Halton Marshes Wet Grassland Scheme
IROPI	Imperative Reasons of Overriding Public Interest
km	Kilometre
m	Metre
MW	Megawatt
MWe	Megawatt electric
NKHP	North Killingholme Haven Pits
NSER	No Significant Effects Report
OCGT	Open Cycle Gas Turbine
ODPM	Office of Deputy Prime Minister
PINS	The Planning Inspectorate
SAC	Special Area of Conservation
SHG	South Humber Gateway
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
TLOR	Total Lindsey Oil Refinery

CONTENTS

1.0 INTRODUCTION 1

2.0 LEGISLATIVE CONTEXT AND OVERVIEW OF HABITATS REGULATIONS ASSESSMENT PROCESS..... 4

4.0 STATEMENT TO INFORM APPROPRIATE ASSESSMENT 10

5.0 CONCLUSIONS 18

6.0 REFERENCES 19

ANNEX A: APPROPRIATE ASSESSMENT MATRICES 20

1.0 INTRODUCTION

1.1 Overview

1.1.1 This Statement to Inform Appropriate Assessment (SIAA) has been prepared on behalf of VPI Immingham B ('VPIB' or the 'Applicant'). It forms part of the application (the 'Application') for a Development Consent Order (a 'DCO'), that has been submitted to the Secretary of State (the 'SoS') for Business, Energy and Industrial Strategy, under Section 37 of 'The Planning Act 2008' (the 'PA 2008').

1.1.2 VPIB is seeking development consent for the construction, operation and maintenance of an open cycle gas turbine ('OCGT') generating station of up to 299 megawatts ('MW') gross electrical output capacity, including electrical and gas supply connections and other associated development (the 'Proposed Development' or 'Project') on land to the north of and in the vicinity of the Existing VPI Combined Heat and Power (CHP) Power Station, Rosper Road, South Killingholme, Immingham, Lincolnshire, DN40 3DZ.

1.1.3 A DCO is required for the Proposed Development as it falls within the definition and thresholds for a 'Nationally Significant Infrastructure Project' (a 'NSIP') under Sections 14 and 15(2) of the PA 2008.

1.1.4 The DCO, if made by the SoS, would be known as the 'Immingham Open Cycle Gas Turbine Order' (the 'Order').

1.2 The Proposed Development Site

1.2.1 The Site is primarily located on land immediately to the north of the Existing VPI Combined Heat and Power (CHP) Plant Site, as previously stated. Immingham Dock is located approximately 1.5 kilometres ('km') to the south east of the Site at its closest point. The Humber ports facility is located approximately 500 metres ('m') north and the Humber Refinery is located approximately 500m to the south.

1.2.2 The villages of South Killingholme and North Killingholme are located approximately 1.4 km and 1.6 km to the west of the Site respectively, and the town of Immingham is located approximately 1.8 km to the south east. The nearest residential property comprises a single house off Marsh Lane, located approximately 325 m to the east of the Site.

1.2.3 The Site comprises the following main parts:

- OCGT Power Station Site;
- Access Site;
- Temporary Construction and Laydown Site;
- Gas Connection Site;
- Electrical Connection Site; and
- Utilities and Services Connections Site.

1.2.4 The Site is located entirely within the boundary of the administrative area of North Lincolnshire Council ('NLC'), a unitary authority. The different parts of the Site are illustrated in the Works Plans (Application Document Ref: 4.3).A more detailed description of the Site is provided in Chapter 3 'Description of the Site' of the Environmental Statement ('ES') Volume I (Application Document Ref. 6.2).

1.3 The Proposed Development

1.3.1 The main components of the Proposed Development are summarised below, as set out in the draft DCO (Application Document Ref: 2.1):

- Work No. 1 – an OCGT power station (the 'OCGT Power Station') with a gross capacity of up to 299MW;
- Work No. 2 – access works (the 'Access'), comprising access to the OCGT Power Station Site and access to Work Nos. 3, 4, 5 and 6;
- Work No. 3 – temporary construction and laydown area ('Temporary Construction and Laydown') comprising hard standing, laydown and open storage areas, contractor compounds and staff welfare facilities, vehicle parking, roadways and haul routes, security fencing and gates, gatehouses, external lighting and lighting columns;
- Work No. 4 – gas supply connection works (the 'Gas Connection') comprising an underground and/or overground gas pipeline of up to 600 millimetres (nominal internal diameter) and approximately 800 m in length for the transport of natural gas from the Existing Gas Pipeline to Work No. 1;
- Work No. 5 – an electrical connection (the 'Electrical Connection') of up to 400 kilovolts and associated controls systems; and
- Work No 6 – utilities and services connections (the 'Utilities and Services Connections').

1.3.2 It is anticipated that subject to the DCO having been made by the SoS and a final investment decision by VPIB, construction work on the Proposed Development would commence in early 2021. The overall construction programme is expected to last approximately 21 months and is anticipated to be completed in late 2022, with the Proposed Development entering commercial operation later that year or early the following year

1.3.3 A more detailed description of the Proposed Development is provided at Schedule 1 'Authorised Development' of the draft DCO (Application Document Ref: 2.1) and Environmental Statement (ES) Volume 1, Chapter 4 'The Proposed Development' (Application Document Ref: 6.2).

1.3.4 The areas within which each of the main components of the Proposed Development are to be built are shown by the coloured and hatched areas on the Works Plans (Application Document Ref: 4.3).

1.4 The Purpose and Structure of this Document

1.4.1 The purpose of this Statement to Inform Appropriate Assessment is to establish whether there are any Adverse Effects on Integrity (AEOI) which may arise from the Proposed Development on any European designated site (see Section 3.2 for further information), either alone or in combination with other plans or projects.

1.4.2 The applicant submitted a No Significant Effects Report (NSER) (Application Document Ref: 5.10) as part of the application for DCO in April 2019. In that NSER a conclusion of no likely significant effects, alone or in combination, was reached for all Natura 2000 sites. This included consideration of disturbance effects from construction and operation on functionally-linked land for the Humber Estuary Special Protection Area and Ramsar site, known as Rosper Road Fields that are located on the opposite (east) side of Rosper Road from the Proposed Development Site.

1.4.3 However, paragraph 4.3.36 of the NSER stated that construction of the Proposed Development may require the use of piling techniques but, as there was no certainty over whether piling would actually be required, did not quantitatively assess the effects of all types of piling on Rosper Road Fields, although rotary bored or hydraulic jacking (vibro-piling) piling methods had been considered.

1.4.4 Natural England, in the Relevant Representations and the Examining Authority in its First Written Questions (FWQs) both commented on this matter. In particular, FWQ 1.12.6 stated that '*ES Chapter 9 [APP-038] Para 9.9.14 refers to the potential for piling, but this is not included in the Rochdale Envelope parameters. As there is a possibility that piling may be required during construction, can the Applicant confirm what piling has been modelled as part of the ecological assessment?'*.

1.4.5 In order to provide further clarification on this matter a specific analysis has been undertaken of the impact of construction piling on Rosper Road Fields and is presented in this report. The analysis is presented as a Statement to Inform Appropriate Assessment as a precaution, since use of mitigation measures may be required to demonstrate no adverse effects on integrity from all types of piling method that may be used.

1.4.6 As the NSER concluded that no significant effects on European Sites or qualifying species could occur from any other aspects of the construction and operation of the Proposed Development, (Natural England has confirmed its agreement to these conclusions, as per its Relevant Representation and the draft Statement of Common Ground), this report only considers the potential implications of alternative piling techniques on the SPA/Ramsar site and functionally-linked land at Rosper Road Fields and Rosper Road Pools.

2.0 LEGISLATIVE CONTEXT AND OVERVIEW OF HABITATS REGULATIONS ASSESSMENT PROCESS

2.1 Legislative Context

2.1.1 Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, which is more commonly known as the 'Habitats Directive', requires Member States of the European Union to take measures to maintain or restore, at favourable conservation status, natural habitats and wild species of fauna and flora of Community interest. The provisions of the Habitats Directive require that Member States designate Special Areas of Conservation ('SAC') for habitats listed on Annex I and for species listed on Annex II. Similarly, Directive 2009/147/EC on the conservation of wild birds (more commonly known as the 'Birds Directive') provides a framework for the conservation and management of wild birds. It also requires Member States to identify and classify Special Protection Areas ('SPA') for rare or vulnerable species listed on Annex I of the Directive, as well as for all regularly occurring migratory species.

2.1.2 Under Article 6(3) of the Habitats Directive, any plan or project which is not directly connected with or necessary to the management of a Natura 2000 site (which comprise all SACs and SPAs), but would be likely to have a significant effect on such a site, either individually or in combination with other plans or projects, must be subject to an 'Appropriate Assessment' (AA) of its implications for the SAC / SPA and its nature conservation objectives. This is known as Habitats Regulations Assessment ('HRA'). Specifically, Article 6(3) states:

> *"Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives."*

The requirements of the Habitats Directive are implemented by the Conservation of Habitats and Species Regulations 2017 (as amended), more commonly referred to as the 'Habitats Regulations'. Regulation 63 states:

> "*A competent authority, before deciding to … give any consent for a plan or project which is likely to have a significant effect on a European site or a European Offshore Marine Site (either alone or in combination with other plans or projects) … must make an appropriate assessment of the implications for the site in view of that sites conservation objectives … The authority shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site …*".

2.1.3 In the past, the term 'Appropriate Assessment' has been used to describe both the overall process and a stage of that process. The term Habitats Regulations Assessment has come into use in order to refer to the process that leads to an Appropriate Assessment, thus avoiding confusion. Throughout this report, HRA is used to refer to the overall procedure required by the Habitats Regulations, while Appropriate Assessment is a specific stage of that procedure.

2.2 Overview of HRA Process

2.2.1 The Habitats Regulations set out a stepwise process, including an Appropriate Assessment, to consider the impacts and effects of a plan or project on a Natura 2000 site. This document

represents information to inform the second stage of the HRA process and serves to aid the Secretary of State in determining whether there would be any adverse effects on the integrity of any Natura 2000 site.

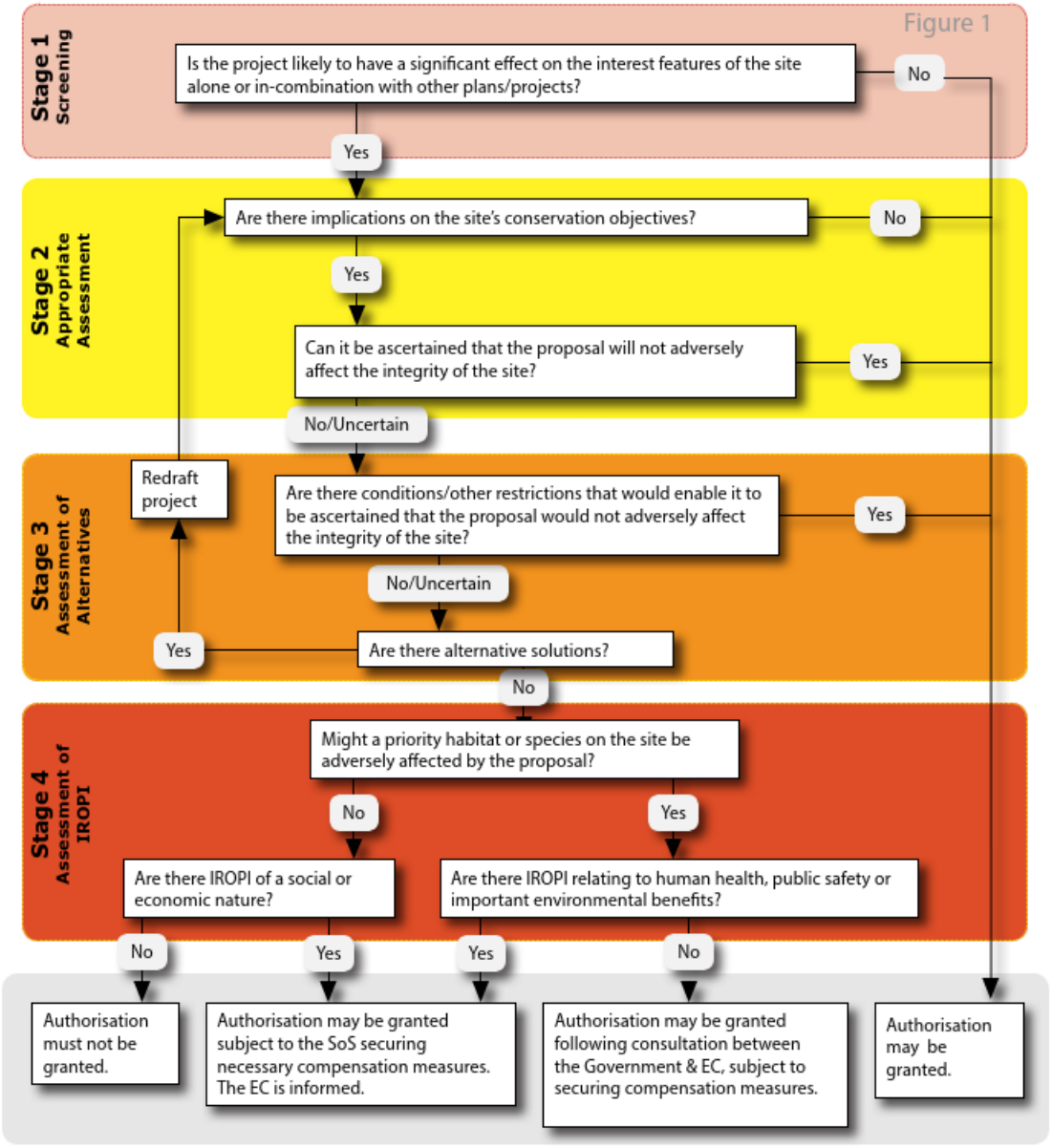
2.2.2 Office of Deputy Prime Minister (ODPM) Circular 06/2005 (Biodiversity and Geological Conservation - Statutory Obligations and Their Impact Within the Planning System) provides guidance on how the Habitats Regulations should be implemented. This is interpreted and summarised as follows:

- Determination of whether the proposal is likely to have a significant effect, either alone or in combination with other plans or projects, on a European site;
- If a significant effect is likely, the competent authority must conduct an Appropriate Assessment of the implications for the European designated site in view of its conservation objectives;
- In considering the plan or project's effects on the site's conservation objectives, the competent authority must determine whether it can ascertain that the proposal will not adversely affect the integrity of the site;
- Taking account of the way in which works are proposed to be carried out, and the site conditions or other restrictions;
- Being satisfied that there are no alternative solutions which would have a lesser effect on site integrity; and
- Considering whether there are Imperative Reasons of Overriding Public Interest (IROPI) to justify granting of permission for the development despite a potentially negative effect on site integrity.
- In the absence of alternatives, and where the importance of the proposal outweighs the harm to a European site, consideration of proposed compensatory measures (to ensure that the overall coherence of the network of Natura 2000 sites is protected).

2.2.3 A flow chart of the HRA process (showing the decisions that are required at each stage) is provided in Figure 2.1 below (this has been reproduced from Advice Note 10 (Planning Inspectorate 2017). A four-stage methodology for HRA would therefore include:

- HRA Stage 1: Screening (including a 'likely significant effect' judgement);
- HRA Stage 2: Appropriate Assessment;
- HRA Stage 3: Assessment of Alternative Solutions; and
- HRA Stage 4: Assessment where no alternative solutions exist and where adverse effects remain (i.e. consideration of Imperative Reasons of Overriding Public Interest).

Figure 2.1: Consideration of Development Proposals Affecting Internationally Designated Nature Conservation Sites



2.2.4 Whilst HRA must be undertaken by a competent authority, the information needed to undertake the necessary assessments is generally provided by the proposer of the plan or project, and this is secured by Regulation 63(2) of the Habitats Regulations. The information needed for the competent authority to establish whether there are any AEOI from the Proposed Development is therefore provided in this Report.

2.2.5 This report has been prepared having regard to all relevant case law relating to the Habitats Regulations. In particular, the recent ruling by the Court of Justice of the European Union (CJEU) in the case of People Over Wind, Peter Sweetman v Coillte Teoranta (C-323/17) has been taken into account.

2.2.6 This case held that; "*it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site*" (paragraph 40). This establishes that 'mitigation measures' which are proposed specifically

in relation to a Natura 2000 site cannot be taken into account at the screening stage, but they can be taken into account in an Appropriate Assessment.

3.0 RELEVANT DESIGNATED SITES

3.1.1 Two European designated sites were identified within the 15km search radius: the Humber Estuary SPA and the Humber Estuary SAC.

3.1.2 In addition, the Humber Estuary Wetland of International Importance (Ramsar site) also lies within the 15km search radius (the boundary of this designation is, in the vicinity of the Development, also coincident with the SPA and SAC of the same name). Although Ramsar sites are not part of the Natura 2000 network of designated sites, National Planning Policy Framework ('NPPF') in England requires that Ramsar sites are given the same level of protection as SPAs and SACs. Throughout this report, and for the sake of simplicity, where reference is made to 'European designated sites', unless otherwise stated this also includes the Humber Estuary Ramsar site, giving a total of three sites within the search radius that are considered in this assessment.

3.1.3 The Statement to Inform Appropriate Assessment focuses on the Humber Estuary SPA and Humber Estuary Ramsar site, as interest features of the Humber Estuary SAC will not be affected by noise disturbance or visual impacts due to their remoteness from the development site and lack of sensitivity to these impact pathways. A summary of the qualifying features of these two sites is provided in Table 1, below.

Table 9B.1: Description of Relevant European Designated Sites

Designated site	Approximate distance from Proposed Development	Total area	Primary reasons for site selection	Other qualifying features
Humber Estuary SPA	1.4km north-east	37,630.24	Populations of European importance of Annex I and Annex II over-wintering wildfowl and wading birds Internationally important assemblage of migratory and wintering birds	N/A

Designated site	Approximate distance from Proposed Development	Total area	Primary reasons for site selection	Other qualifying features
Humber Estuary Ramsar site		37,987.80	Estuarine habitats including dune systems, intertidal mud and sand flats, saltmarshes and brackish lagoons Grey seal Natterjack toad (*Bufo calamita*) Internationally important populations of non-breeding wildfowl and waders Migrating river lamprey and sea lamprey	N/A

3.1.4 The Rosper Road Fields and Rosper Road Pools are both recognised as functionally linked habitat to the SPA and Ramsar site as described in ES Volume I, Chapter 9: Ecology (Application Document Ref. 6.2.9). Only the bird interest features of the SPA and Ramsar site are discussed in this SIAA since the other faunal and habitat interest features are remote from the Proposed Development Site.

3.1.5 It should be noted that Rosper Road fields are recognised to be allocated for redevelopment by a third party; however, impacts are assessed in the eventuality that development does not take place.

3.1.6 The conservation objectives of the Humber Estuary SPA are to ensure the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Birds Directive, by maintaining or restoring:

- 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 population of each of the qualifying features; and
- The distribution of the qualifying features within the site.

3.1.7 There are no explicit conservation objectives available for the Humber Estuary Ramsar site, but these are assumed to be consistent with those described above for the SPA.

4.0 STATEMENT TO INFORM APPROPRIATE ASSESSMENT

4.1 Assessment criteria

4.1.1 The Bird Disturbance Toolkit[1] is based upon studies around the Humber Estuary and indicates that at noise levels in excess of 84 dB(A) there is a flight response in waterfowl (i.e. they are flushed away from the source entirely), while at levels below 55 dB(A) there is no effect (i.e. not even a 'head up' reaction)[2]. Although not explicitly clear in the published papers it is concluded that these thresholds represent LA_{max} i.e. the maximum, rather than average, LA_{eq}, noise level. These thresholds therefore define the two extremes: noise being entirely unnoticed and noise being so intolerable as to cause complete displacement ('scaring off' the birds). Separate advice from the same authors recommends that '*Ambient construction noise levels should be restricted to be below 70dB(A)* [at the bird]*; birds will habituate to regular noise* [emphasis added] *below this level*'[3].

4.1.2 Therefore, this report considers:

- Whether maximum piling noise anywhere in Rosper Road Fields would exceed 84 dB(A) LA_{max} thus risking waterfowl and waders abandoning the affected area entirely while piling is underway; and
- Whether regular piling noise would exceed 70 dB(A) and thus potentially cause the birds to exhibit moderate disturbance responses, such as redistributing within the fields to seek quieter locations, a greater frequency of head up reactions, or otherwise changing their feeding or resting behaviour but remaining on site. For the purposes of this assessment it is assumed that the reference to 'ambient, regular' construction noise in Cutts *et al* (2009) means the typical, most frequently occurring, noise level from the activity and therefore LA_{eq} (average decibels).

4.1.3 In general, the mere fact of a reaction (i.e. redistributing to another part of the same field complex) is not necessarily of concern provided the affected birds can find enough food or rest such that their fitness is not reduced. Therefore, the area affected by disturbing noise levels as a proportion of the available area for use is also a key consideration, as is the existing exposure to disturbance and the timing and duration of any potentially disturbing activity.

4.2 Piling requirements

4.2.1 It is anticipated the main structures of the Proposed Development may require piling for their foundations such as the gas turbine hall. Until detailed design has been completed the preferred piling method cannot be determined. However, as a general principle of construction, the least noisy feasible method would be chosen where suitable (irrespective of the presence of European site interest features). For the purposes of this assessment it is considered most feasible that rotary bored or vibro-piling would be the principal piling

[1] https://www.tide-toolbox.eu/tidetools/waterbird_disturbance_mitigation_toolkit/

[2] Cutts N & Allan J. 1999. Avifaunal Disturbance Assessment. Flood Defence Works: Saltend. Report to Environment Agency

[3] Cutts, N., Phelps, A. and Burdon, D. 2009. Construction and waterfowl: Defining Sensitivity, Response, Impacts and Guidance. Report to Humber INCA, Institute of Estuarine and Coastal Studies, University of Hull

method, with impact piling used occasionally as necessary where difficult ground is encountered. Impact piling is much noisier than vibro-piling since it involves dropping a hammer onto the pile to force it into the ground, but its use can be essential when encountering stiff ground conditions as the pile is being sunk.

4.2.2 While rotary bored or vibro piling were considered in the noise assessment presented in the Environmental Statement, the type of piling likely to result in the highest sound levels is impulsive sheet piling; this has therefore been used in this analysis as a precautionary representation of impact piling, although sheet piles are less likely to be used in this scheme than tubular piles. Therefore, the noise levels discussed for impact piling in this report are considered precautionary. AECOM archive data based on published sources and measurements indicates that the highest expected sound power levels (at source) for a large impact piling rig with no applied noise mitigation would be 145 dB LA_{max} and 133 dB LA_{eq}. These values were therefore used to predict the maximum (LA_{max}) and average (LA_{eq}) sound levels across Rosper Road Fields that would result from such operations.

4.2.3 It should be noted that:

- the entire duration of piling site works is expected to be in the order of c. 1 month or less (greater precision is not possible as the precise duration depends on the ground conditions encountered);
- the assessment conservatively considers the use of a large impact piling rig as a worst-case assumption, in practice a smaller piling rig could be used;
- piling will not be continuous during this period. For example, it would not be necessary to pile during the hours of darkness, which is a key period for wildfowl and waders using high-tide roosts and foraging areas, and even during daylight hours there would be lengthy periods when the rig was being erected, dismantled or moved, or each pile being prepared;
- Parts of Rosper Road Fields are already subject to relatively high noise levels due to Rosper Road, the railway line and the range of industrial facilities that surround them, as shown in the submitted NSER. As such, any birds that use the fields (particularly areas closest to Rosper Road) are likely to be habituated to a degree of noise and human activity and will certainly be less easily disturbed than birds used to a tranquil environment; and
- Rosper Road Fields are of greatest significance to SPA birds (and thus at greatest risk of significant disturbance) during the period September to March inclusive, as the large flocks of passage or wintering wildfowl and waders for which the Humber Estuary SPA and Ramsar site is partly designated are not present during the spring and summer.

4.2.4 Both vibro-piling and impact piling at the OCGT Main Site have been modelled for this analysis. Rotary bored / auger piling is also possible as a technique but has not been modelled here as it is significantly quieter than vibro-piling, only vibro-piling and impact piling are discussed further in this document.

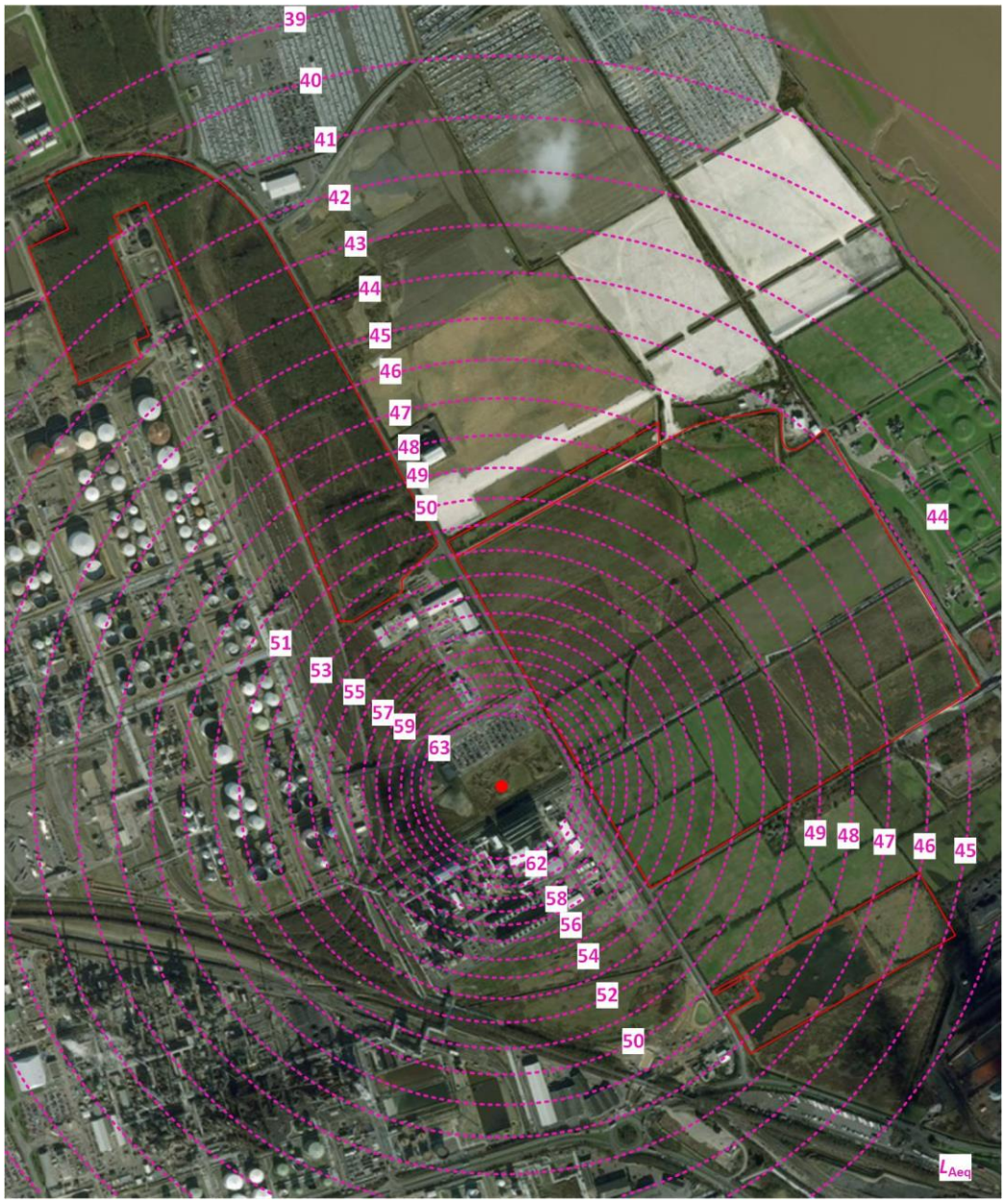
4.2.5 The contour plots (which do not include consideration of noise mitigation) are presented in Figures 1 to 3 below. LA_{eq} values from impact piling are typically c.10 dB(A) below the LA_{max} values (i.e. half as loud) and are representative of the average/typical noise levels that will be experienced, while the LA_{max} values represent the maximum values expected as periodic events. For vibro-piling there is no impulsive element to the sound and therefore only LA_{eq}

values are presented as there is little difference between average and maximum sound pressure levels for vibro-piling.

4.3 Effects of vibro-piling

4.3.1 Even without any specific noise controls, vibro-piling would not breach the 70 dB LA_{eq} or 84 dB LA_{max} thresholds at any point in Rosper Road Fields, with the maximum forecast noise levels at the closest part of Rosper Road Fields being 62 dB $LA_{eq.}$ This is the same as the typical background noise from Rosper Road (61 dB LA_{eq} as per Appendix A of the NSER). Therefore, even if undertaken during the September to March period, no disturbance would be expected of any birds that might be using Rosper Road Fields when the expected primary piling technique is being used, and it is entirely probable no reaction at all would be noticed. Therefore, if only vibro-piling (or a quieter technique) were required it is possible to conclude no adverse on the integrity of the Humber Estuary SPA or Ramsar site with confidence.

Figure 1. Vibro-piling dB(A) LA_{eq} contours



4.4 Effects of impact piling

4.4.1 Impact piling is considerably louder than vibro-piling and contains a distinct impulsive sound element. The SPA and Ramsar site itself would not be directly affected, as even in an unmitigated situation the maximum sound pressure level would be 68 dB LA_{max} and 56 dB LA_{eq}. However, unmitigated impact piling would breach the 84 dB(A) LA_{max} threshold for flushing birds within an area of approximately 3ha at the western end of Rosper Road Fields. This totals approximately 4% of the total area of Rosper Road Fields[4]. Average noise levels within Rosper Road Fields would also breach the 70 dB(A) LA_{eq} threshold within approximately 4ha (5%) of the total area of Rosper Road Fields without mitigation. Rosper

[4] Measured as being 78ha if the boundaries are taken to be Rosper Road, Station Road, Marsh Lane and the railway line

Road Pools would be subject to noise levels of 70-75 dB LA_{max} and 60-64 dB LA_{eq} and therefore would not breach the 84 dB(A) LA_{max} threshold for flushing birds, or the 70 dB LA_{eq} threshold. Note that these numbers do not take account of any acoustic shielding of Rosper Road Pools by the existing VPI Immingham facility and are therefore conservative.

Figure 2. Impact piling dB(A) LA_{max} contours

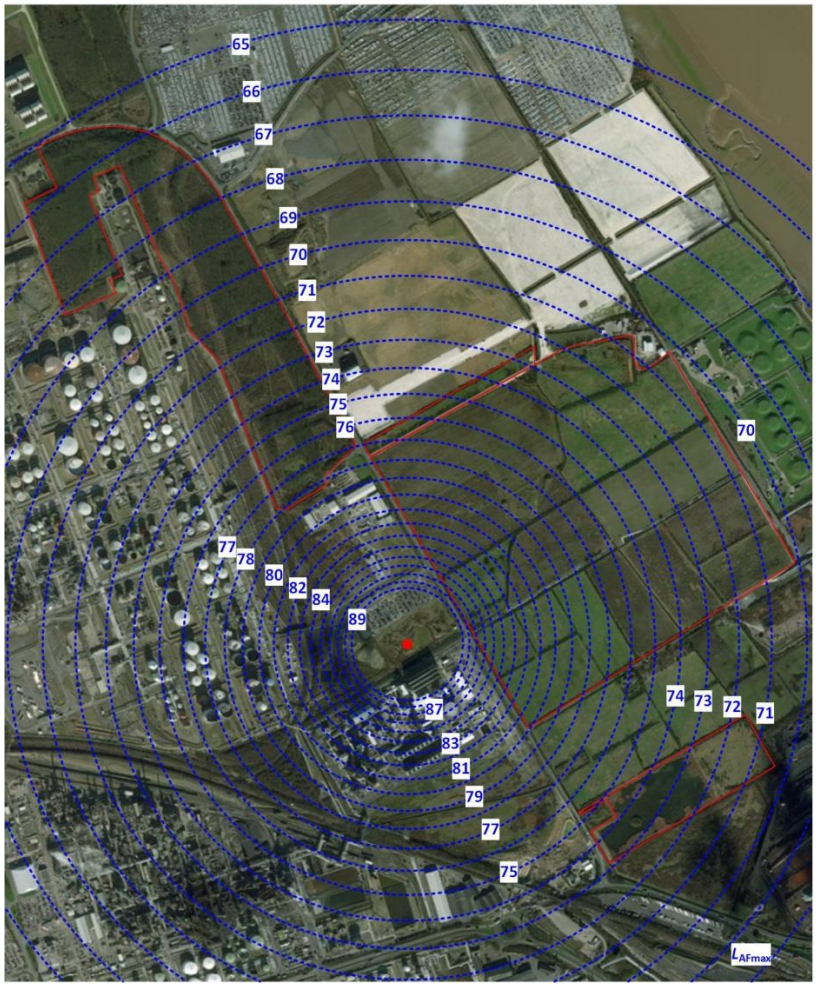
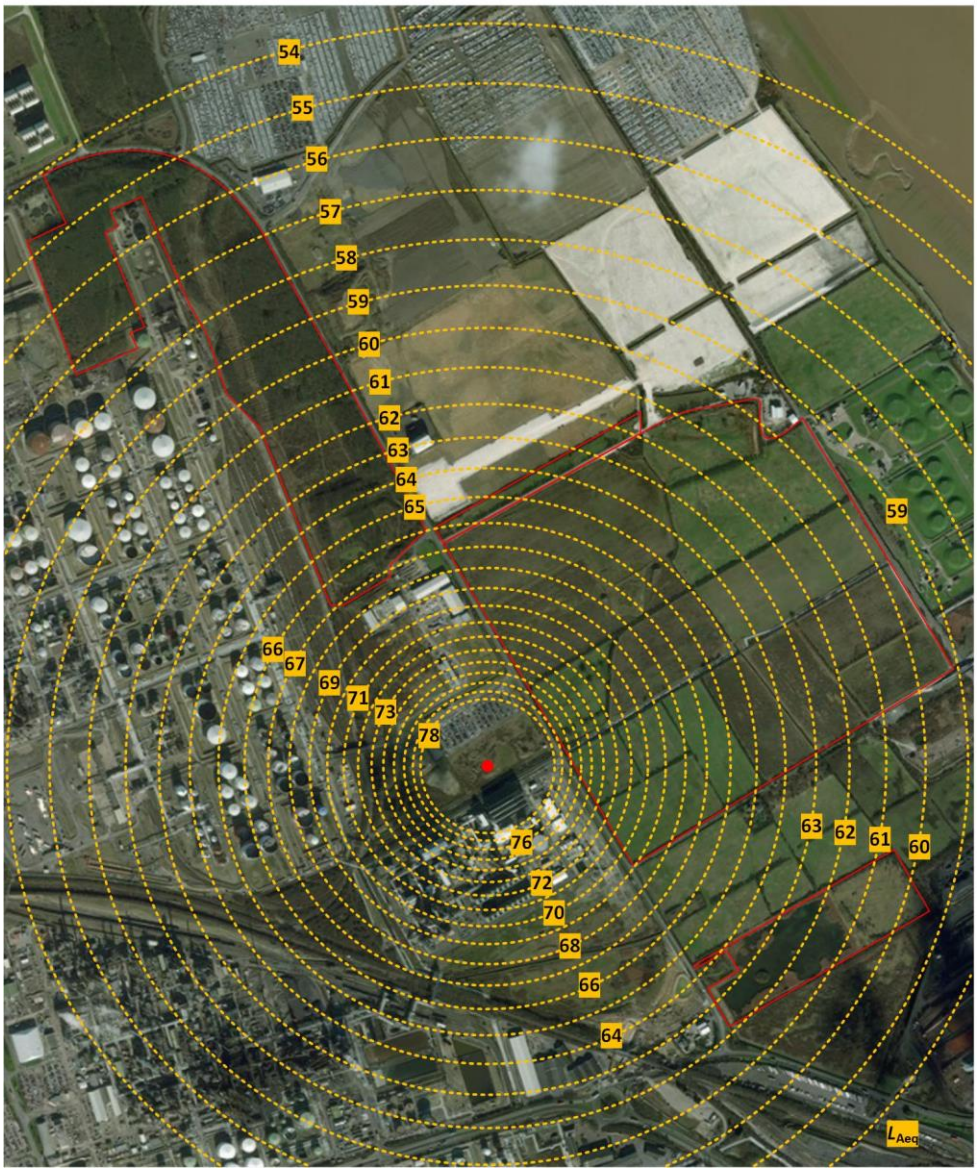


Figure 3. Impact piling dB(A) LA_{eq} contours



4.4.2 Based on the Bird Disturbance Toolkit, exposure of c.4-5% of Rosper Road Fields to noise levels exceeding 70 dB LA_{eq} and 84 dB LA_{max} may well cause waterfowl or waders within that area to move further into the fields for the duration of impact piling. However:

- Based on observations by the authors of waterfowl responses to noise disturbance in estuarine environments (see the references given in Section 4 above), birds would also be very likely to return to their original location as soon as impact piling ceased;
- The remaining c.95% of Rosper Road Fields would be subject to regular (average) noise levels below 70 dB(A) LA_{eq} and thus remain available for roosting or foraging; and
- Impact piling (if required at all) would only occur for short periods at a time during daylight hours and would not take place at all between dusk to early morning.

4.4.3 British Standard BS5228[5] indicates that noise mitigation for impact piling (such as enclosure of the hammer head and top of pile, acoustic damping of the pile itself, the use of a resilient 'dolly' between hammer and pile or use of acoustic fencing round the pile and rig) would reduce noise levels by 5-10 dB. This would reduce maximum noise levels across Rosper Road Fields to below 84 dB LA_{max} and reduce the area of Rosper Road Fields exposed to noise levels above 70 dB LA_{eq} to a small area immediately adjacent to Rosper Road even if only a 5dB reduction was achieved. Since the applicant is committed to using standard noise controls of this kind, no adverse effect on integrity would arise. To further support a conclusion of no adverse effect on integrity through impact piling, if it proved to be necessary at all, this activity could be restricted to the period April to September inclusive, thus avoiding any potential conflict at all with SPA and Ramsar interest features. These standard management / mitigation measures would also protect areas further from the site such as Rosper Road Pools. Use of appropriate measures to control piling noise is proposed to be secured through an amended wording of requirement 14 that specifies agreement of a detailed Construction Environmental Management Plan (CEMP).

4.5 Potential Impacts Acting In Combination

4.5.1 Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location (CIEEM (2018)).

4.5.2 Potential cumulative disturbance to the fields to the east of the Proposed Development (between Rosper Road and the estuary) has been included in the assessment of in combination effects due to the fact that there are several other projects either proposed, consented or under construction around this part of the estuary (including the adjacent consented VPI Immingham Energy Park A power plant). Disturbance / displacement caused by multiple projects therefore has the potential to result in adverse effects on waterbirds in high tide feeding, roosting and loafing habitat in fields bordering the estuary.

4.5.3 The AMEP development will result in the loss of large areas of farmland at North Killingholme adjacent to the North Killingholme mudflats, which support important assemblages of black-tailed godwits (*Limosa limosa*) and other wintering / passage bird species. This project has not yet been constructed, however a substantial package of mitigation was agreed with North Lincolnshire Council and Natural England to create alternative high tide feeding, roosting and loafing waterbird habitat at Killingholme Marshes (referred to as Mitigation Area A). This is at Rosper Road Fields, to the east of the Proposed Development.

4.5.4 There is currently a proposal by the promoter of the AMEP Development to relocate Mitigation Area A further north to East Halton Skitter (referred to as the 'Halton Marshes Wet Grassland Scheme (HMWGS)'), to accommodate the development of Rosper Road fields into car storage (Marsh Lane Car Storage Area). There is also an application for a non-material amendment to the Able Marine development consent order which is under consideration by the Secretary of State, and which is also required to permit these alterations to the proposed scheme. The delivery of mitigation at North Killingholme (or East Halton Skitter) is part of the South Humber Gateway ('SHG') mitigation strategy, that has developed requirements for a package of 80ha of wet grassland mitigation for

[5] Code of practice for noise and vibration control on construction and open sites – Part 1: Noise (2009)

waterbirds (four 20ha blocks with 150m 'buffers') in order to facilitate development in the South Humber Gateway region that is HRA compliant.

4.5.5 There are therefore two scenarios: waterbird mitigation for the project(s) will either be delivered at the consented AMEP Mitigation Area A at Rosper Road Fields, or at East Halton Skitter in the HMWGS. If waterbird mitigation is to be delivered at Mitigation Area A (Rosper Road Fields), there is feasibly the potential for in combination effects with piling for the Proposed Development (if any piling were to be required). However, as described above, even if piling was required the Proposed Development, it will either not result in construction noise levels above ambient conditions (if using vibro-piling or quieter techniques such as auger piling), or can be adequately controlled by either mitigation techniques or a seasonal restriction on working practices (or both). It is therefore considered that there would be no in combination impacts, even if waterbird mitigation were to be delivered in Mitigation Area A at Rosper Road Fields.

4.5.6 There is no potential for in combination effects with the Marsh Lane Car Storage Area because, should this project be consented, it would necessitate a relocation of Mitigation Area A to Halton. The Rosper Road Fields would therefore be permanently lost as a high tide feeding, loafing and roosting resource to the scheme, and would be compensated through the delivery of mitigation at HMWGS.

4.5.7 The Ecological Impact Assessment and HRA undertaken for the adjacent VPI Immingham Energy Park A development (consented) concluded that there would be no significant noise or visual disturbance to waterbirds using Rosper Road Fields to the east. The Proposed Development Site lies between Rosper Road fields and the VPI Immingham Energy Park A development site. There is therefore no potential for likely significant effects to arise due to in combination impacts with this development.

4.5.8 It is therefore concluded that there will be no likely significant effects on any European designated site due to in combination noise disturbance of qualifying species using functionally linked habitat.

5.0 CONCLUSIONS

5.1.1 If only vibro-piling (or a quieter technique) were required, no mitigation would be necessary, and it is possible to conclude no likely significant effect on the Humber Estuary SPA or Ramsar site with confidence.

5.1.2 Based on the Bird Disturbance Toolkit, impact piling may well cause waterfowl or waders within approximately 5% of Rosper Road Fields to move further into the fields for the duration of impact piling, if no mitigation was included. However:

- The birds would also very likely return to their original location as soon as impact piling ceased;
- The remaining c.95% of Rosper Road Fields would be subject to regular (average) noise levels below 70 dB(A) LA_{eq} and thus remain available for roosting or foraging; and
- Impact piling (if required at all) would only occur for short periods at a time during daylight hours and would not take place at all between dusk to early morning.

5.1.3 Moreover, British Standard BS5228[6] indicates that noise mitigation for impact piling (such as enclosure of the hammer head and top of pile, acoustic damping of the pile itself, the use of a resilient 'dolly' between hammer and pile or use of acoustic fencing round the pile and rig) would reduce noise levels by 5-10 dB. This would reduce maximum noise levels across Rosper Road Fields to below 84 dB LA_{max} and reduce the area of Rosper Road Fields exposed to noise levels above 70 dB LA_{eq} to a small area immediately adjacent to Rosper Road even if only a 5dB reduction was achieved. Since the applicant is committed to using standard noise controls of this kind, no adverse effect on integrity would arise. To further support a conclusion of no adverse effect on integrity through impact piling, if it proved to be necessary at all, this activity could be restricted to the period April to September inclusive, thus avoiding any conflict at all with SPA and Ramsar interest features. These mitigation measures would also protect areas further from the site such as Rosper Road Pools.

5.1.4 The mitigation, if needed, could be secured through the detailed Construction Environmental Management Plan (CEMP) and secured through requirement 14 of the DCO.

5.1.5 In combination effects have also been assessed (including with the adjacent consented VPI Immingham Energy Park A scheme), and the assessment has concluded that there would be no likely significant effect in combination on any of the sensitive features of the designated sites. The in combination effects assessment has considered the implications of the delivery of mitigation for the AMEP DCO at Rosper Road Fields (referred to as 'Mitigation Area A'), and found that there would be no likely significant in combination disturbance / displacement effects to waterbirds using the fields for feeding, roosting and loafing should the Proposed Development be consented.

5.1.6 Appropriate Assessment matrices for each of the European designated sites are provided in Annex A of this report.

[6] Code of practice for noise and vibration control on construction and open sites – Part 1: Noise (2009)

6.0 REFERENCES

BSI. (2009) *BS5228 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise*

Chapman, C. and Tyldesley, D. (2016) *Functional linkage: How areas that are functionally linked to European sites have been considered when they may be affected by plans and projects – a review of authoritative decisions*. Natural England Commissioned Reports, Number 207.

Cutts N & Allan J. 1999. *Avifaunal Disturbance Assessment. Flood Defence Works: Saltend.* Report to Environment Agency

Cutts, N., Phelps, A. and Burdon, D. 2009. *Construction and waterfowl: Defining Sensitivity, Response, Impacts and Guidance.* Report to Humber INCA, Institute of Estuarine and Coastal Studies, University of Hull

CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*. Chartered Institute of Ecology and Environmental Management, Winchester.

The Planning Inspectorate (2017). *Advice Note 10: Habitats Regulations Assessment relevant to nationally significant infrastructure projects*.

Annex A: Appropriate Assessment Matrices

Annex A.1: Effects Considered Within the Matrices

Designation	Effects Described in Submission Information	Presented in Matrices As
Humber Estuary SPA	Disturbance of qualifying species using functionally linked habitat during construction	Noise disturbance
Humber Estuary Ramsar site	Disturbance of qualifying species using functionally linked habitat during construction	Noise disturbance

Likely Significant Effects have been identified for the following sites:

- Humber Estuary SPA; and
- Humber Estuary Ramsar site.

These sites have been subject to further assessment in order to establish if the NSIP could have an adverse effect on their integrity, taking account of mitigation. Evidence for the conclusions reached on integrity is detailed within the footnotes to the matrices below.

Matrix key:

a. ✓ = Adverse effect on integrity **cannot** be excluded

b. ✗ = Adverse effect on integrity **can** be excluded

c. C = construction

d. O = operation

e. D = decommissioning

Annex A.2: Matrix for Humber Estuary SPA

Qualifying features	Likely effects of Proposed Development					
Effect	**Noise disturbance**			**Noise disturbance in combination effects**		
Stage of Proposed Development	**C**	**O**	**D**	**C**	**O**	**D**
Populations of European importance of Annex I and Annex II non-breeding wildfowl and wading birds	Xa			Xb		
Internationally important assemblage of migratory and wintering birds	Xa			Xb		

a. Paragraphs 5.1.1 to 5.1.4 states that even if piling were required, it would either not result in disturbing noise levels (vibro-piling or quieter techniques) or can be mitigated to be rendered non-disturbing (impact piling). This mitigation for impact piling would consist of standard noise control methods as set out in British Standard BS5228 and/or a seasonal restriction on impact piling to April to September inclusive, thus avoiding the season when Rosper Road Fields is of significance as functionally-linked land for the SPA. The mitigation, if needed, could be secured through the detailed Construction Environmental Management Plan (CEMP). A framework CEMP is included with this Application (ES Volume III, Appendix 4A, Application Document Ref 6.4).

b. Paragraphs 4.5.1 to 4.5.8 considers the potential for in combination disturbance effects arising with other projects. It concludes that as there is no possibility of noise disturbance from the Proposed Development, because all other development is of a similar scale and nature, because of the existing background levels of human activity and because piling will either not result in disturbing noise levels (vibro-piling or quieter techniques) or can be mitigated to be rendered non-disturbing (impact piling).

Table Annex A.4: Matrix for Humber Ramsar site

Qualifying features	Likely effects of Proposed Development					
Effect	**Noise disturbance**			**Noise disturbance in combination effects**		
Stage of Proposed Development	**C**	**O**	**D**	**C**	**O**	**D**
Estuarine habitats including dune systems, intertidal mud and sand flats, saltmarshes and brackish lagoons	Xa			Xa		
Grey seal	Xa			Xa		
Natterjack toad	Xa			Xa		
Internationally important populations of non-breeding wildfowl and waders	Xb			Xc		
Migrating river lamprey and sea lamprey	Xa			Xa		

a. Paragraph 3.1.4 clarifies that only the bird interest features of the SPA and Ramsar site are discussed in this SIAA since the other faunal interest features do not utilise Rosper Road Fields and no Ramsar qualifying habitats are found there.

b. Paragraphs 5.1.1 to 5.1.4 states that even if piling were required, it would either not result in disturbing noise levels (vibro-piling or quieter techniques) or can be mitigated to be rendered non-disturbing (impact piling). This mitigation for impact piling would consist of

standard noise control methods as set out in British Standard BS5228 and/or a seasonal restriction on impact piling to April to September inclusive, thus avoiding the season when Rosper Road Fields is of significance as functionally-linked land for the Ramsar site. The mitigation, if needed, could be secured through the detailed Construction Environmental Management Plan (CEMP). A framework CEMP is included with this Application (ES Volume III, Appendix 4A, Application Document Ref 6.4).

c. Paragraphs 4.5.1 to 4.5.8 considers the potential for in combination disturbance effects arising with other projects. It concludes that as there is no possibility of noise or visual disturbance from the Proposed Development, because all other development is of a similar scale and nature, because of the existing background levels of human activity and because piling will either not result in disturbing noise levels (vibro-piling or quieter techniques) or can be mitigated to be rendered non-disturbing (impact piling).