

REPORT

Boston Alternative Energy Facility

Habitats Regulations Assessment Screening and Integrity Matrices

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Table of Contents

1	Introduction	1
2	England Coast Path	1
2.1	Introduction	1
2.2	The Proposed Route	2
3	Stage 1: Screening	3
3.1	HRA Screening Matrix A17.1.1.1: The Wash SPA	4
3.2	HRA Screening Matrix A17.1.1.2: The Wash and North Norfolk Coast SAC	9
3.3	HRA Screening Matrix A17.1.1.3: The Wash Ramsar site	13
4	Stage 2: Effects on Integrity	16
4.1	Explanation	16
4.2	HRA Integrity Matrix A17.1.2.1: The Wash SPA	17
4.3	HRA Integrity Matrix A17.1.2.2: The Wash and North Norfolk Coast SAC	20
4.4	HRA Integrity Matrix A17.1.2.3: The Wash Ramsar site	22

1 Introduction

1.1.1 In response to the Examining Authority's (ExA) First Written Questions, Q3.1.18, 3.1.19 and 3.1.20 (REP2-008) and Natural England's (NE) advice within its Risk and Issues Log at Deadline 2 (REP2-048) (that any proposed changes to the England Coast Path (ECP) would require Appropriate Assessment), the following Habitats Regulations Assessment (HRA) Screening and Integrity Matrices have been updated from those submitted in Environmental Statement (ES) Appendix 17.1 Habitats Regulations Assessment (document reference 6.4.18, APP-111):

- Tables A17.1.1.1 and A17.1.2.1 (The Wash Special Protection Area (SPA));
- Tables A17.1.1.2 and A17.1.2.2 (The Wash and North Norfolk Coast Special Area of Conservation (SAC)); and
- Tables A17.1.1.3 and A17.1.2.3 (The Wash Ramsar site);

1.1.2 Updates to the matrices are shown as tracked changes in Table A17-1-1-1, Table A17-1-2-1, Table A17-1-2-2 and Table A17-1-2-3 below.

1.1.3 Table A17-1-1-2 and Table A17-1-1-3 are unchanged and are included for completeness of screening and integrity information.

2 England Coast Path

2.1 Introduction

2.1.1 Changes to the proposed ECP were considered with respect to their potential for Likely Significant Effect. Part 9 of the Marine and Coastal Access Act 2009 ("the 2009 Act") aims to improve public access to, and enjoyment of, the English coastline by creating clear and consistent public rights along the English coast for open-air recreation on foot. It allows existing coastal access to be secured and improved and new access to be created in coastal places where it did not already exist (Natural England, 2013). The ECP in the area around the Facility is not currently designated therefore any changes proposed due to the Facility will affect the future designation of the ECP. The proposed Facility will require changes to the proposed ECP route due to the inability to keep the proposed route aligned, and in close proximity to The Haven along BOST/14/4 and BOST/14/5, where these routes will be permanently stopped up due to the presence of the wharf. The proposed re-routing of the ECP utilises the Public Right of Way (PRoW) running down the Roman Bank along BOST/14/11 and BOST/14/9 as identified in ES Figure 5.3 (Public Footpath Closures (APP-068) (the proposed route)). The

proposed route increases the distance of this section of the proposed route from approximately 950m to approximately 1100m and moves users away from the low water mark by a maximum of 350m. The Applicant has been in discussion with Lincolnshire County Council (as the Highway Authority responsible for public rights of way), Boston Borough Council and Natural England on the improvements to this route to ensure it is as attractive and safe as possible. An Outline Public Rights of Way Design Guide and Stopping Up Plan has been submitted to the Examination at Deadline 3 (document reference 9.41), which will be secured by an appropriate legal mechanism.

2.2 The Proposed Route

- 2.2.1 The potential impact pathways from changes to the ECP to designated features of the **Wash SPA/Ramsar** is considered to be limited to disturbance of non-breeding waterbird species features of the SPA/Ramsar. If considered to have a Likely Significant Effect, the relevant columns of the HRA Screening Matrices from impacts of the ECP route change would be 'Disturbance'. However, the proposed route of the ECP will pass through a largely industrial section of the coastal route and this highly localised re-routing is not expected to exert a strong attracting effect for walkers, which would increase footfall to a significantly greater level than the baseline.
- 2.2.2 The proposed ECP route will have reduced physical proximity to The Haven compared to the original route, along the stretch of The Haven in proximity to the Principal Application Site and proposed wharf location, and equal proximity to The Haven along the stretch close to the planned Habitat Mitigation Area. Visual disturbance from passing pedestrians and dog-walkers will be reduced along the stretch where proximity to The Haven will be reduced, and remain consistent with the existing position elsewhere. The main SPA/Ramsar feature and assemblage of waterbirds of concern to Interested Parties at the Principal Application Site (e.g. redshank *Tringa totanus*) are more sensitive to noise than visual disturbance (Cutts *et al.* 2013) but redshank and other waterbirds use this section of The Haven for both foraging and roosting despite baseline sources of industrial and vessel noise. Reduction in proximity of the ECP is therefore not predicted to impact on disturbance rates, for instance by creating less background stimulation of birds to which they can habituate, as the (more significant) noise levels will continue.
- 2.2.3 In summary, footfall is not considered to increase and any changes to visual disturbance levels will not materially affect the 'environmental disturbance level' of any part of The Wash SPA/Ramsar, The Wash and North Norfolk Coast SAC, or any functionally linked habitat such as the nearest stretches of The Haven. As

a result the ECP is not considered to have a Likely Significant Effect on any of the designated features, and changes observed in the respective Tables relate simply to broad updates and corrections to the Matrices on latest information for the Project as a whole.

3 Stage 1: Screening

Matrix Key:

✓ = Likely significant effect **cannot** be excluded

✗ = Likely significant effect **can** be excluded

C = construction

O = operation

D = decommissioning

3.1 HRA Screening Matrix A17.1.1.1: The Wash SPA

Name of protected site and designation: The Wash SPA															
EU Code: UK9008021															
Distance to NSIP: 3 km															
Site features	Likely effects of NSIP														
Effect	Increased collision risk			Disturbance			Changes to noise levels			Changes to air quality			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Bar-tailed godwit (<i>Limosa lapponica</i>), Non-breeding	x _a	x _b	x _d	√ _e	√ _e	x _d	√ _f	√ _f	x _d	x _g	x _h	x _d	x _a	x _i	x _d
Bewick's swan (<i>Cygnus columbianus bewickii</i>), Non-breeding	x _a	x _c	x _d	x _a	x _c	x _d	x _a	x _c	x _d	x _g	x _h	x _d	x _a	x _i	x _d
Black-tailed godwit (<i>Limosa limosa islandica</i>), Non-breeding	x _a	x _b	x _d	√ _e	√ _e	x _d	√ _f	√ _f	x _d	x _g	x _h	x _d	x _a	x _i	x _d
Common scoter (<i>Melanitta nigra</i>), Non-breeding	x _a	x _b	x _d	√ _e	√ _e	x _d	√ _f	√ _f	x _d	x _g	x _h	x _d	x _a	x _i	x _d
Common tern (<i>Sterna hirundo</i>), Breeding	x _a	x _b	x _d	x_a √ _e	x_c √ _e	x _d	x _a	x _c	x _d	x _g	x _h	x _d	x _a	x _i	x _d
Curlew (<i>Numenius arquata</i>), Non-breeding	x _a	x _c	x _d	√ _e	√ _e	x _d	√ _f	√ _f	x _d	x _g	x _h	x _d	x _a	x _i	x _d
Dark-bellied brent goose (<i>Branta bernicla bernicla</i>), Non-breeding	x _a	x _b	x _d	√ _e	√ _e	x _d	√ _f	√ _f	x _d	x _g	x _h	x _d	x _a	x _i	x _d

Name of protected site and designation: The Wash SPA															
EU Code: UK9008021															
Distance to NSIP: 3 km															
Site features	Likely effects of NSIP														
Effect	Increased collision risk			Disturbance			Changes to noise levels			Changes to air quality			In combination effects		
Dunlin (<i>Calidris alpina alpina</i>), Non-breeding	x a	x b	x d	√ e	√ e	x d	√ f	√ f	x d	x g	x h	x d	x a	x i	x d
Gadwall (<i>Mareca strepera</i>), Non-breeding	x a	x b	x d	√ e	√ e	x d	√ f	√ f	x d	x g	x h	x d	x a	x i	x d
Goldeneye (<i>Bucephala clangula</i>), Non-breeding	x a	x b	x d	√ e	√ e	x d	√ f	√ f	x d	x g	x h	x d	x a	x i	x d
Grey plover (<i>Pluvialis squatarola</i>), Non-breeding	x a	x b	x d	√ e	√ e	x d	√ f	√ f	x d	x g	x h	x d	x a	x i	x d
Knot (<i>Calidris canutus</i>), Non-breeding	x a	x b	x d	√ e	√ e	x d	√ f	√ f	x d	x g	x h	x d	x a	x i	x d
Little tern (<i>Sternula albifrons</i>), Breeding	x a	x b	x d	x a	x c	x d	x a	x c	x d	x g	x h	x d	x a	x i	x d
Oystercatcher (<i>Haematopus ostralegus</i>), Non-breeding	x a	x b	x d	√ e	√ e	x d	√ f	√ f	x d	x g	x h	x d	x a	x i	x d
Pink-footed goose (<i>Anser brachyrhynchus</i>), Non-breeding	x a	x c	x d	x a	x c	x d	x a	x c	x d	x g	x h	x d	x a	x i	x d
Pintail (<i>Anas acuta</i>), Non-breeding	x a	x c	x d	√ e	√ e	x d	√ f	√ f	x d	x g	x h	x d	x a	x i	x d
Redshank (<i>Tringa totanus</i>), Non-breeding	x a	x b	x d	√ e	√ e	x d	√ f	√ f	x d	x g	x h	x d	x a	x i	x d

Name of protected site and designation: The Wash SPA															
EU Code: UK9008021															
Distance to NSIP: 3 km															
Site features	Likely effects of NSIP														
Effect	Increased collision risk			Disturbance			Changes to noise levels			Changes to air quality			In combination effects		
Sanderling (<i>Calidris alba</i>), Non-breeding	x _a	x _b	x _d	√ _e	√ _e	x _d	√ _f	√ _f	x _d	x _g	x _h	x _d	x _a	x _i	x _d
Shelduck (<i>Tadorna tadorna</i>), Non-breeding	x _a	x _b	x _d	√ _e	√ _e	x _d	√ _f	√ _f	x _d	x _g	x _h	x _d	x _a	x _i	x _d
Turnstone (<i>Arenaria interpres</i>), Non-breeding	x _a	x _b	x _d	√ _e	√ _e	x _d	√ _f	√ _f	x _d	x _g	x _h	x _d	x _a	x _i	x _d
Waterbird assemblage, Non-breeding	x _a	x _c	x _d	√ _e	√ _e	x _d	√ _f	√ _f	x _d	x _g	x _h	x _d	x _a	x _i	x _d
Wigeon (<i>Mareca penelope</i>), Non-breeding	x _a	x _b	x _d	√ _e	√ _e	x _d	x _a	√ _f	x _d	x _g	x _h	x _d	x _a	x _i	x _d

Evidence supporting conclusions:

- a. No significant extra shipping activity through the Wash will take place due to the Facility, during the construction and decommissioning phases. A majority of the marine related construction works will take place from the land side of the Facility (i.e. dredging and piling). Specific impacts from these have been assessed in **Chapter 17 Marine and Coastal Ecology** (document reference APP-055), Section 17.8 and ES Chapter 17 and Appendix 17.1 Ornithology Addendum (document reference REP1-026) section 4.3. However, for the purposes of the HRA, no LSE is concluded.
- b. Although increased shipping activity throughout The Wash could affect qualifying bird species that fly low above the sea surface, or below, this is considered a low risk environment by Natural England, where the recommendation for a low risk impact is *“Unless there are evidence based case or site specific factors that increase the risk, or uncertainty on the level of pressure on a receptor, this pressure generally does not occur at a level of concern and should not require consideration as part of an assessment”* . As such, no LSE is concluded.
- c. There is no interaction of concern between the increased risk caused from the Facility, as determined from the supplementary information provided by Natural England. As such, no LSE is concluded.
- d. No decommissioning-phase impacts are anticipated as decommissioning of the wharf structure will take place over a highly constrained temporal window, subsequently allowing the hydrodynamics within this part of The Haven to return a similar level to the baseline. The flood defence will remain in situ. Therefore, no LSE can be concluded.
- e. Increased ship activity throughout The Wash has the potential to affect the behaviour of roosting, foraging, commuting and breeding birds. LSE could not be excluded, as the qualifying interest features are at medium-high risk from visual disturbance caused by vessel movements.
- f. Increased noise levels in The Wash SPA poses a medium-high risk to these qualifying interest features, as it has the potential to affect their foraging, roosting and breeding behaviour. As such, LSE could not be excluded.
- g. The construction-phase aerial deposition was considered insignificant, as a result of the air quality modelling reported in **Chapter 14 Air Quality**. As such, no LSE is concluded.
- h. Although birds are sensitive to changes in air quality, due to their mobile nature, it is unlikely that the increase in air emissions caused from the Facility will impact the qualifying features. As such, no LSE is concluded.

The screening exercise for a potential LSE has confirmed that there are no other plans or projects relevant to the assessment of effects for this site (ES Appendix 17.1 Habitats



Regulations Assessment (document reference APP-111) **Table A17-5**). LSE with other plans and projects, therefore, can be excluded for this protected site.

3.2 HRA Screening Matrix A17.1.1.2: The Wash and North Norfolk Coast SAC

Table A17-1-1-2 HRA Screening Matrix for The Wash and North Norfolk Coast SAC

Name of protected site and designation: The Wash and North Norfolk Coast SAC															
EU Code: UK0017075															
Distance to NSIP: 3 km															
Site features	Likely effects of NSIP														
	Increased collision risk			Disturbance			Changes to noise levels			Changes to air quality			In combination effects		
Effect	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Stage of Development															
Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	x_a	x_b	x_e	x_a	x_b	x_e	x_a	x_b	x_e	x_g	√_h	x_e	x_a	x_j	x_e
Coastal lagoons	x_a	x_b	x_e	x_a	x_b	x_e	x_a	x_b	x_e	x_g	√_h	x_e	x_a	x_j	x_e
Large shallow inlets and bays	x_a	x_b	x_e	x_a	x_b	x_e	x_a	x_b	x_e	x_g	√_h	x_e	x_a	x_j	x_e
Mediterranean and thermo-Atlantic halophilous scrubs (<i>Sarcocornetea fruticosi</i>)	x_a	x_b	x_e	x_a	x_b	x_e	x_a	x_b	x_e	x_g	√_h	x_e	x_a	x_j	x_e
Mudflats and sandflats not covered by seawater at low tide	x_a	x_b	x_e	x_a	x_b	x_e	x_a	x_b	x_e	x_g	√_h	x_e	x_a	x_j	x_e
Reefs	x_a	x_b	x_e	x_a	x_b	x_e	x_a	x_b	x_e	x_g	√_h	x_e	x_a	x_j	x_e
Salicornia and other annuals colonising mud and sand	x_a	x_b	x_e	x_a	x_b	x_e	x_a	x_b	x_e	x_g	√_h	x_e	x_a	x_j	x_e

Name of protected site and designation: The Wash and North Norfolk Coast SAC															
EU Code: UK0017075															
Distance to NSIP: 3 km															
Site features	Likely effects of NSIP														
Effect	Increased collision risk			Disturbance			Changes to noise levels			Changes to air quality			In combination effects		
Sandbanks which are slightly covered by sea water all the time	x a	x b	x e	x a	x b	x e	x a	x b	x e	x g	✓h	x e	x a	x j	x e
Otter (<i>Lutra lutra</i>)	x a	x c	x e	x a	x c	x e	x a	x c	x e	x g	x i	x e	x a	x j	x e
Harbour (common) seal (<i>Phoca vitulina</i>)	✓d	✓d	x e	✓f	✓f	x e	✓f	✓f	x e	x g	x i	x e	✓k	x j	x e

Evidence supporting conclusions:

- a. No significant extra shipping activity through The Wash will take place due to the Facility, during the construction and decommissioning phases. A majority of the marine related construction works will take place from the land side of the Facility (dredging, piling). However, the wharf will be decommissioned (whilst the flood defence will not). Specific impacts from these have been assessed in **ES Chapter 17 Marine and Coastal Ecology** (document reference APP-055), Section 17.8 and ES Addendum to Chapter 17 and Appendix 17.1 - Marine Mammals (REP1-027) and Benthic Ecology, Fish and Habitats (REP1-028). However, for the purposes of this HRA, no LSE is concluded.
- b. There is no pathway for impact from the increased vessel movements caused from the Facility, as determined from the supplementary information provided by Natural England. As such, no LSE is concluded.
- c. The habitats most at risk from these activities are not suitable for otter foraging, breeding, resting or holt construction. It is considered unlikely that any otters would be present in the shipping channel and anchorage area to be at risk from these effects. As such, no LSE is concluded.
- d. The harbour seal and otter have the potential to be affected by increased vessel movements, as The Wash is a very densely populated area, especially with regards to seals. As such, LSE could not be excluded.
- e. No decommissioning-phase impacts are anticipated as decommissioning of the wharf structure will take place over a highly constrained temporal window, returning the hydrodynamics to a similar level to the baseline. The flood defence will remain in situ. Therefore, no LSE can be concluded.
- f. The harbour seal has the potential to be disturbed from the increase in vessels at haul-out sites, as well as the associated increase in underwater noise relating to the Facility during both construction and operation. As such, LSE could not be excluded.
- g. The construction-phase aerial deposition was considered insignificant, as a result of the air quality modelling reported in **ES Chapter 14 Air Quality (REP1-006)**.
- h. The air quality modelling results shows the area of influence could affect some habitats, as these Annex I habitats are at risk from changes in air quality and subsequent deposition LSE could not be excluded without assessment.
- i. The air quality modelling carried out for the operational phase of the Facility concluded that the area of influence does overlap with the SAC. However, marine mammals are unlikely to be sensitive to the potential effect of the Facility on air quality during operation. As such, no LSE is concluded.
- j. The screening exercise for a potential LSE (ES Appendix 17.1 Habitats Regulations Assessment (document reference APP-111) **Table A17-5**) indicates that the operation of the Facility would not have the potential to result in in-combination effects.

- k. The screening exercise for a potential LSE has confirmed that there is potential for other plans or projects to have in-combination effects (ES Appendix 17.1 Habitats Regulations Assessment (document reference APP-111) **Table A17-5**). As such, LSE could not be excluded.

3.3 HRA Screening Matrix A17.1.1.3: The Wash Ramsar site

Table A17-1-1-3 HRA Screening Matrix for The Wash Ramsar Site

Name of protected site and designation: The Wash Ramsar site															
EU Code: site number 395															
Distance to NSIP: 3 km															
Site features	Likely effects of NSIP														
Effect	Increased collision risk			Disturbance			Changes to noise levels			Changes to air quality			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Redshank (<i>Tringa totanus</i>)	x _a	x _b	x _d	√ _e	√ _e	x _d	√ _f	√ _f	x _d	x _g	x _h	x _d	x _a	x _i	x _d
Curlew (<i>Numenius arquata</i>)	x _a	x _c	x _d	√ _e	√ _e	x _d	√ _f	√ _f	x _d	x _g	x _h	x _d	x _a	x _i	x _d
Oystercatcher (<i>Haematopus ostralegus</i>)	x _a	x _b	x _d	√ _e	√ _e	x _d	√ _f	√ _f	x _d	x _g	x _h	x _d	x _a	x _i	x _d
Grey plover (<i>Pluvialis squatarola</i>)	x _a	x _b	x _d	√ _e	√ _e	x _d	√ _f	√ _f	x _d	x _g	x _h	x _d	x _a	x _i	x _d
Knot (<i>Calidris canutus</i>)	x _a	x _b	x _d	√ _e	√ _e	x _d	√ _f	√ _f	x _d	x _g	x _h	x _d	x _a	x _i	x _d
Sanderling (<i>Calidris alba</i>)	x _a	x _b	x _d	√ _e	√ _e	x _d	√ _f	√ _f	x _d	x _g	x _h	x _d	x _a	x _i	x _d
Black-tailed godwit (<i>Limosa limosa islandica</i>)	x _a	x _b	x _d	√ _e	√ _e	x _d	√ _f	√ _f	x _d	x _g	x _h	x _d	x _a	x _i	x _d
Ringed plover (<i>Charadrius hiaticula</i>)	x _a	x _b	x _d	√ _e	√ _e	x _d	√ _f	√ _f	x _d	x _g	x _h	x _d	x _a	x _i	x _d
Black-headed gull (<i>Larus ridibundus</i>)	x _a	x _b	x _d	√ _e	√ _e	x _d	√ _f	√ _f	x _d	x _g	x _h	x _d	x _a	x _i	x _d

Name of protected site and designation: The Wash Ramsar site															
EU Code: site number 395															
Distance to NSIP: 3 km															
Site features	Likely effects of NSIP														
Effect	Increased collision risk			Disturbance			Changes to noise levels			Changes to air quality			In combination effects		
Common eider (<i>Somateria mollissima</i>)	x a	x b	x d	✓ e	✓ e	x d	✓ f	✓ f	x d	x g	x h	x d	x a	x i	x d
Bar-tailed godwit (<i>Limosa lapponica</i>)	x a	x b	x d	✓ e	✓ e	x d	✓ f	✓ f	x d	x g	x h	x d	x a	x i	x d
Shelduck (<i>Tadorna tadorna</i>)	x a	x b	x d	✓ e	✓ e	x d	✓ f	✓ f	x d	x g	x h	x d	x a	x i	x d
Dark-bellied brent goose (<i>Branta bernicla bernicla</i>)	x a	x b	x d	✓ e	✓ e	x d	✓ f	✓ f	x d	x g	x h	x d	x a	x i	x d
Dunlin (<i>Calidris alpina alpina</i>)	x a	x b	x d	✓ e	✓ e	x d	✓ f	✓ f	x d	x g	x h	x d	x a	x i	x d
Pink-footed goose (<i>Anser brachyrhynchus</i>)	x a	x c	x d	x c	x c	x d	x a	x c	x d	x g	x h	x d	x a	x i	x d
Golden plover (<i>Pluvialis apricaria</i>)	x a	x b	x d	✓ e	✓ e	x d	✓ f	✓ f	x d	x g	x h	x d	x a	x i	x d
Lapwing (<i>Vanellus vanellus</i>)	x a	x b	x d	✓ e	✓ e	x d	✓ f	✓ f	x d	x g	x h	x d	x a	x i	x d

Evidence supporting conclusions:

- a. No significant extra shipping activity through the Wash will take place due to the Facility, during the construction and decommissioning phases. A majority of the marine related construction works will take place from the land side of the Facility (dredging, piling). However, the wharf will be decommissioned (whilst the flood defence will not). Specific impacts from these have been assessed in **Chapter 17 Marine and Coastal Ecology**, (document reference, APP-055) Section 17.8 and ES Chapter 17 and Appendix 17.1 Ornithology Addendum (document reference REP1-026). However, for the purposes of this HRA, no LSE is concluded.
- b. Although increased shipping activity throughout The Wash could affect qualifying bird species that fly low above the sea surface, or below, this is considered a low risk environment by Natural England, where the recommendation for a low risk impact is *“Unless there are evidence based case or site specific factors that increase the risk, or uncertainty on the level of pressure on a receptor, this pressure generally does not occur at a level of concern and should not require consideration as part of an assessment”* . As such, no LSE is concluded.
- c. There is no interaction of concern between the increased collision risk caused from the Facility, as determined from the supplementary information provided by Natural England. As such, no LSE is concluded.
- d. No decommissioning-phase impacts are anticipated as decommissioning of the wharf structure will take place over a highly constrained temporal window, returning the hydrodynamics to a similar level to the baseline. The flood defence will remain in situ. Therefore, no LSE can be concluded.
- e. Increased ship activity throughout The Wash has the potential to affect the behaviour of roosting, foraging, commuting and breeding birds. LSE could not be excluded, as the qualifying interest features are at medium-high risk from visual disturbance caused by vessel movements.
- f. Increased noise levels in The Wash SPA poses a medium-high risk to these qualifying interest features, as it has the potential to affect their foraging, roosting and breeding behaviour. As such, LSE could not be excluded.
- g. The construction-phase aerial deposition was considered insignificant, as a result of the air quality modelling reported in **Chapter 14 Air Quality**. As such, no LSE is concluded.
- h. Although birds are sensitive to changes in air quality, due to their mobile nature, it is unlikely that the increase in air emissions caused from the Facility will impact the qualifying features. As such, no LSE is concluded.
- i. The screening exercise for a potential LSE has confirmed that there are no other plans or projects relevant to the assessment of effects for this site (ES Appendix 17.1 Habitats Regulations Assessment (document reference APP-111) **Table A17-5**). LSE with other plans and projects, therefore, can be excluded for this protected site.

4 Stage 2: Effects on Integrity

4.1 Explanation

4.1.1 Likely significant effects have been identified for the following sites:

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

4.1.2 These sites have been subject to further assessment in order to establish if the Boston Alternative Energy Facility, as a Nationally Significant Infrastructure Project (NSIP) could have an adverse effect on their integrity. Evidence for the conclusions reached on integrity is signposted within the footnotes to the matrices below.

Matrix Key:

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

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

C = construction

O = operation

D = decommissioning

4.1.3 Where effects are not relevant to a particular feature the matrix cell has been formatted as follows:



4.2 HRA Integrity Matrix A17.1.2.1: The Wash SPA

Table A17-1-2-1 HRA Integrity Matrix for The Wash SPA

Name of protected site and designation: The Wash SPA															
EU Code: UK9008021															
Distance to NSIP: 3 km															
Site features	Adverse effect on integrity														
	Increased collision risk			Disturbance			Changes to noise levels			Changes to air quality			In combination effects		
Effect	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Stage of Development															
Bar-tailed godwit (<i>Limosa lapponica</i>), Non-breeding	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Bewick's swan (<i>Cygnus columbianus bewickii</i>), Non-breeding	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
Black-tailed godwit (<i>Limosa limosa islandica</i>), Non-breeding	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Common scoter (<i>Melanitta nigra</i>), Non-breeding	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Common tern (<i>Sterna hirundo</i>), Breeding	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Curlew (<i>Numenius arquata</i>), Non-breeding	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Dark-bellied brent goose (<i>Branta bernicla bernicla</i>), Non-breeding	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Dunlin (<i>Calidris alpina alpina</i>), Non-breeding	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Gadwall (<i>Mareca strepera</i>), Non-breeding	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Goldeneye (<i>Bucephala clangula</i>), Non-breeding	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Grey plover (<i>Pluvialis</i>)	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a

Name of protected site and designation: The Wash SPA															
EU Code: UK9008021															
Distance to NSIP: 3 km															
Site features	Adverse effect on integrity														
	Increased collision risk			Disturbance			Changes to noise levels			Changes to air quality			In combination effects		
Effect															
<i>squatarola</i>), Non-breeding															
Knot (<i>Calidris canutus</i>), Non-breeding	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Little tern (<i>Sternula albifrons</i>), Breeding	a	a	a	a	xb	a	a	xb	a	a	a	a	a	a	a
Oystercatcher (<i>Haematopus ostralegus</i>), Non-breeding	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Pink-footed goose (<i>Anser brachyrhynchus</i>), Non-breeding	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
Pintail (<i>Anas acuta</i>), Non-breeding	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Redshank (<i>Tringa totanus</i>), Non-breeding	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Sanderling (<i>Calidris alba</i>), Non-breeding	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Shelduck (<i>Tadorna tadorna</i>), Non-breeding	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Turnstone (<i>Arenaria interpres</i>), Non-breeding	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Waterbird assemblage, Non-breeding	a	a	a	xb	xba	a	xb	xba	a	a	a	a	a	a	a
Wigeon (<i>Mareca penelope</i>), Non-breeding	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a

Evidence supporting conclusions:

- a. The Stage 1 Screening assessment concluded that LSE could be excluded (HRA Screening Matrix A17.1.1.1).
- b. Maintaining the integrity of this SPA is based on the maintenance of the population levels and extent of supporting habitats. Disturbance issues as a result of increased vessel movements were predicted not to be significant when considering the additional disturbance events that the birds would be subjected to as a result of the proposed increase in vessel numbers and the effect is not therefore predicted to affect the population levels of any of the SPA species, nor is it expected to affect the supporting habitats, as assessed in **Chapter 17 Marine and Coastal Ecology**, Section 17.8, 'Assessment of impacts on marine and coastal ecology' and ES **Chapter 17 and Appendix 17.1 - Ornithology Addendum** (document reference REP1-026), section 4.3 'Impact assessment'. See ES **Chapter 17 and Appendix 17.1 - Ornithology Addendum Section 6 and Appendix A1** Error! Reference source not found. for the relevant appropriate assessment.

4.3 HRA Integrity Matrix A17.1.2.2: The Wash and North Norfolk Coast SAC

Table A17-1-2-2 HRA Integrity Matrix for The Wash and North Norfolk Coast SAC

Name of protected site and designation: The Wash and North Norfolk Coast SAC															
EU Code: UK0017075															
Distance to NSIP: 3 km															
Site features	Adverse effect on integrity														
	Increased collision risk			Disturbance			Changes to noise levels			Changes to air quality			In combination effects		
Effect	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	a	a	a	a	a	a	a	a	a	a	xc	a	a	a	a
Coastal lagoons	a	a	a	a	a	a	a	a	a	a	xd	a	a	a	a
Large shallow inlets and bays	a	a	a	a	a	a	a	a	a	a	xd	a	a	a	a
Mediterranean and thermo-Atlantic halophilous scrubs (<i>Sarcocornetea fruticosi</i>)	a	a	a	a	a	a	a	a	a	a	xc	a	a	a	a
Mudflats and sandflats not covered by seawater at low tide	a	a	a	a	a	a	a	a	a	a	xd	a	a	a	a
Reefs	a	a	a	a	a	a	a	a	a	a	xd	a	a	a	a
Salicornia and other annuals colonising mud and sand	a	a	a	a	a	a	a	a	a	a	xc	a	a	a	a
Sandbanks which are slightly covered by sea water all the time	a	a	a	a	a	a	a	a	a	a	xd	a	a	a	a
Otter (<i>Lutra lutra</i>)	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
Harbour (common) seal (<i>Phoca vitulina</i>)	xb	xb	a	xb	xb	a	xb	xb	a	a	a	a	xe	ae	a

Evidence supporting conclusions:

- a. The Stage 1 Screening assessment concluded that LSE could be excluded (HRA Screening Matrix A17.1.1.2).
- b. Due to the size of the shipping channel representing a very small proportion of The Wash area, the increased shipping activity (leading to collision risk, disturbance and noise) is unlikely to interfere with the population and distribution of the harbour seal and otter. Likewise, the very small number of harbour seal potentially affected by the underwater noise from piling and dredging activities during construction is unlikely to lead to interference with the population and distribution of the harbour seal. As such, no adverse effect on integrity can be concluded. See **Section A17.6** of Appendix 17.1 Habitats Regulations Assessment (document reference 6.4.18, APP-111) and section 5 of Addendum to Environmental Statement Chapter 17 and Appendix 17.1 - Marine Mammals (document reference REP1-027).
- c. The air quality modelling reported in **Chapter 14 Air Quality** (document reference 6.2.14(1), REP1-006) indicated that the aerial deposition for some pollutants was slightly greater than 1 % of the Critical Load. However, overall deposition of contaminants (specifically nitrogen) is generally of low importance for saltmarshes as the inputs are generally significantly below the large nutrient loadings from riverine and tidal inputs. As no exceedances of the Critical Load were predicted from an in-combination PEC point of view, no adverse effects on the integrity of The Wash and North Norfolk Coast SAC in relation to the conservation objectives were concluded.
- d. Aerial deposition on to intertidal habitats (such as mudflats and shellfish beds that are exposed and covered at every state of the tide), where although deposition may occur in-between tides, this would be washed away with the tide; although there is the potential for this to contribute to a change in water quality, in the context of the wider water column, this is not considered to be significant. This is further supported by the fact that APIS does not identify deposition as a main input of pollutants to the marine system, compared to other sources of pollutant inputs (such as discharge pipes etc.). As such, the modelled deposition is not expected to have a wider impact on intertidal habitats or water quality, and no adverse effect on the integrity of The Wash and North Norfolk Coast SAC in relation to the conservation objectives were concluded.
- e. Potential effects from the Facility alone and the in-combination project together have the potential to effect a small number of harbour seal, and as such is unlikely to lead to interference with the population and distribution of the harbour seal. Therefore, no adverse effect on integrity can be concluded. See **Section A17.6** of Appendix 17.1 Habitats Regulations Assessment (document reference 6.4.18, APP-111) and section 5 of Addendum to Environmental Statement Chapter 17 and Appendix 17.1 - Marine Mammals (document reference REP1-027).

4.4 HRA Integrity Matrix A17.1.2.3: The Wash Ramsar site

Table A17-1-2-3 HRA Integrity Matrix for The Wash Ramsar Site

Name of protected site and designation: The Wash Ramsar site															
EU Code: site number 395															
Distance to NSIP: 3 km															
Site features	Adverse effects on integrity														
	Increased collision risk			Disturbance			Changes to noise levels			Changes to air quality			In combination effects		
Effect	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Redshank (<i>Tringa totanus</i>)	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Curlew (<i>Numenius arquata</i>)	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Oystercatcher (<i>Haematopus ostralegus</i>)	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Grey plover (<i>Pluvialis squatarola</i>)	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Knot (<i>Calidris canutus</i>)	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Sanderling (<i>Calidris alba</i>)	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Black-tailed godwit (<i>Limosa limosa islandica</i>)	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Ringed plover (<i>Charadrius hiaticula</i>)	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Black-headed gull (<i>Larus ridibundus</i>)	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Common eider (<i>Somateria mollissima</i>)	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Bar-tailed godwit (<i>Limosa lapponica</i>)	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Shelduck (<i>Tadorna tadorna</i>)	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Dark-bellied brent goose (<i>Branta bernicla bernicla</i>)	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Dunlin (<i>Calidris alpina alpina</i>)	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Pink-footed goose (<i>Anser brachyrhynchus</i>)	a	a	a		a	a	a	a	a	a	a	a	a	a	a
Golden plover (<i>Pluvialis apricaria</i>)	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a
Lapwing (<i>Vanellus vanellus</i>)	a	a	a	xb	xb	a	xb	xb	a	a	a	a	a	a	a

Evidence supporting conclusions:

- The Stage 1 Screening assessment concluded that LSE could be excluded (HRA Screening Matrix A17.1.1.3).
- Maintaining the integrity of this site is based on the maintenance of the population levels and extent of supporting habitats. Disturbance issues as a result of increased vessel movements were predicted to not be significant given that repeat disturbance events that would occur due to the increase in vessel numbers do not disturb significant numbers of birds and the effect is not therefore expected to affect the population levels of any of the designated species, nor is it expected to affect the supporting habitats, as assessed in ES **Chapter 17 Marine and Coastal Ecology** (document reference APP-055), Section 17.8 'Assessment of impacts on marine and coastal ecology' and ES **Chapter 17 and Appendix 17.1 - Ornithology Addendum** (document reference REP1-026), section 4.3 'Impact assessment'. See ES **Chapter 17 and Appendix 17.1 - Ornithology Addendum Section 6 and Appendix A1** for the relevant appropriate assessment.

References

Cutts, N., Phelps, A., Spencer, J., & Hemmingway, K. (2013). Waterbird disturbance mitigation toolkit. *Tide toolbox, Interreg IVB North Sea Region Programme*.