From: [redacted]
To: Cleve Hill Solar Park; Jones, Hefin
Cc: [redacted]
Subject: EN010085 - Cleve Hill Solar Park - The Applicant"s Deadline 3 Submission (email 6 of 7)
Date: 01 August 2019 23:20:11
Attachments: [redacted]

Dear Hefin,

EN010085 - Cleve Hill Solar Park - The Applicant's Deadline 3 Submission (email 6 of 7)

Please find attached the Applicant's Deadline 3 submission.

Please do not hesitate to get in touch if you have any queries.

Kind regards,

Mike

Michael Bird

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CLEVE HILL SOLAR PARK

OTHER DEADLINE 3 SUBMISSIONS
UPDATED RIAA APPENDIX 8 - INTEGRITY MATRICES

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Revision A

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Report to Inform and Appropriate Assessment

Appendix 7: Screening Matrices

This Appendix summarises the potential effects of the proposed Cleve Hill Solar Park upon European Sites which are considered within the Report to Inform and Appropriate Assessment (DCO Document Reference 5.2).

The European sites included within the screening assessment are:

- The Swale SPA;
- The Swale Ramsar;
- Thanet Coast & Sandwich Bay SPA;
- Outer Thames Estuary SPA; and
- Blean Complex SAC.

Effects considered within the screening matrices:

Designation	Effects described in submission information	Presented in screening matrices as
The Swale SPA	• Noise and visual disturbance during construction and decommissioning; • Noise and visual disturbance during operation; • Loss/change of habitats; • Fragmentation of habitats; • Hydrological changes; • Deposition of dust; • Collision (birds); and • Disturbance through changes in recreational access.	• Noise, visual and lighting disturbance; • Loss/change of habitats; • Fragmentation of habitats; • Hydrological changes; • Deposition of dust; • Collision of birds; and • Recreational access disturbance.
	In combination: (all of the above are considered in combination at the screening stage) • Noise and visual disturbance during construction and decommissioning; • Noise and visual disturbance during operation; • Loss/change of habitats; • Fragmentation of habitats; • Hydrological changes; • Deposition of dust; • Collision (birds); and • Disturbance through changes in recreational access.	In combination: • Noise, visual and lighting disturbance; • Loss/change of habitats; • Fragmentation of habitats; • Hydrological changes; • Deposition of dust; • Collision of birds; and • Recreational access disturbance.

Designation	Effects described in submission information	Presented in screening matrices as
The Swale Ramsar	• Noise and visual disturbance during construction and decommissioning; • Noise and visual disturbance during operation; • Loss/change of habitats; • Fragmentation of habitats; • Hydrological changes; • Deposition of dust; • Collision (birds); and • Disturbance through changes in recreational access; and • Attraction of egg-laying invertebrates.	• Noise, visual and lighting disturbance; • Loss/change of habitats; • Fragmentation of habitats; • Hydrological changes; • Deposition of dust; • Collision of birds; and • Recreational access disturbance; and • Attraction of egg-laying invertebrates.
	In combination: (all of the above are considered in combination at the screening stage) • Noise and visual disturbance during construction and decommissioning; • Noise and visual disturbance during operation; • Loss/change of habitats; • Fragmentation of habitats; • Hydrological changes; • Deposition of dust; • Collision (birds); • Disturbance through changes in recreational access; and • Attraction of egg-laying invertebrates.	In combination: • Noise, visual and lighting disturbance; • Loss/change of habitats; • Fragmentation of habitats; • Hydrological changes; • Deposition of dust; • Collision of birds; and • Recreational access disturbance; and • Attraction of egg-laying invertebrates.

Designation	Effects described in submission information	Presented in screening matrices as
Thanet Coast & Sandwich Bay SPA	• Loss/change of habitats. [RIAA paragraph 38, page 9]	Screened out – no LSE
	In combination: Not applicable	Screened out – no LSE
Outer Thames Estuary SPA	No pathway for impact [RIAA paragraph 39, page 9]	Screened out – no LSE
	In combination: Not applicable	Screened out – no LSE
Blean Complex SAC	No pathway for impact [RIAA paragraph 40, page 9]	Screened out – no LSE
	In combination: Not applicable	Screened out – no LSE

STAGE 1: SCREENING MATRICES

Matrix Key:

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

C = construction
O = operation
D = decommissioning

Where effects are not relevant to a particular feature the matrix cell should be formatted as follows:

HRA Screening Matrix 1: The Swale SPA

Name of European site and designation: The Swale Special Protection Area

EU Code: UK9012011

Distance to CHSP: 0 km

European site features	**Likely effects of CHSP (alone and in-combination)**																							
Effect	*Noise, visual and lighting disturbance*			*Loss/change of habitats*			*Fragmentation of habitats*			*Hydrological changes*			*Deposition of dust*			*Collision of birds*			*Recreational access disturbance*			*In-combination*		
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Dark-bellied brent goose (non-breeding)	✓a	×c	✓a	✓d	✓d		×f	×f		✓g	×h	✓g	✓i		✓i		×j			×k		✓l	✓l	✓l
Dunlin (non-breeding)	✓a	×c	✓a	×d	×d		×f	×f		✓g	×h	✓g	✓i		✓i		×j			×k		✓l	✓l	✓l
Breeding bird assemblage	✓b	×c	✓b	✓e	✓e		×f	×f		✓g	×h	✓g	✓i		✓i		×j			×k		✓l	✓l	✓l
Wintering assemblage	✓a	×c	✓a	✓d	✓d		×f	×f		✓g	×h	✓g	✓i		✓i		×j			×k		✓l	✓l	✓l

Evidence supporting conclusions:

a. In the absence of mitigation, construction and decommissioning activities in the local landscape have the potential to cause noise and visual disturbance to wintering birds, affecting their foraging or roosting behaviour, resulting in reduced survival or productivity of individuals. [Section 5.2.5.1, paragraphs 63 to 68 of the RIAA]. Natural England agree that there is a likely significant effect as a result of construction/decommissioning disturbance to wintering birds, as set out in Table 3 of the RIAA (Paragraph 2.7 of Natural England Relevant Representation RR-827).

b. In the absence of mitigation, construction and decommissioning activities in the local landscape have the potential to cause noise and visual disturbance to breeding birds, affecting their nesting and foraging behaviour, resulting in reduced survival or productivity of individuals. [Section 5.2.5.1, paragraphs 63 to 68 of the RIAA]. Natural England agree that there is a

likely significant effect as a result of construction/decommissioning disturbance to breeding birds, as set out in Table 3 of the RIAA (Paragraph 2.7 of Natural England Relevant Representation RR-827).

c. Operational activities within the site will be of lower magnitude that the baseline farming activities. No areas of the site will be continuously lit, with security (PIR) and manually operated emergency lighting at transformers within the solar PV arrays. Operational disturbance to birds will be negligible. [Section 5.2.5.2, paragraphs 69 to 73 of the RIAA]. Natural England agree that there will be no likely significant effects as a result of operational disturbance, as set out in Table 3 of the RIAA (Paragraph 2.7 of Natural England Relevant Representation RR-827).

d. The loss/change of habitats occurs in the construction phase and applies throughout the operational phase. Decommissioning is assumed to return the land to its pre-development state and is therefore not relevant. LSEs can be excluded for dunlin and the majority of the wintering bird assemblage, with the exception of brent goose, lapwing and golden plover. These three species forage/roost on the arable land within which the solar PV arrays will be located and therefore LSEs cannot be excluded in the absence of mitigation. [Section 5.2.5.3, paragraphs 74 to 80 of the RIAA]. Natural England agree that there will be no likely significant effects as a result of habitat loss/change on dunlin and wintering assemblage features with the exception of brent goose, golden plover and lapwing, as set out in Table 3 of the RIAA (Paragraph 2.7 of Natural England Relevant Representation RR-827).

e. The loss/change of habitats occurs in the construction phase and applies throughout the operational phase. Decommissioning is assumed to return the land to its pre-development state and is therefore not relevant. LSEs can be excluded for the majority of the breeding bird assemblage (because the arable land within the site is not functionally linked to the SPA for those species), with the exception of marsh harrier. Marsh harriers forage around the arable fields within which the solar PV arrays will be located and therefore LSEs cannot be excluded in the absence of mitigation. [Section 5.2.5.3, paragraphs 81 to 83 of the RIAA]. Natural England agree that there will be no likely significant effects as a result of habitat loss/change on the breeding bird assemblage features with the exception of marsh harrier, as set out in Table 3 of the RIAA (Paragraph 2.7 of Natural England Relevant Representation RR-827).

f. The fragmentation of habitats potentially occurs in the construction phase and applies throughout the operational phase. Large areas of open habitat between arrays permits passage of birds through the landscape and the development does not prevent use of surrounding habitats. [Section 5.2.5.4, paragraphs 84 to 86 of the RIAA]. Natural England agree that there will be no likely significant effects as a result of habitat fragmentation, as set out in Table 3 of the RIAA (Paragraph 2.7 of Relevant Representation RR-827).

g. In the absence of embedded mitigation set out in the Outline Construction Environmental Management Plan (Outline CEMP (dDCO Requirement 10), Technical Appendix A5.4 of the ES with similar measures applicable to a future Decommissioning Plan (dDCO Requirement 16), there is an extremely low possibility of a catastrophic pollution event that adversely affects the water environment connected to the SPA. [Section 5.2.5.5, paragraphs 87 to 88 of the RIAA]. Natural England agree that there is a likely significant effect as a result of hydrological impacts during construction/decommissioning, as set out in Table 3 of the RIAA (Paragraph 2.7 of Natural England Relevant Representation RR-827).

h. The hydrological assessment predicts a long-term positive effect of the development due to reduction of inputs of fertiliser and pesticides to the local agricultural landscape, therefore LSEs can be discounted for the operational phase. [Section 5.2.5.5, paragraphs 89 to 90 of the RIAA]. Natural England agree that there will be no likely significant effects as a result of hydrological changes during operation, as set out in Table 3 of the RIAA (Paragraph 2.7 of Natural England Relevant Representation RR-827).

i. In the absence of embedded mitigation set out in the Outline Construction Environmental Management Plan (Outline CEMP (dDCO Requirement 10), Technical Appendix A5.4 of the ES with similar measures applicable to a future Decommissioning Plan (dDCO Requirement 16)), there is a low risk of dust soiling from earthworks and track-out that could adversely affect the habitats of the SPA. [Section 5.2.5.6, paragraphs 91 to 92 of the RIAA]. Natural England agree that there is a likely significant effect as a result of dust production during construction/decommissioning, as set out in Table 3 of the RIAA (Paragraph 2.7 of Natural England Relevant Representation RR-827).

j. There is an absence of any evidence to indicate that there is a significant risk of collision of birds with solar panels or fences in the agricultural landscape. [Section 5.2.5.7, paragraphs 92 to 96 of the RIAA]. Natural England agree that there will be no likely significant effects as a result of collision, as set out in Table 3 of the RIAA (Paragraph 2.7 of Relevant Representation RR-827).

k. LSEs are excluded because there is not predicted to be any notable change in the recreational access on footpaths within and adjacent to the SPA. [Section 5.2.5.8, paragraphs 97 to 99 of the RIAA]. Natural England agree that there will be no likely significant effects as a result of changes in recreational disturbance, as set out in Table 3 of the RIAA (Paragraph 2.7 of Relevant Representation RR-827).

I. Potential for in-combination effects with other developments within 10 km of the Development site or within 2 km of The Swale SPA during construction, operation or decommissioning. [Section 6, paragraph 108 of the RIAA; Page 9-74 Section 9.2.8 of ES chapter 9: Ornithology].

HRA Screening Matrix 2: The Swale Ramsar Site

Name of European site and designation: The Swale Ramsar Site

EU Code: UK11071

Distance to CHSP: 0 km

European site features	**Likely effects of CHSP (alone and in-combination)**																										
Effect	*Noise, visual and lighting disturbance*			*Loss/change of habitats*			*Fragmentation of habitats*			*Hydrological changes*			*Deposition of dust*			*Collision of birds*			*Recreational access disturbance*			*Attraction of egg-laying invertebrates*			*In-combination*		
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Ramsar Criterion 2: Nationally scarce plants																											
Ramsar Criterion 2: At least seven British Red Data Book invertebrate species										✓g	×h	✓g	✓i		✓i								×l				
Ramsar Criterion 5: Winter waterfowl assemblage of international importance	✓a	×c	✓a	✓d	✓d		×f	×f		✓g	×h	✓g	✓i		✓i		×j			×k					✓m	✓m	✓m
Ramsar Criterion 6: Species/populations at level of international importance in spring/autumn: Redshank	✓a	×c	✓a	×d	×d		×f		× k	✓g	×h	✓g	✓i		✓i		×j			×k					✓m	✓m	✓m
Ramsar Criterion 6: Species/populations at level of international importance in winter: Dark-bellied brent goose	✓b	×c	✓b	✓e	✓e		×f		× k	✓g	×h	✓g	✓i		✓i		×j			×k					✓m	✓m	✓m
Ramsar Criterion 6: Species/populations at level of international importance in winter: Grey plover	✓a	×c	✓a	✓d	✓d		×f		× k	✓g	×h	✓g	✓i		✓i		×j			×k					✓m	✓m	✓m

Evidence supporting conclusions:

a. In the absence of mitigation, construction and decommissioning activities in the local landscape have the potential to cause noise and visual disturbance to wintering birds, affecting their foraging or roosting behaviour, resulting in reduced survival or productivity of individuals. [Section 5.2.5.1, paragraphs 63 to 68 of the RIAA]. Natural England agree that there is a likely significant effect as a result of construction/decommissioning disturbance to wintering birds, as set out in Table 3 of the RIAA (Paragraph 2.7 of Natural England Relevant Representation RR-827).

b. In the absence of mitigation, construction and decommissioning activities in the local landscape have the potential to cause noise and visual disturbance to breeding birds, affecting their nesting and foraging behaviour, resulting in reduced survival or productivity of individuals. [Section 5.2.5.1, paragraphs 63 to 68 of the RIAA]. Natural England agree that there is a likely significant effect as a result of construction/decommissioning disturbance to breeding birds, as set out in Table 3 of the RIAA (Paragraph 2.7 of Natural England Relevant Representation RR-827).

c. Operational activities within the site will be of lower magnitude that the baseline farming activities. No areas of the site will be continuously lit, with security (PIR) and manually operated emergency lighting at transformers within the solar PV arrays. Operational disturbance to birds will be negligible. [Section 5.2.5.2, paragraphs 69 to 73 of the RIAA]. Natural England agree that there will be no likely significant effects as a result of operational disturbance, as set out in Table 3 of the RIAA (Paragraph 2.7 of Natural England Relevant Representation RR-827).

d. The loss/change of habitats occurs in the construction phase and applies throughout the operational phase. Decommissioning is assumed to return the land to its pre-development state and is therefore not relevant. LSEs can be excluded for dunlin and the majority of the wintering bird assemblage, with the exception of brent goose, lapwing and golden plover. These three species forage/roost on the arable land within which the solar PV arrays will be located and therefore LSEs cannot be excluded in the absence of mitigation. [Section 5.2.5.3, paragraphs 74 to 80 of the RIAA]. Natural England agree that there will be no likely significant effects as a result of habitat loss/change on dunlin and wintering assemblage features with the exception of brent goose, golden plover and lapwing, as set out in Table 3 of the RIAA (Paragraph 2.7 of Natural England Relevant Representation RR-827).

e. The loss/change of habitats occurs in the construction phase and applies throughout the operational phase. Decommissioning is assumed to return the land to its pre-development state and is therefore not relevant. LSEs can be excluded for the majority of the breeding bird assemblage (because the arable land within the site is not functionally

linked to the SPA for those species), with the exception of marsh harrier. Marsh harriers forage around the arable fields within which the solar PV arrays will be located and therefore LSEs cannot be excluded in the absence of mitigation. [Section 5.2.5.3, paragraphs 81 to 83 of the RIAA]. Natural England agree that there will be no likely significant effects as a result of habitat loss/change on the breeding bird assemblage features with the exception of marsh harrier, as set out in Table 3 of the RIAA (Paragraph 2.7 of Natural England Relevant Representation RR-827).

f. The fragmentation of habitats potentially occurs in the construction phase and applies throughout the operational phase. Large areas of open habitat between arrays permits passage of birds through the landscape and the development does not prevent use of surrounding habitats. [Section 5.2.5.4, paragraphs 84 to 86 of the RIAA]. Natural England agree that there will be no likely significant effects as a result of habitat fragmentation, as set out in Table 3 of the RIAA (Paragraph 2.7 of Relevant Representation RR-827).

g. In the absence of embedded mitigation set out in the Outline Construction Environmental Management Plan (Outline CEMP (dDCO Requirement 10), Technical Appendix A5.4 of the ES with similar measures applicable to a future Decommissioning Plan (dDCO Requirement 16)), there is an extremely low possibility of a catastrophic pollution event that adversely affects the water environment connected to the SPA/Ramsar site. [Section 5.2.5.5, paragraphs 87 to 88 of the RIAA]. Natural England agree that there is a likely significant effect as a result of hydrological impacts during construction/decommissioning, as set out in Table 3 of the RIAA (Paragraph 2.7 of Natural England Relevant Representation RR-827).

h. The hydrological assessment predicts a long-term positive effect of the development due to reduction of inputs of fertiliser and pesticides to the local agricultural landscape, therefore LSEs can be discounted for the operational phase. [Section 5.2.5.5, paragraphs 89 to 90 of the RIAA]. Natural England agree that there will be no likely significant effects as a result of hydrological changes during operation, as set out in Table 3 of the RIAA (Paragraph 2.7 of Natural England Relevant Representation RR-827).

i. In the absence of embedded mitigation set out in the Outline Construction Environmental Management Plan (Outline CEMP (dDCO Requirement 10), Technical Appendix A5.4 of the ES with similar measures applicable to a future Decommissioning Plan (dDCO Requirement 16)), there is a low risk of dust soiling from earthworks and track-out that could adversely affect the habitats of the SPA/Ramsar site. [Section 5.2.5.6, paragraphs 91 to 92 of the RIAA]. Natural England agree that there is a likely significant effect as a result of dust production during construction/decommissioning, as set out in Table 3 of the RIAA (Paragraph 2.7 of Natural England Relevant Representation RR-827).

j. There is an absence of any evidence to indicate that there is a significant risk of collision of birds with solar panels or fences in the agricultural landscape. [Section 5.2.5.7, paragraphs 92 to 96 of the RIAA]. Natural England agree that there will be no likely significant effects as a result of collision, as set out in Table 3 of the RIAA (Paragraph 2.7 of Relevant Representation RR-827).

k. LSEs are excluded because there is not predicted to be any notable change in the recreational access on footpaths within and adjacent to the SPA. [Section 5.2.5.8, paragraphs 97 to 99 of the RIAA]. Natural England agree that there will be no likely significant effects as a result of changes in recreational disturbance, as set out in Table 3 of the RIAA (Paragraph 2.7 of Relevant Representation RR-827).

l. LSEs are excluded because most of the species cited are either saltmarsh specialists or associated with flowering plants (galls) or emergent vegetation (leaf minors). The majority of the ditch habitats that the Corixidae and Dolichopodidae species are likely to be found in are separated from the solar panel areas by a distance of least 15 m; the ditch habitats/marshland/saltmarsh/pools/mudflats within the Ramsar Wetland designation are the main focus for invertebrates, so those species mentioned are less likely to be impacted by solar panels and more likely to be distant from the solar PV area. Invertebrates are unlikely to fly at heights where the solar panels are. [Section 5.2.5.9, paragraphs 102 to 104 of the RIAA]. Natural England agree that there will be no likely significant effects on Ramsar invertebrates, as set out in Table 3 of the RIAA (Paragraph 2.7 of Natural England Relevant Representation RR-827).

m. Potential for in-combination effects with other developments within 10 km of the Development site or within 2 km of The Swale SPA during construction, operation or decommissioning. [Section 6, paragraph 108 of the RIAA; Page 9-74 Section 9.2.8 of ES chapter 9: Ornithology].

HRA Screening Matrix 3: Thanet Coast & Sandwich Bay SPA

Name of European site and designation: Outer Thames Estuary Special Protection Area			
EU Code: UK9020309			
Distance to CHSP: 7.8 km			
European site features	**Likely effects of CHSP (alone and in-combination*)**		
Effect	*Habitat loss/change*		
Stage of Development	*C*	*O*	*D*
Golden plover (non-breeding)	**×a**	**×a**	
Turnstone (non-breeding)	**×a**	**×a**	
Little tern (breeding)	**×b**	**×b**	

**** no additional in-combination effects were identified at the screening stage of the HRA***

Evidence supporting conclusions:

a. At a distance of nearly 8 km away, numbers of turnstones from the SPA are unlikely to range regularly as far as the Development site (where turnstones are already present within The Swale SPA) and would not make any use of the habitats within the Development site. Wintering golden plover originating from the Thanet Coast & Sandwich Bay SPA could occasionally range as far as the Development site and use the arable habitats. However, the most recent WeBS 5-year peak-mean count of golden plover for the Thanet Coast is only 34 birds. They are extremely unlikely to visit the Development site in numbers or frequency at which there would be any likely significant effects. [Section 5.1, paragraph 38 of the RIAA]. Natural England's view is that Thanet Coast & Sandwich Bay SPA can be ruled out as being potentially affected (REP2-096, section 2.1).

b. There is no impact pathway for effects on breeding little terns associated with the Thanet Coast & Sandwich Bay SPA, because they make no use of the Development site. [Section 5.1, paragraph 38 of the RIAA]. Natural England's view is that Thanet Coast & Sandwich Bay SPA can be ruled out as being potentially affected (REP2-096, section 2.1).

HRA Screening Matrix 4: Outer Thames Estuary SPA

Name of European site and designation: Outer Thames Estuary Special Protection Area			
EU Code: UK9020309			
Distance to CHSP: 1.6 km			
European site features	**Likely effects of CHSP (alone and in-combination*)**		
Effect	*All potential effects*		
Stage of Development	*C*	*O*	*D*
Red-throated diver (non-breeding)	**×a**	**×a**	**×a**
Common tern (foraging in breeding season)	**×a**	**×a**	**×a**
Little tern (foraging in breeding season)	**×a**	**×a**	**×a**

**** no additional in-combination effects were identified at the screening stage of the HRA***

Evidence supporting conclusions:

c. There is no impact pathway for effects on the habitats or qualifying interest features of the Outer Thames Estuary SPA. [Section 5.1, paragraph 40 of the RIAA]. Natural England's view is that the Outer Thames Estuary SPA can be ruled out as being potentially affected (REP2-096, section 2.1).

HRA Screening Matrix 5: Blean Complex SAC

Name of European site and designation: Blean Complex Special Area of Conservation			
EU Code: UK0013697			
Distance to CHSP: 3.6 km			
European site features	**Likely effects of CHSP (alone and in-combination*)**		
Effect	*All potential effects*		
Stage of Development	*C*	*O*	*D*
H9160. Sub-Atlantic and medio-European oak or oak-hornbeam forests of Carpinion betuli*; Oak-hornbeam forests*	**×a**	**×a**	**×a**

**** no additional in-combination effects were identified at the screening stage of the HRA***

Evidence supporting conclusions:

a. There is no impact pathway for effects on the habitats or qualifying interest features of the Blean Complex SAC. [Section 5.1, paragraph 41 of the RIAA]. Natural England's view is that the Blean Complex SAC can be ruled out as being potentially affected (REP2-096, section 2.1).

Report to Inform an Appropriate Assessment

Appendix 8: Integrity Matrices for Cleve Hill Solar Park

STAGE 2: EFFECTS ON INTEGRITY

Likely significant effects have been identified for the following sites:

- The Swale Special Protection Area
- The Swale Ramsar Wetland Site

These sites have been subject to further assessment in order to establish if the NSIP could have an adverse effect on their integrity. Evidence for the conclusions reached on integrity is detailed 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

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

HRA Integrity Matrix 1: The Swale SPA

Name of European site and designation: The Swale Special Protected Area															
EU Code: UK9012011															
Distance to NSIP: 0km															
European site features	**Adverse effects on integrity**														
Effect	*Noise, visual and lighting disturbance*			*Loss/change of habitats*			*Hydrological changes*			*Deposition of dust*			*In-combination effects*		
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Dark-bellied brent goose (non-breeding)	✖ab		✖d	✖e	✖e		✖h		✖h	✖i		✖i	✖j	✖j	✖j
Dunlin (non-breeding)	✖b		✖d				✖h		✖h	✖i		✖i	✖j	✖j	✖j
Breeding bird assemblage	✖c		✖d	✖f	✖f		✖h		✖h	✖i		✖i	✖j	✖j	✖j
Wintering assemblage	✖ab		✖d	✖g	✖g		✖h		✖h	✖i		✖i	✖j	✖j	✖j

Evidence supporting conclusions

a. Dark bellied-brent geese, lapwing and golden plover frequently use the arable fields of the proposed development, so could be affected by noise and visual disturbance [Section 6.1.1.5 paragraph 160 of the RIAA]. The construction of the

development will take place over two to three seasons, and by a field-by-field basis. This means that large areas of the development site will free of development and disturbance at any one time. Additionally, development of the Arable Reversion Habitat Management Area (AR HMA) will occur prior to the first winter of construction, as set out in the outline Landscape and Biodiversity Management Plan (LBMP (dDCO Requirement 4), Technical Appendix A5.2 of the ES) and will provide some resource to the geese and wintering waders. There is considered to be a sufficient extent of disturbance-free habitat during the first winter season to accommodate foraging birds. Approximately half of the AR HMA will be fully established and disturbance free during the second or third winter seasons providing suitable resources and disturbance-free land for the geese and to a lesser extent, lapwing and golden plover [Section 6.1.1.5 paragraph 161-164 of the RIAA]. The resulting temporary loss of foraging resources is not likely to cause reduction in survival/productivity. There will be no long-term adverse effects of noise or visual disturbance on the integrity of the SPA as a consequence of impacts to dark-bellied brent geese lapwing or golden plover [Section 6.1.1.5 paragraph 165-169 of the RIAA]. Natural England agree that construction disturbance and displacement, alone, is not likely to lead to an adverse effect on wintering geese and plovers (REP2-096, paragraph 3.2.9).

b. Guidance and available evidence suggest that noise disturbance causes adverse impacts to birds in estuarine habitats over a threshold of 70dB (L_{Amax}). A threshold value of 55dB (L_{Amax}) has been set as a level below which it is considered birds would not be disturbed to any material effect in intertidal habitats. Between levels of 55 dB LAmax and 70dB LAmax, birds in intertidal habitats would be expected to become alert and possibly reduce feeding efficiency but not move away (i.e. moderate disturbance effects), such that it is unlikely to result in detrimental effects that reduce their ability to survive or reproduce and would not affect their distribution [Section 6.1.1.1 paragraph 127 of the RIAA]. Applying worst case predictions suggests that the noise levels at the closest part of the SPA could exceed 65dB [Section 6.1.1.1 paragraph 134 of the RIAA], but won't exceed 70dB in intertidal habitats. This means that flight responses by birds (moderate-high disturbance effect) are unlikely to occur in intertidal habitats. Birds in a wider area could receive levels exceeding 55dB during piling activity; but, mitigation measures set out in the outline SPA Construction Noise Management Plan (dDCO Requirement 12) (e.g. using a single piling rig with acoustic screening) will be used, in addition to the screening effect of the sea wall, to minimise the noise exceeding 55dB reaching the SPA [Section 6.1.1.1 paragraph 130-133 of the RIAA]. The worst-case scenario location (a distance of 80m from the SPA) for construction piling will only affect small areas, totalling 0.16% of the SPA, at any one time; but, the majority of piling activity will be at a greater distance from the SPA. Birds within the 0.16% of the SPA are expected to remain and habituate to the level

of noise [Section 6.1.1.1 paragraph 134-137 of the RIAA]. The eastern grazing marsh will experience noise levels exceeding 65dB up to 55 m and exceeding 70 dB up to 35 m into the SPA, but this area was not found to be an important resource for wintering birds that form the SPA assemblage [Section 6.1.1.3 paragraph 151-153 of the RIAA]. There will be no long-term adverse effects of noise or visual disturbance on the integrity of the SPA as a consequence of impacts to wintering birds. Natural England confirmed that subject to the detail contained in an updated SPA Construction Noise Management Plan (SPA CNMP) (dDCO Requirement 12), this is an acceptable approach to mitigating disturbance to wintering birds (REP2-096, paragraph 3.2.4).

c. Guidance and available evidence suggest that noise disturbance causes adverse impacts to breeding birds over a threshold of 65dB (L_{Amax}) [Section 6.1.1.1 paragraph 126 of the RIAA]. Applying worse case predictions suggests that the noise levels at the closest part of the SPA could exceed 65dB causing moderate levels of disturbance. The grazing marsh to the north and west provides breeding habitat for a number of species. As set out in the outline SPA Construction Noise Management Plan (dDCO Requirement 12), activities that create noise which exceeds 65dB in the SPA coastal grazing marsh/reedbed will be avoided during the breeding season resulting in no adverse impacts to breeding birds in that location. The eastern grazing marsh will experience noise levels exceeding 65dB up to 55 m and exceeding 70 dB up to 35 m into the SPA, and visual disturbance of moving vehicles along the access road; but the breeding bird survey did not conclude that this area of the SPA is of importance to breeding birds that form the SPA assemblage [Section 6.1.1.3 paragraph 151-153 of the RIAA]. Localised disturbance to breeding marsh harrier may occur as a consequence of construction; however, there is substantial open habitat available to marsh harrier that will remain disturbance free and provide sufficient resources [Section 6.1.1.5 paragraph 156-158 of the RIAA]. There will be no long-term adverse effects of noise or visual disturbance on the integrity of the SPA as a consequence of impacts to the breeding bird assemblage species.

d. The noise levels during decommissioning will be lower and will occur over a shorter time period than the noise levels during construction, which was deemed as having no adverse impacts on the integrity of the SPA (**a-c**), so there will be no long-term adverse effects on the integrity of the SPA during decommissioning as a consequence of the implementation of embedded noise mitigation measures and methods to avoid disturbance [Section 6.1.1.1 paragraph 141 of the RIAA], as controlled through a future Decommissioning Plan (dDCO Requirement 16). Natural England's agreement at (b) regarding construction noise impacts is applicable to decommissioning.

e. A managed mitigation area of 56 hectares (AR HMA) was identified and agreed in principle by Natural England to remain undeveloped in order to provide foraging and sheltering opportunities for the bird species associated with the SPA. The area was being utilised by 55% of the observed dark-bellied brent geese during the baseline surveys which suggests that it is in a suitable location capable of supporting birds associated with the SPA. The management aims and prescriptions of the AR HMA are set out in the outline LBMP (dDCO Requirement 4). Management will convert the arable land into permanent pasture which is known to support high densities of dark-bellied brent geese, and is a preferred feeding habitat of lapwings and golden plovers. The AR HMA will be created prior to the first winter of construction, and will provide high quality managed refuge habitat to mitigate for the loss of a larger, but lower quality, area. The number of bird-days (peak mean counts of the species per day multiplied the number of days in their active season) was calculated for dark-bellied brent geese (101,940) to determine how much foraging resource is required from the site. The 56 ha HMA (providing 50.1 ha functionally available land) meets the necessary requirements of this species; consequently, the proposed development will not result in a net loss of resources for dark-bellied brent geese [Section 6.1.2.1 paragraphs 171-206 of the RIAA], so there will be no adverse impacts on the integrity of the SPA.

f. The change in land use may result in a reduction in the area of land available to foraging marsh harriers, but habitat enhancement areas for marsh harriers have been identified, as set out in the Grazing March Grassland Management Plan in the outline LBMP (dDCO Requirement 4), which will provide a net increase in suitable foraging habitat compared to baseline conditions. The proposed development will not result in a net loss of resources for the bird species associated with the SPA and it is predicted that marsh harriers will forage between and around the solar PV arrays in the meadow habitats created [Section 6.1.2.7 paragraphs 207-211 of the RIAA], so there will be no adverse impacts on the integrity of the SPA.

g. The solar PV development area on arable land provides functionally linked habitat to the SPA for golden plover and lapwing which are important component species of the SPA wintering bird assemblage. A managed mitigation area of 56 hectares (AR HMA) was identified and agreed in principle by Natural England to remain undeveloped in order to provide foraging and sheltering opportunities for the bird species associated with the SPA. The management aims and prescriptions of the AR HMA are set out in the outline LBMP (dDCO Requirement 4). Management will convert the arable land into permanent pasture which is known to be a preferred feeding habitat of lapwings and golden plovers. The AR HMA will be created prior to the first winter of construction, and will provide high quality managed refuge habitat to mitigate for the loss of a larger, but lower quality, area. The number of bird-days (peak mean counts of the species per

day multiplied the number of days in their active season) was calculated for lapwing (56,023) and golden plover (28,802) to determine how much foraging resource is required from the site. A size of 56 hectares meets the necessary requirements of these species; consequently, the proposed development will not result in a net loss of resources for lapwing and golden plover [Section 6.1.2.1 paragraphs 171-206 of the RIAA], so there will be no adverse impacts on its integrity.

h. Potential impacts on the water environment are only considered to be possible through a catastrophic failure of fuel- or concrete-carrying vehicles leading to a pollution event occurring close to a drainage ditch directly connected to the European Site. Buffer zones of at least 5 metres and 8 metres have been included within the design of the development between the solar PV array infrastructure and non-IDB drainage ditches and IDB drainage ditches respectively. However, the buffer zones in the majority of the site have been increased to 15 metres to include grassland habitat enhancements around most of the site. This reduces the potential for chemicals off-spilled by fuel or concrete carrying vehicles to pollute the drainage ditches which may be hydrologically connected to the SPA. As set out in the outline Construction Environmental Management Plan (CEMP) (dDCO Requirement 10), additional measures are in place; including: the presence of spill kits, speed limits for vehicles, and the maintenance of vehicles, which also contribute to minimising the likelihood of pollution entering the ditch. There will be no adverse effects on the integrity of the SPA as a consequence of hydrological changes [Section 6.1.3 paragraphs 212-216 of the RIAA]. Natural England's advice is that standard construction mitigation measures, as set out in the Outline CEMP (dDCO Requirement 10), are sufficient to address potential risks to water quality from the operation of plant and vehicles (REP2-096, paragraph 3.3.1).

i. A variety of mitigation measures that are set out in the outline CEMP (dDCO Requirement 10) and proven to reduce the potential for adverse dust effects, will be implemented throughout construction and decommissioning to control the impact of dust on the neighbouring SPA. There will be no adverse effects on the integrity of the SPA as a consequence of the deposition of dust [Section 6.1.4 paragraphs 217-220 of the RIAA]. Natural England's advice is that standard construction mitigation measures, as set out in the Outline CEMP (dDCO Requirement 10), are sufficient to address potential dust emissions from the operation of plant and vehicles (REP2-096, paragraph 3.3.1).

j. The planning documents of in-combination projects were examined to extract information regarding the residual effects of the proposed development on The Swale SPA [Section 6.2: Table 7 of the RIAA, page 47]. The contribution of each project in-combination with the CHSP Development was found to be non-existent or negligible, negligible with

appropriate mitigation, or positive. No in-combination effects have been identified that would elevate the magnitude of the effects of the development to a level that would be significant [Section 6.2.1 paragraph 226 of the RIAA].

HRA Integrity Matrix 2: The Swale Ramsar Site

Name of European site and designation: The Swale Ramsar Site															
EU Code: UK11071															
Distance to NSIP: 0km															
European site features	**Adverse effects on integrity**														
Effect	*Noise, visual and lighting disturbance*			*Loss/change of habitats*			*Hydrological changes*			*Deposition of dust*			*In-combination effects*		
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Ramsar Criterion 5: Winter waterfowl assemblage of international importance	✖ab		✖c	✖d	✖d		✖f		✖f	✖g		✖g	✖h	✖h	✖h
Ramsar Criterion 6: Species/populations at level of international importance in spring/autumn: Redshank	✖b		✖c				✖f		✖f	✖g		✖g	✖h	✖h	✖h
Ramsar Criterion 6: Species/populations at level of international importance in	✖ab		✖c	✖e	✖e		✖f		✖f	✖g		✖g	✖h	✖h	✖h

winter: Dark-bellied brent goose															
Ramsar Criterion 6: Species/populations at level of international importance in winter: Grey plover	✖b		✖c				✖f		✖f	✖g		✖g	✖h	✖h	✖h
Ramsar Criterion 2: At least seven British Red Data Book invertebrate species							✖f		✖f	✖g		✖g			

Evidence supporting conclusions

a. Dark bellied-brent geese, lapwing and golden plover frequently use the arable fields of the proposed development, so could be affected by noise and visual disturbance [Section 6.1.1.5 paragraph 160 of the RIAA]. The construction of the development will take place over two to three seasons, and by a field-by-field basis. This means that large areas of the development site will free of development and disturbance at any one time. Additionally, development of the Arable Reversion Habitat Management Area (AR HMA) will occur prior to the first winter of construction, as set out in the outline Landscape and Biodiversity Management Plan (LBMP (dDCO Requirement 4), Technical Appendix A5.2 of the ES), and will provide some resource to the geese and wintering waders. There is considered to be a sufficient extent of disturbance-free habitat during the first winter season to accommodate foraging birds. Approximately half of the AR HMA will be fully established and disturbance free during the second or third winter seasons providing suitable resources and disturbance-free land for the geese and to a lesser extent, lapwing and golden plover [Section 6.1.1.5 paragraph 161-164 of the RIAA]. The resulting temporary loss of foraging resources is not likely to cause reduction in survival/productivity. There will be no long-term adverse effects of noise or visual disturbance on the integrity of the European Site as a consequence

of impacts to dark-bellied brent geese lapwing or golden plover [Section 6.1.1.5 paragraph 165-169 of the RIAA]. Natural England agree that construction disturbance and displacement, alone, is not likely to lead to an adverse effect on wintering geese and plovers (REP2-096, paragraph 3.2.9).

b. Guidance and available evidence suggest that noise disturbance causes adverse impacts to birds in estuarine habitats over a threshold of 70dB (L_{Amax}). A threshold value of 55dB (L_{Amax}) has been set as a level below which it is considered birds would not be disturbed to any material effect in intertidal habitats. Between levels of 55 dB LAmax and 70dB LAmax, birds in intertidal habitats would be expected to become alert and possibly reduce feeding efficiency but not move away (i.e. moderate disturbance effects), such that it is unlikely to result in detrimental effects that reduce their ability to survive or reproduce and would not affect their distribution [Section 6.1.1.1 paragraph 127 of the RIAA]. Applying worst case predictions suggests that the noise levels at the closest part of the European Site could exceed 65dB [Section 6.1.1.1 paragraph 134 of the RIAA], but won't exceed 70dB in intertidal habitats. This means that flight responses by birds (moderate-high disturbance effect) are unlikely to occur in intertidal habitats. Birds in a wider area could receive levels exceeding 55dB during piling activity; but, mitigation measures set out in the outline SPA Construction Noise Management Plan (dDCO Requirement 12) (e.g. using a single piling rig with acoustic screening) will be used, in addition to the screening effect of the sea wall, to minimise the noise exceeding 55dB reaching the European Site [Section 6.1.1.1 paragraph 130-133 of the RIAA]. The worst-case scenario location (a distance of 80m from the European Site) for construction piling will only affect small areas, totalling 0.16% of the European Site, at any one time; but, the majority of piling activity will be at a greater distance from the European Site. Birds within the 0.16% of the European Site are expected to remain and habituate to the level of noise [Section 6.1.1.1 paragraph 134-137 of the RIAA]. The eastern grazing marsh will experience noise levels exceeding 65dB up to 55 m and exceeding 70 dB up to 35 m into the European Site, but this area was not found to be an important resource for wintering birds that form the European Site assemblage [Section 6.1.1.3 paragraph 151-153 of the RIAA]. There will be no long-term adverse effects of noise or visual disturbance on the integrity of the European Site as a consequence of impacts to wintering birds. Natural England confirmed that subject to the detail contained in an updated SPA Construction Noise Management Plan (SPA CNMP) (dDCO Requirement 12), this is an acceptable approach to mitigating disturbance to wintering birds (REP2-096, paragraph 3.2.4).

c. The noise levels during decommissioning will be lower and will occur over a shorter time period than the noise levels during construction, which was deemed as having no adverse impacts on the integrity of the European Site (**a-b**), so

there will be no long-term adverse effects on the integrity of the European Site during decommissioning as a consequence of the implementation of embedded noise mitigation measures and methods to avoid disturbance [Section 6.1.1.1 paragraph 141 of the RIAA], as controlled through a future Decommissioning Plan (dDCO Requirement 16). Natural England's agreement at (b) regarding construction noise impacts is applicable to decommissioning.

d. The solar PV development area on arable land provides functionally linked habitat to the European Site for golden plover and lapwing which are important component species of the European Site wintering bird assemblage. A managed mitigation area of 56 hectares (AR HMA) was identified and agreed in principle by Natural England to remain undeveloped in order to provide foraging and sheltering opportunities for the bird species associated with the European Site. The management aims and prescriptions of the AR HMA are set out in the outline LBMP (dDCO Requirement 4). Management will convert the arable land into permanent pasture which is known to be a preferred feeding habitat of lapwings and golden plovers. The AR HMA will be created prior to the first winter of construction, and will provide high quality managed refuge habitat to mitigate for the loss of a larger, but lower quality, area. The number of bird-days (peak mean counts of the species per day multiplied the number of days in their active season) was calculated for lapwing (56,023) and golden plover (28,802) to determine how much foraging resource is required from the site. A size of 56 hectares meets the necessary requirements of these species; consequently, the proposed development will not result in a net loss of resources for lapwing and golden plover [Section 6.1.2.1 paragraphs 171-206 of the RIAA], so there will be no adverse impacts on the integrity of the European Site.

e. A managed mitigation area of 56 hectares (AR HMA) was identified and agreed in principle by Natural England to remain undeveloped in order to provide foraging and sheltering opportunities for the bird species associated with the European Site. The area was being utilised by 55% of the observed dark-bellied brent geese during the baseline surveys which suggests that it is in a suitable location capable of supporting birds associated with the European Site. The management aims and prescriptions of the AR HMA are set out in the outline LBMP (dDCO Requirement 4). Management will convert the arable land into permanent pasture which is known to support high densities of dark-bellied brent geese, and is a preferred feeding habitat of lapwings and golden plovers. The AR HMA will be created prior to the first winter of construction, and will provide high quality managed refuge habitat to mitigate for the loss of a larger, but lower quality, area. The number of bird-days (peak mean counts of the species per day multiplied the number of days in their active season) was calculated for dark-bellied brent geese (101,940) to determine how much foraging resource is required from the site. The 56 hectare HMA (providing 50.1 ha functionally available land) meets the necessary requirements of this

species; consequently, the proposed development will not result in a net loss of resources for dark-bellied brent geese [Section 6.1.2.1 paragraphs 171-206 of the RIAA], so there will be no adverse impacts on the integrity of the European Site.

f. Potential impacts on the water environment are only considered to be possible through a catastrophic failure of fuel- or concrete-carrying vehicles leading to a pollution event occurring close to a drainage ditch directly connected to the European Site. Buffer zones of at least 5 metres and 8 metres have been included within the design of the development between the solar PV array infrastructure and non-IDB drainage ditches and IDB drainage ditches respectively. However, the buffer zones in the majority of the site have been increased to 15 metres to include grassland habitat enhancements around most of the site. This reduces the potential for chemicals off-spilled by fuel or concrete carrying vehicles to pollute the drainage ditches which may be hydrologically connected to the European Site. As set out in the outline Construction Environmental Management Plan (CEMP) (dDCO Requirement 10), additional measures are in place; including: the presence of spill kits, speed limits for vehicles, and the maintenance of vehicles, which also contribute to minimising the likelihood of pollution entering the ditch. There will be no adverse effects on the integrity of the European Site as a consequence of hydrological changes [Section 6.1.3 paragraphs 212-216 of the RIAA]. Natural England's advice is that standard construction mitigation measures, as set out in the Outline CEMP (dDCO Requirement 10), are sufficient to address potential risks to water quality from the operation of plant and vehicles (REP2-096, paragraph 3.3.1).

g. A variety of mitigation measures that are set out in the outline CEMP (dDCO Requirement 10) and proven to reduce the potential for adverse dust effects, will be implemented throughout construction and decommissioning to control the impact of dust on the neighbouring European Site. There will be no adverse effects on the integrity of the European Site as a consequence of the deposition of dust [Section 6.1.4 paragraphs 217-220 of the RIAA]. Natural England's advice is that standard construction mitigation measures, as set out in the Outline CEMP (dDCO Requirement 10), are sufficient to address potential dust emissions from the operation of plant and vehicles (REP2-096, paragraph 3.3.1).

h. The planning documents of in-combination projects were examined to extract information regarding the residual effects of the proposed development on The Swale Ramsar Site [Section 6.2: Table 7 of the RIAA, page 47]. The contribution of each project in-combination with the CHSP Development was found to be non-existent or negligible, negligible with appropriate mitigation, or positive. No in-combination effects have been identified that would elevate the magnitude of the effects of the development to a level that would be significant [Section 6.2.1 paragraph 226 of the RIAA].