



The Planning Inspectorate
Yr Arolygiaeth Gynllunio

REPORT on the IMPLICATIONS for EUROPEAN SITES

Proposed Cleve Hill Solar Park

An Examining Authority report prepared with the
support of the Environmental Services Team

Planning Inspectorate Reference: EN010085

23 October 2019

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1 INTRODUCTION

1.1 Background

- 1.1.1 Cleve Hill Solar Park Ltd (the Applicant) has applied to the Secretary of State for a development consent order (DCO) under section 37 of the Planning Act 2008 (PA2008) for the proposed Cleve Hill Solar Park (the application). The Secretary of State has appointed an Examining Authority (ExA) to conduct an Examination of the application, to report its findings and conclusions, and to make a recommendation to the Secretary of State as to the decision to be made on the application.
- 1.1.2 The relevant Secretary of State is the competent authority for the purposes of the Habitats Directive¹ and the Habitats Regulations² for applications submitted under the PA2008 regime. The findings and conclusions on nature conservation issues reported by the ExA will assist the Secretary of State in performing their duties under the Habitats Regulations.
- 1.1.3 This report compiles, documents and signposts information provided within the DCO application, and the information submitted throughout the Examination by both the Applicant and interested parties (IPs), up to and including Deadline 6 of the Examination (4 October 2019) in relation to potential effects on European sites³. It is not a standalone document and should be read in conjunction with the examination documents referred to. Where document references are presented in square brackets [] in the text of this report, that reference can be found in the Examination Library published on the National Infrastructure Planning website at the following link:
<http://infrastructure.planninginspectorate.gov.uk/document/EN010085-000472>
- 1.1.4 A glossary of terms used in this report can be found in [**REP2-007**]. The Report on the Implications for European Sites (RIES) is issued to ensure that IPs including the statutory nature conservation body (Natural England (NE)) are consulted formally on Habitats Regulations matters. This process may be relied on by the Secretary of State for the purposes of Regulation 63(3) of the Habitats Regulations. Following consultation, the responses will be considered by the ExA in making their recommendation to the Secretary of State and made available to the Secretary of State along with this report. The RIES will not be revised following consultation.

¹ Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (as codified) (the 'Habitats Directive').

² The Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations).

³ The term European Sites in this context includes Sites of Community Importance (SCIs), Special Areas of Conservation (SACs) and candidate SACs, Special Protection Areas (SPAs), possible SACs, potential SPAs, Ramsar sites, proposed Ramsar sites, and any sites identified as compensatory measures for adverse effects on any of the above. For a full description of the designations to which the Habitats Regulations apply, and/ or are applied as a matter of Government policy, see PINS Advice Note 10.

- 1.1.5 The Applicant has not identified any likely significant effects (LSE) on Natura 2000 sites in other European Economic Area (EEA) States [**APP-026**]. Only European sites are addressed in this report.

1.2 Documents used to inform this RIES

- 1.2.1 The Applicant's DCO application concluded that there is potential for LSE, either alone or in-combination with other plans or projects, on two European sites.
- 1.2.2 As such, the Applicant provided a '*Report to Inform Appropriate Assessment*' (RIAA), concluding that there would be no adverse effect on the integrity (AEoI) of any European site, either alone or in-combination with other plans or projects [**APP-026**]. Accompanying screening and integrity matrices were provided in Appendices 7 and 8 of [**APP-026**] (duplicated in [**APP-027**]).
- 1.2.3 At Deadline 3, the Applicant provided revised screening and integrity matrices in response to Q1.1.22 of the ExA's written questions (ExQ1) [**PD-004**]. The revised matrices [**REP3-023**] superseded those provided in [**APP-026** and **APP-027**].
- 1.2.4 For those European sites and qualifying features where the Applicant's conclusions regarding AEoI have been disputed or queried during the Examination, the Applicant's integrity matrices have been updated by the ExA, with the support of the Planning Inspectorate's Environmental Services Team, using relevant documents listed in the [Examination Library](#) for the Proposed Development. The revised Stage 2 integrity matrices are included as Annex 1 to this RIES. Since the conclusions presented in the Applicant's Stage 1 screening matrices [**REP3-023**] have not been disputed during the Examination, they have not been revised.

1.3 Structure of this RIES

- 1.3.1 The remainder of this report is as follows:
- **Section 2** identifies the European sites that have been considered within the DCO application and during the Examination period, up to and including Deadline 6 of the Examination. It provides an overview of the issues that have emerged during the Examination.
 - **Section 3** identifies the European sites and qualifying features for which the Applicant has identified a LSE, either alone or in-combination with other plans and projects. This section also identifies matters relating to the Applicant's assessment of LSE which have been discussed during the Examination.
 - **Section 4** identifies the European sites and qualifying features which have been considered in terms of AEoI, either alone or in-combination with other plans and projects. This section also

identifies where IPs have disputed or queried the Applicant's conclusions during the Examination.

- **Section 5** provides a summary of matters raised for clarification.
- **Annex 1** comprises Stage 2 matrices for those European sites and qualifying features for which the Applicant's conclusions were disputed in relation to AEoI. They summarise the evidence submitted by the Applicant and IPs up to and including Deadline 6 of the Examination.

2 OVERVIEW

2.1 European Sites Considered

- 2.1.1 The Applicant's RIAA demonstrates that the Proposed Development is not connected with or necessary to the management for nature conservation of any European site [**APP-026**]. This position is discussed further in Section 3 of this RIES.

Study areas

- 2.1.2 Section 5 of the RIAA [**APP-026**] explains how the Applicant identified European sites for consideration in the assessment.
- 2.1.3 The Applicant identified all European sites within 5km of the application site. Beyond this distance, the Applicant considered there is no pathway for effects on qualifying features of European sites of non-avian interest [**APP-026**].
- 2.1.4 Noting that birds can be highly mobile, the Applicant also identified European sites within 10km of the application site which are designated for avian interest. The Applicant considered that birds originating from European sites beyond 10km were not considered likely to attend the application site or its adjacent habitats at a level of frequency where the effects of the Proposed Development would cause a material change in their ability to survive or reproduce [**APP-026**] and [**APP-039**]. Therefore, the Applicant considered that significant effects would not be likely to occur on European sites of avian interest located more than 10km from the application site [**APP-026** and **APP-039**].
- 2.1.5 In the Applicant's signed pre-submission Statement of Common Ground (SoCG) with NE [Table 4, **APP-256**], it is agreed that the 5km and 10km search areas are appropriate. Points of agreement in the pre-submission SoCG between the Applicant and NE [**APP-256**] were deliberately not reproduced in the next iteration of the SoCG, submitted (unsigned) at Deadline 4 [**REP4-039**].
- 2.1.6 Accordingly, the RIAA [Table 1, **APP-026**] identifies the following European sites (and qualifying features), for which the UK is responsible, for inclusion within the assessment:

Table 2.1: European sites and qualifying features considered in the Applicant's RIAA [APP-026**]:**

Name of European site	Qualifying features
The Swale Special Protection Area (SPA)	Dark-bellied brent goose (non-breeding)
	Dunlin (non-breeding)
	Breeding bird assemblage
	Wintering waterbird

Name of European site	Qualifying features
	assemblage (non-breeding)
The Swale Ramsar site	Criterion 2 – nationally scarce plants
	Criterion 2 – at least seven British Red Data Book invertebrate species
	Criterion 5 – wintering waterfowl assemblage
	Criterion 6 – redshank (non-breeding)
	Criterion 6 – dark-bellied brent goose (non-breeding)
	Criterion 6 – grey plover (non-breeding)
Outer Thames Estuary SPA	Red-throated diver (non-breeding)
	Common tern (breeding)
	Little tern (breeding)
Blean Complex Special Area of Conservation (SAC)	H9160 Sub-Atlantic and medio-European oak or hornbeam forests of <i>Carpinus betuli</i> ; Oak-hornbeam forests
Thanet Coast and Sandwich Bay SPA	Golden plover (non-breeding)
	Turnstone (non-breeding)
	Little tern (breeding)

- 2.1.7 The locations of these European sites relative to the application site are illustrated on Figure 1 of the RIAA [**APP-026**]. The boundaries of the Swale SPA and Ramsar site are coincident. The northern, eastern and western extents of the application site include areas which are part of the Swale SPA and Ramsar site, as discussed further in Section 3 of this RIES.
- 2.1.8 The RIAA describes the application site as including land that is functionally-linked to the Swale SPA and Ramsar site; of importance to qualifying features and assemblage component species including dark-bellied brent goose (hereafter 'brent goose'), lapwing, golden plover and marsh harrier [**APP-026**]. The assessment presented in the RIAA is conducted on this basis.

2.1.9 The Applicant subsequently scoped out the latter three sites listed in Table 2.1 above from further consideration within the RIAA, for the reasons as follows:

- **Outer Thames Estuary SPA** – the Applicant states that the Proposed Development will have no impact on the habitats that comprise the Outer Thames Estuary SPA. Potential disturbance from the Proposed Development would not extend far enough to have any impact on red-throated divers, common tern or little tern in the marine environment (paragraph 39 of [APP-026] and screening matrix 4, [REP3-023]);
- **Blean Complex SAC** – the Applicant states that there will be no impact pathway for effects from the Proposed Development to the protected woodland habitats which are qualifying interest features of the SAC (paragraph 40 of [APP-026] and screening matrix 5, [REP3-023]); and
- **Thanet Coast and Sandwich Bay SPA** – the Applicant states that due to the distance between Thanet Coast and Sandwich Bay SPA and the application site (approximately 7.8km), turnstones from this SPA are unlikely to range as far as the application site or utilise the habitats within the application site. It is explained that the breeding little tern qualifying feature makes no use of the application site, meaning there is no impact pathway for effects on this species. The Applicant acknowledges that golden plover from the Thanet Coast and Sandwich Bay SPA could occasionally range as far as the application site and utilise the arable habitats, but (noting that the most recent Wetland Bird Survey 5-year peak-mean count of this species for the Thanet Coast and Sandwich Bay SPA was only 34 birds) considers that they are extremely unlikely to visit the application site in numbers or frequency that would result in any LSE (paragraph 38 of [APP-026] and screening matrix 3, [REP3-023]).

2.1.10 Figure 1 of the RIAA [APP-026] illustrates the Thanet Coast and Sandwich Bay Ramsar site as covering the same area as the Thanet Coast and Sandwich Bay SPA. However, the Thanet Coast and Sandwich Bay Ramsar site is not identified in Table 1 of the RIAA [APP-026] as being potentially affected by the Proposed Development and no conclusion is presented in terms of potential for LSE on this site. As these sites cover the same geographical area, the ExA has assumed that the Applicant's conclusions presented in the RIAA in respect to the Thanet Coast and Sandwich Bay SPA also apply to the Ramsar site.

2.1.11 The assessment presented in the RIAA [APP-026] therefore focuses on potential impacts on the Swale SPA and Ramsar site.

2.1.12 NE's relevant representation (RR) [RR-826] identified the Swale SPA and Ramsar site as the European sites which it considered relevant to

the DCO application. NE confirmed it was satisfied that all other statutorily designated nature conservation sites would not be significantly affected by the Proposed Development [**RR-826**].

- 2.1.13 ExQ1.1.25 [**PD-004**] asked NE to confirm whether it was content that the RIAA [**APP-026**] includes sufficient regard for the Swale and Medway European Marine Site and its conservation objectives. In response, NE considered that standard best practice pollution control measures (which are set out in the outline Construction Environmental Management Plan (CEMP) [**REP6-008**] and draft deemed Marine Licence [**REP6-004**]) would be sufficient to mitigate potential impacts on the Swale Estuary Marine Conservation Site, which underpins the Swale and Medway European Marine Site [ExQ1.1.25, **REP2-096**]. NE explained [**REP2-096**] that the Swale and Medway European Marine Site covers the marine parts of the Swale SPA and Medway Estuary and Marshes SPA. Therefore, NE's view was that the RIAA [**APP-026**] does have sufficient regard for its conservation objectives.
- 2.1.14 In the Applicant's unsigned SoCG with Kent Wildlife Trust (KWT) [**REP3-019**], it is agreed that impact pathways only exist for the Swale SPA and Ramsar site and that LSE on the Outer Thames Estuary SPA, Blean Complex SAC and the Thanet Coast and Sandwich Bay SPA can be reasonably discounted.
- 2.1.15 Section 5.2.4 of the RIAA [**APP-026**] identifies the qualifying features of the Swale SPA and Ramsar site, including component species of the wintering and breeding bird assemblage features. Section 5.2.3 of the RIAA [**APP-026**] identifies the species forming the Ramsar invertebrate assemblage. In its RR [**RR-826**] and in its SoCGs with the Applicant [Table 4, **APP-256** and Table 3, **REP4-039**], NE confirmed that the Applicant has identified the correct qualifying features and assemblage component species of the Swale SPA and Ramsar site.
- 2.1.16 There are five birds identified on the information sheet for the Swale Ramsar site (provided in Appendix 5 of the RIAA) and in section 5.2.3 of the RIAA 'for possible future consideration under criterion 6' (namely, ringed plover, widgeon, pintail, shoveler and black-tailed godwit). In response to ExQ1.1.21 [**PD-004**], NE explained that whilst it currently had no information on timetables for updates to the Ramsar citation to include these features under Criterion 6, it could confirm that these species are captured by the assemblage features of the Swale SPA and Ramsar site [**REP2-096**].
- 2.1.17 At the time of writing, no other European sites or qualifying features that could be affected by the Proposed Development have been identified by IPs.

2.2 Potential Impacts

- 2.2.1 The following potential impacts were considered by the Applicant in the RIAA [**APP-026**]:
- Noise and/ or visual disturbance;

- Loss/ change of habitats;
- Habitat fragmentation;
- Hydrological changes;
- Deposition of dust;
- Collision risk to birds;
- Disturbance through changes in recreational access; and
- Attraction of egg-laying invertebrates to solar panels.

2.2.2 Impacts during construction, operation and decommissioning of the Proposed Development were considered, as relevant.

2.3 HRA Matters Considered During the Examination

2.3.1 The main HRA matters raised by the ExA, NE and other IPs and discussed during the Examination include:

- The scope of the Applicant's in-combination assessment;
- The Applicant's conclusion that loss/ change of habitats within the Swale SPA and Ramsar site would not result in a LSE;
- The Applicant's conclusion that attraction of egg-laying invertebrates to solar panels would not result in a LSE on the invertebrate assemblage qualifying feature of the Swale Ramsar site;
- The Applicant's 'bird day' calculations;
- The Applicant's approach to assessing and mitigating impacts of habitat loss/ change to brent goose, lapwing and golden plover, including the proposed Arable Reversion Habitat Management Area (AR HMA);
- The Applicant's approach to assessing and mitigating impacts of habitat loss/ change to marsh harrier, including the proposed Grazing Marsh Grassland Management Plan;
- The content of the outline Landscape and Biodiversity Management Plan (LBMP);
- The Applicant's approach to assessing and mitigating impacts of noise disturbance to birds, including the content of the outline Special Protection Area Construction Noise Management Plan (SPA CNMP) and the outline Breeding Bird Protection Plan (BBPP);
- The Applicant's proposals for monitoring, triggers and an adaptive management approach;

- Impacts from hydrological changes and dust emissions and mitigation of such impacts; and
- The Applicant's overall conclusion of no AEoI on the qualifying features of the Swale SPA and Ramsar site.

2.3.2 These matters are discussed in Sections 3 and 4 of this RIES, as appropriate.

3 LIKELY SIGNIFICANT EFFECTS

3.1 The Applicant's Assessment

- 3.1.1 The Applicant has described how they have determined what would constitute a 'significant effect' within the RIAA [**APP-026**]. The Applicant explains that this follows European Commission (EC) guidance on habitats assessment, including EC Guidance document: 'Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (2000)' and EC Guidance document: 'Assessment of plans and projects significantly affecting Natura 2000 sites (2001)'.
- 3.1.2 The Applicant's conclusions on LSE from the Proposed Development alone are presented in Chapter 5 of the RIAA [**APP-026**] and in the screening matrices [Appendix 7, **REP3-023**].
- 3.1.3 The Applicant has addressed potential in-combination effects within Section 6.2 of the RIAA [**APP-026**] and in the screening matrices [Appendix 7, **REP3-023**]. The plans and projects considered in the in-combination assessment are set out in Table 7 of the RIAA [**APP-026**].

Scope of in-combination assessment

- 3.1.4 Whilst the proposed Kemsley Paper Mill (K4) was identified in Table 7 of the RIAA [**APP-026**] as a project which could potentially result in in-combination effects together with the Proposed Development, it was unclear to the ExA whether other projects proposed at the same site had been included in the in-combination assessment – for example, the Wheelabrator Kemsley Generating Station (K3) and the Wheelabrator Kemsley North Waste to Energy Facility. ExQ1.5.9 [**PD-004**] asked the Applicant to confirm whether the conclusions presented in relation to cumulative and in-combination effects of the Proposed Development with Kemsley Paper Mill (K4) also apply to the other developments proposed on the Kemsley site.
- 3.1.5 In response, the Applicant confirmed that due to the distance from the Proposed Development, combined with the wider Kemsley site having already been developed, the inclusion of Wheelabrator Kemsley Generating Station (K3) and Wheelabrator Kemsley North Waste to Energy Facility would not affect the conclusions of the cumulative and in-combination assessments [ExQ1.5.9, **REP2-006**].
- 3.1.6 In ExQ1.5.10 [**PD-004**], the ExA noted that the in-combination assessment focused on land-based developments and asked the Applicant to explain whether there were any plans or projects located in the marine environment which could result in in-combination effects together with the Proposed Development. In response, the Applicant stated [**REP2-006**] that the activities to be undertaken in the marine environment form a continuation of the existing baseline activities, with no new impacts predicted on the marine environment as a result of the Proposed Development. As such, the Applicant considered that there was no potential for other developments, plans or projects in the marine

environment, in addition to those already considered, to result in in-combination effects with the Proposed Development [**REP2-006**].

- 3.1.7 In their responses to ExQ1.5.11 [**PD-004**], NE, Kent County Council (KCC), Swale Borough Council (SBC) and Canterbury City Council (CCC) confirmed they were content that all plans and projects with potential to result in in-combination effects together with the Proposed Development had been identified and assessed by the Applicant in the RIAA [**REP2-096**, **REP2-053**, **REP2-056** and **REP2-048** respectively]. The Marine Management Organisation (MMO) noted that marine licences granted to the London Array Offshore Wind Farm Export Cable Corridor or Southern Water had not been discussed by the Applicant but were of the view that these were unlikely to result in in-combination effects with the Proposed Development [ExQ1.5.11, **REP2-095**].
- 3.1.8 The Environmental Statement (ES) [**APP-040**] explained that the application site was located within an area of land proposed for managed re-alignment in the consultation draft of the Environment Agency's (EA) Medway Estuary and Swale Strategy (MEASS))⁴. In its RR, the EA provided details of the MEASS proposals; explained that it understood the Proposed Development land use would be for a period of 40 years and that it had adjusted its proposals in the MEASS in response [**RR-507**]. The EA noted that there was no reference to a time limit within the DCO application and confirmed that "*The Strategy has been finalised and will be published shortly*" [**RR-507**].
- 3.1.9 The MEASS was not identified in Table 7 of the RIAA [**APP-026**] as a plan or project which may result in in-combination effects with the Proposed Development, which was noted by the EA in its signed SoCG with the Applicant [Table 2, **AS-017**]. The SoCG [**AS-017**] sets out the Applicant's position that once the MEASS becomes adopted policy, it would then update the in-combination assessment in the RIAA [**APP-026**] accordingly. It is confirmed that "*The EA agree that following the adoption of MEASS, the RIAA for the Development should be updated to refer to the findings of the HRA undertaken in respect of the MEASS*" [**AS-017**].
- 3.1.10 Through the SoCG, the EA confirmed that the "with solar park scenario" in the MEASS was for managed realignment in epoch 2 (2039 to 2069), following the cessation of operation of the Proposed Development [**AS-017**]. The Applicant subsequently added a new Requirement to the draft DCO (dDCO), which broadly sets out that the Proposed Development would be decommissioned once the EA has submitted a managed realignment programme to the relevant planning authority [Requirement 17, **REP6-004**]. In response to ExQ2.4.10 [**PD-008**], the EA confirmed it was satisfied with the wording of dDCO Requirement 16 (now 17) and that it was "*...happy that it provides the appropriate level of flexibility and certainty*" to safeguard managed realignment at the application site [**REP4-061**]. As such, it appears that there would be no temporal

⁴ EA (2017) Medway Estuary and Swale Strategy [online] <https://consult.environment-agency.gov.uk/ksles/medway-estuary-and-swale-strategy/>

overlap between the Proposed Development and the MEASS proposals for the Cleve Hill application site.

- 3.1.11 At Deadline 5, the Applicant [**REP5-001**] noted that the MEASS had now been finalised and adopted by the EA⁵. At the time of writing this RIES, the Applicant had not submitted an update to the in-combination assessment as indicated in Table 2 of the SoCG [**AS-017**].

Conclusions of Applicant's screening assessment

- 3.1.12 The Applicant's screening assessment [**APP-026**] concluded that the Proposed Development would have no LSE, either alone or in-combination with other plans or projects, on the qualifying features of the Outer Thames Estuary SPA, the Blean Complex SAC, or the Thanet Coast and Sandwich Bay SPA. This conclusion has been agreed with NE [**RR-826** and **REP4-039**] and at the time of writing, no other IPs have disputed the Applicant's conclusion of no LSE on these European sites and their qualifying features during the Examination.
- 3.1.13 The Applicant concluded that the Proposed Development is likely to give rise to LSE, either alone or in-combination with other plans or projects, on the qualifying features of the Swale SPA and Ramsar site [**APP-026**].
- 3.1.14 In light of the European Court of Justice (ECJU) ruling in '*People Over Wind and Peter Sweetman v Coillte Teoranta*'; the Applicant confirmed in paragraph 19 of the RIAA [**APP-026**] that mitigation measures have not been taken into account in determining LSE. This position is reiterated by the Applicant in [**REP2-072**].
- 3.1.15 Table 3 of the RIAA [**APP-026**] and the screening matrices [**REP3-023**] summarise the impacts for which a LSE on qualifying features of the Swale SPA and Ramsar site (from the Proposed Development alone) has been identified. In its RR [**RR-826**], NE confirmed agreement with the conclusions presented in Table 3 of the RIAA and that all other potential impacts (including impacts during all phases resulting from habitat fragmentation, collision risk to birds, changes to recreational access, and the attraction of egg-laying invertebrates to solar panels) would not be likely to have a significant effect on the Swale SPA and Ramsar site. The Applicant has also identified potential LSE in-combination with other plans or projects on all qualifying features of the Swale SPA and Ramsar site, with the exception of the Ramsar invertebrate community [**APP-026** and **REP3-023**].
- 3.1.16 In response to ExQ1.1.19 [**PD-004**], the Applicant confirmed [**REP2-006**] that Table 3 of the RIAA should also have identified a LSE in respect of habitat loss/ change during construction; this was a typographic error. The Applicant [ExQ1.1.19, **REP2-006**] confirmed that the assessment of effects on the integrity of the Swale SPA and Ramsar

⁵ EA (2019) Medway Estuary and Swale Flood and Coastal Erosion Risk Management Strategy [online] <https://www.gov.uk/government/publications/medway-estuary-and-swale-flood-and-coastal-risk-management-strategy/medway-estuary-and-swale-flood-and-coastal-risk-management-strategy>

site arising from habitat loss/ change during construction is presented in Section 6.1.2 of the RIAA [**APP-026**].

- 3.1.17 Potential LSE on the Swale SPA and Ramsar site have therefore been identified in respect to the impacts and qualifying features set out in Table 3.1 below.

3.2 Examination

- 3.2.1 The Examination (to date) has generally focussed on whether AEoI of the Swale SPA and Ramsar site can be ruled out; the Applicant's conclusions on LSE have not been disputed by NE and other IPs. As such, the Applicant's screening matrices presented in [Appendix 7, **REP3-023**] have not been revised by the ExA.
- 3.2.2 The following matters relating to the Applicant's assessment of LSE have been discussed during the Examination:

Loss/ change of habitats within the Swale SPA and Ramsar site

- 3.2.3 The northern, eastern and western extents of the application site include areas which are part of the Swale SPA and Ramsar site, as illustrated on Figure 2 of the RIAA [**REP2-014**]. Paragraph 74 of the RIAA [**APP-026**] explains that these areas comprise:
- The existing coastal flood defences which protect the application site;
 - The freshwater grazing marsh and associated habitats (managed by KWT) within the strip landward of the flood defences; and
 - The freshwater grazing marsh at the eastern extent of the application site, between the proposed AR HMA and Seasalter Road (the proposed Freshwater Grazing Marsh Habitat Management Area (FGM HMA)). This area relates to two units of the Swale Site of Special Scientific Interest (SSSI): S15 M Attwood Cleve Marsh (049) and Cleve Marsh West (063).
- 3.2.4 The RIAA states that "*No development is proposed in these areas*" [**APP-026**]. As part of the DCO application, the Applicant is seeking consent to undertake maintenance of the existing coastal flood defences (currently undertaken by the EA). The Applicant's position is that no specific flood defence works, over and above those likely to be undertaken on an ongoing basis by the EA to maintain the current standard of protection, are currently proposed [**APP-026**]. For the purposes of the assessment presented in the RIAA, the Applicant has assumed that there will be no change in the flood defence works over and above the future baseline [**APP-026**].
- 3.2.5 The RIAA also states that "*no development*" is proposed in the freshwater grazing marsh at the eastern extent of the application site; its inclusion as part of the Proposed Development is to allow for enhanced management of this area (under the proposed FGM HMA) [**APP-026**]. In

[**AS-001**], the Applicant clarified that whilst Work No.8 of the dDCO seeks consent for earthworks, means of access and drainage in the area covered by the proposed FGM HMA, this would be a continuation of the activities already undertaken under the existing baseline, with no additional activities proposed in this area. To maintain and manage water levels in the ditches, new water flow control structures may be installed, as illustrated on Figure A5.1 of the outline LBMP [**REP6-006**].

- 3.2.6 Paragraph 76 of the RIAA concludes that there will be no loss or change of habitat within the Swale SPA and Ramsar site and therefore, no LSE on the qualifying features of the European sites in this regard [**APP-026**]. This conclusion has not been disputed by NE during the Examination. In [**REP1-005**], SBC noted that *"...no part of the solar park itself is proposed to be constructed within any of these designated areas, and there should therefore be no direct impact on these designated areas"*.
- 3.2.7 Noting the relationship between the existing coastal flood defences and the Swale SPA and Ramsar site, the ExA asked the Applicant in ExQ1 to confirm to what extent it considered that the maintenance of the existing coastal defence constitutes an action that is connected with or necessary to the management of those designated sites [ExQ1.1.18, **PD-004**].
- 3.2.8 In response, the Applicant considered that the maintenance of the existing coastal defences is, in part, an action connected with or necessary to the management of the Swale SPA and Ramsar site, because its function is necessary to protect the freshwater components of the designated site from inundation by seawater [ExQ1.1.18, **REP2-006**].
- 3.2.9 NE [**REP3-082**] agreed that the sea wall does protect the freshwater habitat but noted that it also contributes to the loss of intertidal habitats through coastal squeeze. Therefore, NE's view [**REP3-082**] is that *"...the maintenance of the sea wall does not need to be considered as 'necessary for the management of the [Swale SPA and Ramsar] site'"*, which it noted was consistent with NE's advice to the EA for its assessment of the MEASS under the Habitats Regulations.
- 3.2.10 NE explained it was content with the Applicant's confirmation that there will be no flood defence works over and above those likely to be undertaken on an ongoing basis by the EA [**REP3-082**]. NE considered that as this current standard of protection had already been assessed through the HRA of the MEASS, and a strategic approach taken to addressing losses of intertidal habitat to coastal squeeze, it agreed with the Applicant's assessment in the RIAA [**APP-026**] that there would be no loss or change of SPA and Ramsar habitats as a result of the Proposed Development [**REP3-082**].
- 3.2.11 NE confirmed it was in agreement with the Applicant's conclusion that maintenance of the sea wall would not have a LSE on the Swale SPA and Ramsar site, as it would not result in any change in habitat over and above that already assessed through the MEASS [**REP3-082**].

- 3.2.12 The inclusion of parts of the Swale SPA and Ramsar site within the eastern extent of the application site to allow for enhanced management (under the proposed FGM HMA) has been welcomed by NE, "*...as it gives the opportunity to manage this part of the designated site, and the AR HMA, together*" [RR-826]. The management prescriptions for the proposed FGM HMA are set out in Appendix K of the outline LBMP [REP6-006].

Attraction of egg-laying invertebrates to solar panels

- 3.2.13 Section 5.2.5.9 of the RIAA [APP-026] considers the potential for attraction of egg-laying invertebrates (which are part of the Swale Ramsar invertebrate community) to the proposed solar panels and concludes that this would not result in a LSE.
- 3.2.14 In ExQ1.1.7 [PD-004], the ExA asked the Applicant to explain whether any studies/ evidence existed to support this conclusion.
- 3.2.15 In response, the Applicant considered that due to the height of the proposed panels and the distance to aquatic ditch habitats, any attraction of invertebrates to the solar panels would not result in a LSE [ExQ1.1.7, REP2-006]. The Applicant cited a supporting study of a solar farm in Sandwich, Kent (Feltwell, 2014⁶), in which Diptera and Coleoptera were the only invertebrate species observed on the solar panels [ExQ1.1.7, REP2-006].
- 3.2.16 NE has confirmed it is in agreement with the Applicant's conclusion that invertebrate attraction to solar panels would not result in a LSE on the Swale Ramsar site [RR-826 and REP3-082].

3.3 Summary of HRA Screening outcomes during the Examination

- 3.3.1 A total of five European sites were screened by the Applicant prior to examination (see Table 2.1 above). Of these sites, the Applicant concluded in [APP-026] that there is potential for LSE, either alone or in-combination with other plans or projects, on the qualifying features of two European sites – namely, the Swale SPA and Ramsar sites. These sites are discussed further in Section 4 of this RIES.

⁶ Feltwell, J. (2014a) 'Observations on the effects of photovoltaic solar panels on invertebrates at Ebbsfleet Farm, Sandwich, Kent.' The Newsletter of the Kent Field Club, 79, pp. 4–17

Table 3.1: European sites, qualifying features and potential impacts for which the Applicant has identified a LSE (summarised from Table 3 of the RIAA [APP-026], the Applicant's screening matrices [REP3-023] and the Applicant's response to ExQ1.1.19 [REP2-006])

European site	Qualifying feature/s	Impact/s	Assessment of effects on integrity required?
The Swale SPA	Brent goose (non-breeding)	<ul style="list-style-type: none"> Noise/ visual disturbance (construction ('C') and decommissioning ('D'); Loss/ change in habitats (C and operation 'O'); Hydrological changes (C and D); Dust emissions (C and D); and In-combination effects (C, O and D). 	Yes
	Dunlin (non-breeding)	<ul style="list-style-type: none"> Noise/ visual disturbance (C and D); Hydrological changes (C and D); Dust emissions (C and D); and In-combination effects (C, O and D). 	Yes
	Breeding bird assemblage	<ul style="list-style-type: none"> Noise/ visual disturbance (C and D); Loss/ change in habitats (C and O) – marsh harrier component species only; Hydrological changes (C and D); Dust emissions (C and D); and In-combination effects (C, O and D). 	Yes
	Wintering waterbird assemblage	<ul style="list-style-type: none"> Noise/ visual disturbance (C and D); Loss/ change in habitats (C and O) – brent goose, lapwing and golden plover only; 	Yes

European site	Qualifying feature/s	Impact/s	Assessment of effects on integrity required?
	(non-breeding)	<ul style="list-style-type: none"> Hydrological changes (C and D); Dust emissions (C and D); and In-combination effects (C, O and D). 	
The Swale Ramsar site	Criterion 2 – at least seven British Red Data Book invertebrate species	<ul style="list-style-type: none"> Hydrological changes (C and D); and Dust emissions (C and D). 	Yes
	Criterion 5 – wintering waterfowl assemblage	<ul style="list-style-type: none"> Noise/ visual disturbance (C and D); Loss/ change in habitats (C and O) – brent goose, lapwing and golden plover only; Hydrological changes (C and D); Dust emissions (C and D); and In-combination effects (C, O and D). 	Yes
	Criterion 6 – redshank (non-breeding)	<ul style="list-style-type: none"> Noise/ visual disturbance (C and D); Hydrological changes (C and D); Dust emissions (C and D); and In-combination effects (C, O and D). 	Yes
	Criterion 6 – brent goose (non-breeding)	<ul style="list-style-type: none"> Noise/ visual disturbance (C and D); Loss/ change in habitats (C and O); Hydrological changes (C and D); Dust emissions (C and D); and 	Yes

European site	Qualifying feature/s	Impact/s	Assessment of effects on integrity required?
		<ul style="list-style-type: none"> • In-combination effects (C, O and D). 	
	Criterion 6 – grey plover (non-breeding)	<ul style="list-style-type: none"> • Noise/ visual disturbance (C and D); • Hydrological changes (C and D); • Dust emissions (C and D); and • In-combination effects (C, O and D). 	Yes

4 ADVERSE EFFECTS ON INTEGRITY

4.1 Conservation Objectives

- 4.1.1 Appendix 4 of the Applicant's RIAA [**APP-026**] provides the conservation objectives for the Swale SPA (dated June 2014). These are reproduced in Section 5.2.2 of the RIAA [**APP-026**]. In the Applicant's pre-submission SoCG with NE [Table 4, **APP-256**], it is agreed that the conservation objectives for the Swale SPA have been correctly identified in Section 5.2.2 of the RIAA [**APP-026**].
- 4.1.2 The ExA notes that NE published an updated version of the conservation objectives document in February 2019⁷, subsequent to submission of the DCO application.
- 4.1.3 The ExA understands that the updated conservation objective document reflects the consolidation of the Habitats Regulations in 2017 and does not materially change the conservation objectives of the Swale SPA.
- 4.1.4 ExQ1.1.20 [**PD-004**] asked the Applicant to confirm whether the Swale SPA and Ramsar site are currently considered to be in favourable condition. The Applicant advised, with reference to NE Supplementary Advice on conservation objectives for the Swale SPA⁸, that the breeding bird and wintering waterbird assemblage features are in unknown or good condition, with the exception of recreational disturbance (where there is evidence that human activities such as dog walking lead to bird disturbance) [ExQ1.1.20, **REP2-006**]. The Applicant also explained that since classification of the Swale SPA/ Ramsar site, 'alerts' for negative changes in abundance of waterbirds (based on data analysed by the British Trust for Ornithology) had been reported for European white-fronted goose, shelduck, shoveler, lapwing, grey plover and dunlin [ExQ1.1.20, **REP2-006**].

4.2 The Integrity Test

No Adverse Effects on Site Integrity

- 4.2.1 The Applicant considered the potential for AEoI of the Swale SPA and Ramsar site from the Proposed Development alone within Section 6.1 of the RIAA [**APP-026**] and in the integrity matrices [**REP3-023**]. Section 6.2 of the RIAA and the integrity matrices [**REP3-023**] considered the potential for AEoI in-combination; the other plans and projects considered in the in-combination assessment are set out in Table 7 [**APP-026**].

⁷ European site conservation objectives for the Swale SPA [online]
<http://publications.naturalengland.org.uk/publication/5745862701481984>

⁸ The Swale SPA supplementary advice on conservation objectives [online]
<https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9012011&SiteName=the%20Swale&SiteNameDisplay=The+Swale+SPA&countyCode=&responsiblePerson=>

- 4.2.2 The Applicant concluded that the Proposed Development would not have an AEoI on any of the qualifying features of the Swale SPA and Ramsar site, either alone or in-combination with other plans and projects [**APP-026**].
- 4.2.3 Several matters relating to the identification of AEoI of the Swale SPA and Ramsar site were discussed during the Examination. These are detailed below. Table 4.1 then identifies those sites and features where the Applicant's conclusion of no AEoI is, at the time of writing, disputed by IPs. Where conclusions around AEoI have been disputed by IPs during the Examination, the Applicant's Stage 2 integrity matrices [**REP3-023**] have been updated for the relevant sites and features (see Annex 1 of this report).

Management Plans and Habitat Management Steering Group

- 4.2.4 In view of the potential impacts of the Proposed Development on designated ecological sites including the Swale SPA and Ramsar site, the RIAA explains that a 'Habitat Management Steering Group' (HMSG) was formed in the pre-application period, with members including the Applicant, NE, KWT and the Royal Society for the Protection of Birds (RSPB) [**APP-026**].
- 4.2.5 Meetings of the HMSG have continued during the pre-Examination/ Examination period and are intended to continue to guide the plans for mitigation and enhancement within the application site. The ongoing role of the HMSG (post any consent) has been discussed during the Examination, as reported below.
- 4.2.6 Discussions with the HMSG relevant to the Applicant's conclusion of no AEoI have included the details of the management prescriptions for the proposed habitat management areas, which are contained within the outline LBMP. This document has been updated during the Examination with the most recent version at the time of writing being [revision D, **REP6-006**]. Requirement 5 of the dDCO [**REP6-004**] relates to the submission and approval of a LBMP (which must accord with the outline LBMP), with NE as a consultee to this requirement.
- 4.2.7 In addition to the outline LBMP, the Applicant's conclusion of no AEoI relies on measures included in the following proposed management plans, which have been updated and discussed during the Examination as reported later in this RIES:
- Outline SPA CNMP [**REP4-013**] (Requirement 13 of the dDCO [**REP6-004**] relates to submission and approval of a SPA CNMP which must accord with the outline SPA CNMP);
 - Outline CEMP [**REP6-008**] and outline BBPP (Appendix B of the outline CEMP) (Requirement 11 of the dDCO [**REP6-004**] relates to submission and approval of a CEMP which must accord with the outline CEMP); and
 - Outline Decommissioning and Restoration Plan (D&RP) [**REP6-010**] (Requirement 17 (parts 10 to 12) of the dDCO [**REP6-004**] relates

to submission and approval of a D&RP which must accord with the outline D&RP).

RSPB position on AEoI

- 4.2.8 The RR from the RSPB [**RR-841**] explained that it had serious remaining concerns with the application and stated *that: "As it stands, we do not agree that the current impact assessment enables a conclusion of no adverse effect on integrity of the [Swale] SPA/Ramsar site to be reached"*.
- 4.2.9 In its Deadline 2 submission [**REP2-101**], the RSPB confirmed that it objected to the Proposed Development but was unable to make further submissions to the Examination due to resource constraints. The RSPB advised that it deferred to NE and KWT in respect of Examination submissions [**REP2-101**]. However, the RSPB stated that it would continue to input to the HMSG to agree measures to avoid damage to the Swale SPA and Ramsar site [**RR-841** and **REP2-101**].

Habitat loss/ change and proposed AR HMA

- 4.2.10 The Proposed Development would result in the displacement of three wintering waterbird species of the Swale SPA and Ramsar site (brent goose, lapwing and golden plover) from the arable fields within the application site, which they would have otherwise used for foraging and resting/ roosting [**APP-026**]. The arable fields therefore represent land which is functionally-linked to the Swale SPA and Ramsar site but is outside of the boundary of these designated sites. The assessment of potential AEoI of these three species as a result of habitat loss/ change of this functionally-linked land during construction and operation of the Proposed Development (and the proposed approach to mitigating such impacts) is presented in Section 6.1.2 of the RIAA [**APP-026**].
- 4.2.11 To mitigate for the loss of the foraging resource for brent goose, lapwing and golden plover, the Proposed Development includes the reversion of approximately 56ha of arable fields to permanent grassland pasture, described as the 'Arable Reversion Habitat Management Area' (AR HMA) [**APP-026**]. The location of the AR HMA is illustrated on Figure 2 of the RIAA [**REP2-014**]. On a precautionary basis (assuming a 50m avoidance zone around site infrastructure, where there may be a lower density of foraging birds), the RIAA describes the AR HMA as providing 50.1ha of functionally available grassland area [**APP-026**].
- 4.2.12 NE's RR advised that the AR HMA should maximise its production of grass for brent geese, as these are *"...more site faithful and have a shorter foraging distance than lapwings or golden plovers"* [**RR-826**]. This point was reiterated in NE's Deadline 3 submission [**REP3-082**].
- 4.2.13 To achieve this, the RIAA explained that the grassland within the AR HMA would be managed through a combination of grass cutting and application of nitrous fertiliser [**APP-026**]. Inclusion of clover in the grassland mix was also proposed, with the RIAA citing evidence that clovers may be an effective way of attracting geese to a site [footnotes

41 to 43, **APP-026**]. The exact management prescriptions for the AR HMA was a matter discussed during the Examination, as set out below.

- 4.2.14 At Issue Specific Hearing (ISH) 4, the Applicant confirmed that no additional measures were proposed to mitigate impacts from habitat loss to brent goose, lapwing and golden plover during construction, beyond those to mitigate the impact of habitat loss during operation [**REP3-017**]. However, the Applicant clarified that the AR HMA would be created before the first winter of construction [**REP3-017**]. The exact timing of the sowing of the AR HMA was a matter discussed during the Examination, as set out below.
- 4.2.15 NE's view is that in order to have sufficient certainty that an AEoI on the Swale SPA and Ramsar site can be avoided, there should be no net loss of foraging resource as a result of the Proposed Development [**REP3-082**].

Applicant's 'bird day' calculations

- 4.2.16 As explained in Section 6.1.2 of the RIAA [**APP-026**] and in Section 9.6 of Ornithology Technical Appendix A9.1 [**APP-223**], the Applicant used a 'bird days' metric to assess the current use of the arable fields within the application site by these three species (also referred to as 'goose days' in respect of brent goose). This was compared to the number of bird days that could be supported by the proposed AR HMA, as follows:
- Determine via site survey the inter-annual mean of the intra-annual mean of the peak monthly counts (the 'peak-mean') number of birds per day which are foraging on the arable land (as set out in paragraph 178 the RIAA [**APP-026**] and paragraph 104 of [**APP-223**]). Baseline survey data is provided in Appendix 6 of the RIAA [**APP-026**]; and
 - Multiply the peak-mean number of foraging birds, by the number of days in the season, to calculate seasonal 'bird days' (as set out in paragraph 181 of the RIAA [**APP-026**]). This is the number of bird days which the AR HMA would need to provide to fully mitigate the loss of foraging resource.
- 4.2.17 The seasonal bird day calculations presented in the RIAA [**APP-026**] are as follows: brent goose - 101,940 bird days/winter; golden plover - 28,802 bird days/winter; and lapwing - 56,023 bird days/winter.
- 4.2.18 In its RR, NE stated [**RR-826**] that it considered the 'bird days' metric to be an appropriate way of assessing losses and gains in habitat. NE also confirmed it was satisfied that the baseline bird surveys were undertaken during a representative part of the crop rotation, and hence that the 'peak-mean' is an appropriate way to calculate bird days [**RR-826**].
- 4.2.19 KWT is also in agreement that the peak-mean metric is an appropriate method for assessing and mitigating impacts on brent geese, lapwing and golden plover [Table 2, **REP3-019**].

Brent goose

- 4.2.20 In the RIAA, the Applicant calculated that the AR HMA would support 2,097 foraging brent goose days/ha. The necessary 101,940 brent goose days would therefore require 48.6ha of grassland within the AR HMA. On a precautionary basis, the RIAA concluded that the AR HMA would provide 50.1ha of grassland habitat for geese – over the required amount. The RIAA concluded that there would be no net loss of habitat for brent goose [**APP-026**].
- 4.2.21 NE stated in its RR [**RR-826**] that there is evidence to show that grass cut five times and fertilised with 50kgN/ha can support 2,097 goose days/ha. Therefore, NE considered that it could have confidence in the predicted number of goose days for the AR HMA, if this management regime was followed [**RR-826**]. NE stated that if 2,097 goose days/ha could be achieved without affecting other ecological interests, then it was satisfied that the 50.1ha AR HMA is large enough to avoid an adverse effect on foraging brent geese [**RR-826**]. Potential impacts from the management for brent geese on lapwing, golden plover and invertebrates are discussed later in this RIES.

Golden plover and lapwing

- 4.2.22 In the RIAA, the Applicant calculated that 18.5ha of mitigation land was required for golden plover (for 28,802 bird days). The AR HMA would provide 50.1ha, so far over the requirement. The RIAA predicted no net loss of habitat for golden plover [**APP-026**].
- 4.2.23 In respect of lapwing, the Applicant calculated in the RIAA that 56ha of mitigation land was required (for 56,023 bird days). The AR HMA would provide 50.1ha of habitat, so under the requirement. However, the Applicant considered that the additional capacity for golden plover could be utilised by lapwing, meaning there would be no net loss of habitat for lapwing [**APP-026**].
- 4.2.24 As reported in paragraph 203 of the RIAA, the baseline surveys found that there was almost no coincidence between golden plovers/ lapwing and brent geese in the same fields at the same time (although the same fields were used at different times) [**APP-026**]. The Applicant considered that the mitigation area for golden plover and lapwing could be co-located in the same area and under the same management as that for brent geese. The RIAA explained that golden plovers and lapwing feed on surface and soil invertebrates, whereas brent geese feed on vegetation, meaning there is no competition for foraging resources between these species [**APP-026**].
- 4.2.25 In its RR, NE acknowledged that brent geese do not compete for the same food as lapwing and golden plover and that these species could "potentially" be accommodated on the same piece of mitigation land [**RR-826**].
- 4.2.26 However, NE stated [**RR-826**] that there were some uncertainties around the bird day calculations for lapwing and golden plover. Specifically, NE noted that the calculation of bird days had been based on the existing arable habitat and considered it was unclear whether grassland would provide the same capacity [**RR-826**]. NE questioned

how easy it would be for lapwing and golden plover to access their invertebrate prey if the AR HMA was managed as a dense sward for brent goose [**RR-826**].

- 4.2.27 NE advised that it had not been able to provide a specialist review of the calculations and conclusions for lapwing and golden plover at RR stage but intended to work with the Applicant to resolve these uncertainties and provide advice during the Examination [**RR-826**]. The uncertainties raised in NE's RR are discussed further below.

Interrogation of supporting evidence and assessment findings

- 4.2.28 Section 6.1.2.4 of the RIAA cited various literature sources to support the proposals for the AR HMA in respect to brent geese (see footnotes 27 to 29 and 32 to 46 [**APP-026**]). For golden plover and lapwing, the rationale for the management of the AR HMA is set out in Section 6.1.2.5 of the RIAA; the principal source of supporting evidence cited by the Applicant was a study by Gillings *et al* (2007)⁹ [**APP-026**].
- 4.2.29 In ExQ1.1.26 [**PD-004**], the ExA asked the Applicant to confirm the extent to which the literature cited in the RIAA was applicable to the development of an AR HMA of this scale, in this location and for the particular species of bird involved.
- 4.2.30 In response, the Applicant considered that the main difference was that the literature studies for brent geese are based on established grassland, rather than arable reversion as required in respect of the Proposed Development [ExQ1.1.26, **REP2-006**]. The Applicant highlighted factors which attract brent geese to a feeding site (informed by a guidance note from Defra¹⁰) and stated that these measures were all directly applicable to the proposed AR HMA and its management prescriptions [ExQ1.1.26, **REP2-006**].
- 4.2.31 In relation to lapwing and golden plover, the Applicant confirmed that the assessment relies primarily on the research by Gillings *et al* (2007), this being a study of mixed arable farmland for which capacity in terms of bird days was estimated for the two species together [ExQ1.1.26, **REP2-006**]. The Applicant acknowledged that there are no directly applicable studies of the capacity of grassland, in terms of bird days, to support these species [ExQ1.1.26, **REP2-006**].
- 4.2.32 The Applicant stated that the cited literature all indicated that grassland would have a higher capacity to support lapwing and golden plover than arable crops [ExQ1.1.26, **REP2-006**]. Notwithstanding this, the Applicant explained that following advice from NE, it had applied a precautionary approach and based its analysis of the required area of the AR HMA for lapwing and golden plover on the capacity of arable crops [ExQ1.1.26, **REP2-006**]. As such, the Applicant considered that: *"...whilst this literature may not be directly applicable, it is relevant and*

⁹ Gillings, S., Fuller, R.J. and Sutherland, W. (2007). Winter field use and habitat selection by Eurasian Golden Plovers *Pluvialis apricaria* and Northern Lapwings *Vanellus* on arable farmland. *Ibis* **149**: 509-520

¹⁰ Defra (2001) WCA26: Management of Damage Caused by Brent Geese
<http://adlib.everysite.co.uk/adlib/defra/content.aspx?id=000HK277ZW.0A4HIW1LG0GAJ8>

precautionary in terms of calculating the capacity of the AR HMA to host golden plover and lapwing" [ExQ1.1.26, **REP2-006**].

- 4.2.33 In ExQ1.1.27 [**PD-004**], the ExA asked NE to expand on the statement in its RR [**RR-826**] that brent goose, lapwing and golden plover could "*potentially*" be accommodated on the same piece of mitigation land. NE was asked to explain what factors might determine whether lapwing, golden plover and brent goose could be accommodated on the same piece of mitigation land and whether it considered any additional evidence was required from the Applicant in this regard [ExQ1.1.27, **PD-004**].
- 4.2.34 In its response at Deadline 2, NE stated [**REP2-096**] that the factors determining whether both types of species could be accommodated are whether there is physically enough space for the different flocks, and whether management for one does not hinder the other's ability to forage. The crucial factor, in NE's opinion, was whether the intensive grassland management necessary to feed the brent geese hinders the waders' ability to get to their invertebrate prey. NE noted that these waders prefer muddy patches where it is easy to probe for earthworms [**REP2-096**].
- 4.2.35 Whilst its advice to the Applicant was to focus on management of the AR HMA for brent geese, NE noted that the application of fertiliser would be helpful in providing some bare patches and invertebrate prey [**REP3-082**]. NE explained that it would support an adaptive management approach that could provide muddy patches later - if this wouldn't compromise habitat for geese and was agreed by the HMSG [**REP3-082**].
- 4.2.36 In [**REP2-096**], NE also set out what it considered to be four areas of uncertainty regarding the wader calculations. These points can be summarised as follows:
1. Whether the lapwing and golden plover bird days can be combined so that the over provision for golden plovers can make up for the shortfall for lapwings;
 2. The fact that a lapwing/ golden plover-days figure is not available for pasture, so the calculation of mitigation land requirements is based on arable land in Norfolk;
 3. Whether intensive management for geese will hinder lapwings and golden plovers from getting at soil invertebrates; and
 4. The Gillings *et al* (2007) study found that lapwings and golden plovers were concentrated in a few fields, therefore if they averaged over the whole area, the bird days would be much lower. It is not clear from that study why the plovers were aggregating in the fields they did, and whether those conditions will be replicated in the AR HMA.
- 4.2.37 In its written summary of oral evidence presented at ISH 4, NE [**REP3-082**] reiterated these four uncertainties and confirmed that it was

working with the Applicant (through the HMSG) to resolve these but considered that management of the AR HMA would be key.

- 4.2.38 As set out in paragraph 206 of the RIAA [**APP-026**], the establishment and ongoing management of the AR HMA is relied upon to conclude that the loss of functionally-linked arable land (providing foraging resource for wintering brent goose, lapwing and golden plover) would not result in an AEoI of the Swale SPA and Ramsar site. NE's view is that in order to have sufficient certainty that an AEoI on the Swale SPA and Ramsar site can be avoided, there should be no net loss of foraging resource as a result of the Proposed Development [**REP3-082**].

- 4.2.39 As such, discussions during the Examination regarding the establishment and management of the AR HMA are reported as follows.

Management prescriptions for AR HMA

- 4.2.40 The management prescriptions for the proposed AR HMA are set out in the outline LBMP, primarily within Appendix J ("Arable Reversion Habitat Management Area Management Plan"). The Applicant has updated the outline LBMP submitted with the DCO application [**APP-203**] during the Examination in response to discussions with the HMSG, comments from the ExA and from IPs, with the most recent version at the time of writing this RIES being [revision D, **REP6-006**]. As noted above, it is proposed that the grassland within the AR HMA would be managed through a combination of grass cutting and application of nitrous fertiliser [**APP-026** and **REP6-006**].
- 4.2.41 NE's RR [**RR-826**] stated that: "*Experimental manipulation of management prescriptions for brent geese and accurate survey has shown that grass cut five times and fertilised with 50kgN/ha can support 2097 goose-days/ha. Therefore, we can have confidence in the predicted number of goose-days for the AR HMA, if this management regime is followed*". In ExQ1.3.37 [**PD-004**], the ExA asked the Applicant to explain how maintenance of the grass equivalent to the cutting frequency specified by NE in [**RR-826**] would be assured.
- 4.2.42 In response, the Applicant stated that a supporting study¹¹ had found no significant difference in the intensity of grazing by brent geese between cutting vs grazing, grazing with cattle or sheep, or cutting two, three, four or five times [ExQ1.1.37, **REP2-006**]. The Applicant explained that its preferred option for maintaining the short sward in the AR HMA (that is required by the time the geese arrive at the application site in the autumn) was to graze the grassland with cattle, sheep or both [**REP2-006**]. The Applicant explained that the sward would be monitored according to the prescription set out in Appendix J of the outline LBMP, further details of which it would include in an updated version of the outline LBMP. Mechanical cutting would then be undertaken if required to achieve the desired sward length [**REP2-006**].

¹¹ Vickery et al. (1994) [Vickery, J.A., Sutherland, W.J. and Lane, S.J. (1994). The management of grass pastures for Brent geese. *Journal of Applied Ecology* 31: 282-290]

- 4.2.43 The Applicant submitted updates to the outline LBMP at Deadlines 3 [revision B, **REP3-005**] and 4 [revision C, **REP4-008**], which included reference to a KWT Advice Sheet on choosing livestock for conservation grazing¹² to support its proposed approach. At Deadline 5, NE confirmed [**REP5-050**] it was satisfied with what was set out at paragraphs 42 and 347 of the outline LBMP [**REP4-008**] in terms of grazing. However, NE noted that the success of the grazing would depend on finding a grazier that can respond quickly to adjust the grazing pressure if necessary to achieve the right sward height at the beginning of winter [**REP5-050**].
- 4.2.44 The Applicant submitted a further update to the outline LBMP at Deadline 6 [revision D, **REP6-006**], which retained reference to the KWT Advice Sheet. In response to comments from NE in [**REP4-069**], the outline LBMP [**REP6-006**] now includes reference to surveys by an ecologist to assess the success of the AR HMA grassland management and status of water levels in years 0-1, 1-2, 2-3, 4-5, 10 and 20 and confirms that a report will be provided to the HMSG following each survey.
- 4.2.45 In response to ExQ1.1.37 [**PD-004**], the Applicant confirmed [**REP2-006**] that application of fertiliser to the AR HMA would be required on an annual basis. In its WR, NE recommended application of 12 tonnes organic manure/ha/year, leaving a 10m buffer between the ditches and the fertiliser application [**REP2-096**].
- 4.2.46 In response to concerns from KWT regarding water quality and use of fertiliser on the AR HMA [**RR-799**], the Applicant stated [KWT-3, **AS-009**]: *"It is anticipated that spreading of organic fertiliser will be restricted beyond 10 m of wet field boundaries, in line with government guidance"*. In response to ExQ1.1.23, the Applicant explained [**REP2-006**] that it would update Appendix J of the outline LBMP to secure this commitment.
- 4.2.47 At Deadline 3, Appendix J of the outline LBMP [revision B, **REP3-005**] was updated to confirm that: *"Application of the fertiliser will be excluded from within 10m of the drainage ditches, in line with DEFRA best practice guidance"*. Table 3: AR HMA in the outline LBMP was also updated at Deadline 3 to confirm that up to the equivalent of 12 tonnes of organic fertiliser (e.g. farmyard manure) per hectare per year would be applied to the AR HMA [**REP3-005**], in line with NE's recommendation [**REP2-096**].
- 4.2.48 However, the Applicant's updated outline LBMP at Deadline 4 [revision C, **REP4-008**] removed Table 3: AR HMA (and consequently, the reference to application of 12 tonnes of organic fertiliser per hectare per year) from the outline LBMP [**REP4-008**]. This situation was unchanged in the updated outline LBMP submitted at Deadline 6 [revision D, **REP6-006**].
- 4.2.49 As recommended by NE in [**REP2-096**], the Applicant also considered whether the exclusion of fertiliser within 10m of ditches would have any impact on the calculations (as presented in the RIAA) for the capacity of the AR HMA for brent geese. The Applicant provided calculations to

¹² Kent Wildlife Trust Land Management Advice Sheet 5 - Choosing livestock for conservation grazing

demonstrate the impact in Table 2.17 (ref. 29) of **[REP3-020]**. The Applicant reiterated these findings at Deadline 4, explaining that the recalculation without the fertilised area around the ditches resulted in a capacity of the AR HMA at 101,580 goose days, versus the 101,940 goose days previously calculated (i.e. a difference of 360 goose days) [ExQ2.1.11, **REP4-020**].

- 4.2.50 NE's response to ExQ2.1.11 **[REP4-069]** and the Applicant's Deadline 4 SoCG with NE [Table 4, **REP4-039**] both provide confirmation that: *"NE considers that the difference of 360 goose-days when taking into account the unfertilised buffer along the ditches is not significant in the context of the number of goose-days supported by the whole AR HMA"*. This point is reiterated in NE's Deadline 5 submission **[REP5-050]**.
- 4.2.51 KWT **[REP5-048]** noted that the revised calculations result in the carrying capacity of the AR HMA for brent geese being 360 goose days short of the mitigation target. KWT confirmed that it *"...sticks to the principle of meeting the mitigation target"* **[REP5-048]**. At Deadline 6, the Applicant **[REP6-015]** acknowledged KWT's position in this regard and referred to its earlier submissions to the Examination (response to ExQ2.1.11 **[REP4-020]**; response 4 in Table 2.15 **[REP4-041]**; and response 4 in Table 2.16 **[REP3-020]**).
- 4.2.52 The Applicant considered that the exclusion of fertiliser within 10m of ditches would have no impact on the calculations for lapwing and golden plover, as the capacities for those species were not based on fertilised or unfertilised grass **[REP3-017]**. This position has not been disputed by any IPs during the Examination to date.
- 4.2.53 The RIAA explains that the Proposed Development would result in a *"substantive reduction"* in the application of herbicides, pesticides and fertiliser at the application site, when compared to the current land use as arable farmland **[APP-026]**. As a result, beneficial effects on local habitats are predicted and the RIAA concludes that changes in surface water quality during operation would not result in a LSE **[APP-026]**.
- 4.2.54 In paragraph 3.3.2 of its WR, NE sought confirmation of the current level of pesticide, fertiliser and herbicide use on the application site, to allow the benefit of ceasing the current arable operation to be quantified **[REP2-096]**. ExQ1.1.23 **[PD-004]** asked the Applicant to provide an estimate of the level of application of fertilisers, herbicides and pesticides currently employed on the application site, and a comparison with the proposed application of fertiliser to the AR HMA.
- 4.2.55 In response, the Applicant confirmed that it would prepare a 'clarificatory report' to compare the baseline and proposed application of fertiliser in the AR HMA [ExQ1.1.23, **REP2-006**].
- 4.2.56 This report was submitted at Deadline 4 **[REP4-050]**. It quantified the annual pesticide and fertiliser use under the current arable farming practices on the application site, as well the proposed use with the solar farm and AR HMA in place. The report showed that with the solar farm and AR HMA in place, annual pesticide use would be reduced from a total of 2,597kg (7.33kg per ha) to 0. Annual fertiliser use would be reduced

from a total of 73,956kg (208.74kg per ha) to 6,741kg (134.82kg per ha) [**REP4-050**].

- 4.2.57 At Deadline 5, NE confirmed [**REP5-050**] it was satisfied that fertiliser application rates over the whole Proposed Development site would be lower than the current situation, as evidenced in [**REP4-050**]. NE acknowledged that there would be lower nutrient inputs to the ditches if the Proposed Development is built, which would be a benefit to the Ramsar invertebrate community over the current situation. Therefore, NE considered [**REP5-050**] that the issue raised in paragraph 3.3.2 of its WR [**REP2-096**] was resolved.
- 4.2.58 The RIAA suggested that the use of manure will benefit feeding lapwings and golden plovers by increasing the invertebrate biomass of the AR HMA [**APP-026**]. The Applicant subsequently confirmed [**REP6-015**] that: *"The application of manure is not relied upon to achieve carrying capacities in the AR HMA for golden plover and lapwing that would be equivalent to the capacities recorded in arable land as reported by Gillings (2003, 2007); however, the application of manure is likely to increase the attraction of golden plover and lapwing to the ARHMA, this likelihood being based on the findings of the Gillings study and Tucker (1992)".*
- 4.2.59 In its WR, KWT [**REP2-092**] queried whether the manure would be sourced from ivermectin-free cattle, owing to the negative effects of ivermectin on invertebrates. NE also noted the need to source ivermectin-free manure in [**REP3-082** and **REP4-069**].
- 4.2.60 At Deadline 3, Appendix J of the LBMP [revision B, **REP3-005**] was updated to confirm that *"The manure will be sourced from ivermectin free cattle (where possible) to avoid adverse effect on invertebrates"*.
- 4.2.61 At ISH 6, the ExA queried the use of the term *"where possible"* and whether NE and KWT considered this to be acceptable [**EV-027**]. In response, the Applicant considered that the qualification *"where possible"* was necessary as it is not necessarily viable to fully commit to ivermectin-free farmyard manure, as the use of such treatments is widespread in the industry and availability of the necessary volumes from a feasible source could be very limited [**REP5-011** and **REP5-024**].
- 4.2.62 In [**REP5-024**], the Applicant cited evidence to suggest that earthworms are the dominant prey item for lapwing and golden plover. The Applicant suggested that whilst ivermectin is potentially harmful to invertebrates, the degree to which earthworms are affected by ivermectin is not categorical and the Applicant is confident that the management of the AR HMA will increase density of earthworms and other invertebrates, regardless of whether ivermectin-free manure is used [**REP5-024**].
- 4.2.63 KWT requested that whether or not the manure used in the AR HMA is ivermectin-free be a variable recorded to assist with monitoring, alongside invertebrate biomass [**REP4-068** and **REP5-048**]. Similarly, NE suggested that this issue could be addressed through monitoring of the amounts of ivermectin-free manure and the impact this has on the

invertebrates available, and wader numbers/ foraging locations, with the results of this monitoring reported back to the HMSG [**REP5-050**]. NE suggested that this could be addressed in the next version of the outline LBMP [**REP5-050**].

- 4.2.64 NE also supported the suggestion made by IP Bob Gomes at ISH 6, that it would be beneficial if the grazing licence for the AR HMA could stipulate that the animals used should be ivermectin-free [**REP5-050**].
- 4.2.65 In [**REP5-024**], the Applicant stated that it would update the outline LBMP [revision C, **REP4-008**] to include provision for testing and reporting of ivermectin content of farmyard manure, so that this could be measured as a variable and any measured detrimental impact be remediated (for example through the sourcing of farmyard manure with lower ivermectin content, which could be possible by procuring manure sources at different times of year).
- 4.2.66 An updated outline LBMP was submitted at Deadline 6 [revision D, **REP6-006**]. This included additional commitments in Table 2 and Appendix J, summarised as follows:
- In the event manure cannot be sourced entirely from ivermectin-free cattle, monitoring will be undertaken to understand the difference in developing invertebrate communities in areas treated with ivermectin-free manure, compared to areas with manure from ivermectin-dosed cattle;
 - Sampling will be undertaken of the ivermectin content of fertiliser applied to the AR HMA and invertebrate biomass, to establish any difference in usage according to variations in ivermectin content; and
 - The findings and any necessary remedial measures will be discussed with the HMSG. Remedial measures could include adjustments to the sward management in terms of manure fertilisation (including ivermectin content and invertebrate density).

Seed mix for AR HMA

- 4.2.67 The proposed grassland seed mix for the AR HMA is set out in Table 7.1 of the outline LBMP; the outline LBMP submitted with the DCO application [**APP-203**] stated that this would comprise white clover, common bent grass and saltmarsh grass.
- 4.2.68 In response to ExQ1.1.34 [**PD-004**], the Applicant stated [**REP2-006**] that *Trifolium pratense* (red clover) was considered to be the optimum species of clover for the AR HMA. However, in response to ExQ1.1.26 [**PD-004**], the Applicant referred [**REP2-006**] to a guidance note from Defra¹⁰, which stated that white clover is extremely attractive to brent geese.
- 4.2.69 The ExA queried this apparent contradiction at ISH 4 [**EV-020**]. The Applicant confirmed [**REP3-017**] that the Applicant's reference to red clover [in response to ExQ1.1.34, **REP2-006**] was in error and should

have referred to white clover. The Applicant submitted an updated outline LBMP at Deadline 3 [revision B, **REP3-005**], with the seed mix in Table 7.1 remaining as per [**APP-203**].

- 4.2.70 At Deadline 4, NE stated [ExQ2.1.5, **REP4-069**] that the grassland seed mix in Table 7.1 of the outline LBMP [**REP3-005**] should be amended. NE considered that saltmarsh grass was inappropriate and recommended a more diverse mix of grasses: rye grass and other bents and fescues. Whilst white clover is good for foraging brent geese, NE considered that the mix could include some red clover as this would be beneficial for pollinators [ExQ2.1.5, **REP4-069**].
- 4.2.71 At Deadline 4, the Applicant amended Table 7.1 of the outline LBMP [revision C, **REP4-008**] to remove saltmarsh grass and add rye grass, red fescue, crested dog tail and red clover, following NE's recommendation in [ExQ2.1.5, **REP4-069**].
- 4.2.72 At Deadline 5, NE confirmed [**REP5-050**] it was content with the seed mix set out in the updated outline LBMP [revision C, **REP4-008**] and that this takes account of the discussions at the HMSG meeting on 23 August 2019.
- 4.2.73 The grassland seed mix in Table 7.1 remained unchanged in the Applicant's updated LBMP submitted at Deadline 6 [revision D, **REP6-006**].

Timing of the sowing of the AR HMA

- 4.2.74 ExQ1.1.30 [**PD-004**] asked the Applicant to confirm at what point in the construction programme the AR HMA and each of the other HMAs would be established.
- 4.2.75 In its WR, NE stated [**REP2-096**] that it was necessary to create the AR HMA grassland as early in the construction timetable as possible, to ensure that the habitat is established and available as soon as construction finishes. At Deadline 3, NE [**REP3-082**] stated that the early sowing of grassland, in order to provide a foraging resource as soon as possible, was necessary to avoid an AEoI.
- 4.2.76 In response to ExQ1.1.30, the Applicant stated that the timing of the sowing of grasslands in the different areas would vary depending on the timing of the start of construction [**REP2-006**]. The Applicant explained that the outline LBMP [revision A, **APP-203**] would be updated to provide the proposed timetabling of the development of the AR HMA for different construction commencement scenarios, with an accompanying plan showing the relevant areas [ExQ1.1.30, **REP2-006**].
- 4.2.77 In the Deadline 3 iteration of the outline LBMP [revision B, **REP3-005**], the Applicant provided a schedule for the sowing and establishment of the AR HMA grassland at section 16 of the document.
- 4.2.78 In the ExA's further written questions (ExQ2), NE and KWT were asked [ExQ2.1.5, **PD-008**] whether section 16 of the outline LBMP [**REP3-005**] addressed their previous concerns around sowing and establishment of the AR HMA and whether this secured the early sowing

of grassland which NE considered necessary to avoid an AEoI [**REP3-082**].

- 4.2.79 In response, NE noted [**REP4-069**] that whilst paragraph 317 of the outline LBMP [**REP3-005**] stated that "*grassland will be established in advance of the first winter before construction is due to commence*", Section 16 showed that for some construction start timetables, the grassland will be sown after construction, although before the winter when birds will arrive.
- 4.2.80 KWT stated [**REP4-068**] that the implementation of the AR HMA in [**REP3-005**] would commence after the start of construction (rather than construction starting after the mitigation has been confirmed to have established), but before the first winter when the impacts on brent geese, lapwing and golden plover can be expected. KWT considered that it would be preferable to implement the AR HMA and establish the mitigation prior to the start of construction (and therefore impacts) [**REP4-068**].
- 4.2.81 KWT also advised that in the event the establishment of the AR HMA does not go according to expectations, leading to a reduction in carrying capacity for the target species, it would be advisable to halt construction with respect to avoiding further loss of carrying capacity until habitats have established [**REP4-068**]. The ExA explored this point at ISH 6 [**EV-027**], with the Applicant stating [paragraph 6.30 of **REP5-011** refers] that temporary loss during construction was assessed in the ES as not significant, on the premise that in some years those species for which the grassland mitigation is provided do not use the site. It is unclear whether the Applicant's statement in [**REP5-011**] would also be applicable to conclusions on AEoI as presented in the RIAA. A Rule 17 request has been issued alongside the RIES for clarification.
- 4.2.82 The timing of the sowing of the AR HMA was discussed further at ISH 6 [**EV-027**], in light of the updated outline LBMP submitted at Deadline 4 [revision C, **REP4-008**]. The Applicant stated [**REP5-011**] that Section 16 of the outline LBMP [then revision C, **REP4-008**] now included sowing timetables based on different construction start dates, which it explained was welcomed by the HMSG.
- 4.2.83 NE stated [**REP5-050**] it would wish to see the habitat management areas, in particular the AR HMA, seeded and growing before the birds arrive in the first winter after construction has started.
- 4.2.84 KWT considered [**REP5-048**] that the timing of establishment of the AR HMA was still an issue that required 'correction' in the outline LBMP and advised that it would provide further suggested changes to the Applicant.
- 4.2.85 At Deadline 6, the Applicant submitted an updated outline LBMP [**REP6-006**], which at Section 18 (formerly Section 16) now refers to implementation of the AR HMA grassland (and Grazing Marsh Grassland) from year 0. The outline LBMP also now includes reference to the grassland habitats within the AR HMA being established prior to the first winter of construction at page 27 and in Appendix J [**REP6-006**].

- 4.2.86 At the time of writing this RIES, NE and KWT had not submitted comments on the updated outline LBMP [**REP6-006**] to the Examination. As such it is unclear whether NE and KWT are content with the updates made to the outline LBMP at Deadline 6 [**REP6-006**] in relation to the AR HMA, including the Applicant's updated proposals for:
- inspection of the grassland and water levels;
 - monitoring/ sampling of ivermectin content of manure and invertebrate biomass and implementation of any necessary remedial measures following discussions with the HMSG; and
 - timings for implementation/ establishment of the AR HMA grassland.
- 4.2.87 A Rule 17 request has been issued alongside the RIES for clarification.
- Level of certainty regarding no AEoI*
- 4.2.88 In light of the uncertainties around the wader calculations as highlighted by NE in [**REP2-096**] (see paragraph 4.2.36 of this RIES), the Applicant submitted a response in [**AS-023**]. The Applicant stated that there was insufficient detail in the Gillings *et al* (2007) study to ascertain how often lapwings and plover were found foraging together and potentially competing for resources [**AS-023**]. However, the Applicant noted [**AS-023**] that the Gillings paper stated: "*In general both species selected and avoided the same habitats*". The Applicant was of the view that any significant segregation between lapwings and golden plover would have been reported in the paper [**AS-023**]. The Applicant reiterated these points in its responses to WRs, submitted at Deadline 3 [Table 2.17, **REP3-020**].
- 4.2.89 In Table 2.17 of [**REP3-020**], the Applicant acknowledged that there was "...a degree of uncertainty in this respect" but noted that it has used the highest counts (peak-mean) to calculate bird days capacity (in contrast to the Gillings *et al* (2007) study, which used an average figure). The Applicant considered that its approach in this regard is likely to have resulted in an over-estimation of use of the site by lapwing and golden plover and therefore, a degree of over-provision of the area required to mitigate for the loss of foraging area [**REP3-020**].
- 4.2.90 This matter was discussed further at ISH 4 [**EV-020**]. The Applicant explained it had been in further discussions with Dr Gillings, in which Dr Gillings agreed that golden plover and lapwing compete for the same resources to some extent and therefore transferring capacity would be applicable [**REP3-017**].
- 4.2.91 NE considered that if the Applicant submitted evidence of this communication with Dr Gillings, this may resolve uncertainty no.1 as set out above [**REP3-082**]. A copy of this communication was requested by the ExA in ExQ2.1.12 [**PD-008**].
- 4.2.92 ExQ2.1.12 [**PD-008**] also asked NE to comment on whether the information provided in Table 2.17 of the Applicant's response to WRs

[**REP3-020**] resolved any of the four areas of uncertainty around the wader calculations, as set out in paragraph 4.2.36 above.

4.2.93 At Deadline 4, NE responded to ExQ2.1.12 [**REP4-069**] as follows:

- NE confirmed that subject to confirmation from Dr Gillings, uncertainty no.1 was resolved; the bird days for lapwing and golden plover can be combined;
- NE considered that uncertainty no.2 could not be entirely resolved as there is no experimental data for the number of wader bird days supported by brent goose pasture;
- Regarding uncertainty no.3, NE acknowledged that the Applicant's response to WRs [**REP3-020**] (refs 32 and 33) demonstrated that lapwing and golden plover will use pasture with a short, dense sward. Therefore, intensive management for geese would not necessarily hinder foraging lapwing and golden plover. However, the references cited by the Applicant indicate that old pastures are preferred over new. Therefore, foraging waders in old pastures may be exploiting a wider range of invertebrate prey than will be available in the AR HMA (where earthworms are likely to be the main prey item). The use of ivermectin-free manure will be important in improving the invertebrate biomass of the AR HMA; and
- NE considered that uncertainty no.4 was reduced by the fact that lapwings and golden plovers were recorded during the Applicant's pre-application baseline surveys using the fields that will make up the AR HMA.

4.2.94 In its response to ExQ2.1.12, the Applicant explained [**REP4-020**] that it was in the process of seeking written confirmation from Dr Gillings but was unable to submit this at Deadline 4. This was subsequently provided as an Additional Submission [**AS-040**] shortly after Deadline 4 and included the following statement from Dr Gillings: *"If the carrying capacity values are real, then it seems reasonable to me to assume that the carrying capacity for Lapwings can be added to the carrying capacity for Golden Plovers. This total "plover days" value could then be shared out according to how common the two species are relative to one another at a particular location"*.

4.2.95 At Deadline 5, KWT [**REP5-048**] considered that: *"...as Dr Gillings has confirmed that the figures for lapwing and golden plover carrying capacity from his study can be combined, this particular issue has been dealt with"*. Similarly, NE [**REP5-050**] was satisfied that [**AS-040**] confirmed that the lapwing and golden plover bird days could be combined and thus resolved this uncertainty.

4.2.96 NE considered [**REP5-050**] that as there has been confirmation that the lapwing and golden plover bird days can be combined, giving a requirement of around 33ha for both species, the provision of 51ha is

sufficiently precautionary to overcome the uncertainties it had previously identified surrounding the sufficiency of the AR HMA for lapwing and golden plover (as set out in NE's answer to ExQ2.1.12 [REP4-069] and in paragraph 4.2.93 of this RIES).

- 4.2.97 NE noted that the recommendation of a HMSG meeting on 23 August 2019 *"...was to provide open water in a scrape on the adjacent SSSI land, to attract the waders to the site, and make it more likely that they use the AR HMA for foraging"* [REP5-050]. Subject to this being added to the outline LBMP, along with further detail on the constitution of the HMSG, NE was satisfied that an AEoI of the Swale SPA and Ramsar site for lapwings and golden plovers would be avoided [REP5-050].
- 4.2.98 NE also confirmed [REP5-050] that subject to the updates to the outline LBMP discussed at ISH 6 [EV-027] (to secure the constitution and status of the HMSG), it was satisfied that the AR HMA is sufficient to avoid an AEoI of the Swale SPA and Ramsar site for brent geese.
- 4.2.99 In earlier submissions to the Examination, NE had suggested [REP3-082] that provision of off-site mitigation land might be appropriate in the face of uncertainties around lapwings and golden plovers. This was to overcome the fact that the bird days calculations indicated an under-provision for lapwings but over-provision for golden plover [REP5-050]. As confirmation that the bird days can be combined had now been provided, NE's view at Deadline 5 was that off-site mitigation was not necessary for lapwings and golden plovers [REP5-050].
- 4.2.100 The Applicant's updated outline LBMP at Deadline 6 [revision D, REP6-006] added reference (at page 29 and Appendix K) to the creation of additional surface water features, including scrapes, within the FGM HMA. It is explained that these measures *"...are complementary to the management of the AR HMA"* and would be undertaken with reference to RSPB guidance¹³ [REP6-006]. The Applicant considered that the further details of the management of the FGM HMA in the SSSI are such that *"NE should be able to conclude no adverse effect on integrity with regards to lapwing and golden plover"* [REP6-015].
- 4.2.101 Regarding the details of the constitution and status of the HMSG, the Applicant confirmed in [REP6-015] that *"The Applicant will consult the HMSG on a draft governance for the HMSG and the Applicant welcomes further comment from KWT and the HMSG"*. Section 1.4 ('HMSG Governance') was blank in the updated outline LBMP at Deadline 6 [revision D, REP6-006].
- 4.2.102 At the time of writing this RIES, NE and KWT had not submitted comments on the updated outline LBMP [revision D, REP6-006] to the Examination. As such, it was unclear whether NE and KWT considered the measures within [REP6-006] to be sufficient to conclude no AEoI of the Swale SPA and Ramsar site for lapwing, golden plover and brent

¹³ RSPB, Farming for Wildlife, Scrape Creation for Wildlife. Available at: https://www.rspb.org.uk/globalassets/downloads/documents/farming-advice/scrapecreationforwildlife_tcm9-255102.pdf

goose. A Rule 17 request has been issued alongside the RIES for clarification.

Habitat loss/ change, Grazing Marsh Grassland Management Plan and potential adverse effects on marsh harriers

Proposed management measures for marsh harriers

- 4.2.103 The Proposed Development would result in a change from growing crops in the arable fields to the presence of solar panels and the energy storage facility, which potentially reduces the area available for foraging marsh harriers [**APP-026**]. The Applicant's baseline flight activity surveys demonstrated that the application site provides an important foraging area for marsh harriers (a component species of the breeding bird assemblage qualifying feature of the Swale SPA) throughout the year [**APP-026**]. However, the RIAA explains that the arable fields are not favoured foraging habitat, with marsh harriers mostly recorded foraging along the ditch and grassland strips at the edges of the arable fields and throughout the coastal grazing marsh/ reedbed strip just inland of the sea wall [**APP-026**].
- 4.2.104 Paragraph 81 of the RIAA concludes that in the absence of mitigation, a LSE on marsh harrier resulting from the loss of functionally-linked land cannot be discounted [**APP-026**]. The Applicant's assessment of potential AEOI on marsh harrier as a result of habitat loss/ change during construction and operation of the Proposed Development (and the proposed approach to mitigating such impacts) is presented in section 6.1.2.7 of the RIAA [**APP-026**]. The RIAA concludes that subject to the appropriate management of the large grassland swathes between the solar arrays, there would be no AEOI on marsh harrier of the Swale SPA [**APP-026**].
- 4.2.105 In ExQ1, the ExA asked the Applicant [ExQ1.1.11, **PD-004**] to confirm the management measures proposed for the areas between the solar panel arrays and the ditches for marsh harrier (the 'Field Margin and Ditch Margin Habitat'). The Applicant explained [**REP2-006**], with reference to Figure A5.1 of the outline LBMP [then **APP-203**, now superseded by **REP6-006**], that the areas between the solar panel arrays and ditches would be managed as Coastal and Floodplain Grazing Marsh.
- 4.2.106 The Applicant [ExQ1.1.11, **REP2-006**] pointed to Appendix A of the outline LBMP for the management prescriptions for the Coastal and Floodplain Grazing Marsh Grassland (titled "Grazing Marsh Grassland Management Plan" (GMG MP)). The aim of the GMG MP is to establish a grassland sward with greater ecological value than the existing arable land [**REP6-006**].
- 4.2.107 In WR, NE stated [**REP2-096**] that there is some uncertainty as to whether individual marsh harriers would continue to forage along the ditches within the proposed solar park. NE considered that this uncertainty emerges from the lack of existing equivalent sites with which to compare the potential response of marsh harrier to the presence of solar panels [**REP2-096**]. In its response to ExQ1.1.11, the Applicant

accepted [**REP2-006**] that there was no peer-reviewed empirical evidence regarding changes in behaviour of marsh harriers at or around solar farms. The Applicant provided a blog post (discussing preliminary research findings) in support of its prediction in the RIAA that marsh harriers would forage in the areas between the solar panels in [Appendix 5, **REP2-011**], although the study referenced within did not mention marsh harrier specifically.

- 4.2.108 NE recognised that the setting back of panels to a minimum of 15m from the ditches (as referenced in paragraph 209 of the RIAA [**APP-026**]) would be helpful in reducing the risk of creating 'pinch points' which would deter birds [**REP2-096**]. The creation of rough grassland to maximise the presence of small mammals was considered by NE to be crucial in encouraging marsh harriers to continue to forage in the area [**REP2-096**].
- 4.2.109 Similarly, KWT considered [**REP2-092**] that, if successfully delivered by the LBMP, there is no dispute that the habitats created along the ditches will be of a type used by marsh harrier. However, KWT was concerned about the solar panels (plus fences in some places) creating a development 'corridor' that marsh harriers would not use [**REP2-092**].
- 4.2.110 At ISH 4 [**EV-020**], the Applicant confirmed its position that there would be no adverse effect on the Swale SPA based on creating suitable areas of habitat for foraging for marsh harriers between the solar arrays, and the aquatic habitats management plan (Appendix H of the outline LBMP) to improve ditch water quality and the reed bed [**REP3-017**].
- 4.2.111 During ISH 4, the Applicant stated [**REP3-017**] that whilst a plan for monitoring marsh harrier behaviour was not included in the outline LBMP at that time [**APP-203**], this would be considered in subsequent updates to the plan. Monitoring arrangements for marsh harrier behaviour have subsequently been included at Appendix A of the outline LBMP [**REP6-006**].
- 4.2.112 The Applicant advised that any remedial measures would aim to vary grazing pressure and water levels in ditches to create a sward appropriate to support the marsh harriers' prey [**REP3-017**]. During ISH 4, the Applicant confirmed [**REP3-017**] that monitoring and adaptive management measures requested by KWT in [**REP2-092**] would be addressed in the outline LBMP. This was subsequently addressed in updates to the outline LBMP [**REP6-006**].
- 4.2.113 At set out in [**REP3-082**], NE's view was that to be confident in a conclusion of no AEoI of the Swale SPA for marsh harriers, there should be no net loss of foraging resource. As such, NE advised the Applicant to maximise the habitat between the ditches and solar panels to provide as many small mammals as possible as food for marsh harriers [**REP3-082**]. NE advised that an abundant food source may encourage marsh harriers to overcome any reticence they might have about entering the proposed solar park [**REP3-082**].
- 4.2.114 However, noting submissions to the Examination from IP Bob Gomes including [**REP2-072**], NE acknowledged [**REP3-082**] that if marsh

harriers are deterred from using the site by the presence of the panels, this food will not be available to them. NE considered that absolute certainty over the response of marsh harriers was not possible as there are no equivalent sites and the Proposed Development has not yet been built. Therefore, NE explained that it would work with the Applicant and the HMSG on the steps to take to resolve the uncertainty [**REP3-082**]. Subsequent discussions on this during the Examination to date are reported as follows.

Carrying capacity of the DCO area

- 4.2.115 In line with suggestions from NE in [**REP3-082**], ExQ2.1.15 [**PD-008**] asked the Applicant to provide a calculation for the carrying capacity of the Order area for marsh harriers before and after the implementation of the Proposed Development, and to define the amount of prey likely to be provided by the different parts of the Order area, with a view to demonstrating how the change in habitat quality across the site will influence how much food will be provided in the different parts. The Applicant was also asked to confirm the width of the ditch corridors at the northern part of the application site, and to comment on whether they would be wide enough that marsh harriers are not deterred from entering the site from the existing habitat along the borrow dyke [ExQ2.1.15, **PD-008**].
- 4.2.116 The Applicant's response [ExQ2.1.15, **REP4-020**] reported that the South Swale Nature Reserve and adjacent habitats have historically supported nesting marsh harrier, although not at a consistent level since 2004, with data showing single nest attempts each year between 2013 and 2018 following between 3 and 8 pairs attempting to nest each year from 2004 to 2012 (as explained at paragraph 351 of ES Chapter 9 - Ornithology [**APP-039**]). The Applicant explained that the data on nesting attempts is helpful in quantification of the carrying capacity of the Order area available, although it is known that other marsh harriers from a wider area also forage at the site [ExQ2.1.15, **REP4-020**].
- 4.2.117 The Applicant explained that structurally diverse habitat such as a rough grassland is likely to contain a greater variety of food sources and potential nesting sites for a variety of small mammals. The Applicant provided some information [**REP4-022**] which confirmed mammals have been shown to distribute themselves between habitats according to habitat quality, with higher densities of mammals in higher quality habitats. The Applicant provided a summary of the results of a study of barn owl feeding areas in Northumberland¹⁴ looking at the overall composition of small mammals within two corridors, with particular emphasis on field voles, wood mice and common shrew. The study showed a statistically significant increase in field vole abundance within ungrazed habitats compared to the managed grassland. Other studies

¹⁴ Keene, A. (2009) Study of small mammal populations within two Barn owl corridors at Folly Farm Bioscience Horizons Vol 2 reported at [**REP4-022**].

have shown that densities of field vole can range from 1-15/ha in mixed farmland up to 100-300/ha in rough grassland¹⁵.

- 4.2.118 Densities of common shrew are stated [**REP4-022**] as 10 per ha in lowland unimproved grasslands prior to the breeding season, compared to lower densities of 2.5 per ha in arable areas, where common shrews are only found within hedgerows. Wood mouse densities are greatest in woodland and scrub, however there is an increased density of 2.5 per ha in unimproved grassland, compared to 1 per ha in arable land. Harvest mice are more specialized and dependent on a high sward height. Mean density estimates for a number of habitats are as follows; 0.05 per ha in barley; 0.4 per ha in wheat; 2.5-5.0 per ha in rough and damp meadows; 20 per ha in reedbeds.
- 4.2.119 The Applicant concluded that densities of the selected small mammals are all lower in arable habitats compared to rough grassland, however, the type of management of arable fields will have a huge impact on the density of mammals present and overall biodiversity.
- 4.2.120 Therefore, the Applicant responded to the ExA [**REP4-020**] that the habitat enhancements at the application site were likely to improve conditions for many small mammals but an accurate quantification of this was not feasible. The provision of additional favourable habitat, associated increase in prey species and the more sympathetic management of water levels within the application site are all factors that are expected to have beneficial effects for marsh harrier. Whilst it was acknowledged that individual birds may be dissuaded from utilising the site by the presence of the Proposed Development, the greater availability of prey and the more favourable habitat created is expected to at least maintain the carrying capacity of the Order area at a population level [ExQ2.1.15, **REP4-020**].
- 4.2.121 The Applicant was not initially proposing to introduce details of sampling of small mammal populations in the outline LBMP, but revised paragraph 52 in [revision C, **REP4-008**] stated that sampling could be considered.
- 4.2.122 At ISH 6 [**EV-027**], the ExA quoted paragraph 52 and asked when the Applicant planned to make a decision regarding sampling of small mammal populations given their importance as prey for the marsh harriers. The Applicant confirmed that additional monitoring would be undertaken if marsh harrier use was lower than expected [**REP5-011**].
- 4.2.123 The outline LBMP was updated at Deadline 6 [**REP6-006**] to state (paragraph 72, previously 52) that an ecologist will visit the site regularly during construction and during operation in years 0-1, 1-2, 2-3, 4-5, 10 and 20 to monitor bird activity (including marsh harriers) and to undertake sampling of small mammal populations in relation to marsh harrier prey availability. The findings of the monitoring would be reported to and discussed with the HSMG, along with any necessary remedial

¹⁵ Harris S, Morris P, Wray S et al. (1995) A Review of British Mammals: Population Estimates and Conservation Status of British Mammals Other than Cetaceans. Peterborough: JNCC. AND Lambin X, Petty SJ, Mackinnon JL (2000) Cyclical dynamics in field vole populations and generalist predation. J Anim Ecol 69: 106–118 reported at [**REP4-022**].

measures should the triggers set out in [Section 6.5.3, **REP6-006**] occur.

- 4.2.124 At the time of writing this RIES, it was unclear what would be involved in the sampling of small mammal populations and when the results of the monitoring would be reported to the HMSG.

Solar panels as a deterrent

- 4.2.125 In [ExQ2.1.15, **PD-008**], the ExA asked the Applicant to confirm the width of the corridors through the solar array along ditches and paths at the northern part of the site and comment on whether they would be sufficiently wide that marsh harriers would not be deterred from entering the solar array from the existing favoured habitat along the borrow dyke.
- 4.2.126 The Applicant [**REP4-023**] provided the information requested on the separation between arrays along the northern edge of the application site. The Applicant confirmed it was confident that the separations achieved were sufficiently wide that marsh harriers would not be deterred from entering the solar array area from the borrow dyke.
- 4.2.127 At the HMSG meeting on 23rd August 2019 (meeting notes provided at Deadline 4 [**REP4-021**]), the issue of solar panel deterrence for marsh harrier was discussed. The HMSG asked the Applicant whether there was any evidence relating to marsh harriers nesting near solar panels. The Applicant suggested that at the Kemsley Paper Mill (near Sittingbourne in Kent), marsh harrier nest and continued to nest during construction of the energy centre there.
- 4.2.128 KWT [**REP4-068**] states that with no studies to compare it to, the reaction of marsh harriers to the solar park, either on the site-wide or individual ditch scale, will remain an unknown. KWT considered that there is nothing in the LBMP that can adapt the management to deal with this, if it happens. Therefore, KWT suggested that, if there is shown to be, through monitoring, a minimum width that the harriers will use, panels in those areas that fall below this could be decommissioned to widen these areas [**REP4-068**].
- 4.2.129 At Deadline 5, the Applicant maintained [**REP5-015**] that the habitat management proposals across the site, as set out in the outline LBMP, will provide enhanced foraging resources for marsh harrier and that they will be available to marsh harrier. The Applicant confirmed that decommissioning of panels to widen inter-array grassland areas is not proposed as a remedial action [**REP5-015**].
- 4.2.130 The Applicant pointed out [**REP5-015**] that the arable fields under the current baseline occupy approximately 390 ha in extent. 22.5% of this currently arable area that comprises the AR HMA and Lowland Grassland Meadow Habitat Management Area will remain undeveloped with no solar panels or infrastructure, with arable to grassland reversion enhancements that will provide more suitable foraging habitat for marsh harriers, at least during some parts of the year [**REP5-015**]. The Applicant concludes that the inter-array grassland habitats will continue to attract foraging marsh harriers to the application site and there will not be an AEoI of the Swale SPA [**REP5-015**].

- 4.2.131 At the time of writing this RIES, information has not been provided to demonstrate what proportion of marsh harrier foraging habitat would be affected and/ or lost as a result of the Proposed Development, in the context of the Swale SPA and the applicable functionally-linked land. The ExA has issued a Rule 17 question alongside the RIES in this regard.

Level of certainty regarding no AEoI

- 4.2.132 As reported above, NE's view [**REP3-082**] is that to be confident in a conclusion of no AEoI of the Swale SPA for marsh harriers, the Applicant should ensure that there is no net loss of foraging resource. Subject to details on habitat management being set out in the outline LBMP, NE is in agreement that the proposed habitat enhancements will result in more food for marsh harriers in both the ditch corridors and the AR HMA. However, NE is concerned that if marsh harriers are deterred from using the application site by the presence of the panels, this food will not be available to them [**REP3-082**].
- 4.2.133 NE considers that absolute certainty over the response of marsh harriers to solar panels will not be possible as there are no equivalent sites and the Proposed Development has not yet been built [**REP3-082** and **REP5-050**].
- 4.2.134 NE's view in [**REP5-050**] regarding the triggers and remedial actions for marsh harrier (as proposed in Appendix A, paragraph 55, of the Deadline 4 outline LBMP [**REP4-008**]) is that these relate to actions the Applicant can take within the application site boundary. However, NE considers there is a gap in that there is no remedial action in the event that marsh harriers are deterred from using the application site due to the presence of the solar panels [**REP5-050**]. The triggers and remedial actions for marsh harrier have been updated in the outline LBMP submitted at Deadline 6 [**REP6-006**] (Appendix A, Section 6.5.3). NE has not yet submitted comments on [**REP6-006**] to the Examination and it is currently unclear whether this update addresses NE's concerns in [**REP5-050**] regarding the gap in remedial actions. A Rule 17 request has been issued alongside the RIES for clarification. However, it is noted that the outline LBMP [**REP6-006**] now states at paragraph 75 that remedial measures will be agreed with the HMSG.
- 4.2.135 The approach taken by the Applicant has been to maximise the habitat within the solar park site for small mammals as a foraging resource for marsh harriers. This is in line with NE's advice that the presence of optimal foraging habitat is likely to encourage at least some individual marsh harriers to overcome any reticence about the presence of the panels, such that the overall population will be maintained [**REP3-082** and **REP5-050**]. However, NE considers that there is uncertainty over whether the landscape changes will deter marsh harriers from accessing the habitat provided [**REP5-050**].
- 4.2.136 NE's view is that even if the habitat is in optimal condition, it might be the presence of the panels that prevent marsh harriers from using that habitat [**REP5-050**]. In order to be certain that an AEoI of the Swale SPA will be avoided, NE considers that there should be both no net loss

of foraging habitat and no net loss of foraging opportunities [**REP5-050**].

- 4.2.137 NE has highlighted [**REP5-050**] that judgements in both the ECJU and the UK courts have made it clear that a high level of certainty is required when assessing whether a plan or project is likely to adversely affect the integrity of a European site; noting that the ECJU in Waddenzee (case C-127/02) ruled that a high level of certainty is required “where no reasonable scientific doubt remained as to the absence of such effects”.
- 4.2.138 The Applicant expressed its position on the level of certainty required for the purposes of HRA at Deadlines 2 [**REP2-027**] and 5 [**REP5-015**]. In [**REP2-027**], the Applicant explained (paragraph 3.3) that it believed a degree of uncertainty is inherent to any assessment process, as it necessarily involves prediction and modelling in an effort to assess what is likely to happen in the real world. The Applicant quoted paragraph 107 of Waddenzee C-127/02 which states that there is never, or rarely, absolute certainty, which leading case law on the HRA process accepts is “almost impossible to attain” [**REP2-027**]. The Applicant concluded at paragraph 3.4 of [**REP2-027**] that whilst the assessment should be informed by expert assessment, the exercise of judgement is necessary.
- 4.2.139 [**REP5-015**] explains that “At ISH 6, the Applicant emphasised the importance of doing what the law requires with respect to the Habitats Regulations, given that no-one can state with certainty what the marsh harriers will do if the project is built”. The Applicant reiterated its view as expressed in [**REP2-027**] that there is no requirement for absolute certainty, rather the requirement is to demonstrate beyond reasonable scientific doubt there will not be a significant adverse effect on a SPA, with the Secretary of State having regard to the best available evidence when making the decision [**REP5-015**].
- 4.2.140 On this point, NE’s guidance [**REP5-050**] is that the best that can be achieved is for the competent authority to identify the reasonably foreseeable risks, in light of information that can be realistically obtained and put in place a legally enforceable framework aimed at preventing the risks. NE considers that there is always going to be a certain level of uncertainty as we are making a prediction of the reactions of individual birds – there cannot be absolute certainty as the project has not been built yet [**REP5-050**]. Therefore, the assessment of impacts has to be based on expert opinion, which is divided. NE considers that where scientific uncertainty is present then a precautionary approach should be adopted; and explained that its engagement in the Examination and through the HMSG has been to try and resolve the uncertainty as far as possible [**REP5-050**].
- 4.2.141 At Deadline 5, NE’s view [**REP5-050**] was that there is still some remaining uncertainty surrounding the use of the application site by marsh harriers, such that it has not yet been established, beyond reasonable scientific doubt, that there will not be an AEoI of the Swale SPA for marsh harriers. NE stated that it would continue to work with the Applicant and the HMSG to resolve this issue. NE considered that off-site habitat creation could be a way of resolving the uncertainty surrounding

marsh harriers but explained that it could not give a figure for the amount of habitat that might be necessary [REP5-050].

- 4.2.142 The Applicant responded to NE's submission [REP5-050] at Deadline 6 [REP6-015]; referring to its earlier submissions to the Examination regarding recent case law and appropriate assessment under the Habitats Regulations [REP2-027], the northern edge array spacings [REP4-023], the ditch cross sections [REP4-030] and information on small mammal carrying capacity [REP4-022]. The Applicant acknowledged the difference in positions between the Applicant and NE regarding the level of uncertainty and remedial actions for marsh harrier but maintained that further remedial measures for marsh harrier are not required to conclude beyond reasonable scientific doubt that there will not be an AEOI of the Swale SPA [REP6-015].
- 4.2.143 At the time of writing this RIES, it was unclear whether the Applicant intended to pursue available mechanisms to deliver any additional land that might be required (as suggested by NE in [REP5-050] as a way of resolving the uncertainties it has identified surrounding marsh harriers) and how any such additional land would be secured through the DCO or other legal mechanism. A Rule 17 request has been issued alongside the RIES for clarification.
- 4.2.144 KWT stated in [REP5-048] that with regard to triggers and the outline LBMP, further changes to the document were still necessary and that the behavioural response of marsh harrier to the development is an unknown. KWT has submitted [REP5-049] a summary of the conclusions of a study of the factors that influenced the occurrence and abundance of marsh harriers in an agricultural wetland landscape conducted in Portugal¹⁶. KWT explains that the study identified a negative association between roads and 'Human constructions' (stated as "*e.g. buildings, industry*") and the presence of marsh harriers during the breeding season [REP5-049]. KWT's view, given the industrial look and scale of the solar arrays proposed for Cleve Hill, is that "*in the absence of anything better, this study appears to be the best available evidence regarding the impact of industrial development on marsh harriers, and casts doubt on whether the proposed mitigation will avoid a Likely Significant Effect*" [REP5-049].
- 4.2.145 At Deadline 6, the Applicant responded [REP6-015] to KWT's comments in [REP5-049]. The Applicant disagreed with KWT's interpretation of the Alves *et al* study¹⁶ and suggested that it is "*...the element of human activity associated with the "human constructions" that has the negative association, rather than the constructions themselves*" [REP6-015]. The Applicant noted that the Proposed Development would operate with less intense human and vehicular activity than the baseline farming operations [REP6-015]. The Applicant also provided two further examples of marsh harriers breeding near urban environments, at

¹⁶ Alves, M., Ferreira, J., Torres, I., Fonseca, C., and Matos, M. (2014). Habitat Use and Selection of the Marsh Harrier *Circus aeruginosus* in an Agricultural-Wetland Mosaic. *Ardeola*. 61. 351-366. 10.13157/arla.61.2.2014.351.

Radipole Lake in Dorset and Potteric Carr in Doncaster [**REP6-015**]. The Applicant [**REP6-015**] acknowledged KWT's comments in [**REP5-049**] regarding the uncertainty of birds' responses to the presence of the Proposed Development but considered the degree of uncertainty to be "acceptably low".

- 4.2.146 In [**REP5-048**], KWT stated that if the behavioural response of marsh harrier is negative, the outline LBMP does not provide any remedial measures that can address this and considered there were still changes required to the outline LBMP with regard to triggers and remedial actions. KWT considers that the success of the mitigation remains an uncertainty and that with the Applicant having done what they are able to within the constraints of the Proposed Development design, what would be needed would be to increase the available habitat [**REP5-048**].
- 4.2.147 In response, the Applicant acknowledged the difference in positions between the Applicant and KWT regarding remedial action but maintained that further remedial measures for marsh harrier are not required to avoid an AEoI of the Swale SPA [**REP6-015**].

**Noise disturbance to birds, outline Special Protection Area
Construction Noise Management Plan and outline Breeding Bird
Protection Plan**

- 4.2.148 The Applicant's assessment of potential AEoI as a result of noise and visual disturbance to breeding and non-breeding birds during construction and decommissioning of the Proposed Development (and the proposed approach to mitigating such impacts) is presented in Section 6.1.1 of the RIAA [**APP-026**]. Subject to mitigation measures including the SPA CNMP, the RIAA concludes that there would be no AEoI of the qualifying features of the Swale SPA and Ramsar site in this respect [**APP-026**].
- 4.2.149 Table 9.6 of the ES Ornithology chapter [**APP-039**] summarises the Swale SPA component species using the intertidal area to the north of the Proposed Development. This indicates that significant numbers of SPA species use this area.
- 4.2.150 In relation to noise from construction of the Proposed Development, Figure 3 of the RIAA [**APP-026**] shows that the 70dB_{L_{Amax}} noise contour does not reach the intertidal area. However, NE noted [**RR-827**] that the 55dB_{L_{Amax}} contour extends 320m from the source of the piling, and hence extends into the intertidal area. Therefore, there is the potential for wintering birds to be impacted by construction noise. In NE's view [**REP2-096**], this applied particularly to birds roosting at Castle Coote, as options for alternative high tide roosts are more limited than foraging areas and birds are pushed closer to the source of disturbance by the high tide.
- 4.2.151 The Applicant submitted an outline SPA CNMP with the DCO application [**APP-243**], which set out proposed measures to mitigate impacts on birds from noise disturbance. In its RR, NE [**RR-826**] raised concerns that the measures in [**APP-243**] were not sufficient to be certain that adverse impacts would be avoided at high tide. NE understood that the

Applicant would submit an updated version of the outline SPA CNMP including timing restrictions on piling to avoid disturbance to birds using the high tide roost at Castle Coote [**REP2-096**].

- 4.2.152 At Deadline 3, the Applicant submitted a revised outline SPA CNMP [**REP3-008**; superseded by **REP4-013**] with the aim of addressing NE's concerns. A revised version of the outline BBPP was also submitted at Deadline 3 [Appendix B, **REP3-006**; superseded by **REP6-008**].
- 4.2.153 At Deadline 5, NE confirmed [**REP5-050**] it was satisfied that the revised versions of the outline SPA CNMP [**REP3-008**] and outline BBPP [**REP3-006**] submitted by the Applicant at Deadline 3 take account of the concerns raised in its RR [**RR-826**] and WR [**REP2-096**]. In particular, NE considered that these documents now addressed its previous concerns regarding noise contours and measures to avoid construction noise disturbance to particularly sensitive parts of the designated sites, including Castle Coote [**REP5-050**].
- 4.2.154 Therefore, NE confirmed it was satisfied that the SPA CNMP and BBPP contain clear and sufficient measures to avoid an AEoI of the qualifying features of the Swale SPA and Ramsar site from construction disturbance [**REP5-050**].

Hydrological changes and dust emissions

- 4.2.155 The Applicant's assessment of potential AEoI as a result of hydrological change and dust emissions during construction and decommissioning of the Proposed Development is presented in Sections 6.1.3 and 6.1.4 of the RIAA, respectively [**APP-026**]. Subject to mitigation measures set out in the outline CEMP, the RIAA concludes that there would be no AEoI of the qualifying features of the Swale SPA and Ramsar site in this respect [**APP-026**].
- 4.2.156 Further to its agreement regarding impacts from construction disturbance, NE has confirmed [**REP5-050**] it is content that the CEMP [**REP3-006**; superseded by **REP6-008**] contains sufficient mitigation measures to avoid an AEoI from other construction impacts, including dust and water quality. This agreement is also reflected in the Applicant's SoCG with NE submitted at Deadline 4 [**REP4-039**].

Decommissioning

- 4.2.157 The RIAA explains that increased extents of undisturbed habitat will become available as the decommissioning phase progresses [**APP-026**]. It is stated that noise levels during decommissioning would be lower and occur over a shorter time period than the noise levels during construction, with noise levels to be controlled through a decommissioning plan [**APP-026**].
- 4.2.158 An outline D&RP has been provided [**APP-206**, superseded by **REP6-010**]. In response to ExQ1.4.24 [**PD-004**], the Applicant confirmed [**REP2-006**] that measures in the outline D&RP are required to conclude no AEoI of the Swale SPA and Ramsar site during decommissioning of the Proposed Development. The Applicant considers that the outline D&RP "...provides the mechanism by which there can be certainty that

*control measures will be implemented during decommissioning to prevent significant effects of noise disturbance, dust and hydrological changes to SPA breeding and wintering birds” [ExQ1.4.24, **REP2-006**].*

- 4.2.159 At Deadline 3, NE confirmed [**REP3-082**] that it had no comments on the scope and content of the outline D&RP. The Applicant asserts that NE’s agreement regarding construction impacts [**REP5-050**] is applicable to decommissioning.

Table 4.1: The Applicant's RIAA and degree of agreement with Interested Parties

Qualifying features	Potential Adverse Effect on Integrity?*	Agreed with SNCB and other relevant parties?	Comments
The Swale SPA			
Brent goose (wintering)	No - sections 6.1 and 6.2 of RIAA [APP-026] and integrity matrix 1 [REP3-023]	<p>Not yet agreed with NE in respect of habitat loss/ change. However, at Deadline 5, NE confirmed [REP5-050] that subject to updates to the outline LBMP to secure the constitution and status of the HMSG, it is satisfied that the AR HMA is sufficient to avoid an AEoI of the Swale SPA and Ramsar site for brent geese.</p> <p>KWT considered that further updates to the outline LBMP were required in respect of the AR HMA [REP5-048].</p> <p>NE and KWT have not yet commented on the latest version of the outline LBMP submitted at Deadline 6 [revision D, REP6-006]. However, details of the constitution and status of the HMSG are yet to be added [revision D, REP6-006].</p> <p>Not agreed with RSPB [RR-841].</p>	See Stage 2 matrix 1 (Annex 1 of RIES)
Dunlin (wintering)	No - sections 6.1 and 6.2 of RIAA [APP-026] and integrity matrix 1 [REP3-023]	No specific objections raised by NE or other IPs.	See Stage 2 matrix 1 (Annex 1 of RIES)
Breeding bird assemblage	No - sections 6.1 and 6.2 of RIAA [APP-026] and	<p>Not agreed with NE and KWT for marsh harrier component species in respect of habitat loss/ change.</p> <p>NE and KWT have outstanding concerns around the</p>	See Stage 2 matrix 1 (Annex 1 of RIES)

Qualifying features	Potential Adverse Effect on Integrity?*	Agreed with SNCB and other relevant parties?	Comments
	integrity matrix 1 [REP3-023]	<p>behavioural response of marsh harriers to the presence of solar panels and the triggers and remedial actions in the outline LBMP ([REP5-050] and [REP5-048], respectively). The triggers and remedial actions for marsh harrier have been updated in the outline LBMP submitted at Deadline 6 [REP6-006] (Appendix A, Section 6.5.3), but NE and KWT have not yet submitted comments on [REP6-006] to the Examination and it is currently unclear whether this update addresses their concerns in this regard.</p> <p>NE considers [REP5-050] that there is still some remaining uncertainty surrounding the use of the application site by marsh harriers, such that it has not yet been established, beyond reasonable scientific doubt, that there will not be an AEoI of the Swale SPA for marsh harriers. NE stated that it would continue to work with the Applicant and the HMSG to resolve this issue but suggested that off-site habitat creation could be a way of resolving the uncertainty [REP5-050].</p> <p>The Applicant maintains that there would be no AEoI of the Swale SPA for marsh harrier [REP6-015].</p> <p>No specific objections raised by NE or other IPs in relation to other component species.</p>	
Wintering waterbird assemblage	No - sections 6.1 and 6.2 of RIAA [APP-026] and integrity matrix 1	Not yet agreed with NE for lapwing, golden plover and brent goose component species in respect of habitat loss/change. However, at Deadline 5, NE stated that subject to details of scrapes in the SSSI land being added to the	See Stage 2 matrix 1 (Annex 1 of RIES)

Qualifying features	Potential Adverse Effect on Integrity?*	Agreed with SNCB and other relevant parties?	Comments
	[REP3-023]	<p>outline LBMP, along with further detail on the constitution of the HMSG, it is satisfied that an AEoI of the Swale SPA and Ramsar site for lapwings and golden plovers would be avoided [REP5-050]. NE also confirmed [REP5-050] that subject to updates to the outline LBMP to secure the constitution and status of the HMSG, it is satisfied that the AR HMA is sufficient to avoid an AEoI of the Swale SPA and Ramsar site for brent geese.</p> <p>NE and KWT have not yet commented on the latest version of the outline LBMP submitted at Deadline 6 [revision D, REP6-006]. This added details of scrapes within the FGM HMA, but details of the constitution and status of the HMSG are yet to be added [revision D, REP6-006].</p> <p>Not agreed with RSPB in respect of lapwing, golden plover and brent goose [RR-841].</p> <p>No specific objections raised by NE or other IPs in relation to other component species.</p>	
The Swale Ramsar site			
Criterion 2 – at least seven British Red Data Book invertebrate species	No - sections 6.1 and 6.2 of RIAA [APP-026] and integrity matrix 2 [REP3-023]	No specific objections raised by NE or other IPs.	See Stage 2 matrix 2 (Annex 1 of RIES)

Qualifying features	Potential Adverse Effect on Integrity?*	Agreed with SNCB and other relevant parties?	Comments
Criterion 5 – wintering waterfowl assemblage	No - sections 6.1 and 6.2 of RIAA [APP-026] and integrity matrix 2 [REP3-023]	<p>Not yet agreed with NE for lapwing, golden plover and brent goose component species in respect of habitat loss/change. However, at Deadline 5, NE stated that subject to details of scrapes in the SSSI land being added to the outline LBMP, along with further detail on the constitution of the HMSG, it is satisfied that an AEoI of the Swale SPA and Ramsar site for lapwings and golden plovers would be avoided [REP5-050]. NE also confirmed [REP5-050] that subject to updates to the outline LBMP to secure the constitution and status of the HMSG, it is satisfied that the AR HMA is sufficient to avoid an AEoI of the Swale SPA and Ramsar site for brent geese.</p> <p>NE and KWT have not yet commented on the latest version of the outline LBMP submitted at Deadline 6 [revision D, REP6-006]. This added details of scrapes within the FGM HMA, but details of the constitution and status of the HMSG are yet to be added [revision D, REP6-006].</p> <p>Not agreed with RSPB in respect of lapwing, golden plover and brent goose [RR-841].</p> <p>No specific objections raised by NE or other IPs in relation to other component species.</p>	See Stage 2 matrix 2 (Annex 1 of RIES)
Criterion 6 – redshank (non-breeding)	No - sections 6.1 and 6.2 of RIAA [APP-026] and integrity matrix 2 [REP3-023]	No specific objections raised by NE or other IPs.	See Stage 2 matrix 2 (Annex 1 of RIES)

Qualifying features	Potential Adverse Effect on Integrity?*	Agreed with SNCB and other relevant parties?	Comments
Criterion 6 – brent goose (non-breeding)	No – sections 6.1 and 6.2 of RIAA [APP-026] and integrity matrix 2 [REP3-023]	<p>Not yet agreed with NE in respect of habitat loss/ change. However, at Deadline 5, NE confirmed [REP5-050] that subject to updates to the outline LBMP to secure the constitution and status of the HMSG, it is satisfied that the AR HMA is sufficient to avoid an AEoI of the Swale SPA and Ramsar site for brent geese.</p> <p>KWT considered that further updates to the outline LBMP were required in respect of the AR HMA [REP5-048].</p> <p>NE and KWT have not yet commented on the latest version of the outline LBMP submitted at Deadline 6 [revision D, REP6-006]. However, details of the constitution and status of the HMSG are yet to be added [revision D, REP6-006].</p> <p>Not agreed with RSPB [RR-841].</p>	See Stage 2 matrix 2 (Annex 1 of RIES)
Criterion 6 – grey plover (non-breeding)	No – sections 6.1 and 6.2 of RIAA [APP-026] and integrity matrix 2 [REP3-023]	No specific objections raised by NE or other IPs.	See Stage 2 matrix 2 (Annex 1 of RIES)

*From Applicant's RIAA [**APP-026**] and integrity matrices [**REP3-023**].

5 SUMMARY

- 5.0.1 The ExA has produced this RIES to outline the latest position in respect of HRA matters during the Examination.
- 5.0.2 Matters for clarification have been raised, including:
- Whether the Applicant's statement in paragraph 6.30 of [**REP5-011**], regarding the assessment of temporary habitat loss during construction in the ES, would also be applicable to conclusions on AEoI as presented in the RIAA;
 - What proportion of marsh harrier foraging habitat would be affected and/ or lost as a result of the Proposed Development, in the context of the Swale SPA and the applicable functionally-linked land;
 - In light of NE's comments in [**REP5-050**], which suggest that off-site habitat creation could be a way of resolving the uncertainty it has identified surrounding marsh harriers, whether the Applicant intended to pursue available mechanisms to deliver any additional land that might be required and how any such additional land would be secured through the DCO or other legal mechanism; and
 - Noting that details of the constitution and status of the HMSG have yet to be added to the outline LBMP [**REP6-006**], whether NE and KWT consider the measures within [**REP6-006**] to be sufficient to conclude no AEoI of the Swale SPA and Ramsar site for lapwing, golden plover and brent geese.
- 5.0.3 The Applicant and all IPs are invited to make written comments in response to this RIES by Deadline 7 (13 November 2019).

ANNEX 1: HRA STAGE 2 MATRICES: ADVERSE EFFECT ON INTEGRITY

Stage 2 Matrices: Adverse Effect on Integrity

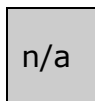
This annex of the RIES identifies the European sites and features for which the Applicant's conclusions with regards to adverse effects on integrity (AEoI) were disputed by Interested Parties (IPs). Therefore, revised integrity matrices have been produced by the Planning Inspectorate.

Key to Matrices:

- ✓ AEoI cannot be excluded
- × No AEoI
- ? Agreement not yet reached between Applicant and IPs that an AEoI can be excluded
- C construction
- O operation
- D decommissioning

Information supporting the conclusions is detailed in footnotes for each table with reference to relevant supporting documentation.

Where an impact is not considered relevant for a feature of a European site, the cell in the matrix is formatted as follows:



Matrices presented in this Annex:

Stage 2 Matrix 1: The Swale SPA

Stage 2 Matrix 2: The Swale Ramsar site

Stage 2 Matrix 1: The Swale SPA

Site Code: UK9012011

Distance to Proposed Development: 0km - the application site includes areas which are part of the Swale SPA (as illustrated on Figure 2 of the RIAA [REP2-014])

European site features	Effects on integrity														
	Noise, visual and lighting disturbance			Loss/change of habitats			Hydrological changes			Deposition of dust			In-combination effects		
	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
<i>Dark-bellied brent goose (non-breeding)</i>	xa	n/a	xb	?c	?c	n/a	xf	n/a	xg	xh	n/a	xi	xj	xj	xj
<i>Dunlin (non-breeding)</i>	xa	n/a	xb	n/a	n/a	n/a	xf	n/a	xg	xh	n/a	xi	xj	xj	xj
<i>Breeding bird assemblage</i>	xa	n/a	xb	?d	?d	n/a	xf	n/a	xg	xh	n/a	xi	xj	xj	xj
<i>Wintering waterbird assemblage (non-breeding)</i>	xa	n/a	xb	?c, e	?c, e	n/a	xf	n/a	xg	xh	n/a	xi	xj	xj	xj

Evidence supporting conclusions

- a. The Applicant's assessment of potential AEOI as a result of noise and visual disturbance to breeding and non-breeding birds during construction of the Proposed Development (and the proposed approach to mitigating such impacts) is

presented in Section 6.1.1 of the RIAA [**APP-026**]. The RIAA explains that construction would take place over two to three seasons, and by a field-by-field basis, meaning large areas of the application site would remain free of development and disturbance at any one time [**APP-026**]. In light of advice from NE [**REP2-096**, **REP3-082** and **REP5-050**] and KWT [**REP4-068**], the outline LBMP (Requirement 5 of the dDCO [**REP6-004**] refers) now refers to the AR HMA being established prior to the first winter of construction [**REP6-006**]; the RIAA explains that this will provide some disturbance-free habitat for geese and wintering waders during construction [**APP-026**]. Subject to mitigation measures including the SPA CNMP, the RIAA concludes that there would be no AEoI of the qualifying features of the Swale SPA as a result of noise and visual disturbance during construction. NE has agreed that the revised SPA CNMP [**REP3-008**; superseded by **REP4-013**] (Requirement 13 of the dDCO [**REP6-004**] refers) and BBPP [Appendix B, **REP3-006**; superseded by **REP6-008**] (Requirement 11 of the dDCO [**REP6-004**] refers) contain clear and sufficient measures to avoid an AEoI of the qualifying features of the Swale SPA and Ramsar site from construction disturbance [**REP5-050**]. See paragraphs 4.2.148 – 4.2.154 of the RIES.

- b. The Applicant's assessment of potential AEoI as a result of noise and visual disturbance to breeding and non-breeding birds during decommissioning of the Proposed Development (and the proposed approach to mitigating such impacts) is presented in Section 6.1.1 of the RIAA [**APP-026**]. The RIAA explains that noise levels during decommissioning would be lower and occur over a shorter time period than the noise levels during construction, with noise levels to be controlled through a decommissioning plan [**APP-026**]. The Applicant considers that the outline D&RP [**REP6-010**] (Requirement 17 of the dDCO [**REP6-004**] refers) *"...provides the mechanism by which there can be certainty that control measures will be implemented during decommissioning to prevent significant effects of noise disturbance, dust and hydrological changes to SPA breeding and wintering birds"* [ExQ1.4.24, **REP2-006**]. The RIAA concludes that there would be no AEoI of the qualifying features of the Swale SPA in this respect [**APP-026**]. The Applicant asserts that NE's agreement regarding construction impacts [**REP5-050**] (as set out in (a) above) is applicable to decommissioning. See paragraphs 4.2.148 – 4.2.154 and paragraphs 4.2.157 – 4.2.159 of the RIES.
- c. To mitigate for the loss of the arable fields, which provide a foraging and resting/ roosting resource for brent goose (and therefore represent land which is functionally-linked to the Swale SPA), the Proposed Development includes the reversion of approximately 56ha of arable fields to permanent grassland pasture; the AR HMA [**APP-026**]. NE has advised that the AR HMA should maximise its production of grass for brent geese [**RR-826** and **REP3-082**]. This would be achieved by managing the grassland within the AR HMA through a combination of grass cutting and

application of nitrous fertiliser [**APP-026**]. The aims and management prescriptions of the AR HMA are set out in the outline LBMP [**REP6-006**] (Requirement 5 of the dDCO [**REP6-004**] refers). In light of advice from NE [**REP2-096**, **REP3-082** and **REP5-050**] and KWT [**REP4-068**], the outline LBMP now refers to the AR HMA being established prior to the first winter of construction [**REP6-006**]. The number of 'bird days' was calculated for brent geese (101,940/winter) to determine how much foraging resource was required [**APP-026**]. On a precautionary basis, the RIAA states that the AR HMA would provide 50.1ha of grassland habitat for geese – over the required amount of 48.6ha [**APP-026**]. On this basis, the RIAA concluded that there would be no net loss of habitat for brent geese and no AEOI of brent geese of the Swale SPA [**APP-026**]. NE has confirmed [**REP5-050**] that subject to updates to the outline LBMP to secure the constitution and status of the HMSG, it was satisfied that the AR HMA is sufficient to avoid an AEOI of the Swale SPA for brent geese. However, details of the constitution and status of the HMSG are yet to be added to the outline LBMP [**REP6-006**] and NE and KWT have not yet submitted comments to the Examination on this latest version. See paragraphs 4.2.10 – 4.2.102 of the RIES.

- d. The Applicant's assessment of potential AEOI on marsh harrier (a component species of the breeding bird assemblage) as a result of habitat loss/ change during construction and operation of the Proposed Development (and the proposed approach to mitigating such impacts) is presented in section 6.1.2.7 of the RIAA [**APP-026**]. The Proposed Development would result in a change from growing crops in the arable fields to the presence of solar panels and the energy storage facility, which potentially reduces the area available for foraging marsh harriers [**APP-026**]. The RIAA concludes that subject to the appropriate management of the large grassland swathes between the solar arrays, there would be no AEOI on marsh harrier of the Swale SPA [**APP-026**]. These areas would be managed according to the Grazing Marsh Grassland Management Plan, set out in Appendix A of the outline LBMP [**REP6-006**] (Requirement 5 of the dDCO [**REP6-004**] refers). NE agrees that the proposed habitat enhancements included in the outline LBMP will result in more food available for marsh harriers but is concerned that marsh harriers may be deterred from using the application site by the presence of the panels [**REP3-082** and **REP5-050**]. In order to be certain that an AEOI of the Swale SPA will be avoided, NE considers that there should be both no net loss of foraging habitat and no net loss of foraging opportunities [**REP5-050**]. NE considers that there is always going to be a certain level of uncertainty as we are making a prediction of the reactions of individual birds – there cannot be absolute certainty as the Proposed Development has not been built yet [**REP5-050**]. NE's view was that there is still some remaining uncertainty surrounding the use of the application site by marsh harriers, such that it has not yet been established, beyond

reasonable scientific doubt, that there will not be an AEoI of the Swale SPA for marsh harriers. NE stated that it would continue to work with the Applicant and the HMSG to resolve this issue [REP5-050]. KWT states that with no studies to compare it to, the reaction of marsh harriers to the Proposed Development will remain an unknown [REP4-068]. KWT also considers [REP5-048] that the outline LBMP does not provide any remedial measures that can address negative response from marsh harriers to the Proposed Development and that there are still changes required to the outline LBMP with regard to triggers and remedial actions. NE considers there is a gap in that there is no remedial action in the event that marsh harriers are deterred from using the application site due to the presence of the solar panels [REP5-050]. The triggers and remedial actions for marsh harrier have been updated in the outline LBMP submitted at Deadline 6 [REP6-006] (Appendix A, Section 6.5.3), but NE and KWT have not yet submitted comments on [REP6-006] to the Examination and it is currently unclear whether this update addresses their concerns (set out in [REP5-050] and [REP5-048] respectively) regarding triggers and remedial actions for marsh harrier. As such, whilst the Applicant maintains that there would be no AEoI of the Swale SPA for marsh harrier [REP6-015] and has submitted additional evidence to support this position (including [REP4-022, REP4-023 and REP4-030] and examples of marsh harriers breeding in proximity to construction works/ infrastructure), this conclusion has not yet been agreed with NE and KWT. See paragraphs 4.2.103 – 4.2.147 of the RIES.

- e. To mitigate for the loss of the arable fields, which provide a foraging and resting/ roosting resource for the wintering waterbird assemblage component species brent goose, lapwing and golden plover (and therefore represent land which is functionally-linked to the Swale SPA), the Proposed Development includes the reversion of approximately 56ha of arable fields to permanent grassland pasture; the AR HMA [APP-026]. The Applicant is confident that the management of the AR HMA will increase density of earthworms and other invertebrates, on which lapwing and golden plover feed [REP5-024]. The aims and management prescriptions of the AR HMA are set out in the outline LBMP [REP6-006] (Requirement 5 of the dDCO [REP6-004] refers). In light of advice from NE [REP2-096, REP3-082 and REP5-050] and KWT [REP4-068], the outline LBMP now refers to the AR HMA being established prior to the first winter of construction [REP6-006]. The number of 'bird days' was calculated for lapwing (56,023/winter) and golden plover (28,802/winter) to determine how much foraging resource was required [APP-026]. On a precautionary basis, the RIAA states that the AR HMA would provide 50.1ha of mitigation land for lapwing and golden plover – under the required amount of 56ha for lapwing, but far over the required amount of 18.5ha for golden plover [APP-026]. The Applicant considered that the additional capacity for golden plover could be utilised by lapwing [APP-026] and

submitted additional evidence to support this position [**AS-040**], which has been accepted by NE [**REP5-050**] and KWT [**REP5-048**]. The RIAA concludes that there would be no net loss of habitat for golden plover or lapwing and no AEoI of the Swale SPA in this respect [**APP-026**]. NE has confirmed [**REP5-050**] that subject to details of scrapes in the SSSI land being added to the outline LBMP, along with further detail of the constitution and status of the HMSG, it was satisfied that an AEoI of the Swale SPA for lapwings and golden plovers would be avoided [**REP5-050**]. NE and KWT have not yet submitted comments to the Examination on the latest version of the outline LBMP [revision D, **REP6-006**]; which added details of scrapes within the FGM HMA, but details of the constitution and status of the HMSG are yet to be added. See paragraphs 4.2.10 – 4.2.102 of the RIES.

- f. The Applicant's assessment of potential AEoI as a result of hydrological change during construction of the Proposed Development is presented in section 6.1.3 of the RIAA [**APP-026**]. Subject to mitigation measures set out in the outline CEMP, the RIAA concludes that there would be no AEoI of the qualifying features of the Swale SPA in this respect [**APP-026**]. NE has confirmed [**REP5-050**] it is content that the CEMP [**REP3-006**; superseded by **REP6-008**] (Requirement 11 of the dDCO [**REP6-004**] refers) contains sufficient mitigation measures to avoid an AEoI from construction impacts, including water quality. See paragraphs 4.2.155 and 4.2.156 of the RIES.
- g. The Applicant's assessment of potential AEoI as a result of hydrological change during decommissioning of the Proposed Development is presented in section 6.1.3 of the RIAA [**APP-026**]. The Applicant considers that the outline D&RP [**REP6-010**] (Requirement 17 of the dDCO [**REP6-004**] refers) "*...provides the mechanism by which there can be certainty that control measures will be implemented during decommissioning to prevent significant effects of noise disturbance, dust and hydrological changes to SPA breeding and wintering birds*" [ExQ1.4.24, **REP2-006**]. The RIAA concludes that there would be no AEoI of the qualifying features of the Swale SPA in this respect [**APP-026**]. The Applicant asserts that NE's agreement regarding construction impacts [**REP5-050**] (as set out in (f) above) is applicable to decommissioning. See paragraphs 4.2.155, 4.2.156 and 4.2.157 – 4.2.159 of the RIES.
- h. The Applicant's assessment of potential AEoI as a result of dust emissions during construction of the Proposed Development is presented in section 6.1.4 of the RIAA [**APP-026**]. Subject to mitigation measures set out in the outline CEMP, the RIAA concludes that there would be no AEoI of the qualifying features of the Swale SPA in this respect [**APP-026**]. NE has confirmed [**REP5-050**] it is content that the CEMP [**REP3-006**; superseded by **REP6-008**] (Requirement 11 of the dDCO [**REP6-004**] refers) contains sufficient mitigation measures to avoid an AEoI from construction impacts, including dust. See paragraphs 4.2.155 and 4.2.156 of the RIES.

- i. The Applicant's assessment of potential AEoI as a result of dust emissions during decommissioning of the Proposed Development is presented in section 6.1.4 of the RIAA [**APP-026**]. The Applicant considers that the outline D&RP [**REP6-010**] (Requirement 17 of the dDCO [**REP6-004**] refers) "*...provides the mechanism by which there can be certainty that control measures will be implemented during decommissioning to prevent significant effects of noise disturbance, dust and hydrological changes to SPA breeding and wintering birds*" [ExQ1.4.24, **REP2-006**]. The RIAA concludes that there would be no AEoI of the qualifying features of the Swale SPA in this respect [**APP-026**]. The Applicant asserts that NE's agreement regarding construction impacts [**REP5-050**] (as set out in (h) above) is applicable to decommissioning. See paragraphs 4.2.155 – 4.2.159 of the RIES.
- j. Section 6.2 of the RIAA considered the potential for AEoI in-combination; the other plans and projects considered in the in-combination assessment are set out in Table 7 [**APP-026**]. The Applicant concluded that the Proposed Development would not have an AEoI on any of the qualifying features of the Swale SPA in-combination with other plans and projects [**APP-026**]. This conclusion has not been disputed by NE or any IPs during the Examination, to date.

Stage 2 Matrix 2: The Swale Ramsar site

Site Code: UK11071

Distance to Proposed Development: 0km - the application site includes areas which are part of the Swale Ramsar site (as illustrated on Figure 2 of the RIAA [**REP2-014**])

European site features	Effects on integrity														
	Noise, visual and lighting disturbance			Loss/ change of habitats			Hydrological changes			Deposition of dust			In-combination effects		
	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
<i>Ramsar Criterion 5: Winter waterfowl assemblage of international importance</i>	xa	n/a	xb	?c, d	?c, d	n/a	xe	n/a	xf	xg	n/a	xh	xi	xi	xi
<i>Ramsar Criterion 6: Species/populations at level of international importance in spring/autumn: Redshank (non-breeding)</i>	xa	n/a	xb	n/a	n/a	n/a	xe	n/a	xf	xg	n/a	xh	xi	xi	xi
<i>Ramsar Criterion 6: Species/populations at level of international importance in winter: Dark-bellied brent goose (non-breeding)</i>	xa	n/a	xb	?d	?d	n/a	xe	n/a	xf	xg	n/a	xh	xi	xi	xi

European site features	Effects on integrity														
	Noise, visual and lighting disturbance			Loss/ change of habitats			Hydrological changes			Deposition of dust			In-combination effects		
	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
<i>Ramsar Criterion 6: Species/populations at level of international importance in winter: Grey plover (non-breeding)</i>	xa	n/a	xb	n/a	n/a	n/a	xe	n/a	xf	xg	n/a	xh	xi	xi	xi
<i>Ramsar Criterion 2: At least seven British Red Data Book invertebrate species</i>	n/a	n/a	n/a	n/a	n/a	n/a	xe	n/a	xf	xg	n/a	xh	n/a	n/a	n/a

Evidence supporting conclusions

- a. The Applicant's assessment of potential AEoI as a result of noise and visual disturbance to birds during construction of the Proposed Development (and the proposed approach to mitigating such impacts) is presented in Section 6.1.1 of the RIAA [APP-026]. The RIAA explains that construction would take place over two to three seasons, and by a field-by-field basis, meaning large areas of the application site would remain free of development and disturbance at any one time [APP-026]. In light of advice from NE [REP2-096, REP3-082 and REP5-050] and KWT [REP4-068], the outline LBMP (Requirement 5 of the dDCO [REP6-004] refers) now refers to the AR HMA being established prior to the first winter of construction [REP6-006]; the RIAA explains that this will provide some disturbance-free habitat for geese and wintering waders during construction [APP-026]. Subject to mitigation measures including the SPA CNMP, the RIAA concludes that there would be no AEoI of the qualifying features of the Swale Ramsar site as a result of noise

and visual disturbance during construction. NE has agreed that the revised SPA CNMP [**REP3-008**; superseded by **REP4-013**] (Requirement 13 of the dDCO [**REP6-004**] refers) and BBPP [Appendix B, **REP3-006**; superseded by **REP6-008**] (Requirement 11 of the dDCO [**REP6-004**] refers) contain clear and sufficient measures to avoid an AEoI of the qualifying features of the Swale SPA and Ramsar site from construction disturbance [**REP5-050**]. See paragraphs 4.2.148 – 4.2.154 of the RIES.

- b.** The Applicant's assessment of potential AEoI as a result of noise and visual disturbance to birds during decommissioning of the Proposed Development (and the proposed approach to mitigating such impacts) is presented in Section 6.1.1 of the RIAA [**APP-026**]. The RIAA explains that noise levels during decommissioning would be lower and occur over a shorter time period than the noise levels during construction, with noise levels to be controlled through a decommissioning plan [**APP-026**]. The Applicant considers that the outline D&RP [**REP6-010**] (Requirement 17 of the dDCO [**REP6-004**] refers) "*...provides the mechanism by which there can be certainty that control measures will be implemented during decommissioning to prevent significant effects of noise disturbance, dust and hydrological changes to SPA breeding and wintering birds*" [ExQ1.4.24, **REP2-006**]. The RIAA concludes that there would be no AEoI of the qualifying features of the Swale Ramsar site in this respect [**APP-026**]. The Applicant asserts that NE's agreement regarding construction impacts [**REP5-050**] (as set out in (a) above) is applicable to decommissioning. See paragraphs 4.2.148 – 4.2.154 and paragraphs 4.2.157 – 4.2.159 of the RIES.
- c.** To mitigate for the loss of the arable fields, which provide a foraging and resting/ roosting resource for the wintering waterbird assemblage component species brent goose, lapwing and golden plover (and therefore represent land which is functionally-linked to the Swale Ramsar site), the Proposed Development includes the reversion of approximately 56ha of arable fields to permanent grassland pasture; the AR HMA [**APP-026**]. The Applicant is confident that the management of the AR HMA will increase density of earthworms and other invertebrates, on which lapwing and golden plover feed [**REP5-024**]. The aims and management prescriptions of the AR HMA are set out in the outline LBMP [**REP6-006**] (Requirement 5 of the dDCO [**REP6-004**] refers). In light of advice from NE [**REP2-096**, **REP3-082** and **REP5-050**] and KWT [**REP4-068**], the outline LBMP now refers to the AR HMA being established prior to the first winter of construction [**REP6-006**]. The number of 'bird days' was calculated for lapwing (56,023/winter) and golden plover (28,802/winter) to determine how much foraging resource was required [**APP-026**]. On a precautionary basis, the RIAA states that the AR HMA would provide 50.1ha of mitigation land for lapwing and golden plover – under the required amount of 56ha for lapwing, but far over the required amount of 18.5ha for golden plover [**APP-026**]. The

Applicant considered that the additional capacity for golden plover could be utilised by lapwing [**APP-026**] and submitted additional evidence to support this position [**AS-040**], which has been accepted by NE [**REP5-050**] and KWT [**REP5-048**]. The RIAA concludes that there would be no net loss of habitat for golden plover or lapwing and no AEoI of the Swale Ramsar site in this respect [**APP-026**]. NE has confirmed [**REP5-050**] that subject to details of scrapes in the SSSI land being added to the outline LBMP, along with further detail of the constitution and status of the HMSG, it is satisfied that an AEoI of the Swale Ramsar site for lapwings and golden plovers would be avoided [**REP5-050**]. NE and KWT have not yet submitted comments to the Examination on the latest version of the outline LBMP [revision D, **REP6-006**]; which added details of scrapes within the FGM HMA, but details of the constitution and status of the HMSG are yet to be added. See paragraphs 4.2.10 – 4.2.102 of the RIES.

- d. To mitigate for the loss of the arable fields, which provide a foraging and resting/ roosting resource for brent goose (and therefore represent land which is functionally-linked to the Swale SPA), the Proposed Development includes the reversion of approximately 56ha of arable fields to permanent grassland pasture; the AR HMA [**APP-026**]. NE has advised that the AR HMA should maximise its production of grass for brent geese [**RR-826** and **REP3-082**]. This would be achieved by managing the grassland within the AR HMA through a combination of grass cutting and application of nitrous fertiliser [**APP-026**]. The aims and management prescriptions of the AR HMA are set out in the outline LBMP [**REP6-006**] (Requirement 5 of the dDCO [**REP6-004**] refers). In light of advice from NE [**REP2-096**, **REP3-082** and **REP5-050**] and KWT [**REP4-068**], the outline LBMP now refers to the AR HMA being established prior to the first winter of construction [**REP6-006**]. The number of 'bird days' was calculated for brent geese (101,940/winter) to determine how much foraging resource was required [**APP-026**]. On a precautionary basis, the RIAA states that that the AR HMA would provide 50.1ha of grassland habitat for geese – over the required amount of 48.6ha [**APP-026**]. On this basis, the RIAA concluded that there would be no net loss of habitat for brent goose and no AEoI of brent goose of the Swale Ramsar site [**APP-026**]. NE has confirmed [**REP5-050**] that subject to updates to the outline LBMP to secure the constitution and status of the HMSG, it was satisfied that the AR HMA is sufficient to avoid an AEoI of the Swale Ramsar site for brent geese. However, details of the constitution and status of the HMSG are yet to be added to the outline LBMP [**REP6-006**] and NE and KWT have not yet submitted comments to the Examination on this latest version. See paragraphs 4.2.10 – 4.2.102 of the RIES.
- e. The Applicant's assessment of potential AEoI as a result of hydrological change during construction of the Proposed Development is presented in section 6.1.3 of the RIAA [**APP-026**]. Subject to mitigation measures set out in the

outline CEMP, the RIAA concludes that there would be no AEoI of the qualifying features of the Swale Ramsar site in this respect [**APP-026**]. NE has confirmed [**REP5-050**] it is content that the CEMP [**REP3-006**; superseded by **REP6-008**] (Requirement 11 of the dDCO [**REP6-004**] refers) contains sufficient mitigation measures to avoid an AEoI from construction impacts, including water quality. See paragraphs 4.2.155 and 4.2.156 of the RIES.

- f. The Applicant's assessment of potential AEoI as a result of hydrological change during decommissioning of the Proposed Development is presented in section 6.1.3 of the RIAA [**APP-026**]. The Applicant considers that the outline D&RP [**REP6-010**] (Requirement 17 of the dDCO [**REP6-004**] refers) "*...provides the mechanism by which there can be certainty that control measures will be implemented during decommissioning to prevent significant effects of noise disturbance, dust and hydrological changes to SPA breeding and wintering birds*" [ExQ1.4.24, **REP2-006**]. The RIAA concludes that there would be no AEoI of the qualifying features of the Swale Ramsar site in this respect [**APP-026**]. The Applicant asserts that NE's agreement regarding construction impacts [**REP5-050**] (as set out in (e) above) is applicable to decommissioning. See paragraphs 4.2.155, 4.2.156 and 4.2.157 – 4.2.159 of the RIES.
- g. The Applicant's assessment of potential AEoI as a result of dust emissions during construction of the Proposed Development is presented in section 6.1.4 of the RIAA [**APP-026**]. Subject to mitigation measures set out in the outline CEMP, the RIAA concludes that there would be no AEoI of the qualifying features of the Swale Ramsar site in this respect [**APP-026**]. NE has confirmed [**REP5-050**] it is content that the CEMP [**REP3-006**; superseded by **REP6-008**] (Requirement 11 of the dDCO [**REP6-004**] refers) contains sufficient mitigation measures to avoid an AEoI from construction impacts, including dust. See paragraphs 4.2.155 and 4.2.156 of the RIES.
- h. The Applicant's assessment of potential AEoI as a result of dust emissions during decommissioning of the Proposed Development is presented in section 6.1.4 of the RIAA [**APP-026**]. The Applicant considers that the outline D&RP [**REP6-010**] (Requirement 17 of the dDCO [**REP6-004**] refers) "*...provides the mechanism by which there can be certainty that control measures will be implemented during decommissioning to prevent significant effects of noise disturbance, dust and hydrological changes to SPA breeding and wintering birds*" [ExQ1.4.24, **REP2-006**]. The RIAA concludes that there would be no AEoI of the qualifying features of the Swale Ramsar site in this respect [**APP-026**]. The Applicant asserts that NE's agreement regarding construction impacts [**REP5-050**] (as set out in (g) above) is applicable to decommissioning. See paragraphs 4.2.155 – 4.2.159 of the RIES.
- i. Section 6.2 of the RIAA considered the potential for AEoI in-combination; the other plans and projects considered in the in-combination assessment are set out in Table 7 [**APP-026**]. The Applicant concluded that the Proposed

Development would not have an AEoI on any of the qualifying features of the Swale SPA in-combination with other plans and projects [**APP-026**]. This conclusion has not been disputed by NE or other IPs during the Examination, to date.