# Green Hill Solar Farm

## EN010170

# Habitats Regulations Assessment

## Revision A (Tracked)

Prepared by: Clarkson and Woods Ltd.

Date: ~~May~~November 2025

Document Reference: ~~APP~~EX1/GH7.21_A
APFP Regulation 5(2)(g)

# Schedule of Changes

| Revision | Section Reference | Description of Changes | Reason for Revision |
|---|---|---|---|
| A | 1.1.3 | Figure list updated with new figures. | As required for submission at Deadline 1. |
| | 2.1.3 | Scheme description updated to reflect optionality over removal of cables at decommissioning, as per Examiner's question Q9.0.2. | As required for submission at Deadline 1. |
| | Table 1 | Consultation summary table updated to reflect meeting held on 06/10/2025. | As required for submission at Deadline 1. |
| | Table 2 | New table added to summarise features assessed and outcomes of screening of Likely Significant effects, as per Examiner's question Q9.0.6. | As required for submission at Deadline 1. |
| | 7.2.45 | Clarification of golden plover observations in FF13 which led to its consideration as precautionary FLL. | As required for submission at Deadline 1. |
| | Table 5; 7.2.74; 7.2.76 | Mitigation calculations updated to reflect removal of FF16 from mitigation offering, given the need to instate a hedgerow along the boundary between FF13 and for visual screening. | As required for submission at Deadline 1. |
| | Figures | New figures added to show locations of FLL and FLL mitigation. | As required for submission at Deadline 1. |
| | Table references | Table references updated following addition of new table. | As required for submission at Deadline 1. |
| | [throughout] | Updates to document references. | As required for submission at Deadline 1. |

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Report Prepared for: Green Hill Solar Farm

~~DCO Submission~~
Deadline 1

# Habitats Regulations Assessment

## Revision A

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| Original | 23/05/2025 | MH | HF |
| Revision A | 03/11/2025 | MH | CP |

# 1 Introduction

1.1.1 Clarkson and Woods Ltd. has been commissioned by Green Hill Solar Farm Ltd to provide information to support an assessment under Regulation 63 of The Conservation of Habitats and Species Regulations 2017 (as amended) for Development Consent Order (DCO) for the construction, operation and maintenance and decommissioning of Green Hill Solar Farm (hereafter referred to as 'the Scheme'). This process is known as a Habitats Regulations Assessment (HRA), and it examines any potential impacts from the Scheme upon sites statutorily designated for nature conservation under the above legislation.

1.1.2 Specifically, this document assesses impacts on the Upper Nene Valley Gravel Pits Special Protection Area (hereafter UNVGP SPA) and overlapping Ramsar site designation.

1.1.3 The following figures have been produced to accompany this Appendix, which are included at the end of this document:

- **Figure 9.3.1** International Statutory Designated Sites within 10km of the Order Limits
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# 2 Scheme Description and Planning Context

2.1.1 The Scheme has received the Planning Inspectorate (PINS) reference number EN010170 which is used for the basis of document references within this report. The Order Limits are approximately 1,441.4 ha and include all the land required for the key components of the Scheme, including highway improvement and mitigation works. The Scheme comprises two main parts: the Sites and the Cable Route Corridor. The Sites are described as Green Hill A, A.2, B, C, D, E, F, G, and BESS (see Location Plan **[~~EN010170/~~APP~~/GH2.1~~-190]** which accommodate ground mounted Solar Photovoltaic (PV) modules, battery energy storage systems, energy storage infrastructure, grid connection infrastructure and landscaping (collectively referred to as the Solar Arrays). The Cable Route Corridor defines the area within with the underground cables connecting the Sites and Point of Connection will be located.

2.1.2 The Scheme will comprise the construction, operation and maintenance, and decommissioning of a generating station with a total capacity exceeding 50 megawatts (MW). As such, it is considered a Nationally Significant Infrastructure Project (NSIP) and will require a Development Consent Order (DCO) to proceed. An Environmental Statement **[~~EN010170/~~APP~~/GH6.1~~-037** to **~~EN010170/~~APP~~/GH6.5~~-544]** has been prepared and should be read in conjunction with this document, particularly Chapter 9: Ecology and Biodiversity **[~~EN010170/APP~~**Revision **[EX1/GH6.2.9_A]**.

2.1.3 The Sites are to be connected to the National Grid Point of Connection at Grendon Substation via underground cables within the Cable Route Corridor. The Solar PV Array Works Area and related components, substations, BESS and all associated works (with the exception of the cable ducts) will be removed and recycled or disposed of in accordance with good practice and market conditions at that time. ~~-~~The underground cables are anticipated to be decommissioned in situ to minimise environmental impacts~~.~~, however, cables may be removed via opening of trenches in discrete locations, in accordance with good practice and market conditions at that time. The operational life of the Scheme is anticipated to be a maximum of 60 years. Once the Scheme ceases to operate, it will be decommissioned.

2.1.4 The Scheme also includes further associated development including fencing, gates, boundary treatment and other means of enclosure; bunds, embankment, trenching and swales; irrigation systems; drainage systems; services and utilities connections; ramps, bridges and means of access; security and monitoring measures; improvement, maintenance and use of existing private tracks; footpath diversions and enhancement; landscaping and related works; habitat creation and enhancement; site establishment and preparation works; earthworks and excavations; works for the protection of buildings and land; tunnelling, boring and drilling works; and other works to mitigate any adverse effects on the construction, maintenance, operation or decommissioning of the Scheme.

# 3 Methodology

## 3.1 Legislative Framework and Relevant Case Law

### Conservation of Habitats and Species Regulations 2017

3.1.1 The Conservation of Habitats and Species Regulations 2017 (as amended) (Ref .1) is a key piece of UK legislation that transposes the EU Habitats Directive and parts of the Birds Directive into domestic law. It forms the legal framework for the protection and management of habitats and species of European importance within England and Wales (and offshore marine areas).

3.1.2 Regulations 63 and 64 of the Conservation of Habitats and Species Regulations 2017 (as amended) are central to the UK's legal framework for protecting designated nature conservation sites, such as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), collectively forming the National Site Network.

**Regulation 63: Appropriate Assessment**

3.1.3 Before granting permission for any plan or project that is likely to have a significant effect on a European site (either alone or in combination with other plans or projects), and which is not directly connected with or necessary to the management of that site, the competent authority must undertake an Appropriate Assessment of the implications for that site in view of its conservation objectives.

3.1.4 This assessment process includes:

- Screening: Determining whether the plan or project is likely to have a significant effect on the Site; and
- Appropriate Assessment: If significant effects are likely, a detailed assessment is required to ascertain whether the plan or project will adversely affect the integrity of the Site.

3.1.5 The competent authority must consult the appropriate nature conservation body (e.g., Natural England) and consider any representations made.

3.1.6 If the assessment concludes that the plan or project will adversely affect the integrity of the Site, the competent authority can only agree to the plan or project if the conditions in Regulation 64 are met.

**Regulation 64: Considerations of Overriding Public Interest**

3.1.7 Where an Appropriate Assessment under Regulation 63 concludes that a plan or project will adversely affect the integrity of a European site, Regulation 64 provides a derogation allowing the plan or project to proceed if:

- No Alternative Solutions: There are no feasible alternative solutions that would have a lesser impact on the Site.
- Imperative Reasons of Overriding Public Interest (IROPI): The plan or project must be necessary for imperative reasons of overriding public interest, which may include reasons of a social or economic nature.

- Compensatory Measures: All necessary compensatory measures must be taken to ensure that the overall coherence of the National Site Network is protected.

3.1.8 In cases where the Site hosts a priority natural habitat type or species, the reasons for overriding public interest must relate to human health, public safety, or beneficial consequences of primary importance to the environment.

3.1.9 These regulations ensure that any potential adverse effects on protected sites are thoroughly assessed and that exceptions are only made under strict conditions to safeguard the integrity of the UK's most important natural habitats.

**People Over Wind and Sweetman v Coillte Teoranta (CJEU Case C-323/17)**

3.1.10 This judgment confirmed that a conclusion of no likely significant effect must be made prior to the consideration of measures to avoid or reduce harm, i.e. impacts must be assessed pre-mitigation.

**Waddenzee (CJEU Case C-127/02)**

3.1.11 This judgment confirmed that the Appropriate Assessment must be conducted using best scientific knowledge, and the Competent Authorities must be satisfied that there is no reasonable doubt as to the absence of adverse effects on integrity).

**Holohan and Others v An Bord Pleanála (CJEU Case C-461/17)**

3.1.12 This judgment confirmed that consideration must be given to effects on qualifying habitats and/or species of a European Site, even when occurring outside the boundary of the European Site, if these are relevant to meeting its conservation objectives; and to effects on non-qualifying habitats/species on which the qualifying habitats/species depend which could result in adverse effects on integrity of the European Site).

**T.C Briels and Others v Minister van Infrastructure Milieu (CJEU Case C-521/12)**

3.1.13 This judgment confirmed that compensatory measures cannot be used to support a conclusion of no adverse effects on integrity.

## 3.2 Guidance

3.2.1 The following sources provide guidance on the preparation of an HRA.

- The European Commission’s Guidance on HRA (Ref .2)
- The UK Government’s general guidance on HRA (Ref .3)
- The Planning Inspectorate (PINS)’ Advice on HRA (Ref .4)

## 3.3 Test of Likely Significant Effect (Screening)

3.3.1 According to the Conservation of Habitats and Species Regulations 2017 (as amended), further clarified through paragraph 181 of the National Planning Policy Framework, the network of sites receiving protection under this legislation is limited to Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar (international wetland) sites, as well as possible, potential or proposed iterations of these designations.

3.3.2 Policy also requires areas identified or required to compensate for damage to a European site to be treated as if they are designated European Sites.

3.3.3 The first stage of an HRA is a Test of Likely Significant Effects (TLSE) which is undertaken to screen for any likelihood of significant effects arising from the proposed Scheme, either alone or in combination with other plans or projects, upon any sites statutorily designated for nature conservation under the Conservation of Habitats and Species Regulations 2017, plus Ramsar sites designated under the Ramsar Convention, also known as 'The Convention on Wetlands'.

3.3.4 This process involves a stepwise examination of all activities associated with the various phases of the proposed scheme to look for potential impact pathways between it and the designated sites in question. Identified potential impact pathways would be further examined to determine the possibility for them to enable significant effects to arise. As per the Waddenzee case (C-127/02), the European Court of Justice (ECJ) clarified that 'Likely' should not be interpreted as meaning 'probable' — instead, it should be understood as referring to a 'risk' or 'possibility' of significant effects, not necessarily a probability. This established the precautionary principle at the TLSE stage: if there is any reasonable doubt as to the absence of significant effects, an Appropriate Assessment is required.

3.3.5 A significant effect may be characterised in many ways depending on the sensitive receptors involved but is generally taken to be an effect which undermines the integrity of, or maintenance of a favourable conservation status for, the designated site. This assessment process is undertaken both in isolation from and in combination with other plans or projects. In accordance with recent case law (C-323/17 People Over Wind and Peter Sweetman v Coillte), specific mitigation measures identified within the design of the Scheme and set out within the accompanying Environmental Statement to reduce any harmful effects on these sites are not taken into account at this stage.

## 3.4 Appropriate Assessment

3.4.1 Should any likely significant effects be identified (as per 3.3.4 above, this is taken to be the possibility of significant effects), an 'Appropriate Assessment' (AA) should be carried out. An AA would comprise a detailed characterisation of the potential impacts upon the integrity of any identified site, again both alone or in combination with other projects or plans, and an assessment of all mitigation to reduce them. This will assess the individual component parts of the Site's designation, for instance the designated habitats and/or species it supports, as well as effects to habitats/species outside the boundaries that may affect the conservation objectives of the Site.

3.4.2 In the event that the AA identifies that there would an adverse effect on the integrity of any identified sites, the HRA would consider all feasible alternative solutions which would achieve the aims of the proposals without causing adverse effects upon the identified sites. Finally, where no viable alternative solutions exist, the HRA would assess the significance of all residual effects upon the Sites, as well as considering whether there are Imperative Reasons of Overriding Public Interest and the need for any compensatory measures. While an HRA is carried

out by a 'Competent Authority', it is typical for specialist consultants to supply information to be used to inform this process.

## 3.5 Potential Sources of Impact

3.5.1 The potential for impacts to adversely change the integrity of a designated site have been carefully examined. As set out in Section 9.7 of Chapter 9 of the Environmental Statement **[EN010170/APP**Revision A **[EX1/GH6.2.9_A]**, potential sources of impact which have been screened for include the following:

- Direct habitat loss or change, i.e. habitat losses or modifications to habitats within the designated site's boundary, which could affect the conservation objectives of the Site.
- Killing, injury or removal of a designated species, or their prey, which could affect the populations of designated species.
- Habitat fragmentation, so as to reduce the physical integrity or connectivity of the designated habitats or those on which designated species depend (this includes Functionally Linked Land which falls outside of the designated site boundary but is critical to the function of the Site).
- Disturbance to designated species, which may lead to reduced ecological fitness and impact normal behaviours such as breeding or foraging. This could affect the populations of designated species.
- Pollution and habitat degradation, including:
    - Release of waterborne chemicals or sediments, which may interfere with normal function of habitats and directly harm species.
    - Release of airborne pollutants such as dust, which may interfere with normal function of habitats and directly harm species.
    - Hydrological changes through ground compaction and alteration of soil/water chemical composition, which may interfere with normal function of habitats.
    - The spread of non-native species, which may have a deleterious effect on the designated habitats or species through competition with native species, predation or spread of disease.

## 3.6 Scope of Assessment

3.6.1 The assessment considers the potential for the above impacts to occur on identified relevant SPA/SAC/Ramsar sites as a result of activities anticipated to be carried out during the construction, operation and decommissioning phases of the Scheme. A description of the construction and operational phase activities most likely to give rise to potential sources of impact are set out in Section 9.7 of Chapter 9 of the Environmental Statement **[EN010170/APP**Revision A **[EX1/GH6.2.9_A]**.

3.6.2 Potential for effects have been considered in turn, firstly for the Scheme in isolation and secondly in combination with the following other proposed projects as identified and examined within the Environmental Statement. Relevant projects considered in the assessment lie within 10km of the Sites, to encapsulate

the Zone of Influence for ecological receptors. The list of projects has been narrowed down to focus on those projects which are most likely to give rise to cumulative effects. A long-list was generated, which was then refined following consultation with the relevant local planning authorities. This long-list was further refined to a short-list, through discussion with all relevant LPAs, which forms the basis of this assessment, and which are detailed below.

3.6.3 The projects below are listed in order of proximity to the Scheme.

1. NW/23/00360/FUL - Grendon Lakes Main Road Grendon Northampton NN7 1JW

   This pending application is for a BESS facility, with associated infrastructure including access, drainage and landscaping. It lies adjacent to Green Hill BESS. There is potential for an overlap in construction periods with the Scheme.

2. DA/2020/0001 - Land To East Of Kettering Road Overstone Northamptonshire

   This development pertains to an urban extension of up to 1,600 homes, with associated facilities as per Overstone Leys. It is located approximately 1km southeast of Green Hill B. Construction commenced in 2021 and is expected to end in 2034.

3. WP/15/00727/OUT - Land Rear 260 Northampton Road And Near Wordsworth Road Park Farm Way Wellingborough Northamptonshire

   This project is located approximately 1.2km northeast of Green Hill E and comprises an Outline planning application for residential development of up to 600 dwellings, public open space (POS), access landscaping, sustainable urban drainage systems, footpaths/cycleways, and associated infrastructure. It was consented in 2019.

4. NW/24/00138/OUT (Associated with WP/2012/0525/XEIA) - Glenvale Park Phase 2 Development Site, Niort Way Wellingborough

   This project is located approximately 1.7km northeast of Green Hill D and comprises an Outline application for a mixed-use development of up to 1,000 homes, business facilities, recreation areas, landscaping, infrastructure and supporting works. If permitted, construction would commence in 2025 and run across an expected six-year period.

5. NW/22/00904/FUL (Associated with WP/2012/0525/XEIA) - Land North Of Niort Way And West Of Bunnet Road Niort Way Wellingborough

   This consented project is located approximately 2.5km northeast of Green Hill D and comprises residential development of up to 250 homes, POS, landscaping, infrastructure and supporting works. An overlap in construction periods with the Scheme is expected.

6. DA/2013/0850; 2023/6201/COND; 2023/6198/COND; 2023/6203/COND; 2023/6206/COND; 2023/6214/COND; 2023/5526/COND;

2023/6209/COND; 2024/1271/COND - Overstone Leys Overstone Lane Overstone Northamptonshire

This is an approved application for a large residential development of up to 2,000 homes, along with a new section of dual carriageway, various community facilities, POS, allotments, play areas, landscape planting, access and drainage. It is located approximately 4.5km east of Green Hill C. Construction commenced in 2014/15 and is expected to end in 2029.

7. NW/24/00418/FUL - Land Route Of Isham Bypass Wellingborough Road Isham

   This project lies approximately 5km northeast of Green Hill D and entails the development of up to 3.5km of the A509 Isham Bypass link road. Overbridges, non-motorised user bridges and mammal underpass are all proposed, alongside improvement works to connecting roads, footpaths and lighting; landscaping and drainage. If consented, construction completion is anticipated in Autumn 2027.

8. KET/2018/0965 - Kettering South (land at) (Off A509 north of Isham), Kettering

   This is an approved industrial development with ancillary offices and associated access, internal roads, parking, landscaping and drainage. The project is located approximately 5km east of Green Hill A.2. There is expected overlap in construction dates, with anticipated completion in 2031.

9. Wellingborough East SUE (Stanton Cross) - PBW Policy Site 1; WP/2004/0600; WP/15/00481/OUT; WP/15/00605/VAR - Land Between Finedon Road and The Railway, Neilson's Sidings and Land north of Finedon Road (Bovis) Finedon Road Wellingborough Northamptonshire

   This is a mixed-use development with residential, commercial and social units, new access, a country park and other works. It lies approximately 6km east of Green Hill E. This project is currently under construction and housing is expected to be delivered by 2031.

10. NK/2024/0613 - Kettering Energy Park, Burton Wold Wind Farm (land adjacent to), Thrapston Road (land West of), Burton Latimer

    This entails an EIA Scoping Opinion for development of energy infrastructure, structures to accommodate advanced agricultural systems and new employment floorspace and associated works, located approximately 8km east of Green Hill A. This application is in an early stage, but there is potential for overlap in construction dates if consented.

11. NK/2024/0018 - Nunnery Farm, Harrington Road, Rothwell, NN14 6AW

    This entails an EIA Scoping Opinion for a large-scale industrial development, alongside woodland planting, green infrastructure, and

landscaping; access; supporting infrastructure and utilities; and demolition of existing buildings. The Site is located approximately 8km east of Green Hill A. This application is in an early stage, but there is potential for overlap in construction dates if consented, with expected completion in 2030.

12. KET/2007/0694; KET/2013/0314; KET/2013/0232; KET/2015/0967; KET/2019/0628; KET/2020/0306 - East Kettering Sustainable Urban Extension (SUE) (also called Hanwood Park)

    This is an approved application for 5,500 dwellings and related development, located approximately 8km east of Green Hill A.2. There is overlap in construction dates, with anticipated completion in 2031.

13. KET/2011/0235; NK/2021/0356; KET/2017/0169 - North Desborough (land at), Desborough, NN14 2SR

    This is an approved residential development of up to 700 dwellings including provision of a local centre primary school green infrastructure and creation of accesses. Currently under construction, this is located approximately 9km north of Green Hill A.

14. 2025/0069/EIA - Land north of The Green, south of Brackmills Country Park and southwest of Great Houghton

    This is an Outline application for a mixed-use development comprising up to 650 residential units; other commercial and community units, demolition/ refurbishment of existing buildings, and supporting infrastructure and open space. This development is located approximately 9km to the southwest of Green Hill B. Pending approval, construction is due to start in 2027; with completion by 2034.

15. NK/2022/0613 - Harborough Road (land at), Millbuck Industrial Estate (land adj), Desborough, NN14 2SR

    This is an approved industrial development with ancillary offices and associated landscaping, car parking, servicing and access arrangements. The project is located approximately 10km north of Green Hill A. There is potential for overlap in construction dates.

16. 2023/5978/EIA - Land South and East of Grange Park, Northampton Northamptonshire NN7 2EE

    Located approximately 10km west of the Cable Route Search Area, this is an Outline application for up to 850 dwellings, a new local centre, primary school, open space (including an extension to the adjacent country park), community allotments, landscape buffers, enhanced offsite pedestrian and cycle links, and associated offsite highways works. The application is pending approval, with anticipated construction completion in 2030.

17. WNS/2022/2402/EIA; 2024/1072/COND; 2024/1073/COND; 2024/1074/COND; 2024/1401/COND; 2024/2027/NMA; 2024/2616/COND - Land South Of East Lodge Farm Quinton Road Courteenhall

    Located approximately 10km west of the Cable Route Search Area, this is an approved application for the construction and operation of an Anaerobic Digestion facility; with associated infrastructure and landscape planting. There is potential for overlap in construction dates.

18. 20/01453/OUT - Rushden East Urban Extension Liberty Way Rushden Northamptonshire

    This development pertains to an urban extension of up to 2,200 homes, industrial and commercial units, community facilities, access, POS, a cemetery, allotments, drainage and other works. It is located approximately 10km northeast of Green Hill F. If approved, construction is to commence in 2025; the final phase is due to commence in 2034.

# 4 Consultation

4.1.1 Consultation with Natural England on the subject of likely significant effects on the UNVGP SPA was carried out via the Discretionary Advice Service between January 2024 and March 2025, to inform the EIA process. The detailed responses can be found in Appendix 9.4 – Consultation Responses to Chapter 9 of the Environmental Statement **[EN010170/APP**Revision A **[EX1/GH6.32.9.4]. A].**

4.1.2 Post-submission, a meeting was held to discuss points raised in Natural England's Relevant Representation response, chiefly around the approach to assessment of Functionally Linked Land.

4.1.14.1.3 A summary of the discussions is provided in **Table 1** below (the Item references relate to those in Appendix 9.4).

**Table 1: Summary of Natural England Consultation**

| Item Reference | Enquiry and Dates |
|---|---|
| 1 | Applicant ecologist contacted NE to hold initial meeting and confirm the scope of wintering bird surveys required. It was confirmed that nocturnal surveys would be required.<br>Virtual meeting held 16/01/2024.<br>Email response received 16/01/2024. |
| 2 | Applicant ecologist contacted NE to confirm the scope of ecological survey work required. Applicant ecologist responded with follow up questions and clarifications.<br>Email response received 01/02/2024.<br>Follow-up email sent 16/02/2024. |
| 3 | Applicant ecologist contacted NE to confirm the scope of wintering bird surveys required. It was confirmed at that time that only 1 year of survey effort would be required.<br>Email response received 18/03/2024. |
| 4 | NE advised that recent discussions with LPAs meant that 2 years of wintering bird survey effort would be required.<br>Email response received 20/08/2024. |
| 5 | Applicant ecologist contacted NE to hold meeting re. revised scope of wintering bird surveys and mitigation. NE provided advice re. mitigation for Functionally Linked Land in follow-up email. Applicant ecologist responded requesting further clarity over likely quantum of mitigation land needed.<br>Virtual meeting held 05/09/2024.<br>Email received 05/09/2024. |

| Item Reference | Enquiry and Dates |
|---|---|
| 6 | Applicant ecologist contacted NE to discuss the suitability of an offering of precautionary mitigation provision for Functionally Linked Land (given that 2 years' survey could not be completed across all Sites).<br>NE requested further information, which was provided by the applicant ecologist. The utility of supporting BTO data was queried.<br>NE provided a response, but did not clarify the extent of land which may be needed as precautionary mitigation.<br>Initial email sent 09/10/2024.<br>Final response received 17/12/2024. |
| 8 | Applicant ecologist responded to NE's incorrect statement that only 1 year of survey effort would be completed by the applicant to inform the proposals and sought to clarify the outstanding matter of precautionary mitigation land. Applicant ecologist reclarified survey effort. NE did not clarify their position but stated their preference to view full survey data before making a decision.<br>Initial email sent 13/02/2025.<br>Final response received 11/03/2025. |
| - | A meeting was held post-submission to discuss points raised in Natural England's Relevant Representation response, chiefly around the approach to assessment of Functionally Linked Land. The Applicant ecologist clarified their approach, including use of the field-scale for determining FLL. The outcome of the meeting was positive, and matters verbally agreed, subject to final review of the supporting survey data by Natural England. It was agreed that Natural England would review the information and input into the Statement of Common Ground to agree remaining matters.<br>Virtual meeting held 06/10/2025. |

# 5 Identification of Designated Sites for Consideration

## 5.1 Overview

5.1.1 According to the Conservation of Habitats and Species Regulations 2017 (as amended), the network of national sites receiving protection under this legislation is limited to SACs and SPAs, as well as potential SACs and potential SPAs. However, Ramsar sites continue to be included under HRAs according to the National Planning Policy Framework (NPPF), despite not falling under the remit of the coming under the Conservation of Habitats and Species Regulations 2017 (as amended). This was clarified in Annex 2 of the NPPF and in the Biodiversity and geological conservation: circular 06/2006.

5.1.2 Special Areas of Conservation seek to protect particular sites of high conservation importance due to the type of rare or otherwise threatened habitats and species they support. In particular, habitats listed on Annexe I and species listed on Annexe II of the Habitats Directive (European Council Directive 92/43/EEC) are capable of being reasons for designation.

5.1.3 Special Protection Areas seek to protect sites of particular importance to birds, according to the presence of significant assemblages of species or large populations of high conservation priority species, or a combination thereof.

5.1.4 Ramsar sites are wetland sites designated to be of international importance under the Ramsar Convention, also known as "The Convention on Wetlands". Criteria for selection include both habitat and species-based criteria.

5.1.5 Candidate statutorily designated sites were searched for within a standard radius of 10 km from the Order Limits. One site – the UNVGP SPA and overlapping Ramsar site, was recorded within this radius. The UNVGP SPA and Ramsar site is shown in **Figure 9.3.1** and reasons for each designation and proximity to the Sites is described below.

5.1.6 Considering the mobility of certain protected species groups, in particular bats and birds, this radius was extended to 30 km for the purposes of this document. No additional sites were found within this wider search radius.

5.1.7 Additionally, land which is designated as mitigation for impacts on SACs, SPAs and Ramsar sites is subject to the same level of scrutiny under the HRA process. Heidelburg's (formerly Hanson) Earls Barton Quarry was identified within the Order Limits, which is due to be reinstated as wetland forest. Mineral extraction here was permitted in 2008 prior to the formal designation of the SPA. Whilst the quarry lies in close proximity to the UNVGP SPA/ Ramsar site, the habitat restoration works are not provided as mitigation for impacts on the UNVGP SPA/ Ramsar site, and therefore this area is scoped out of the assessment.

## 5.2 Relevant Sites

### Upper Nene Valley Gravel Pits SPA

5.2.1 The UNVGP SPA comprises a network of exhausted sand and gravel pits extending across approximately 35km of alluvial deposits of the River Nene floodplain. This forms an extensive series of shallow and deep open waters which occur in association with a wide range of marginal features, such as sparsely-

vegetated islands, gravel bars and shorelines and habitats including reedswamp, marsh, wet ditches, rush pasture, rough grassland and scattered scrub.

5.2.2 The UNVGP SPA lies in closest proximity to Green Hill BESS, where the SPA lies 0.01km north of the Order Limits. Green Hill F lies 2km from the SPA; Green Hill D and E lie within 5km; and Green Hill C and G lie within 10km. Green Hill A lies beyond 10km, and Green Hill A.2 lies 9.9km northwest of the SPA.

5.2.3 As set out in the Water Framework Directive Assessment ~~(EN010170/APP~~Revision A **[EX1/GH7.22~~),~~ A]**, the Scheme, except for Green Hill G, is located wholly within the River Nene Water Framework Directive Surface Water Management Catchment. Green Hill G is located within the Upper and Bedford Ouse Management Catchment. Since the Sites are spread linearly, more or less perpendicular to the River Nene (and the SPA), they are situated at differing distances from the river and the SPA. Moreover, there are differing levels of hydrological connectivity at each Site, given the presence or absence of significant watercourses or drainage ditches.

**Qualifying Features**

5.2.4 The Site qualifies under article 4.1 of the Birds Directive (Directive 2009/147/EC) as it is used regularly by 1% or more of the Great Britain populations of the following species listed in Annex I in any season:

| Annex 1 species | Count and season | Period | % of GB population |
|---|---|---|---|
| Bittern *Botaurus stellaris* | 2 individuals – wintering | 5 year peak mean 1999/2000 – 2003/04 | 2.0% |
| Golden plover *Pluvialis apricaria* | 5,790 individuals – wintering | 5 year peak mean 1999/2000 – 2003/04 | 2.3% |

5.2.5 The Site qualifies under article 4.2 of the Birds Directive as it is used regularly by 1% or more of the biogeographical populations of the following regularly occurring migratory species (other than those listed in Annex I) in any season:

| Migratory species | Count and season | Period | % of subspecies/ population |
|---|---|---|---|
| Gadwall *Anas strepera* | 773 individuals – wintering | 5 year peak mean 1999/2000 – 2003/04 | 2.0% strepera, NW Europe (breeding) |

5.2.6 The Site qualifies under article 4.2 of the Birds Directive as it is used regularly by over 20,000 waterbirds (waterbirds as defined by the Ramsar Convention) in any season. In the non-breeding season, the area regularly supports 23,821 individual waterbirds (5 year peak mean 1999/2000 – 2003/04), including wigeon *Anas penelope*, gadwall *Anas strepera*, mallard *Anas platyrhynchos*, shoveler

*Anas clypeata*, pochard *Aythya ferina*, tufted duck *Aythya fuligula*, great crested grebe *Podiceps cristatus*, cormorant *Phalacrocorax carbo*, bittern *Botaurus stellaris*, golden plover *Pluvialis apricaria*, lapwing *Vanellus vanellus* and coot *Fulica atra*.

**Current Impacts**

5.2.7 Current negative threats and pressures are all high-level threats and include the following:

- A02 Modification of cultivation practices; inside the SPA
- F02 Fishing and harvesting aquatic resources; inside the SPA
- G01 Outdoor sports and leisure activities, recreational activities; inside the SPA
- E06 Other urbanisation, industrial and similar activities; both inside and outside the SPA

5.2.8 Positive sources of impact are all high-level and include the following:

- A06 Annual and perennial non-timber crops; inside the SPA
- A02 Modification of cultivation practices; inside the SPA
- A04 Grazing; inside the SPA

**Conservation Objectives**

5.2.9 Ensure that the integrity of the Site is maintained or restored as appropriate, and ensure that the Site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;

- The extent and distribution of the habitats of the qualifying features
- The structure and function of the habitats of the qualifying features
- The supporting processes on which the habitats of the qualifying features rely
- The population of each of the qualifying features, and,
- The distribution of the qualifying features within the Site.

**Current Condition**

5.2.10 According to the 2017 assessment (Ref .5), the status of each qualifying feature is as follows:

*Bittern*

5.2.11 The Site supports internationally significant numbers of bittern during the winter months and when the SPA was classified in 2011 this represented 2.0% of the total British wintering population.

5.2.12 The population fluctuates from year to year depending on continental weather conditions, in cold winters more bitterns over-winter within the Valley, escaping colder conditions in Europe, the overall trend however is stable since the SPA classification with a 5-year peak mean of 2 individuals (WeBS data from BTO).

5.2.13 When present in the SPA, Bitterns tend to roost at 3 main locations (Titchmarsh, Grendon, and Stanwick) where there are dense stands of common reed *Phragmites australis* present. During the day birds feed at various locations within the valley, both within and outside of the SPA boundary.

*Golden Plover*

5.2.14 The Site supports internationally significant numbers of golden plover during the winter months and when the SPA was classified this represented 2.3% of the NW European population.

5.2.15 Numbers fluctuate from year to year depending on weather conditions in the UK and Europe; during periods of cold weather in continental Europe, larger numbers of golden plover visit the SPA. However, during periods of extreme cold within central England the birds move further south and west.

5.2.16 Whilst there is natural fluctuation within the population year to year, the population trend on the Site has been downwards since the classification of the SPA; this is thought to be due to increased levels of recreational disturbance at the key roosting site of Northamptonshire Washlands.

5.2.17 Golden plover use the SPA for roosting and loafing, favouring three main roost locations at Stanwick, Earls Barton (Summer Leys) and Northamptonshire Washlands. Birds feed on the surrounding agricultural land often flying many kilometres to feed. It is not currently known where there preferred feeding grounds are and whether they remain faithful to specific fields or select fields based on crop type / food availability.

*Gadwall*

5.2.18 This site supports internationally significant numbers of gadwall during the non-breeding period and when the SPA was classified in 2011 this represented 2% of the NW Europe population.

5.2.19 The population within the SPA has remained stable since classification although there have been significant changes in distribution within the SPA for reasons which are not yet clear.

5.2.20 Numbers of gadwall begin to build in August with birds undergoing their post-breeding moult with peak numbers arriving from October onwards. Birds are distributed across evenly across the SPA and will be feeding on lakes which have a good supply of their preferred food sources - aquatic plants, seeds and invertebrates.

*Waterbird Assemblage*

During the non-breeding season, the SPA regularly supports an assemblage of waterfowl species numbering more than 20,000 birds.

The main component species of this non-breeding waterfowl assemblage which are not already covered under individual features, and which are present in either nationally important numbers or comprise 2,000 or more individuals are:

- Wigeon: Require areas of short grassland for feeding and easy access to water - when birds are disturbed whilst feeding on grasslands they will prefer to walk into nearby waterbodies rather than flying. Wigeon can be very

sensitive to disturbance and their tendency to feed on grassland leads to increased disturbance from walkers and dogs compared to other species. Key areas of the SPA are Northamptonshire Washlands, Earls Barton, Stanwick, and Ditchford West.

- Mallard: Evenly distributed across the SPA.
- Shoveler: Numbers often peak earlier in the non-breeding season as birds pass through on migration to Africa. Numbers begin to build from August and may peak in November. Distribution is localised across the valley, whilst shoveler are found within each of the lake complexes within the SPA, their distribution may be restricted to 1-2 lakes within a complex, often smaller and more sheltered lakes; disturbance to these lakes can cause a disproportionate impact.
- Pochard: Distributed across the SPA favouring larger and deeper lakes.
- Tufted duck: Distributed evenly across the SPA.
- Great-crested grebe: Distributed evenly across the SPA.
- Mute swan: Distributed evenly across the SPA, often found feeding on adjacent arable fields. Large numbers congregate outside the SPA at Wellingborough Embankment where they are often fed.
- Cormorant: Birds roost at 2-3 key locations within the SPA where there are concentrations of mature trees as roost perches - Thrapston / Titchmarsh; Ringstead; Ditchford. Birds fly out to feed in the morning, often favouring areas where fish are easy to catch, returning to roost sites during the evening; cormorants have been shown to travel the length of the Valley and there is likely to be an interchange between other non-breeding populations. Presence of birds on a lake does not indicate that they are feeding at that location; in many cases they will feed at one location and then fly and short distance to an undisturbed lake to loaf and preen.
- Lapwing: Distribution similar to golden plover.
- Coot: Evenly spread across the SPA.

### Upper Nene Valley Ramsar

5.2.21 The boundary follows the same boundary as Upper Nene Valley Gravel Pits SPA and encompasses most of the Upper Nene Valley Gravel Pits SSSI (Site of Special Scientific Interest).

#### Qualifying Features

5.2.22 The Ramsar Information Sheet (Ref .6) confirms that the site qualifies as a Ramsar site under Criterion 5 due to regularly supporting more than 20,000 waterbirds; in the non-breeding season, the Site regularly supports 23,821 individual waterbirds (5 year peak mean 1999/2000 – 2003/04).

5.2.23 The Site qualifies as a Ramsar site under Criterion 6 because it regularly supports 1% of the individuals in the populations of the following species or subspecies of waterbird in any one season:

| Species | Count and season | Period | % of subspecies/ population |
|---|---|---|---|
| Mute swan *Cygnus olor* | 629 individuals – wintering | 5 year peak mean 1999/2000 – 2003/04 | 1.7% Britain |
| Gadwall *Anas strepera* | 773 individuals – wintering | 5 year peak mean 1999/2000 – 2003/04 | 2.0% strepera, NW Europe (breeding) |

**Current Impacts**

5.2.24 Current negative threats and pressures and include the following:

- Activities connected with ongoing urban development cause significant disturbance to wintering birds if unmanaged; outside the Ramsar site.
- Lack of grazing is leading to succession from short grassland to rank grassland, scrub / woodland. Whilst this is desirable in certain areas, widespread vegetation succession will result in a decrease in the availability of suitable habitat for key species; inside the Ramsar site; major impact.
- Invasive plants, including floating pennywort *Hydrocotyle ranunculoides*, New Zealand pigmy weed *Crassula helmsii*, and Nuttall's pondweed *Elodea nuttallii*, are known to be present in small areas of the Site; inside the Ramsar site.
- Access by people and dogs both on and off of public rights of way is a significant cause of disturbance in some areas. The Site is also subject to a variety of recreational activities including fishing and watersports. Demand for access and formal / informal recreational activities within the Nene Valley are increasing; development of facilities / opportunities is often in an uncoordinated manner; both inside and outside the Ramsar site; major impact.

5.2.25 Positive sources of impact include the following:

- The Wildlife Trust for Northamptonshire and Rockingham Forest Trust make use of the Site for environmental educational purposes, both formal and informal. The Wildlife Trust have also established an Ecology Group within the Nene Valley aimed at increasing the number of local people with wildlife monitoring skills and involvement with local reserves.
- Within the wider Ramsar site, bird hides exist at Summer Leys Local Nature Reserve (LNR) and Titchmarsh LNR, both managed by the Wildlife Trust and at Stanwick Lakes, managed by Rockingham Forest Trust. There is a visitor centre at Stanwick Lakes, managed by Rockingham Forest Trust, which has interpretation facilities and an events programme relating to Stanwick Lakes; there is no wider Nene Valley focussed visitor centre.

**Conservation Objectives**

5.2.26 No current information on conservation measures was available and a formal management plan was not prepared with the citation. However, the following measures were proposed to address current impacts:

- Vegetation succession: This is principally being addressed through agri-environment schemes, predominantly HLS. This is only relevant where large areas of grassland are involved. The scope of agri-environment schemes mean that much of the land is not eligible and there are no alternative sources of funding for the small scale landowners / occupiers to undertake positive management works associated with marginal / aquatic habitats e.g. willow clearance around edge of a lake. Alternative sources for funding e.g. local grant schemes should be investigated. Issues leading to vegetation succession are also to be addressed through enhanced liaison with landowners/occupiers, management agreements and management plans; assisted by powers under the Wildlife & Countryside Act 1981, as amended.
- Introduction / invasion of non-native plant species: Invasion of lakeside edges by invasive non-native plants is to be addressed through enhanced liaison with landowners / occupiers and The Environment Agency.
- Recreation / tourism disturbance: The intensity and location of recreational activities taking place just prior to SSSI notification on 24 November 2005 was considered compatible with maintaining appropriate population levels. This is managed through voluntary agreements assisted by powers within Wildlife & Countryside Act 1981 as amended and The Conservation of Habitats & Species Regulations 2010.
- The development of future recreational opportunities is to be addressed through valley-wide tourism and recreational strategies to provide a coordinated approach; including the development of access management plans for key sites and that appropriate planning policies are incorporated within strategic planning documents to ensure developments take account of direct and indirect recreational disturbance. Natural England intend to support and work in partnership with the following initiatives: The Wildlife Trust's Nene Valley Vision, RSPB Futurescapes and River Nene Regional Park projects.

**Current Condition**

5.2.27 No current condition information was available.

# 6 Test of Likely Significant Effects of the Scheme on Identified Sites

6.1.1 This section considers each given source of potential impact sequentially. This is done first in isolation and then considering in-combination factors and other relevant developments which could give rise to cumulative effects.

6.1.2 Given the similarity in designations for the overlapping SPA and Ramsar site, sources of impact are amalgamated for brevity. Thus, where the text refers to the SPA, this applies to the Ramsar as well.

## 6.2 Assessment in Isolation

### Assessment of Potential for Impacts on Designated Habitats

6.2.1 The SPA and Ramsar designations relate to overwintering bird populations, and not for the habitats themselves. As such, there are no designated habitats. However, impacts to habitats within the SPA may have the potential to lead to effects on the species residing therein. This section considers impacts relating to habitats within the boundaries of the SPA.

**Direct Habitat Loss or Change**

6.2.2 The Scheme does not involve any requirement of physical resources from the SPA and will not result in any direct harm or alteration of habitats as the Order Limits are wholly separate to the SPA. As such, there is **NO risk of Likely Significant Effects** from this pathway.

**Pollution and Habitat Degradation**

*Airborne Pollution*

6.2.3 During construction, topsoil stripping, trenching works and movement of haul vehicles and plant at Green Hill BESS and within the Cable Route Corridor has the potential to result in dust emissions, and chemical emissions from vehicle exhausts.

6.2.4 Operationally, there is negligible risk of airborne pollution from routine maintenance; the Sites will be subject to low-intensity maintenance, such as periodic grass cutting. Replacement of solar panels at Green Hill A-G (understood to be once over the lifetime of the Scheme) and batteries at Green Hill C and BESS (understood to be up to five times over the lifetime of the Scheme) will not entail any major ground works and will only entail movement of vehicles.

6.2.5 During decommissioning, airborne pollution risks will be comparable to the construction phase.

6.2.6 Airborne dust pollution and chemical emissions from vehicles typically attenuates over a short distance, with the Construction Dust Methodology and Assessment ~~(EN010170/~~[APP~~/GH6.3.16.1)~~-166] considering impacts on ecological features within 50m. Besides Green Hill BESS, the Sites are all over 2km from the SPA, and so airborne pollution and degradation impacts associated with these Sites are not considered likely. Therefore, impacts would only be felt on the SPA associated with construction of Green Hill BESS, as well as the nearby sections of the Cable Route Corridor.

6.2.7 There is a **risk of Likely Significant Effects** from this pathway.

*Waterborne Pollution*

6.2.8 During construction, topsoil stripping, trenching works (including open cut trenching of minor watercourses and Horizontal Directional Drilling (HDD) beneath watercourses), and movement of haul vehicles and plant at the Sites and within the Cable Route Corridor, has the potential to result in sediment runoff or chemical release (including fuels and other contaminants). Some of these impacts may also be tangible during decommissioning.

6.2.9 Additionally, battery energy storage systems are proposed at Green Hill C and Green Hill BESS, which entails a collection of batteries sited within a compound. In the event of a battery fire, there is a risk that chemicals from the batteries could enter watercourses upstream of the SPA and affect the habitats in the SPA. This risk is tangible during operation (including the replacement of the batteries) and during decommissioning.

6.2.10 All sites bar Green Hill G lie within the catchment of the River Nene, which flows into the SPA. However, impacts are most likely to be felt for works in proximity to the SPA, with waterborne pollution associated with more distant works being more likely to attenuate over distance. The greatest likelihood of impacts are associated with construction of Green Hill BESS and trenching works for the nearby sections of the Cable Route Corridor. The development areas on Green Hill BESS lie 0.25km from the SPA. The Grendon Brook runs roughly north-south along the eastern edge of the Site, and flows due north into the SPA. Additionally, a tributary of the River Nene runs along the northwestern edge of the Site. Thus, there is a potential pathway for waterborne pollution to enter the SPA via these watercourses. The cable route for the Scheme crosses the River Nene approximately 700m west of the SPA. The River Nene flows northeast into the SPA, and so any pollution through trenching of the river could lead to habitat degradation.

6.2.11 **There is a risk of Likely Significant Effects from this pathway.**

*Spread of Invasive/ Non-native Species*

6.2.12 During the construction phase, trenching works will be required of watercourses associated principally with the cable route, although potentially also with crossings of minor watercourses for site access within the Sites. It is possible that the banksides of watercourses, where invasive/ non-native plant species are present, may be damaged. Similarly, trenching equipment within the watercourse channel for open-cut trenching works may come into contact with invasive/ non-native plant species in the channel. Repeat use of equipment at different crossing points could potentially spread these species along watercourses in closer proximity to the SPA than baseline levels.

6.2.13 No invasive/ non-native plant species have been detected within the Order Limits during the ecological surveys to date, although they may not have been recorded, or else occur subsequently.

6.2.14 There are no other pathways by which invasive/ non-native species may be spread which could impact the SPA.

6.2.15 There is a **risk of Likely Significant Effects** from this pathway.

*Surface Water Runoff*

6.2.16 The scheme will entail the construction of solar PV modules and BESS compounds on currently open arable land. This has the potential to alter the hydrology of the Sites and affect the water flow into the SPA. If changes are significant, this could degrade the habitats.

6.2.17 There is a **risk of Likely Significant Effects** from this pathway.

## Assessment of Potential for Impacts on Designated Species

6.2.18 The SPA is designated for its overwintering bird populations. Besides birds residing within the bounds of the SPA, mobile species such as golden plover and lapwing utilise land surrounding the SPA for foraging. This section considers impacts relating to species associated with the SPA.

### Killing, Injury or Removal of a Designated Species, or Their Prey

6.2.19 The Scheme will not result in the direct killing, injury or removal of any designated species or their prey from within the SPA itself.

6.2.20 During construction, any wintering birds associated with the SPA which are using land in the Order Limits will take flight, and so not be at risk of killing or injury.

6.2.21 During operation, there are no activities which present a risk of killing or injury. The Sites will be subject to low-intensity maintenance, such as periodic grass cutting and panel cleaning. It has been assumed that Solar PV Panels will be replaced once during the lifetime of the Scheme. The Solar PV Panels are anticipated to be replaced over a 24 month period. The BESS may be replaced five times during the lifetime of the Scheme. Such replacement activities will be wholly within the confines of the Order Limits.

6.2.22 Risk of bird strike on solar panels is considered to be low, based on a review of the literature (Ref .7). The most at-risk species are wildfowl and waders, which may mistake highly reflective panels for water; this is known as the ‘lake effect’. Such risks are greatest near wetland habitats or stopover sites. No solar panels are being installed at Green Hill BESS, which lies closest to the SPA and the lakes which form component parts. The other arrays sites all lie over 2km from the SPA and not . As such, this is not considered a tangible impact pathway.

6.2.23 Bittern, gadwall and mute swan may forage within lakes associated with the SPA itself; gadwall and mute swan may roam slightly further and utilise ponds, lakes or watercourses outside the SPA. In the event of a significant waterborne pollution event, there is the potential for associated habitat degradation to reduce the availability of food sources for these three species. To avoid repetition, this is considered under ‘Pollution and Habitat Degradation’.

6.2.24 Golden plover typically forage in damp pasture and arable fields. Loss of habitat to the development area may reduce the quantum of suitable foraging habitat. This is discussed under ‘Habitat Fragmentation’ and not repeated here.

6.2.25 As such, there is **NO risk of Likely Significant Effects** from this pathway.

**Habitat Fragmentation**

6.2.26 Gadwall, bittern and mute swan, are reliant on the habitats within the SPA itself and do not typically make use of land outside of the SPA over the winter period. Since no land within the SPA will be impacted, there are no habitat fragmentation risks for these species.

6.2.27 However, mobile species such as golden plover and lapwing readily utilise land surrounding the SPA for foraging. Natural England have identified a 10km consultation zone around the SPA within which an assessment must be taken to determine the use of land by golden plover and lapwing, and whether the land is of especial importance to these species for winter foraging, thereby constituting Functionally Linked Land (FLL).

6.2.28 FLL is defined as "areas of land or sea occurring outside a designated site which is considered to be critical to, or necessary for, the ecological or behavioural functions in a relevant season of a qualifying feature for which a Special Areas of Conservation (SAC)/ Special Protection Area (SPA)/ Ramsar site has been designated." Advice from Natural England during Discretionary Advice Service consultation indicated that FLL would be defined as land within the 10km SPA consultation zone within which significant numbers of either golden plover or lapwing were recorded on more than one occasion over the survey period (pattern use).

6.2.29 The spatial scale for evaluating FLL was not made clear by Natural England, however, this was taken to be the level of individual fields for this assessment. The individual field level was the most logical scale to determine pattern use of the same area. Furthermore, this acknowledges the ultimate selection of foraging areas by birds at the level of individual fields.

6.2.30 'Significant numbers' are taken to be more than 1% of the SPA population. Through consultation with Natural England, it was understood that the SPA populations of both golden plover and lapwing had declined substantially since the original designation of the Site, and Natural England indicated that updated population estimates should be used to inform the FLL assessment. As such, revised population estimates conducted by the British Trust for Ornithology (BTO), 2017/18-2021/22 have been used. The original SPA citation and more recent population counts, and 1% threshold numbers, are indicated in ~~Table 2 below.~~**Table 3** below.

6.2.31 Green Hill B-G, plus Green Hill BESS, and land within the cable route corridor, lie within the 10km consultation zone. Surveys have recorded both golden plover and lapwing using the land within the Scheme. As such, there is the potential for habitat fragmentation through loss of supporting habitat, if any areas of the Scheme constitute FLL.

6.2.32 There is a **risk of Likely Significant Effects** from this pathway.

**Disturbance to Designated Species**

6.2.33 Disturbance of designated species may be felt through noise and visual impacts during construction, operation and decommissioning. This is split by disturbance

to species within the SPA confines and species using land outside the SPA, below.

*Disturbance to Species Inside the SPA*

6.2.34 Disturbance to species residing within the SPA itself is only considered possible during works associated with construction, operation and decommissioning of Green Hill BESS, and construction of the cable route connection at Grendon substation. The development areas at Green Hill BESS lie 0.25km from the SPA at the nearest point, and a field which lay adjacent to the SPA was removed from the Order Limits following consultation with Natural England, prior to submission of the DCO application. The Order Limits lie within 15m of the SPA at the nearest point around the Grendon substation, where the connection into the National Grid substation may be made. There are no risks of disturbance to species within the SPA associated with any other works at the other Sites or areas of the Cable Route Corridor, during construction, operation or decommissioning, due to the distances between the SPA and the Order Limits.

6.2.35 The presence of tall hedgerows and treelines between the Order Limits and the SPA, and the sunken nature of the gravel pits, mean that activity within the Green Hill BESS site would not be visible to species within the SPA, and therefore would fully mitigate any visual disturbance impacts.

6.2.36 There is a risk of noise disturbance during construction through works associated with construction of the BESS areas and cabling works. During operation, noise from the batteries themselves and battery replacement works may also cause noise disturbance. Decommissioning would present similar impacts as construction.

6.2.37 There is a **risk of Likely Significant Effects** from this pathway.

*Disturbance to Species Outside the SPA*

6.2.38 There is a risk of disturbance to mobile species, including overwintering golden plover and lapwing, using land outside of the SPA, within or adjacent to the Order Limits. Disturbance may occur during construction, operation and decommissioning, through the presence of personnel and machinery. This may cause these species to seek alternative foraging areas.

6.2.39 Baseline surveys have identified areas within the Order Limits which are used by notable numbers of golden plover and lapwing. These areas are deemed Functionally Linked Land, as discussed under 'Habitat Fragmentation' above. Besides these areas, use of the Sites and wider landscape by golden plover and lapwing was patchy; these species will roam widely in search of food.

6.2.40 In order to lead to a significant adverse effect on the integrity of the SPA, disturbance would have to cause significant numbers of birds to be displaced and for this displacement to lead to continued stress (either physical or resource-based stress) and in turn the reduced ecological fitness of these species, ultimately leading to a decline in the sustainability of their population.

6.2.41 Given the temporary nature of construction/ replacement/ decommissioning works, the patchy distribution of golden plover and lapwing in the vicinity of the Order Limits, the availability of alternative foraging areas in the local landscape,

the propensity for bird populations to habituate to a level of persistent noise/visual stimuli, and their mobility within the local landscape, there is considered to be **NO risk of Likely Significant Effects** from this pathway.

## 6.3 In-combination and Cumulative Assessment

### Assessment of Potential for Impacts on Designated Habitats

#### Direct Habitat Loss or Change

6.3.1 There are no direct impacts resulting from the Scheme, and therefore no in-combination or cumulative effects are likely.

#### Pollution and Habitat Degradation

6.3.2 In-combination effects may be felt through the combination of the various pollution pathways identified above, i.e.:

- Dust and sediment deposition from haul vehicles, movement of plant, and topsoil stripping;
- Chemical pollution from vehicle fuel spillages;
- Chemical spillage from battery fire/ battery replacement at the BESS site;

*Airborne Pollution*

6.3.3 There is a greater risk of airborne pollution in combination with the Grendon Lakes BESS facility (Project 1), during construction and decommissioning. There is therefore potential for exacerbation of pollution impacts in combination with other projects.

*Waterborne Pollution*

6.3.4 There is a greater risk of waterborne pollution in combination with the Grendon Lakes BESS Project 1 during construction, operation and decommissioning. Project 9, a mixed-use development, is also located adjacent a separate unit of the SPA, located over 6km from Green Hill BESS; pollution events associated with this project could also compound impacts associated with the Scheme on the SPA. Other projects are unlikely to give rise to cumulative effects given their distance from the Scheme. There is therefore potential for exacerbation of pollution impacts in combination with other projects.

*Spread of Invasive/ Non-native Species*

6.3.5 Spread of invasive species is unlikely to be compounded by other developments given the lack of major works to watercourses upstream of the SPA and therefore no in-combination or cumulative effects are likely.

*Surface Water Runoff*

6.3.6 Other projects within the catchment of the River Nene could lead to changes in surface water runoff which may lead to cumulative impacts on the SPA. There is therefore potential for exacerbation of impacts in combination with other projects.

## Assessment of Potential for Impacts on Designated Species

### Killing, Injury or Removal of a Designated Species, or Their Prey

6.3.7 There are no direct impacts resulting from the Scheme, and therefore no in-combination or cumulative effects are likely.

### Habitat Fragmentation

6.3.8 The Scheme will result in the net loss of available open field habitat for mobile wading birds (golden plover and lapwing) associated with the SPA, which could include FLL. Other projects within the 10km SPA consultation zone (all listed projects, excluding Projects 11 and 15) will also reduce the availability of open field habitats and, potentially, result in the loss of further areas of FLL.

6.3.9 The loss of FLL should be controlled, mitigated and compensated through adherence to guidance set out by Local Planning Authorities and Natural England. However, at present, this is not understood to be specified in unified guidance; a forthcoming Supplementary Planning Document will set out mitigation criteria clearly for all future developments. There is therefore potential for exacerbation of fragmentation through cumulative loss of FLL.

### Disturbance to Designated Species

*Disturbance to Species Inside the SPA*

6.3.10 Disturbance to species within the SPA may only be compounded, in combination with the Scheme, by Project 1, which lies in proximity to the SPA, Green Hill BESS, and the cable connection at Grendon substation. Disturbance may be compounded during construction, operation and decommissioning.

*Disturbance to Species Outside the SPA*

6.3.11 Disturbance impacts on mobile species outside the SPA (golden plover and lapwing) during construction or decommissioning of the Scheme, may be compounded by concurrent construction of other projects, if the same flocks of birds are disturbed by the works.

6.3.12 The projects which are in proximity to both the SPA and the Scheme are Projects 1-7 and 9; other projects lie more distantly. For these projects to lead to significant cumulative impacts, disturbance events would need to affect the same flocks of birds over a prolonged period such that their ecological fitness was reduced.

6.3.13 This is considered highly unlikely given the quantum of available alternative foraging habitat surrounding the SPA and the mobile nature of golden plover and lapwing, combined with the temporary nature of construction works. As such, no cumulative effects are likely.

## 6.4 Conclusion

6.4.1 Likely Significant effects are discussed below and summarised in **Table 2**.

### Assessment of Potential for Impacts on Designated Habitats

#### Direct Habitat Loss or Change

6.4.16.4.2 No direct habitat loss or change is anticipated as result of the Scheme. This is scoped out from further assessment.

#### Pollution and Habitat Degradation

*Airborne Pollution*

6.4.26.4.3 There is a risk of airborne pollution impacts on the SPA through construction, operation and decommissioning works at Green Hill BESS, as well as the installation of the cable route. This could be compounded by concurrent works associated with Project 1. This will be subject to Appropriate Assessment**.**

*Waterborne Pollution*

6.4.36.4.4 Waterborne pollution impacts on the SPA could be felt through construction works associated with the Sites and Cable Route Corridor; operationally from battery fire risk and battery replacement; and during decommissioning. This could be compounded by concurrent works associated with Projects 1 and 9. This will be subject to Appropriate Assessment.

*Spread of Invasive/ Non-native Species*

6.4.46.4.5 Invasive/ non-native plant species could be spread by watercourse trenching works and degrade the SPA. This will be subject to Appropriate Assessment.

*Surface Water Runoff*

6.4.56.4.6 The Scheme could lead to changes to surface water runoff which could degrade the SPA. This may be compounded by other developments. This will be subject to Appropriate Assessment.

### Assessment of Potential for Impacts on Designated Species

#### Killing, Injury or Removal of a Designated Species, or Their Prey

6.4.66.4.7 There are no likely impacts, either alone, in combination, or cumulatively with other developments, associated with killing or injury of designated species or their prey. This is scoped out from further assessment.

#### Habitat Fragmentation

6.4.76.4.8 Fragmentation effects may be felt through the loss of FLL, used by golden plover and lapwing. This effect could be compounded through loss of additional FLL as a result of other developments in proximity to the 10km SPA consultation zone (all listed projects, excluding Projects 11 and 15). This will be subject to Appropriate Assessment.

#### Disturbance to Designated Species

*Disturbance to Species Inside the SPA*

6.4.86.4.9 Disturbance of species within the SPA boundary is only likely for construction, operation and decommissioning works at Green Hill BESS. This could be compounded by concurrent works associated with Project 1. This will be subject to Appropriate Assessment.

*Disturbance to Species Outside the SPA*

6.4.9 For mobile species using land outside of the SPA, including golden plover and lapwing, the temporary nature of construction works and the mobile nature of the designated species means that no significant effects are likely, either alone or in combination with other developments. This is scoped out from further assessment.

## Table 2: Summary of Screening Outcomes in Isolation and in Combination

| Qualifying Feature | Population | Designation | Impact Pathways Screened Against and Risk of LSE in Absence of Mitigation (Y/N) *LSE in isolation in plain text, in combination in parentheses* | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Direct habitat loss or change | Killing/ injury/ removal of a designated species, or their prey | Habitat fragmentation | Disturbance | | Pollution and habitat degradation | | | |
| | | | | | | Species within SPA | Species outside SPA | Airborne Pollution | Waterborne Pollution | Spread of Invasive/ Non-native Species | Surface water Runoff |
| Bittern *Botaurus stellaris* | Wintering | SPA | N (N) | N (N) | N (N) | Y (Y) | N (N) | Y (Y) | Y (Y) | Y (N) | Y (Y) |
| Golden plover *Pluvialis apricaria* | Wintering | SPA | N (N) | N (N) | Y (Y) | Y (Y) | N (N) | Y (Y) | Y (Y) | Y (N) | Y (Y) |
| Gadwall *Anas strepera* | Wintering | SPA / Ramsar | N (N) | N (N) | N (N) | Y (Y) | N (N) | Y (Y) | Y (Y) | Y (N) | Y (Y) |
| Mute swan *Cygnus olor* | Wintering | Ramsar | N (N) | N (N) | N (N) | Y (Y) | N (N) | Y (Y) | Y (Y) | Y (N) | Y (Y) |
| Waterbird assemblage | Wintering | SPA/ Ramsar | N (N) | N (N) | Y (Y) | Y (Y) | N (N) | Y (Y) | Y (Y) | Y (N) | Y (Y) |

# 7 Appropriate Assessment

7.1.1 This section considers each identified potential impact pathway carried forward from Section 6 above, sequentially. This is done first in isolation, and then considering in-combination factors and other relevant developments which could give rise to cumulative effects.

7.1.2 Given the similarity in designations for the overlapping SPA and Ramsar site, the impact assessment is amalgamated for brevity. Thus, where the text refers to the SPA, this applies to the Ramsar as well.

## 7.2 Assessment in Isolation

### Pollution and Habitat Degradation

#### Airborne Pollution

*Construction and Decommissioning Phases*

7.2.1 The SPA is potentially susceptible to short to medium-term degradation impacts during the construction / decommissioning phases arising from dust-generating activities, such as trenching works and movement of haul vehicles and plant, as well as chemical emissions from vehicle exhausts.

7.2.2 Embedded mitigation measures to minimise the likelihood and severity of airborne pollution have been incorporated into the Scheme. The Outline Construction Environmental Management Plan (OCEMP) **~~[EN010170/APP~~**Revision A **[EX1/GH7.1_A]** and Outline Ecological Protection and Mitigation Strategy (OEPMS) **~~[EN010170/APP~~**Revision A **[EX1/GH7.5_A]** detail how vehicles, plant and materials will be transported to the construction zone, as well as other standard environmental protection measures that will apply to the construction phase, such as dust suppression, pollution control measures and protection of adjacent habitats/watercourses.

7.2.3 Measures to limit the spread of dust and other airborne pollutants include**:**

- Detail on the location and specification of temporary and permanent protective fencing to be installed prior to the onset of construction. It is anticipated that the specified buffer zones will drive these locations;
- Restrictions on the use of fuels and other contaminants in proximity to boundary features and other sensitive habitats;
- Measures to limit the dust generating activities, such as when working in dry conditions;
- A Dust Management Plan;
- Site layout will be planned so that plant and dust causing activities will be located away from receptors as far as is possible;
- Enclosure of particularly dust forming activities;
- Construction personnel will receive a Toolbox Talk detailing the presence of sensitive ecological features at or close to the Sites and will be informed that no materials should be stored, or vehicles drive, through buffer zones; and

- An Ecological Clerk of Works (EcoCoW) will be designated at the onset of the construction phase, which will provide ecological supervision during the completion of any works which have the potential to impact protected and notable species, as appropriate.

7.2.4 Given the above mitigation measures, which will be secured through DCO Requirements, it is considered that significant impacts arising from discharge/deposition of sediments, dust and contaminants can be avoided/mitigated, and therefore there will be **no significant adverse effects** on the SPA through this potential impact pathway.

*Operational Phase*

7.2.5 In the absence of mitigation, there is a potential risk of a battery fire at Green Hill C and BESS and subsequent release of particulates and chemicals into the atmosphere. Discharge of chemicals from a battery fire could potentially degrade the habitats of the SPA and lead to significant adverse effects. Atmospheric pollution would attenuate over distance, and a battery fire at Green Hill C would be unlikely to affect the SPA to any significant degree, given that the BESS facility at Green Hill C lies 6km from the SPA. However, this is more likely at Green Hill BESS given its proximity to the SPA.

7.2.6 Embedded mitigation measures to minimise the likelihood and severity of battery fire have been incorporated into the Scheme, including the implementation of fire suppression systems. The risk of a fire and measures to mitigate impacts in the event of a fire are detailed in the Outline Battery Storage Safety Management Plan (OBSSMP) **~~[EN010170/APP~~**Revision A **[EX1/GH7.7_A]**. These are discussed in more detail in Chapter 10: Hydrology, Flood Risk and Drainage **~~[EN010170/APP~~**Revision A **[EX1/GH6.2.10_A]**, and Chapter 22: Ground Conditions and Contamination **~~[EN010170/APP~~**Revision A **[EX1/GH6.2.22_A]**.

7.2.7 Replacement of batteries at Green Hill C and BESS will occur approximately five times over the lifetime of the Scheme. Given that all other infrastructure will already be in place and batteries will be changed within the compound, the risks of pollution impacts will be reduced compared to construction. Embedded mitigation will minimise these impacts. Potential battery fire impacts associated with battery replacement will be mitigated as detailed above.

7.2.8 Given the above embedded mitigation measures which will be secured through DCO Requirement, it is considered that significant impacts arising from a battery fire can be avoided/mitigated, and therefore there will be **no significant adverse effects** on the SPA through this potential impact pathway.

**Waterborne Pollution**

*Construction Phase*

7.2.9 Inaccessible and development-free buffers have been designed into the Scheme to minimise the likelihood of pollutants entering watercourses. This includes minimum buffers of 8m from all ditches; 20m from all moderate watercourses; and 30m from all major watercourses within the Sites.

7.2.10 Measures to limit the spread of sediment and chemical runoff are detailed in the Outline Construction Environmental Management Plan (OCEMP)

**~~[EN010170/APP~~**Revision A **[EX1/GH7.1_A],** which include correct storage of chemicals and fuels, regular inspections of plant, machinery and vehicles, and an emergency response plan in the event of a spillage. The final LEMP will be secured through application of a DCO Requirement.

7.2.11 Embedded mitigation measures to minimise the likelihood and severity of pollution events and run-off have been incorporated into the Scheme. The Outline Construction Environmental Management Plan (OCEMP) **~~[EN010170/APP~~**Revision A **[EX1/GH7.1_A]** and Outline Ecological Protection and Mitigation Strategy (OEPMS) **~~[EN010170/APP~~**Revision A **[EX1/GH7.5_A]** detail how vehicles, plant and materials will be transported to the construction zone, as well as other standard environmental protection measures that will apply to the construction phase, such as pollution control measures and protection of adjacent habitats/watercourses from surface runoff.

7.2.12 Measures to limit the spread of waterborne pollutants are detailed in the Outline Construction Environmental Management Plan (OCEMP) **~~[EN010170/APP~~**Revision A **[EX1/GH7.1_A],** which include**:**

- Detail on the location and specification of temporary and permanent protective fencing to be installed prior to the onset of construction. It is anticipated that the specified buffer zones will drive these locations;
- Restrictions on the use of fuels and other contaminants in proximity to boundary features and other sensitive habitats;
- Measures to limit the mobilisation of sediments and run-off, such as when working in very wet conditions or the use of silt fencing when working in ditches;
- Construction personnel will receive a Toolbox Talk detailing the presence of sensitive ecological features at or close to the Sites and will be informed that no materials should be stored, or vehicles drive, through buffer zones; and
- An Ecological Clerk of Works (EcoCoW) will be designated at the onset of the construction phase, which will provide ecological supervision during the completion of any works which have the potential to impact protected and notable species, as appropriate.

7.2.13 Open-cut trenching of the River Nene or its tributaries could lead to habitat degradation through sediment and chemical runoff. For major watercourses, including the Nene itself, Horizontal Directional Drilling (HDD) will instead be utilised; practically, open-cut trenching is also logistically difficult for major watercourses. HDD will entail the trench-less installation of cables using an automated drilling machine, to install the cables underneath the river. Measures will be put in place to minimise sediment release or disturbance, including frack-out. This includes the appropriate siting of entry and exit pits beyond the banks of the watercourse, and depth settings, with a minimum depth of 5m beneath the River Nene, thereby avoiding any direct damage to the river or sediment runoff to the downstream SPA. An EcoCoW will be also present during works to monitor for unintended sediment breakout.

7.2.14 For minor watercourses, open-cut trenching may be used, and this will entail temporarily culverting the flow, with the channel and banks restored after laying the cable. Standard best practice measures will include the appropriate use of sediment/silt traps and temporary dams to minimise the risk of sediment release. This is detailed in the OEPMS **~~[EN010170/APP~~**Revision A **[EX1/GH7.5_A]**, the finalised version of which will be secured by a DCO Requirement.

7.2.15 As such, there will be **no adverse effects** on the integrity of the SPA through this potential impact pathway.

*Operational Phase*

7.2.16 In the absence of mitigation, there is a potential risk of a battery fire at Green Hill C and BESS and subsequent discharge of chemicals into watercourses which feed into the River Nene. This is more likely at Green Hill BESS given its proximity to the Nene and the SPA. Discharge of chemicals from a battery fire could potentially degrade the water quality of the SPA and lead to significant adverse effects. However, ecological buffers have been embedded into the design of the Scheme from an early stage (as detailed above), to minimise the likelihood of chemicals entering the watercourses.

7.2.17 Additionally, embedded mitigation measures to minimise the likelihood and severity of battery fire have been incorporated into the Scheme, including the implementation of fire suppression systems, with containment measures in place to manage runoff in the event of a fire. Specifically, fire suppressant water will be automatically contained in designated receptacles before being tested to determine whether the water can be safely released or disposed of offsite. The risk of a fire and measures to mitigate impacts in the event of a fire are detailed in the Outline Battery Storage Safety Management Plan (OBSSMP) **~~[EN010170/APP~~**Revision A **[EX1/GH7.7_A]**. These are discussed in more detail in Chapter 10: Hydrology, Flood Risk and Drainage **~~[EN010170/APP~~**Revision A **[EX1/GH6.2.10_A]**, and Chapter 22: Ground Conditions and Contamination **~~[EN010170/APP~~**Revision A **[EX1/GH6.2.22_A]**.

7.2.18 Replacement of batteries at Green Hill C and BESS will occur approximately five times over the lifetime of the Scheme. Given that all other infrastructure will already be in place and batteries will be changed within the compound, the risks of pollution impacts will be reduced compared to construction. Embedded mitigation will minimise these impacts. Potential battery fire impacts associated with battery replacement will be mitigated as detailed above.

7.2.19 Given the above embedded mitigation measures which will be secured through DCO Requirement, it is considered that significant impacts arising from a battery fire can be avoided/mitigated, and therefore there will be **no significant adverse effects** on the SPA through this potential impact pathway.

*Decommissioning Phase*

7.2.20 During the decommissioning phase, risks of waterborne pollution would be comparable to the construction phase. The same embedded mitigation measures would avoid or mitigate all potential effects; as such, there will be **no significant adverse effects** on the SPA through this potential impact pathway.

**Spread of Invasive/ Non-native Species**

*Construction Phase*

7.2.21 During trenching works of watercourses associated principally with the cable route, although potentially also with crossings of minor watercourses for site access within the Sites, it is possible that the banksides of watercourses, where invasive/ non-native plant species are present, may be damaged. Similarly, trenching equipment within the watercourse channel for open-cut trenching works may come into contact with invasive/ non-native plant species in the channel. Repeat use of equipment at different crossing points could potentially spread these species along watercourses in closer proximity to the SPA than baseline levels.

7.2.22 No invasive/ non-native plant species have been detected within the Order Limits during the ecological surveys to date, although they may not have been recorded, or else occur subsequently.

7.2.23 To prevent the spread of invasive/ non-native species, the OEPMS **~~[EN010170/APP~~**Revision A **[EX1/GH7.5_A]** details measures whereby an EcoCoW will check the working area prior to trenching works to ensure that invasive/ non-native species are present. The crossing point will be microsited to avoid any areas with invasive/ non-native species, or else measures put in place to prevent their spread with the support of specialist contractors; these will be specific to the species in question.

7.2.24 Cleaning of equipment between watercourses will ensure that no invasive/ non-native species are spread between watercourses.

7.2.25 The spread of invasive/ non-native species into the SPA will be mitigated by the measures detailed above, and there will be **no adverse effects** on the integrity of the SPA via this pathway.

**Surface Water Runoff**

*Construction and Decommissioning Phases*

7.2.26 There is the potential for temporary increases in the quantum of impermeable area during construction and decommissioning. Where necessary, a temporary drainage network will be installed prior to the commencement of construction/ decommissioning and a robust maintenance plan, confirmed through the (OCEMP) **~~[EN010170/APP~~**Revision A **[EX1/GH7.1_A]** / Outline Decommissioning Statement **~~[EN010170/APP~~**Revision A **[EX1/GH7.3_A]** will be maintained throughout the duration of works. As such, runoff levels will be maintained and there will be **no adverse effects** on the integrity of the SPA via this pathway.

*Operational Phase*

7.2.27 Although the Scheme will entail the alteration of habitats within the catchment of the River Nene, the Scheme has been designed to include permeable surfaces for site access, the installation of lined gravel surfacing at the key infrastructure elements such as substations and battery units, and the strategic planting of wildflowers along the leeward edges of solar panels. This will provide sufficient

treatment, attenuate runoff effectively, and maintain current runoff rates. The Water Framework Directive Assessment Revision A sets this out in more detail **[~~EN010170/APP~~EX1/GH7.22_A]**. The Flood Risk Assessment (FRA) for Green Hill BESS **[~~EN010170/APP~~EX1/GH6.3.10.11_A]** also includes drainage measures that will store rainwater and attenuate this to drain into the Grendon Brook and Unnamed Land Drain adjacent to fields BESS1 and BESS2 at rates compliant with greenfield runoff principles.

7.2.28 As such, runoff levels will be maintained and there will be **no adverse effects** on the integrity of the SPA via this pathway.

### Habitat Fragmentation

#### Survey Effort

7.2.29 In order to determine the extent of any FLL used by mobile species associated with the Upper Nene Valley Gravel Pits SPA (golden plover and lapwing), extensive survey work was undertaken, in accordance with advice received through Natural England's Discretionary Advice Service (DAS) and best practice. This comprised two winter seasons of diurnal surveys (six visits per season) and two years of nocturnal surveys (three visits per season) at all Sites within the 10km SPA consultation zone; Green Hill B-G, plus Green Hill BESS. As agreed with Natural England, surveys were not undertaken for the Cable Route Corridor, due to the temporary nature of cabling works.

7.2.30 Two full seasons of both diurnal and nocturnal wintering bird surveys have been completed across Green Hill B-E, plus Green Hill BESS. Due to the later addition of Green Hill F and G to the Scheme, two full seasons of diurnal and nocturnal wintering bird surveys could not be completed within the submission timelines. However, survey effort has been maximised within these constraints. For Green Hill F, 10/12 diurnal survey visits have been completed, alongside two full seasons of nocturnal surveys. For Green Hill G, a single season of both diurnal and nocturnal surveys has been completed. This scope has been confirmed with Natural England and assessment will take a precautionary approach where there is a deficit in survey data.

7.2.31 Wintering bird surveys are discussed in detail in Appendix 9.9 – Wintering Bird Surveys **[~~EN010170/~~APP~~/GH6.3.9.9~~-092]**, of the Environmental Statement, but the findings for golden plover and lapwing are summarised here.

#### FLL Definition

7.2.32 In the context of the proposed scheme, FLL is defined as individual fields within which significant numbers of qualifying species were recorded on more than one occasion over the survey period.

7.2.33 Significant numbers are taken to be more than 1% of the SPA population; this has been determined based on revised population estimates conducted by the British Trust for Ornithology (BTO), 2017/18-2021/22. The population counts and 1% threshold numbers are indicated in **Table 3** below.

**Table 3: SPA Golden Plover and Lapwing Populations, and 1% Threshold for Determining FLL**

| Population Count Resources | Golden Plover | | Lapwing | |
|---|---|---|---|---|
| | Population | 1% | Population | 1% |
| Original SPA Citation | 5,790 | 57.9 (58) | 3,349 | 33.49 (33) |
| BTO average data 2015/16-2019/20 | 597 | 5.97 (6) | 3,065 | 30.65 (31) |
| BTO average data 2017/18-2021/22 | 420 | 4.2 (4) | 2,739 | 27.39 (27) |

## Survey Results

*Golden Plover*

7.2.34 Golden plover were recorded by surveyors principally through the diurnal surveys, which also recorded the largest flock sizes. A reduced number of observations, typically of individual birds, were recorded by nocturnal surveys.

7.2.35 Golden plover were noted to be using land within Green Hill B, E and F. Golden plover were also recorded at Green Hill C, D and BESS, but were only flying overhead or observed outside of the Site itself (therefore not associated directly with the Sites). No golden plover were recorded at Green Hill G. Observations of birds using the Sites themselves are discussed below.

7.2.36 At Green Hill B, flocks of 11, 13 and 14 birds were observed using BF3 on three occasions in Winter 2024-2025. This makes BF3 FLL.

7.2.37 At Green Hill E, golden plover were observed on seven occasions across a total of six different fields in the south of the Site. Pattern use was observed in EF25, with golden plover observed on three occasions; counts of two, six and 20 individuals. This makes EF25 FLL. Pattern use was also observed in EF31, which lies to the immediate southwest of EF25, with golden plover observed here on five occasions; counts of one, three (on three occasions) and 35 individuals. This field does not qualify as FLL due to threshold population numbers not being recorded on more than one occasion, although is used semi-regularly. Golden plover were only observed on a single occasion in Fields EF22 (two birds), EF28 (one bird), EF30 (one bird) and EF34 (one bird). All of these fields lie in the southwest of Green Hill E. As such, it is clear that this general area has importance to golden plover.

7.2.38 At Green Hill F, golden plover were observed in five fields across a total of four different occasions. No pattern use was observed of individual fields, with golden plover only observed on a single occasion in Fields FF1 (23 birds), FF2 (three birds), FF11 (18 birds), FF15 (six birds) and FF30 (one bird).

7.2.39 **Figures 9.9.1-9.9.7** show all registrations of golden plover across all survey visits, including both diurnal and nocturnal surveys.

*Lapwing*

7.2.40 Lapwing were recorded by surveyors principally through the diurnal surveys, which also recorded the largest flock sizes. A reduced number of observations, typically of individual birds, were recorded by nocturnal surveys.

7.2.41 Lapwing were noted to be using land within the Scheme at Green Hill A, B, C, E and F. No lapwing were recorded at Green Hill D or BESS. A flock of lapwing was seen flying over Green Hill G, but not associating with the Site itself. Observations of birds using the Sites themselves are discussed below.

7.2.42 At Green Hill B, lapwing were recorded on four separate occasions in BF2, with a peak of 28 birds noted on a single occasion, then 22 birds, 10 birds and one bird on the other occasions. This does not meet the threshold for FLL, although indicates pattern usage. In BF3, lapwing were observed on two occasions; nine (from same flock of 10 birds in BF2) and 13 birds. In BF4, a single bird was observed on a single occasion.

7.2.43 At Green Hill C, single birds were observed on one occasion in both CF1 and CF2.

7.2.44 At Green Hill E, lapwing were observed on eight occasions across a total of 10 different fields. Pattern use was observed in just one field, with other fields used on single occasions only. In EF25, lapwing were observed on three occasions; counts of three, nine and 48 individuals. Though this does not qualify as FLL, nonetheless the flock of 48 birds is the largest recorded by the surveys. Fields used on a single occasion included: EF1, EF11, EF14, EF15, EF20 (same flock as in EF25), EF22, EF24, EF31 and EF34.

7.2.45 At Green Hill F, lapwing were observed on six occasions across a total of six different fields. Pattern use was observed in just one field, with other fields used on single occasions only. In FF1, lapwing were observed on two occasions; counts of two and nine birds. In FF15, a flock of 45 birds was recorded~~; the~~. The same flock of 45 birds was noted in FF13 during the same survey, but was not mapped in FF13 to prevent double-counting; however, this was considered in terms of Functional Linkage – see 7.2.68 below. Though this does not qualify as FLL due to no pattern use, nonetheless the numbers of birds are notable. Other fields used on a single occasion included: FF7 (the same flock of nine as in FF1), FF30 and FF33.

7.2.46 **Figures 9.9.7 to 9.9.13** show all registrations of lapwing across all survey visits, including both diurnal and nocturnal surveys.

*Bittern*

7.2.47 No bittern were recorded using the Sites during the surveys. A bittern was heard offsite, north of Green Hill BESS, within the SPA during the breeding season only. The SPA designation is for the wintering population of bittern.

*Gadwall*

7.2.48 The pond in Field BF5 at Green Hill B was used by up to five gadwall on two occasions; this is below the 1% of the SPA population, based on the citation. Otherwise, this species was not recorded within the Sites.

*Mute Swan*

7.2.49 Two mute swans were observed flying overhead at Green Hill D on one occasion. Separately, two mute swans were seen at Green Hill F, within a small stream in Field FF23, on one occasion. There is limited suitable habitat provided by the Sites for this species, and no strong association was observed with the Sites themselves.

*Other Species*

7.2.50 Several other species which are part of the assemblage for which the SPA/ Ramsar has been designated have also been recorded by the wintering bird surveys; relevant species include cormorant, grey heron, mallard, shoveler and wigeon. Other species which are part of the assemblage, including pochard, tufted duck, great crested grebe and coot, were not recorded.

7.2.51 These species were all recorded chiefly flying over the Sites and, less frequently, foraging or sheltering within the Sites in low numbers.

7.2.52 Grey heron were recorded at several Sites in low numbers, chiefly at Green Hill D, E and BESS. All observations were of single birds, aside from a group of four birds on one occasion.

7.2.53 Mallard were recorded in low numbers across the majority of Sites, with a maximum of 12 birds.

7.2.54 There was seasonal use of the pond in Field BF5 by wigeon, with this species recorded on a single occasion in October 2023 and 2024; a maximum of 20 birds.

7.2.55 Cormorant and shoveler were only recorded flying over the Sites, with no association with the Sites themselves.

*Summary*

7.2.56 Fields BF3 and EF25 constitute FLL for golden plover. There was a general selection of fields in the southwest region of Green Hill E by golden plovers. Several fields in Green Hill F were also used by larger flocks of plovers, although no pattern use was observed.

7.2.57 No FLL was recorded for lapwing. However, fields BF2, EF25 and FF1 showed pattern use, and several further fields in Green Hill F were also used by larger flocks of plovers, although no pattern use was observed.

7.2.58 Together, fields identified as FLL are 23.27ha in size. Details of these fields are provided in **Table 4**. and shown in **Figures 7.21.1** and **7.21.4**.

7.2.59 The Sites do not support notable numbers of other SPA assemblage species.

**Assessment**

*Precautionary Assessment in Light of Reduced Survey Effort at Green Hill F and G*

7.2.60 As discussed above, a somewhat reduced survey effort was conducted at Green Hill F, where two diurnal survey visits were not completed during one of the two survey years. This is a minor shortfall, but it is possible that pattern use may have been identified through further surveys, making additional fields FLL. This is only

considered likely in fields where golden plover or lapwing were already recorded in numbers over the 1% SPA threshold on a single occasion. For golden plover, this was fields FF1, FF11 and FF15. For lapwing, this was fields FF13 and FF15.

7.2.61 No golden plover were observed at Green Hill G during any of the surveys, despite the presence of suitable habitat in the form of large, open, arable fields. It is improbable that golden plover would change their use of this Site drastically in another given survey year, since the management of this Site is understood to have been consistent for several years; either winter wheat or spring barley. This Site is also more distant from the SPA than Green Hill F. As such, no precautionary mitigation is deemed necessary at this Site.

7.2.62 Together, fields considered FLL on a precautionary basis are 44.22ha in size. Details of these fields are provided in **Table 4**~~.~~ and are shown in **Figure 7.21.5**.

*Mitigation/ Compensation for Loss of Confirmed FLL*

7.2.63 From the survey data, two fields; BF3 and EF25, were identified as FLL for golden plover. No fields constituted FLL for lapwing.

7.2.64 BF3 is 14.98ha and comprises arable land with cereal crops, and a narrow grass margin along the southern boundary. Mitigation has been provided for the loss of FLL in the form of field BF1, which lies adjacent to BF3, and is of a comparable size (14.54ha). This field comprises permanent pasture, which is damp in winter. This field will be managed as conservation grassland, cut once annually between July and September. This field has also been noted to be of value to several other species, such as lapwing, skylark, meadow pipit and snipe.

7.2.65 EF25 is 8.29ha in size and is currently managed as cereal crops. This field has been retained without panels and will be managed as permanent grassland; this will be sown during the construction phase and, as for BF1, managed via a late season cut.

7.2.66 During operation, fields designated for FLL mitigation will be managed to maintain their suitability for golden plover and lapwing, as detailed in the OLEMP **~~[EN010170/APP~~**Revision A **[EX1/GH7.4 A]**.

7.2.67 Details of these fields are provided in

7.2.68 **Table** 5~~.~~ and are shown in **Figures 7.21.1** and **7.21.4**. Together, fields provided as mitigation for loss of confirmed FLL total 22.83ha, and will be of enhanced quality for plovers. These measures wholly mitigate for losses of identified FLL.

*Precautionary Mitigation*

7.2.69 On a precautionary basis, FF1, FF11, FF13 and FF15 may be considered FLL.

7.2.70 FF1, FF11 and FF15 will be panelled and so would be unusable by plovers.

7.2.71 FF13 has been removed from the development area and will be managed as permanent grassland. ~~Additionally, FF16 will be managed as a contiguous extension to FF13, increasing its extent by 1.86ha.~~

7.2.72 FF7 has been retained outside the development area and will be managed as grassland with wader scrapes, providing greatly enhanced habitat for plovers; this field is 18.35ha in size.

7.2.73 In addition, several other fields have been retained outside the development area which lie within 10km of the SPA, and therefore bolster the degree of precautionary mitigation provided. All such fields are over 8ha in size, which is considered suitable since EF25, one of the only fields identified as FLL, is itself just 8.29ha in size. All fields will be managed as habitat suitable for plovers; all will be reverted to permanent grassland. Relevant fields are: CF2, DF4, EF18, EF26, EF29 and E30.

7.2.74 During operation, fields designated for FLL mitigation will be managed to maintain their suitability for golden plover and lapwing, as detailed in the OLEMP [EN010170/APPRevision A [EX1/GH7.4_A]].

7.2.75 Details of these fields are provided in

7.2.76 **Table** 5. and are shown in **Figures 7.21.2, 7.2.13, 7.21.4** and **7.21.5**. Taken together, the extent of precautionary mitigation provided is 75.65ha73.79ha, which greatly exceeds the combined area of precautionary FLL. Moreover, the quality of mitigation habitats will also be greatly improved through provision of permanent grassland. The degree of mitigation provided is considered to fully mitigate for any loss of land deemed FLL on a precautionary basis.

**Table 4: Details of FLL Fields**

| Field Reference | Size (ha) | Use by Golden Plover | Use by Lapwing | Current Land Management | Proposed Land Management |
|---|---|---|---|---|---|
| **Confirmed FLL** | | | | | |
| BF3 | 14.98 | **>1% of SPA population recorded on three occasions** | <1% of SPA population recorded on two occasions | Arable, cereal crops | Lost - solar panels |
| EF25 | 8.29 | **>1% of SPA population recorded on two occasions; <1% of SPA population recorded on one occasion** | >1% of SPA population recorded on one occasion; <1% of SPA population recorded on two occasions | Arable, cereal crops | Retained - conservation grassland |
| **All** | **23.27** | | | | |
| **Precautionary FLL** | | | | | |
| FF1 | 10.08 | **>1% of SPA population recorded on one occasion** | <1% of SPA population recorded on two occasions | Arable, cereal crops | Lost - solar panels |
| FF11 | 13.68 | **>1% of SPA population recorded on one occasion** | N/A | Arable, cereal crops | Lost - solar panels |

| Field Reference | Size (ha) | Use by Golden Plover | Use by Lapwing | Current Land Management | Proposed Land Management |
|---|---|---|---|---|---|
| FF13 | 7.53 | N/A | **>1% of SPA population recorded on one occasion** | Arable, cereal crops | Retained – conservation grassland |
| FF15 | 12.93 | **>1% of SPA population recorded on one occasion** | **>1% of SPA population recorded on one occasion** | Arable, cereal crops | Lost - solar panels |
| **All** | **44.22** | | | | |
| **Total Area** | **67.49** | | | | |

**Table 5: Details of Mitigation Fields**

| Field Reference | Size (ha) | Use by Golden Plover | Use by Lapwing | Current Land Management | Proposed Land Management |
|---|---|---|---|---|---|
| **Mitigation for Loss of Confirmed FLL** | | | | | |
| BF1 | 14.54 | N/A | N/A | Grassland | Conservation grassland |
| EF25 | 8.29 | FLL | >1% of SPA population recorded on one occasion; <1% of SPA population recorded on two occasions | Arable, cereal crops | Conservation grassland |
| **All** | **22.83** | | | | |
| **Precautionary Mitigation** | | | | | |
| CF2 | 8.29 | N/A | <1% of SPA population recorded on one occasion | Arable, cereal crops | Conservation grassland |
| DF4 | 10.56 | N/A | N/A | Arable, cereal crops | Arable, spring-sown cereals |
| EF26 | 8.07 | N/A | N/A | Arable, cereal crops | Conservation grassland |
| EF29 | 10.54 | N/A | N/A | Grassland, grazed | Conservation grassland |

| Field Reference | Size (ha) | Use by Golden Plover | Use by Lapwing | Current Land Management | Proposed Land Management |
|---|---|---|---|---|---|
| EF30 | 10.45 | <1% of SPA population recorded on one occasion | N/A | Arable, cereal crops | Conservation grassland |
| FF7 | 18.35 | N/A | <1% of SPA population recorded on one occasion | Arable, cereal crops | Conservation grassland with wader scrapes |
| FF13 and FF16 | 9.397.53 | N/A | >1% of SPA population recorded on one occasion | Arable, cereal crops | Conservation grassland |
| **All** | **75.6573.79** | | | | |
| **Total Area** | **98.4896.62** | | | | |

**Other Species**

7.2.77 Given the limited use of the Sites by other species which form part of the SPA/ Ramsar assemblage, it is considered highly unlikely that such species are dependent to any significant extent upon land within the Scheme, and thus there are no fragmentation effects for these species.

**Conclusion**

7.2.78 Given the mitigation for all identified FLL and provision of ample precautionary mitigation land, totalling 98.48ha96.62ha, which will be secured through DCO Requirement, there will be **no residual impacts** on site integrity.

**Disturbance to Designated Species**

**Disturbance to Species Inside the SPA**

*Desk Study*

7.2.79 Data were purchased from the British Trust for Ornithology (BTO's) Wetland Bird Survey (WeBS), pertaining to the four gravel pits which form component parts of the SPA which face onto the Order Limits (Pits G10, G13, G14 and G15); **Plate 1** refers.

7.2.80 These data provide a summary from the most recent five years of published monitoring surveys of these pits under the WeBS scheme; 2018/19; 2019/20; 2020/21; 2021/22; and 2022/23.

7.2.81 **Tables 4-86-9** display the peak monthly counts of each species recorded by the surveys which is a qualifying species or part of the waterbird assemblage for the SPA/ Ramsar site.

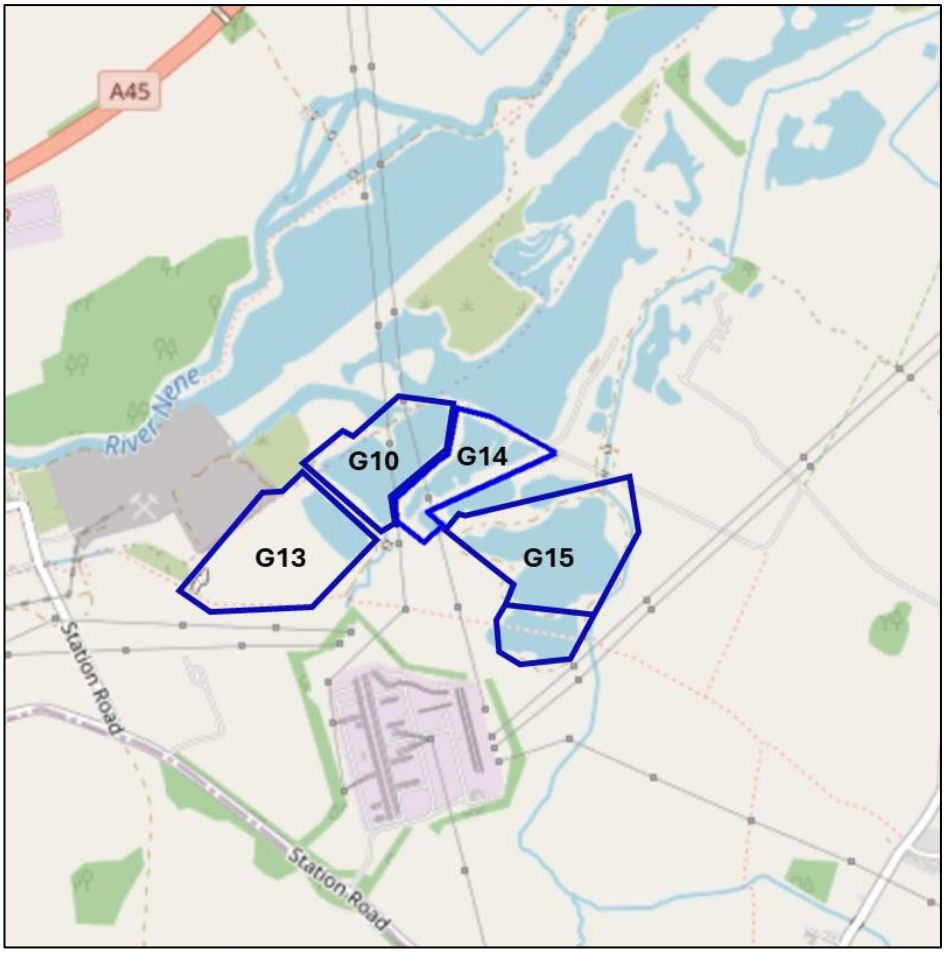



**Plate 1: Gravel Pits Facing onto Green Hill BESS (reproduced from BTO WeBS figures)**

**Table 6: Five-year Peak Counts for Relevant Species – Gravel Pit G10**

| Species | Sep | Oct | Nov | Dec | Jan | Feb | Mar |
|---|---|---|---|---|---|---|---|
| Coot | 0 | 0 | 0 | 0 | 4 | 6 | 4 |
| Cormorant | 2 | 4 | 1 | 5 | 0 | 11 | 3 |
| Great crested grebe | 0 | 0 | 0 | 2 | 0 | 0 | 1 |
| Mallard | 3 | 6 | 9 | 4 | 3 | 2 | 6 |
| Mute swan | 5 | 1 | 5 | 8 | 3 | 3 | 2 |

**Table 7: Five-year Peak Counts for Relevant Species – Gravel Pit G13**

| Species | Sep | Oct | Nov | Dec | Jan | Feb | Mar |
|---|---|---|---|---|---|---|---|
| Coot | 2 | 2 | 5 | 7 | 6 | 6 | 9 |
| Cormorant | 0 | 1 | 2 | 0 | 0 | 1 | 1 |
| Gadwall | 0 | 1 | 2 | 0 | 0 | 2 | 0 |
| Mallard | 25 | 2 | 2 | 6 | 2 | 2 | 3 |
| Mute swan | 2 | 7 | 7 | 7 | 4 | 4 | 2 |
| Pochard | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Shoveler | 0 | 0 | 3 | 2 | 13 | 0 | 0 |
| Tufted duck | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Wigeon | 0 | 0 | 0 | 4 | 0 | 0 | 0 |

**Table 8: Five-year Peak Counts for Relevant Species – Gravel Pit G14**

| Species | Sep | Oct | Nov | Dec | Jan | Feb | Mar |
|---|---|---|---|---|---|---|---|
| Coot | 2 | 0 | 0 | 0 | 4 | 3 | 2 |
| Cormorant | 0 | 0 | 0 | 1 | 3 | 0 | 0 |
| Gadwall | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Mallard | 6 | 6 | 7 | 7 | 2 | 0 | 4 |
| Mute swan | 1 | 2 | 0 | 2 | 1 | 1 | 3 |

**Table 9: Five-year Peak Counts for Relevant Species – Gravel Pit G15**

| Species | Sep | Oct | Nov | Dec | Jan | Feb | Mar |
|---|---|---|---|---|---|---|---|
| Coot | 5 | 2 | 9 | 20 | 5 | 10 | 6 |
| Cormorant | 0 | 0 | 3 | 1 | 1 | 3 | 0 |
| Gadwall | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Great crested grebe | 2 | 1 | 1 | 2 | 0 | 1 | 2 |
| Mallard | 12 | 2 | 4 | 0 | 0 | 0 | 3 |
| Mute swan | 3 | 0 | 2 | 0 | 1 | 2 | 2 |
| Tufted duck | 8 | 1 | 13 | 30 | 30 | 18 | 6 |

*Construction and Decommissioning Phases*

7.2.82 As can be seen from **Tables 4-86-9**, peak counts of individual species vary between months and between gravel pits.

7.2.83 Numbers of gadwall are low in all these pits, with peak counts of one to two individuals only per pit. Numbers therefore fall below 1% of the SPA population citation numbers, which would constitute 7.73 (8) birds. As such, there is no risk of adverse disturbance effects on significant numbers of gadwall.

7.2.84 Numbers of mute swan are higher than gadwall, although only peak at three individuals for Pits G14 and G15. For Pits G10 and G13, peaks were seven and eight birds respectively. This exceeds the 1% of the Ramsar population citation numbers, which would constitute 6.29 (6) birds.

7.2.85 Assemblage species vary in their use of pits.

7.2.86 Modelled noise levels associated with construction and decommissioning are comparable to background levels, as set out in the Noise and Vibration chapter of the ES **[EN010170/APP/GH6.2.14-051]**. As such, there will be no risk of increases in noise levels on the SPA and no risk of disturbance to birds residing therein. Moreover, all works will be temporary, and the works which may occur in closest proximity to the SPA, associated with the connection of the Cable Route Corridor to Grendon substation, will be the briefest in nature. Consequently, there will be **no adverse effects** on the integrity of the SPA via this pathway.

*Operational Phase*

7.2.87 Operationally, the BESS at Green Hill BESS areas will generate some degree of noise. However, the BESS areas lie further from the SPA than the existing Grendon substation, and the noise modelling predicts that noise levels from the operational Scheme will be no higher than the representative background noise levels. As such, there will be no risk of increases in noise levels on the SPA and no risk of disturbance to birds residing therein. Consequently, there will be **no adverse effects** on the integrity of the SPA via this pathway.

## 7.3 In-combination and Cumulative Assessment

### Pollution and Habitat Degradation

7.3.1 In-combination effects may be felt through the combination of the various pollution pathways identified above, i.e.:

- Dust and sediment deposition from haul vehicles, movement of plant, and topsoil stripping;
- Chemical pollution from vehicle fuel spillages; and
- Chemical spillage from battery fire/ battery replacement at the BESS sites (Green Hill C and BESS).

7.3.2 However, given the mitigation measures which will avoid or mitigate all adverse effects associated with each of these pathways, there is no residual adverse effect on the SPA as a result of these impact pathways in-combination.

### Airborne Pollution

7.3.3 There is a greater risk of airborne pollution in combination with the Grendon Lakes BESS facility (Project 1), during construction and decommissioning. However, Project 1 will need to secure similar mitigation measures to the Scheme to minimise the likelihood and the severity of any such events. With the adoption of such measures (secured through planning conditions and environmental permits and licences) **no adverse effects** on integrity, arising cumulatively between the Scheme and Project 1 associated with airborne pollution events are anticipated to arise.

### Waterborne Pollution

*Construction and Decommissioning Phases*

7.3.4 There is a greater risk of waterborne pollution events in combination with Projects 1 and 9 during construction and decommissioning. However, Project 1 and 9 will need to secure similar mitigation measures to the Scheme to minimise the likelihood and the severity of any such events. With the adoption of such measures (secured through planning conditions and environmental permits and licences) no adverse effects between the Scheme and Project 1 associated with waterborne pollution events are anticipated to arise.

*Operational Phase*

7.3.5 There is a greater risk of waterborne pollution events associated with a battery fire in combination with Project 1. The potential severity of pollution in the event of a battery fire is high, although the likelihood of such an event is low. Moreover, the likelihood of such events occurring in tandem across both the Scheme and Project 1 is very low. Similar embedded mitigation measures for both the Scheme and Project 1 (secured through planning conditions and environmental permits and licences) will minimise the likelihood and the severity of any such events, and therefore **no adverse effects** on integrity, arising cumulatively between the Scheme and Project 1 associated with waterborne pollution events, are anticipated to arise.

**Surface Water Runoff**

7.3.6 There is no change to baseline runoff levels associated with the Scheme. Other projects would need to be supported their own drainage strategies, in line with relevant guidance and best practice, in order to be consented. As such, provided that all the mitigation measures are implemented for all schemes, then **no adverse effects** on integrity, arising cumulatively between the Scheme and other projects associated with surface water runoff, are anticipated to arise.

**Habitat Fragmentation**

7.3.7 The Scheme will result in the net loss of available open field habitat for mobile wading birds (golden plover and lapwing) associated with the SPA. However, all identified FLL has been mitigated, and additional mitigation land provided to fully mitigate all land deemed potential FLL, as part of a precautionary assessment.

7.3.8 Other projects within the 10km SPA consultation zone (all listed projects, excluding Projects 11 and 15) may also reduce the availability of open field habitats and, potentially, result in the loss of further areas of FLL. The loss of FLL should be controlled, mitigated and compensated through adherence to guidance set out by Local Planning Authorities and/or Natural England. At present, this is not understood to be specified in unified guidance, but a forthcoming Supplementary Planning Document will set out mitigation criteria clearly for all future developments.

7.3.9 Given the full mitigation of all identified and precautionarily assigned FLL within the Scheme, there cannot be cumulative losses of FLL and therefore **no adverse effects** on integrity associated with fragmentation impacts.

**Disturbance to Designated Species**

**Disturbance to Species Inside the SPA**

7.3.10 Disturbance to species within the SPA may only be compounded, in combination with the Scheme, by Project 1, which lies in proximity to the SPA, Green Hill BESS, and the cable connection at Grendon substation.

7.3.11 Noise levels associated with the construction, operation and decommissioning of Green Hill BESS are comparable to baseline levels. As such, any noise disturbance associated with Project 1 will not exacerbate impacts and therefore there will be **no adverse effects** on integrity associated with cumulative noise impacts.

# 8 Conclusions

8.1.1 Embedded mitigation measures to control and limit pollution during construction, operation and decommissioning will minimise the likelihood and severity of any pollution effects. Similar measures will prevent the spread of invasive and non-native species. Other projects will need to adopt similar measures as part of their consent.

8.1.2 Surface water runoff will be maintained comparable to baseline levels via an appropriate drainage strategy; other projects will follow their own drainage strategies as part of their consent.

8.1.3 Mitigation for both identified and precautionary Functionally Linked Land will ensure that all habitat determined to be of elevated value to mobile species associated with the SPA (golden plover and lapwing) is either retained or compensated.

8.1.4 Disturbance to species within the SPA through noise associated with construction, operation and decommissioning is not sufficiently loud above baseline levels to cause qualifying species to be adversely impacted, either alone or cumulatively.

8.1.5 With the adoption of mitigation measures, **no adverse effects** on site integrity of the SPA or Ramsar are deemed likely, either in isolation, in combination, or cumulatively.

## References

Ref .1 The Conservation of Habitats and Species Regulations 2017 (SI 2017/1012). Online source. Available at: The Conservation of Habitats and Species Regulations 2017

Ref .2 Assessment of plans and projects in relation to Natura 2000 sites – Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. Online source. Available at: Official Journal C 437/2021

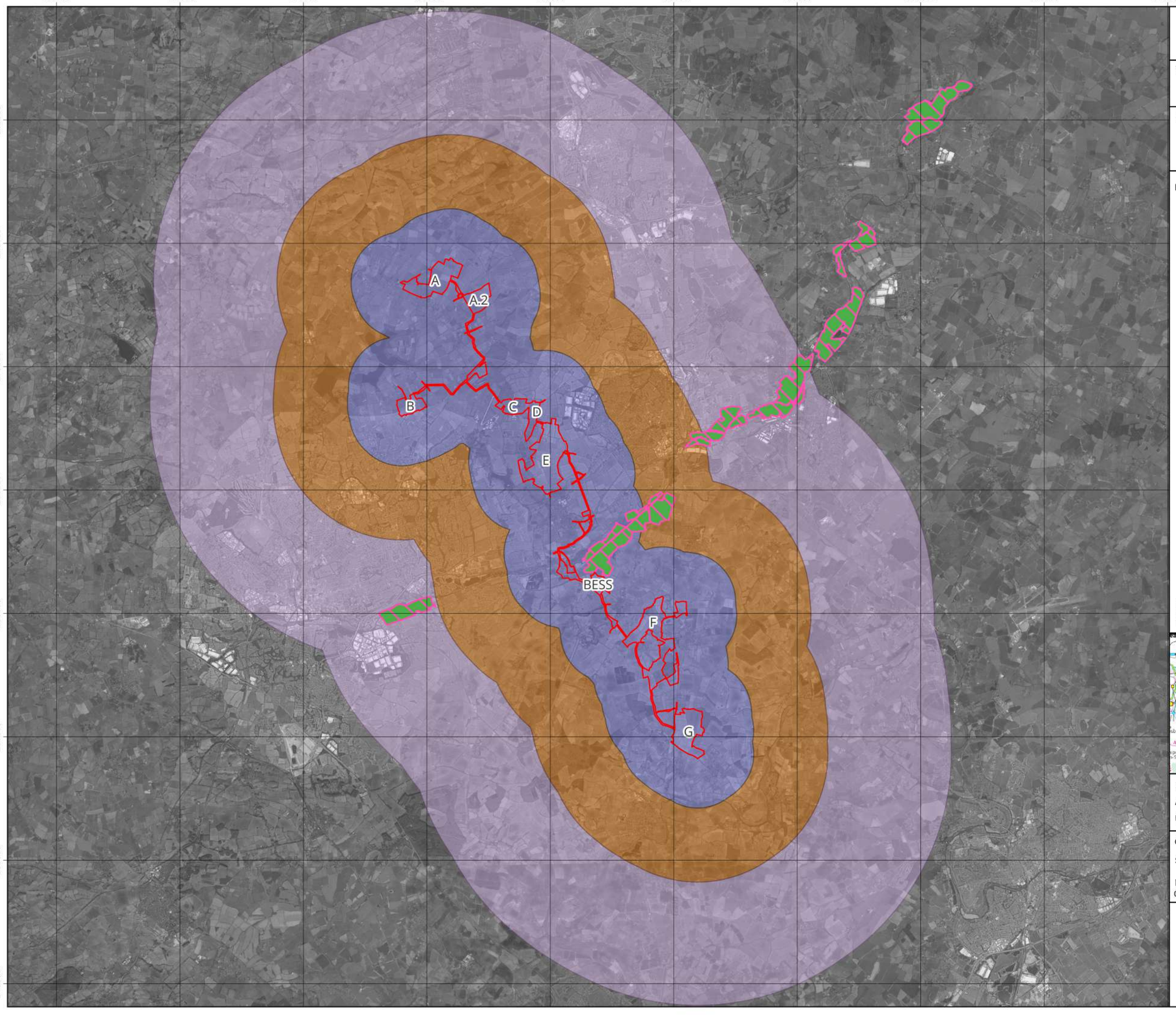
Ref .3 Online source. Available at: Habitats regulations assessments: protecting a European site - GOV.UK

Ref .4 Online source. Available at: Nationally Significant Infrastructure Projects: Advice on Habitats Regulations Assessments - GOV.UK

Ref .5 Natural England (24 March 2017). European Site Conservation Objectives: Supplementary advice on conserving and restoring site features. Upper Nene Valley Gravel Pits Special Protection Area (SPA) Site Code: UK9020296. Online source. Available at: UK9020296_Upper Nene Valley Gravel Pits_SPA_Published 10 Jul 2024

Ref .6 Information Sheet on Ramsar Wetlands (RIS). Upper Nene Valley Gravel Pits. Online source. Available at: UK11083.pdf

Ref .7 Natural England (2017). Evidence review of the impact of solar farms on birds, bats and general ecology (NEER012). 1st edition - 9th March 2017. Online source. Available at: Evidence review of the impact of solar farms on birds, bats and general ecology 2016 - NEER012




GREEN HILL SOLAR FARM

Title: Figure 9.3.1 International Statutory Designated Sites within 10km of the Order Limits

Document:
Volume 2
Appendix 9.3 - Desk Study
Environmental Statement (ES)

Legend:

- Order Limits
- Upper Nene Valley Gravel Pits Ramsar
- Upper Nene Valley Gravel Pits Special Protection Area (SPA)
- 2km Buffer
- 5km Buffer
- 10km Buffer




APFP Regulation: 5(2)(l)

Application Doc no.: EN010170/APP/GH6.3.9.3

Drawing no.: CW.ES.DS.1

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:144757 @ A3

N
W
E
S

0 1 2 3 4 5 km

Island GREEN POWER

CLARKSON & WOODS
ECOLOGICAL CONSULTANTS

478913 479450 479988 480525 481063

274663 274125 273588 273050 272513

1

GREEN HILL SOLAR FARM

Title:
9.9.1 Golden Plover Survey Results (Green Hill A)

Document:
Volume 2
Appendix 9.9 - Wintering Bird Surveys
Environmental Statement (ES)

Legend:
- Order Limits
- Calling - including alarm calls
- Diurnal Visit 4



APFP Regulation: 5(2)(a)

Application Doc no.: EN010170/APP/GH6.3.9.9

Drawing no.: CW.ES.WB.1

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:8600 @ A3

N W E S

0 0.08 0.16 0.24 0.32 0.4 km

Island GREEN POWER

CLARKSON & WOODS ECOLOGICAL CONSULTANTS

478800
479100
479400
479700
480000
269100
268800
268500
268200
13
14
11

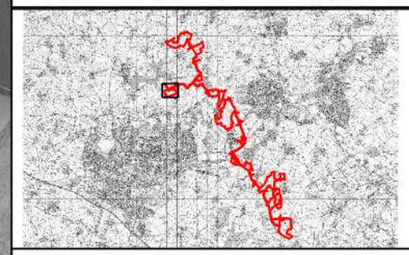
GREEN HILL SOLAR FARM

Title:
9.9.2 Golden Plover Survey Results (Green Hill B)

Document:
Volume 2
Appendix 9.9 - Wintering Bird Surveys
Environmental Statement (ES)

Legend:
- Order Limits
- Diurnal Visit 9
- Diurnal Visit 11
- Diurnal Visit 12





APFP Regulation: 5(2)(a)

Application Doc no.: EN010170/APP/GH6.3.9.9

Drawing no.: CW.ES.WB.2

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:4800 @ A3

N
W
E
S

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Island GREEN POWER

CLARKSON & WOODS
ECOLOGICAL CONSULTANTS

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268625 268188 267750 267313

8 1 5 60

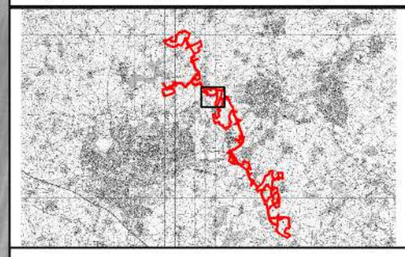
GREEN HILL SOLAR FARM

Title:
9.9.3 Golden Plover Survey Results (Green Hill C & D)

Document:
Volume 2
Appendix 9.9 - Wintering Bird Surveys
Environmental Statement (ES)

Legend:
- Order Limits
- Flying overhead - E
- Flying overhead - SE
- Flying overhead - W
- Diurnal Visit 6
- Diurnal Visit 9
- Diurnal Visit 10
- Diurnal Visit 11





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Application Doc no.: EN010170/APP/GH6.3.9.9

Drawing no.: CW.ES.WB.3

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:7000 @ A3

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Island GREEN POWER

CLARKSON & WOODS ECOLOGICAL CONSULTANTS

482850 483575 484300 485025 485750 486475

267525 266800 266075 265350

1 5 60 35 2 1 20 1 2 17 35 5 1 32 3 3 6 1 3 1 1

GREEN HILL SOLAR FARM

Title:
9.9.4 Golden Plover Survey Results (Green Hill E)

Document:
Volume 2
Appendix 9.9 - Wintering Bird Surveys
Environmental Statement (ES)

Legend:

- Order Limits
- Calling - including alarm calls
- Flying overhead - N
- Flying overhead - NE
- Flying overhead - E
- Flying overhead - SE
- Flying overhead - W
- Diurnal Visit 1
- Diurnal Visit 5
- Diurnal Visit 6
- Diurnal Visit 7
- Diurnal Visit 8
- Diurnal Visit 9
- Diurnal Visit 10
- Diurnal Visit 11
- Nocturnal Visit 3
- Nocturnal Visit 4
- Nocturnal Visit 5
- Nocturnal Visit 6

**Data:** IGP, 2025,
**Base Maps:** '© Crown copyright and database rights 2024 Ordnance Survey 0100031673'
Imagery ©2024 Landsat / Copernicus, Maxar Technologies, Map Data ©2024

APFP Regulation: 5(2)(a)

Application Doc no.: EN010170/APP/GH6.3.9.9

Drawing no.: CW.ES.WB.4

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:11600 @ A3

N W E S

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Island GREEN POWER

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GREEN HILL SOLAR FARM

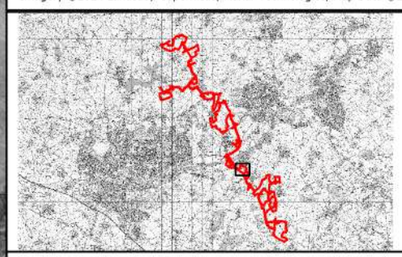
Title:
9.9.5 Golden Plover Survey Results (Green Hill BESS)

Document:
Volume 2
Appendix 9.9 - Wintering Bird Surveys
Environmental Statement (ES)

Legend:

Order Limits





APFP Regulation: 5(2)(a)

Application Doc no.: EN010170/APP/GH6.3.9.9

Drawing no.: CW.ES.WB.5

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:4200 @ A3

N
W E
S

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Island GREEN POWER

CLARKSON & WOODS
ECOLOGICAL CONSULTANTS

487331 488213 489094 489975 490856

259969 259088 258206 257325

23 3 18 13 3 3 1 12 1

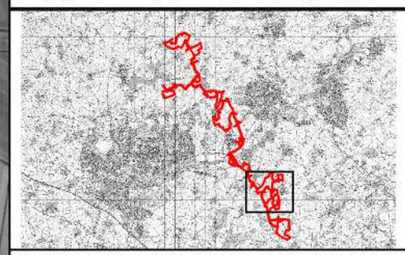
GREEN HILL SOLAR FARM

Title:
9.9.6 Golden Plover Survey Results (Green Hill F)

Document:
Volume 2
Appendix 9.9 - Wintering Bird Surveys
Environmental Statement (ES)

Legend:
- Order Limits
- Flying overhead - NE
- Flying overhead - SW
- Flying overhead - NW
- Diurnal Visit 4
- Diurnal Visit 8
- Diurnal Visit 10
- Nocturnal Visit 5
- Nocturnal Visit 6





APFP Regulation: 5(2)(a)

Application Doc no.: EN010170/APP/GH6.3.9.9

Drawing no.: CW.ES.WB.6

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:14100 @ A3

N W E S

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Island GREEN POWER

CLARKSON & WOODS ECOLOGICAL CONSULTANTS

489375 489844 490313 490781 491250 491719

255938

255469

255000

254531

GREEN HILL SOLAR FARM

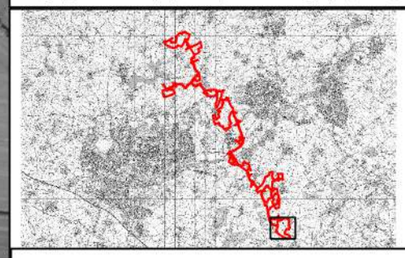
Title:
9.9.7 Golden Plover Survey Results (Green Hill G)

Document:
Volume 2
Appendix 9.9 - Wintering Bird Surveys
Environmental Statement (ES)

Legend:

Order Limits





APFP Regulation: 5(2)(a)

Application Doc no.: EN010170/APP/GH6.3.9.9

Drawing no.: CW.ES.WB.7

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:7500 @ A3

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Island GREEN POWER

CLARKSON & WOODS
ECOLOGICAL CONSULTANTS

478913 479450 479988 480525 481063

274663 274125 273588 273050 272513

25 1 2

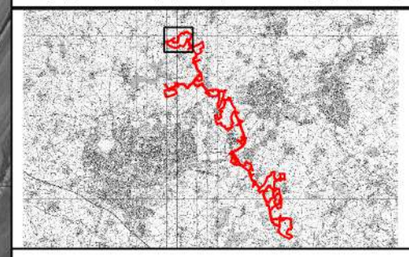
GREEN HILL SOLAR FARM

Title:
9.9.8 Lapwing Survey Results (Green Hill A)

Document:
Volume 2
Appendix 9.9 - Wintering Bird Surveys
Environmental Statement (ES)

Legend:
- Order Limits
- Diurnal Visit 4





APFP Regulation: 5(2)(a)

Application Doc no.: EN010170/APP/GH6.3.9.9

Drawing no.: CW.ES.WB.8

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:8600 @ A3

N W E S

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Island GREEN POWER

CLARKSON & WOODS
ECOLOGICAL CONSULTANTS

478800
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479400
479700
480000
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268500
268200
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1
13
22
10
26
2

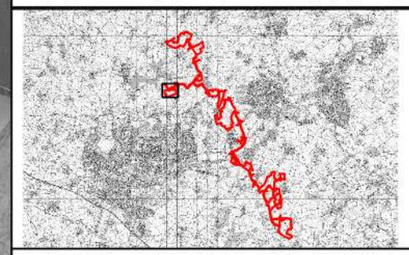
GREEN HILL SOLAR FARM

Title:
9.9.9 Lapwing Survey Results (Green Hill B)

Document:
Volume 2
Appendix 9.9 - Wintering Bird Surveys
Environmental Statement (ES)

Legend:
- Order Limits
- Diurnal Visit 9
- Diurnal Visit 10
- Diurnal Visit 11
- Nocturnal Visit 1





APFP Regulation: 5(2)(a)

Application Doc no.: EN010170/APP/GH6.3.9.9

Drawing no.: CW.ES.WB.9

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:4800 @ A3

N
W
E
S

0 0.04 0.08 0.12 0.16 0.2 km

Island GREEN POWER

CLARKSON & WOODS
ECOLOGICAL CONSULTANTS

483000 483438 483875 484313 484750

268625 268188 267750 267313

1 1 1 1

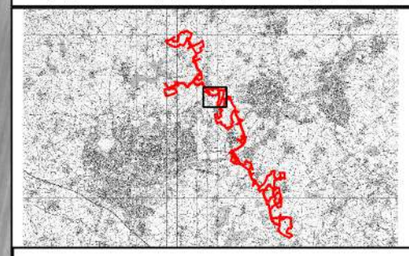
GREEN HILL SOLAR FARM

Title:
9.9.10 Lapwing Survey Results (Green Hill C & D)

Document:
Volume 2
Appendix 9.9 - Wintering Bird Surveys
Environmental Statement (ES)

Legend:
- Order Limits
- Calling - including alarm calls
- Singing
- Nocturnal Visit 2
- Nocturnal Visit 6





APFP Regulation: 5(2)(a)

Application Doc no.: EN010170/APP/GH6.3.9.9

Drawing no.: CW.ES.WB.10

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:7000 @ A3

N W E S

0 0.07 0.14 0.21 0.28 0.35 km

Island GREEN POWER

CLARKSON & WOODS ECOLOGICAL CONSULTANTS

482850 483575 484300 485025 485750 486475

267525 266800 266075 265350

GREEN HILL SOLAR FARM

Title:
9.9.11 Lapwing Survey Results (Green Hill E)

Document:
Volume 2
Appendix 9.9 - Wintering Bird Surveys
Environmental Statement (ES)

Legend:

- Order Limits
- Flying overhead - E
- Flying overhead - S
- Flying overhead - W
- Flying overhead - NW
- Diurnal Visit 3
- Diurnal Visit 4
- Diurnal Visit 5
- Diurnal Visit 9
- Diurnal Visit 10
- Diurnal Visit 11
- Diurnal Visit 12
- Calling - including alarm calls
- Singing
- Nocturnal Visit 1
- Nocturnal Visit 2
- Nocturnal Visit 4
- Nocturnal Visit 6



APFP Regulation: 5(2)(a)

Application Doc no.: EN010170/APP/GH6.3.9.9

Drawing no.: CW.ES.WB.11

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:11600 @ A3

0 0.1 0.2 0.3 0.4 0.5 km

Island GREEN POWER

CLARKSON & WOODS ECOLOGICAL CONSULTANTS


GREEN HILL SOLAR FARM

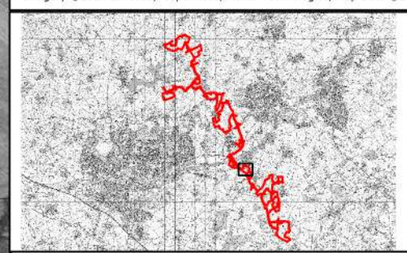
Title:
9.9.11 Lapwing Survey Results (Green Hill BESS)

Document:
Volume 2
Appendix 9.9 - Wintering Bird Surveys
Environmental Statement (ES)

Legend:

Order Limits





APFP Regulation: 5(2)(a)

Application Doc no.: EN010170/APP/GH6.3.9.9

Drawing no.: CW.ES.WB.11

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:4200 @ A3

N
W E
S

0 0.04 0.08 0.12 0.16 0.2 km

Island GREEN POWER

CLARKSON & WOODS
ECOLOGICAL CONSULTANTS

487448 488330 489211 490093 490974

260031 259150 258268 257387

9 2 18 45 2 1 1

GREEN HILL SOLAR FARM

Title:
9.9.13 Lapwing Survey Results (Green Hill F)

Document:
Volume 2
Appendix 9.9 - Wintering Bird Surveys
Environmental Statement (ES)

Legend:
- Order Limits
- Calling - including alarm calls
- Flying overhead - SW
- Flying overhead - W
- Diurnal Visit 4
- Diurnal Visit 5
- Diurnal Visit 6
- Diurnal Visit 10
- Nocturnal Visit 3



APFP Regulation: 5(2)(a)

Application Doc no.: EN010170/APP/GH6.3.9.9

Drawing no.: CW.ES.WB.13

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:14103 @ A3

N W E S

0 0.1 0.2 0.3 0.4 0.5 km

Island GREEN POWER

CLARKSON & WOODS ECOLOGICAL CONSULTANTS

489731 490202 490672 491142 491613

255921

255451

254980

254510

19

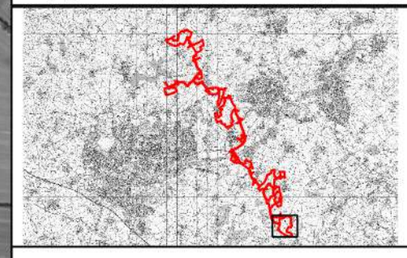
GREEN HILL SOLAR FARM

Title:
9.9.14 Lapwing Survey Results (Green Hill G)

Document:
Volume 2
Appendix 9.9 - Wintering Bird Surveys
Environmental Statement (ES)

Legend:
- Order Limits
- Flying overhead - S
- Diurnal Visit 12





APFP Regulation: 5(2)(a)

Application Doc no.: EN010170/APP/GH6.3.9.9

Drawing no.: CW.ES.WB.14

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:7527 @ A3

N W E S

0 0.07 0.14 0.21 0.28 0.35 km

Island GREEN POWER

CLARKSON & WOODS ECOLOGICAL CONSULTANTS

478800
479100
479400
479700
480000
269100
268800
268500
268200
BF1
BF3

GREEN HILL SOLAR FARM

Title:
7.21.1 Functionally Linked Land (FLL) Assessment - Green Hill B

Document:
GH7.21 - Habitat Regulations Assessment [APP-565]

Legend:

Order Limits

**Functionally Linked Land (FLL) Retention Category**

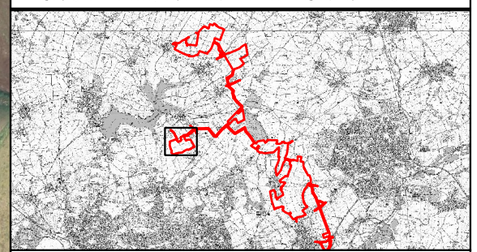
Lost

Created - Mitigation Land

**Baseline Functionally Linked Land (FLL) Type**

Confirmed





APFP Regulation: 5(2)(g)

Application Doc no.: EN010170/APP/GH7.21

Drawing no.: CW.HRA.GHB

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:4800 @ A3

N
W
E
S

0 0.04 0.08 0.12 0.16 0.2 km

Island GREEN POWER

CLARKSON & WOODS
ECOLOGICAL CONSULTANTS

482788 483054 483321 483587 483853

268955 268689 268423 268156 267890

CF2

GREEN HILL SOLAR FARM

Title:
7.21.2 Functionally Linked Land (FLL) Assessment - Green Hill C

Document:
GH7.21 - Habitat Regulations Assessment [APP-565]

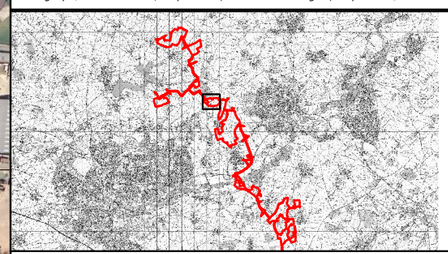
Legend:

Order Limits

**Functionally Linked Land (FLL) Retention Category**

Created - Mitigation Land





APFP Regulation: 5(2)(g)

Application Doc no.: EN010170/APP/GH7.21

Drawing no.: CW.HRA.GHC

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:4261 @ A3

N W E S

0 0.04 0.08 0.12 0.16 0.2 km

Island GREEN POWER

CLARKSON & WOODS ECOLOGICAL CONSULTANTS

483439 483807 484175 484543 484911

268413

268045

267677

267309

CF2

DF4

GREEN HILL SOLAR FARM

Title:

7.21.3 Functionally Linked Land (FLL) Assessment - Green Hill D

Document:

GH7.21 - Habitat Regulations Assessment [APP-565]

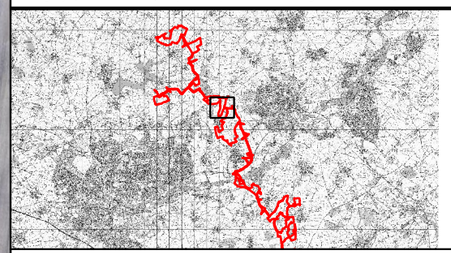
Legend:

Order Limits

**Functionally Linked Land (FLL) Retention Category**

Created - Mitigation Land

**Data:** IGP, 2025,
**Base Maps:** '© Crown copyright and database rights 2024 Ordnance Survey 0100031673'
Imagery ©2024 Landsat / Copernicus, Maxar Technologies, Map Data ©2024



APFP Regulation: 5(2)(g)

Application Doc no.: EN010170/APP/GH7.21

Drawing no.: CW.HRA.GHD

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:5891 @ A3

N W E S

0 0.05 0.1 0.15 0.2 0.25 km

Island GREEN POWER

CLARKSON & WOODS ECOLOGICAL CONSULTANTS


GREEN HILL SOLAR FARM

Title:

7.21.4 Functionally Linked Land (FLL) Assessment - Green Hill E

Document:

GH7.21 - Habitat Regulations Assessment [APP-565]

Legend:

- Order Limits

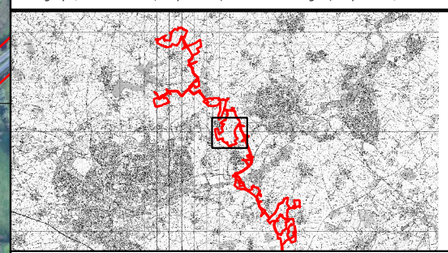
**Functionally Linked Land (FLL) Retention Category**

- Retained
- Created - Mitigation Land

**Baseline Functionally Linked Land (FLL) Type**

- Confirmed





APFP Regulation: 5(2)(g)

Application Doc no.: EN010170/APP/GH7.21

Drawing no.: CW.HRA.GHE

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:8704 @ A3

N
W E
S

0 0.08 0.16 0.24 0.32 0.4 km

Island GREEN POWER

CLARKSON & WOODS
ECOLOGICAL CONSULTANTS

488247 488809 489372 489934 490497

260436 259873 259311 258748

FF1 FF7 FF11 FF13 FF15

GREEN HILL SOLAR FARM

Title:
7.21.5 Functionally Linked Land (FLL) Assessment - Green Hill F

Document:
GH7.21 - Habitat Regulations Assessment [APP-565]

Legend:

Order Limits

**Functionally Linked Land (FLL) Retention Category**

Lost

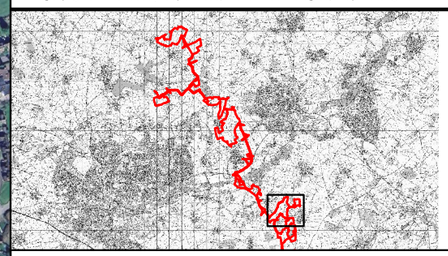
Retained

Created - Mitigation Land

**Baseline Functionally Linked Land (FLL) Type**

Precautionary





APFP Regulation: 5(2)(g)

Application Doc no.: EN010170/APP/GH7.21

Drawing no.: CW.HRA.GHF

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:9000 @ A3

N W E S

0 0.09 0.18 0.27 0.36 0.45 km

Island GREEN POWER

CLARKSON & WOODS ECOLOGICAL CONSULTANTS