

# Green Hill Solar Farm

## Preliminary Environmental Information Report

### Chapters 1 to 6

Prepared by: Lanpro  
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# 1 Introduction

## 1.1 Background

1.1.1 This Preliminary Environmental Information Report ('PEIR') has been prepared on behalf of Green Hill Solar Farm Limited ('the Applicant') in relation to an application (the 'Application') for a Development Consent Order (DCO) for Green Hill Solar Farm (hereafter referred to as the 'Scheme').

1.1.2 The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) undertaken to date and will be used to inform the statutory consultation process of the proposed application for a DCO to be submitted under sections 14(1)(a) and 15(2) of the Planning Act 2008 (Ref.1) to the Secretary of State for Energy Security and Net Zero.

### The Scheme

1.1.3 The Scheme consists of an electricity generating station with a capacity of over 50 megawatts ('MW') comprising of ground mounted solar arrays and associated development, the latter comprising: energy storage, grid connection infrastructure and any other infrastructure as well as works integral to the construction, operation, maintenance and decommissioning of the Scheme. The grid connection Point of Connection ('PoC') will be at the Grendon 400kV National Grid Substation ('Grendon Substation').

1.1.4 As the Scheme comprises the construction of a generating station with a capacity of over 50MW it is defined as a Nationally Significant Infrastructure Project ('NSIP') under sections 14(1)(a) and 15(2) of the Planning Act 2008 and therefore must be consented by way of a DCO.

1.1.5 The Scheme comprises the two main elements:

- The 'Sites' where the Solar Arrays and Associated Development (other than those parts of the grid connection cable to be located in the Cable Route Search Area) would be located; and
- The 'Cable Route Search Area' within which the underground cables connecting the Sites and PoC will be located.

1.1.6 The operational life of the Scheme is anticipated to be 60 years. Once the Scheme ceases to operate, the development will be decommissioned.

1.1.7 The Scheme's location are shown in **Volume 2, Figure 3.1 Location Plan**.

### The Sites

1.1.8 The Sites are referred to as Green Hill A, Green Hill A.2, Green Hill B, Green Hill C, Green Hill D, Green Hill E, Green Hill F, Green Hill G and the Green Hill BESS and are described in detail in **Chapter 3: Development Site**.

1.1.9 The Sites will accommodate ground mounted solar photovoltaic ('PV') generating stations, grid connection infrastructure and energy storage infrastructure (collectively referred to as the 'Solar Arrays'). The Sites are located in an area of countryside to the west and south of Wellingborough and north and south-east of Northampton.

1.1.10 The Sites location are shown in **Volume 2, Figures 3.1.2 to 3.1.5**.

### The Cable Route Search Area

1.1.11 The Cable Route Search Area is shown in **Volume 2, Figures 3.2.1 to 3.2.3**. The area shown represents the area of search for a Cable Corridor within which the underground electrical cables would be located to connect the Sites to the Grendon Substation. This will be refined as the design is developed and additional technical surveys are carried out. Within the Cable Route Search Area, a narrow width (the 'Cable Corridor') will be required for the cable circuits and its construction together with a series of temporary construction compounds.



## 1.2 The EIA Regulations

- 1.2.1 As the Scheme comprises the construction of a generating station with a capacity of over 50MW it is defined as a Nationally Significant Infrastructure Project ('NSIP') under sections 14(1)(a) and 15(2) of the Planning Act 2008 and therefore must be consented by way of a DCO.
- 1.2.2 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) stipulate that developments listed under Schedule 1 must be subject to EIA, while Schedule 2 lists development which will be subject to EIA if considered "*likely to have significant effects on the environment by virtue of factors such as its nature, size or location*". The criteria on which this judgement should be made are set out in Schedule 3 of the EIA Regulations.
- 1.2.3 The Scheme is a Schedule 2 development under paragraph 3(a) as it constitutes '*Industrial installations for the production of electricity, steam, water and hot water*'.
- 1.2.4 The Applicant will be providing an ES to accompany its DCO application and this was confirmed in the Scoping Report pursuant Regulation 8(1)(b) of the EIA Regulations. O, owing to the size, nature, and location of the Scheme, it is likely to have significant effects on the environment and is therefore considered to be EIA development.
- 1.2.5 Under Regulation 12 of the EIA Regulations, the Applicant is required to set out in its Statement of Community Consultation ('SoCC') how it intends to publicise and consult on the preliminary environmental information relating to the Scheme. Regulation 12(2) of the EIA Regulations states that the purpose of the PEIR is to provide sufficient information to enable stakeholders to develop an informed view of the likely significant effects of the development (and of any Associated Development).
- 1.2.6 The Ministry of Housing, Communities and Local Government guidance on the pre-application stage for Nationally Significant Infrastructure Projects (April 2024) encourages the PEIR to be presented as an early draft of the Environmental Statement. Accordingly, the PEIR report does not constitute a complete assessment, but is a compilation of the environmental information available at the point in time the PEIR is produced.

## 1.3 Purpose and Structure of the PEIR

- 1.3.1 The information contained in this PEIR is 'preliminary' and may not represent the final project design or include the final EIA considerations and conclusions. The Applicant is seeking consultation responses to the information presented in order to continue to refine the development design and to continue to obtain information that will inform the final assessment of the impacts which will be contained in the ES which will accompany the DCO application.
- 1.3.2 The PEIR is published to accompany the statutory consultation under sections 42 and 47 of the Planning Act 2008 (Ref.1) and follows informal consultation undertaken by the Applicant in March and May 2024. The statutory consultation runs for a period of 6 weeks in accordance with the SoCC.
- 1.3.3 The SoCC sets out how the Applicant proposes to consult people affected by the development or living in the vicinity of the Scheme and has been developed in consultation with North Northamptonshire Council, West Northamptonshire Council and Milton Keynes City Council.
- 1.3.4 The PEIR will be made available to the prescribed consultees, local authorities and landowners and to members of the public and the wider community. This will enable the consultees, including the local community, to understand the potential environmental effects and implications of the Scheme so as to inform their responses to consultation.
- 1.3.5 The PEIR takes the form of a draft and emerging ES. A substantial amount of survey work has been completed to date to inform the EIA process. **Table 1.1** below sets out the structure of the PEIR and the topics that are covered. The Applicant is advised by a team of experienced and competent environmental consultants who have addressed each topic. The consultants are also identified below. A statement of competence will be provided within the ES for the authors of the various chapters.
- 1.3.6 The structure of this PEIR is outlined in **Table 1.1** below.



**Table 1.1: PEIR Structure**

Document	Consultant
Volume 1 – Main Document	Coordinated by Lanpro
Chapter 1: Introduction	Lanpro
Chapter 2: EIA Process and Methodology	Lanpro
Chapter 3: Development Site	Lanpro
Chapter 4: Scheme Description	Lanpro
Chapter 5: Alternatives and Design Evolution	Lanpro
Chapter 6: Energy Need, Legislative Context, and Energy Policy	Lanpro
Chapter 7: Climate Change	Bureau Veritas
Chapter 8: Landscape and Visual	Lanpro
Chapter 9: Ecology and Biodiversity	Clarkson and Woods
Chapter 10: Hydrology, Flood Risk and Drainage	Mabbett
Chapter 11: Minerals	Clover Planning
Chapter 12: Cultural Heritage	Lanpro
Chapter 13: Transport and Access	KMC Transport Planning
Chapter 14: Noise and Vibration	Tetra Tech
Chapter 15: Glint and Glare	Mabbett
Chapter 16: Air Quality	Arcadis
Chapter 17: Socio-Economics, Tourism and Recreation	Lanpro
Chapter 18: Human Health	Lanpro
Chapter 19: Arboriculture	Lanpro
Chapter 20: Agricultural Circumstances	Arcadis
Chapter 21: Electro-magnetic Fields (EMF)	Pager Power
Chapter 22: Ground Conditions and Contamination	Lucion Group
Chapter 23: Major Accidents and Disasters	Lanpro
Chapter 24: Other Environmental Matters	Lanpro
Chapter 25: Cumulative Effects	All consultant team
Chapter 26: Commitments Register	Lanpro
Volume 2 – Figures	Coordinated by Lanpro
Volume 3 – Technical Appendices	Coordinated by Lanpro
Volume 4 – Non-Technical Summary	Coordinated by Lanpro

## 1.4 The Applicant

1.4.1 The Scheme is being developed by Green Hill Solar Farm Limited (the ‘Applicant’), part of Island Green Power Limited (‘IGP’), which is a leading international developer of renewable energy projects, established in 2013.

1.4.2 IGP has delivered 34 solar projects worldwide totalling more than 1GW of capacity. This includes 17 solar projects in the UK and Republic of Ireland. Their mission is to increase solar energy usage, making more renewable energy possible whilst drastically reducing carbon emissions. Recently, IGP have taken two NSIP solar projects (Cottam Solar Project and West Burton Solar Project) through the examination stage of the DCO process. The examination of the West Burton



Solar Project closed on the 8<sup>th</sup> of May 2024. The Cottam Solar Project was granted development consent by Secretary of State on 5<sup>th</sup> September 2024.

## 1.5 Consultation

1.5.1 The importance of consultation is key to the Planning Act 2008 and is fundamental to the success of the Scheme. The Applicant has sought to engage with key stakeholders from an early stage to brief them on the Scheme, focus the environmental studies and to identify specific issues. Consultation is an ongoing process during the development of the Scheme. It enables mitigation measures to be incorporated into the design and enhance environmental benefits. The publication of the PEIR is a key part of the consultation process.

1.5.2 There are a large number of stakeholders with different interests in the Scheme which require different levels and forms of consultation. The types of stakeholders include landowners, local communities, statutory consultees and specialist interest groups. The consultation activities, therefore, have been tailored to be appropriate for the particular groups.

1.5.3 Stakeholder engagement for the Scheme is based on the following principles:

- To be open and transparent – To be open and honest about the proposals, sharing consistent information and messages with stakeholders;
- Clear and well-timed – Promote understanding of the Scheme, its objectives and development process;
- Proactive engagement – Seek to build relationships, support and mitigate risks;
- Building trust with stakeholders – Develop good relationships, listening and ensuring stakeholders feel valued when providing views and clearly showing how we have taken feedback on board; and
- Ensure appropriate statutory consultation is undertaken in compliance with requirements of the Planning Act 2008, EIA Regulations and associated guidance.

### Consultation to Date

1.5.4 A number of meetings have taken place with statutory consultees to introduce the Scheme and commence discussions on detailed matters relating to the Scheme which include:

- North Northamptonshire Council, West Northamptonshire Council and Milton Keynes City Council (Officers and Members);
- Parish Councils;
- Local Member of Parliament – Ms Gen Kitchen – MP for Wellingborough; Sarah Bool – MP for South Northamptonshire; Mike Reader – MP for Northampton South;
- Historic England;
- Environment Agency; and
- Natural England.

1.5.5 The Applicant will undertake on-going consultation with the host authorities, the stakeholders identified above and other relevant consultees and stakeholders, throughout the duration of the Scheme development and preparation of the ES. This will include complying with the consultation requirements set out in the Planning Act 2008 and associated regulations and guidance.

1.5.6 Within each technical chapter of the PEIR there is further detail on any topic specific consultations that have taken place to date.

1.5.7 In respect of the local communities affected by the Scheme, the Applicant has already undertaken a first stage of (non-statutory) public consultation throughout March and May 2024. Consultation is on-going with local communities and individual property owners where appropriate. Responses to the consultations will be taken into account as part of the design process for the Scheme.



- 1.5.8 The Scheme was subject to EIA Scoping with a Scoping Opinion issued on the 30<sup>th</sup> August 2024 (included in **Volume 3, Appendix 2.1**). In the preparation of the Scoping Report, consultation was undertaken with key stakeholders where possible. The Planning Inspectorate consulted on the Scoping Report with the prescribed consultation bodies as listed in Schedule 1 of The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (as amended). Those responses were included with the Scoping Opinion issued by the Planning Inspectorate. Any key matters raised in those responses will be covered in the individual technical chapters where relevant.
- 1.5.9 All of the pre-application consultation that is undertaken on the Scheme will be described in the Consultation Report that will form part of the DCO application.

## **1.6 References**

- Ref.1 Planning Act 2008, 2008 c.29.
- Ref.2 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, 2017 No. 572. *[as amended]*
- Ref.3 The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009, 2009 No. 2264. *[as amended]*



## 2 EIA Process and Methodology

### 2.1 EIA Process

- 2.1.1 EIA is the process undertaken to identify and evaluate the likely significant effects of a proposed development on the environment and to identify measures to mitigate or manage any significant negative effects. The EIA should be informed by consultation with statutory consultees, other interested bodies and members of the public. The purpose of identifying likely significant effects is to ensure decision makers can make an informed judgement on the environmental impacts of a proposal.
- 2.1.2 This chapter outlines the approach that will be taken to assess and understand the likely significant effects of the Scheme. This chapter sets out relevant standard methodology used in the EIA. The approach taken in this PEIR is, where appropriate, to adopt relevant methodologies used in EIA and to report on the latest findings in the form of a draft ES.
- 2.1.3 It should be noted that some technical disciplines may utilise different criteria when undertaking assessments due to differences in industry accepted guidelines and specifications. Where this is the case, the relevant topic chapter will discuss how the assessment methodology or classification of effects differs from the general EIA methodology as described in this section and provide justification. Further details of topic specific methodologies, such as survey methods, are provided in the relevant PEIR topic chapters.
- 2.1.4 The ES must contain the information specified in Regulation 14(2) of the EIA Regulations and must meet the requirements of Regulation 14(3) of the EIA Regulations (Ref.1). It must also include any additional information specified in Schedule 4 of the EIA Regulations which is relevant to the specific characteristics of the particular development or type of development and the environmental features likely to be significantly affected.
- 2.1.5 The key matters for ensuring a robust EIA process relating to NSIPs are:
- An iterative project design process, considering feedback from consultation and applying it to the design process on an ongoing basis;
  - Scoping and ongoing consultation, including consideration of responses and how these should be addressed as part of the EIA;
  - Technical assessments, including baseline studies, input to the design process, and identification of potential likely significant environmental effects;
  - Proposed mitigation measures (both ‘embedded’ and ‘additional’ mitigation) where necessary, to prevent or reduce likely significant adverse effects;
  - Consultation on the Preliminary Environmental Information Report (PEIR); and
  - Preparation of the ES.
- 2.1.6 Each of the technical assessments will apply the following approach:
- Description of the baseline conditions;
  - Identification and assessment of likely effects;
  - Identification of mitigation measures, including design changes;
  - Assessment of potential residual effects that remain following mitigation; and
  - Assessment of ‘in-combination’ effects within the Scheme to consider the interaction of different environmental effects and ‘cumulative’ effects when considering the Scheme along with other planned developments in the area.
- 2.1.7 The EIA assessment, as reported in the PEIR, is being undertaken based on a number of related activities which will include the following:
- Consultation with the relevant statutory and non-statutory consultees throughout the process;



- Consideration of local, regional and national planning policies, legislation and guidelines as relevant to EIA;
- Consideration of technical standards for the development of significance criteria;
- Review of secondary information, previous environmental studies and publicly accessible databases and information;
- Physical surveys and monitoring;
- Desk based assessment;
- Computer modelling (where appropriate and proportionate); and
- Expert opinion.

2.1.8 The assessments provided in this PEIR are preliminary and the design of the Scheme is evolving as assessments continue. The conclusions in this PEIR will be finalised following statutory consultation, having consideration to continued assessment work and consultation feedback as the design of the Scheme evolves. When those conclusions are finalised the significance of the effects identified in this PEIR may well be revised such that adverse effects decrease in significance.

#### **General Assessment Approach**

2.1.9 This PEIR has been prepared in accordance with and to satisfy the requirements of the EIA Regulations.

2.1.10 In preparing this PEIR, reference has been made to the following advice notes:

- Planning Inspectorate Advice on EIA Notification and Consultation (September 2024) (Ref.2);
- Planning Inspectorate Advice Note 7: Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements (June 2020, Version 7) (Ref.3);
- Planning Inspectorate Advice Note 9: Rochdale Envelope (July 2018, Version 3) (Ref.4);
- Planning Inspectorate Advice on Working with Public Bodies in the Infrastructure Planning Process (September 2024) (Ref.5); and
- Planning Inspectorate Advice on Cumulative Effects Assessment (September 2024) (Ref.6).

## **2.2 EIA Scoping**

2.2.1 The aim of the EIA Scoping process is to identify key expected environmental issues at an early stage, determining which elements of the Scheme are likely to result in significant effects on the environment and to establish the extent of survey and assessment requirements for the EIA.

2.2.2 The issues to be addressed within this PEIR were identified in the EIA Scoping Report submitted to the Planning Inspectorate in July 2024. The Secretary of State's Scoping Opinion was received on 30<sup>th</sup> August 2024 including the formal responses received by the Planning Inspectorate from consultees on the EIA Scoping Report.

2.2.3 The Scoping Opinion confirmed which topics were scoped in and out of the EIA. Key issues raised in the Scoping Opinion are set out in the technical chapters in the PEIR and are being considered throughout the EIA process.

## **2.3 Rochdale Envelope**

2.3.1 The Scheme will adopt the Rochdale Envelope approach to provide flexibility in the DCO Application, to address uncertainties in the Scheme design and to allow for the most up to date technology possible to be utilised at the time of construction. The approach to the Rochdale Envelope is described further in **Chapter 4: Scheme Description**.

2.3.2 Planning Inspectorate Advice Note 9 (Ref.4) sets out advice on the use of the 'Rochdale Envelope' as a way of assessing a proposed development comprising EIA development where



uncertainty exists with the final design details and necessary flexibility is sought. The note sets out that there are key points and documents required where the implications of seeking that flexibility need to be addressed:

- During pre-application consultation process;
- Within the ES; and
- Within the description of the project in the application documents, particularly the DCO but also other application documents identified elsewhere in this note.

2.3.3 The ES will employ a maximum design scenario approach reflecting the principle of the 'Rochdale Envelope'. This approach allows for a project to be assessed on the basis of maximum project design parameters i.e., the worst-case scenario in order to provide flexibility and take advantage of technological improvements, assessing all potentially significant effects (positive or adverse) within the EIA process and reported in the ES.

2.3.4 As the design, environmental assessment and consultation processes (which run in parallel) evolve, the maximum parameters set out in the PEIR may change in order to deliver the best environmental outcomes for the Scheme.

2.3.5 A set of design parameters and principles will be established in order to outline the parameters for assessment within the Rochdale Envelope.

2.3.6 An indicative masterplan is outlined in **Volume 3, Appendix 4.1** identifying potential areas for the Solar Arrays, Associated Development and potential mitigation and enhancement opportunities. The masterplan has been used to undertake the preliminary assessment of likely significant environmental effects, for topics where the nature of the assessment methodology requires a specific level of detail, namely the landscape and visual, cultural heritage, and noise assessments.

2.3.7 The Cable Route Search Area will accommodate the Cable Corridor, an area of land identified for the cable route within which cable circuits will connect Green Hill A to G and the Green Hill BESS to the Grendon Substation. The Sites and Cable Route Search Area show the expected maximum extent of land that would be included within the application for a DCO. This approach allows for environmental constraints to be identified within (and beyond) this area of land to be used.

## 2.4 Assessment of Impacts

2.4.1 Each of the technical assessments for the environmental topics has been undertaken using the following approach.

### Legislation, Policy, and Guidance

2.4.2 Each of the chapters in this PEIR includes a section on legislation, policy and guidance relevant to the chapter topic. This ensures legal compliance and the setting of clear criteria and procedures for environmental assessments, as applicable to each topic.

### Baseline Conditions

2.4.3 In order to evaluate likely significant environmental effects, existing baseline conditions have been identified through a combination of desktop and physical surveys, and monitoring. This involves the Scheme as well as the surrounding area. Once the baseline conditions have been established, this is used to assess the sensitivity of receptors on and near the Scheme and what changes may take place during the construction, operation and maintenance and decommissioning of the Scheme. Any effects on these receptors will be assessed in full in the ES, preliminary effects on receptors are set out in this PEIR.

2.4.4 The data collected to establish the baseline conditions has been gathered from a variety of sources, including the following:

- Physical surveys and monitoring;
- Publicly accessible records and databases; and
- Environmental survey information that has been submitted for other development in the area.



2.4.5 The methods of data collection have been shared and discussed with statutory and non-statutory consultees as part of the pre-application process. The technical chapters set out where methodologies have been discussed and agreed to date with the relevant consultees. At this stage, engagement with statutory and non-statutory consultees are ongoing and will continue through to submission of the DCO application as the EIA progresses.

#### **Spatial Scope**

2.4.6 The topic chapters in the PEIR describe and justify the spatial scope, including the rationale for determining the specific area, within which an assessment is focussed, referred to as 'Study Areas'. These Study Areas are usually defined by the nature of potential impacts and the locations of potentially affected environmental resources or receptors.

#### **Temporal Scope: Assessment Years**

2.4.7 Within this PEIR, the individual chapters assess the impacts over the project specific time periods set out below. These timescales are indicative and are for use in the assessment of environmental effects only.

#### **Construction Phase**

2.4.8 For the purposes of the assessment, the construction phase effects (up to two years) are anticipated to result from activities during site preparation / enabling works, construction, and commissioning activities e.g. effects such as construction traffic, noise and vibration from construction activities, dust generation, site runoff, mud on roads, and the visual intrusion of plant and machinery on site. Some aspects of construction will last longer than others.

#### **Operational Phase**

2.4.9 These effects will be associated with operation and maintenance activities during the generating lifetime of the Scheme, including the effects of the physical presence of the solar arrays and their use and maintenance including replacement activities. The duration of effects identified are set out in each relevant topic chapter. In EIA terms, effects are defined as:

- Short term (lasts for up to 12 months);
- Medium term (lasts for one to five years);
- Long term (more than five years);
- Reversible long-term effects (long-term effects, which last for the lifetime of the Scheme, but which cease once it has been decommissioned; and
- Permanent effects (those which cannot be reversed following decommissioning).

#### **Decommissioning Phase**

2.4.10 Effects are those arising from activities for the duration of the decommissioning stage (which for the purposes of the assessment is expected to take between 12 and 24 months) and will likely be short term e.g., site traffic, noise and vibration from decommissioning activities, dust generation, site runoff.

#### **Assessment Years**

2.4.11 The EIA will consider the environmental impacts of the Scheme at all three phases described above. The operational phase for the Scheme is anticipated to be up to 60 years, and this time period has been assessed in this EIA (and within this PEIR).

2.4.12 The 'existing baseline' year for assessment will be 2023 as this is the date on which baseline studies for the project were commenced. A future baseline is also considered within the EIA (and within this PEIR) for certain assessments. The future baseline considers factors that will change the current baseline, without the Scheme proceeding. Committed developments are one factor that can influence the future baseline (these 'committed developments' are defined as those that currently have the benefit of planning permission or are allocated in adopted development plans).



The potential effects of the Scheme are considered against both the current baseline and the future baseline in the EIA, where relevant.

2.4.13 The assessment scenarios that have been considered for the purposes of the EIA are:

- Existing baseline: 2023.
- Construction phase: 2027-2029.
- Operational phase: opening year 2029. It has been assumed for the purposes of the EIA that the Scheme will be operational by end of Q3 2029. As part of the operational phase, impacts will be considered for routine maintenance and wide-scale solar panel replacement – estimated to take place every 30 years, and the replacement of the batteries every 20 years.
- Decommissioning: 2089. This would be the year when decommissioning of the Scheme would commence and has been based on a 60-year operational lifetime for solar projects. It has therefore been assumed for the purposes of the EIA that the Scheme will be decommissioned no later than 2089.
- A future year of 2044 (15 years post opening of the Scheme) will be considered for the landscape and visual assessment i.e., 15 years after planting which is the typical period for the maturation of landscape planting.

**Assessment of Likely Significant Effects**

2.4.14 In order to provide for a consistent approach to the description of significance, a standard methodology is applied in instances where no specific criteria are required by technical discipline-specific guidance.

2.4.15 Where guidance is available for defining sensitivity and magnitude (whether from professional guidance or government publications or bespoke definitions agreed with stakeholders) this is referred to within the relevant topic chapter.

2.4.16 The significance of impacts is evaluated with reference to appropriate standards, accepted criteria, technical guidance or legislation where these exist, for each technical discipline.

2.4.17 Each technical chapter will assess the following:

- Sensitivity of receptor/resource;
- Extent and magnitude of impact;
- Duration of effect;
- Nature of effect i.e. is it direct, is it reversible?
- Does the effect occur in isolation, or is it cumulative or in-combination?

2.4.18 The criteria for determining sensitivity are given in **Table 2.1** below.

**Table 2.1: Sensitivity Criteria**

Sensitivity	Definition
<b>High</b>	The receptor or resource has little ability to absorb the change without fundamentally altering its present character or it is of international or national importance.
<b>Medium</b>	The receptor or resource has moderate capacity to absorb the change without significantly altering its present character or is of high and more than local (but not national or international) importance.
<b>Low</b>	The receptor or resource is tolerant of change without detrimental effect, is of low or local importance.
<b>Negligible</b>	The receptor or resource can accommodate change without material effect, is of limited importance.



2.4.19 The criteria for determining the impact magnitude are set out in **Table 2.2**.

**Table 2.2: Magnitude Criteria**

Magnitude	Definition
<b>High</b>	The total loss or major change/substantial alteration to key elements/features of the baseline (pre-development) conditions, such that the post development character/composition/attributes will be fundamentally changed.
<b>Medium</b>	Loss or alteration to one or more key elements/features of the baseline conditions, such that post development character/composition/attributes of the baseline will be materially changed.
<b>Low</b>	A minor shift away from baseline condition. As change arising from the loss/alteration will be discernible/detectable but not material. The underlying character/composition/attributes of the baseline condition will be similar to the pre-development circumstances/situation.
<b>Negligible</b>	Very little change from baseline conditions. The change will be barely distinguishable and approximating to a non-change situation.
<b>Neutral</b>	No change from baseline conditions.

2.4.20 Significance will be characterised as adverse, beneficial, or neutral, and the scale of significance determined by reference to the matrix in **Table 2.3**.

**Table 2.3: Degrees of Significance**

Sensitivity	High	Medium	Low	Negligible
Magnitude				
High	Major	Major/Moderate	Moderate	Moderate/ Minor
Medium	Major/Moderate	Moderate	Moderate/Minor	Minor
Low	Moderate	Moderate/Minor	Minor	Negligible
Negligible	Moderate/Minor	Minor	Negligible	Negligible
Neutral	Neutral	Neutral	Neutral	Neutral

2.4.21 **Major Significance:** This level indicates that the proposed project or activity is likely to cause severe, potentially irreversible, and widespread adverse impacts on the environment. Extensive assessment and mitigation measures, often leading to significant redesigns, may be necessary to minimise adverse effects.

2.4.22 **Moderate Significance:** This level indicates that the project or activity is likely to cause adverse impacts on the environment. These impacts may be localised, temporary, or reversible, requiring mitigation measures.

2.4.23 **Minor Significance:** This level indicates that the proposed project or activity is expected to have minimal adverse impacts on the environment, typically involving minor disturbances, they generally do not pose significant environmental risks.

2.4.24 **Negligible Significance:** This level indicates that the project or activity is not expected to have any discernible adverse impacts on the environment, with impacts so minor that they can be disregarded. Negligible significance impacts generally require no mitigation measures or further assessment.

2.4.25 **Neutral Significance:** The level of impact where the project/activity has neither positive nor negative effects, or has no effect, on the environment.

2.4.26 Major and moderate effects are considered to be significant (as shown in grey in **Table 2.3** above), whilst minor and negligible effects are considered to be not significant. In the event a topic chapter uses a different methodology or threshold for determining significance, this will be set out in the relevant topic chapter.



2.4.27 As noted above, the PEIR stage does not represent the final assessments, but provides information necessary to obtain an informed view of the likely significant environmental effects of the Scheme for the purposes of consultation. The design of the Scheme is an iterative process, and a finding in the PEIR that an activity leads to a significant effect, and the levels of significance of the effects identified, will not be conclusive at this stage. The addition of mitigation and changes to the Scheme design are likely to reduce the number and significance of the environmental effects that are reported in the ES. Each technical chapter of the PEIR will explain the preliminary findings of the EIA process and, if applicable, give reasons as to why final conclusions cannot be reached at this stage. The ES will also set out what on-going assessment work is taking place. The final assessments will be concluded in the ES, once the design parameters and mitigation are finalised.

#### In-combination Effects and Cumulative Effects

2.4.28 Both in-combination effects and cumulative effects will be reported within **Chapter 25: Cumulative effects**. The following types of effects will be considered in accordance with the EIA Regulations and best practice guidance:

#### In-Combination Effects

2.4.29 The approach to the assessment of interactions of environmental effects identified within separate topic chapters of the PEIR and ES, a summary of potential likely in-combination effects will be provided within **Chapter 25: Cumulative Effects**. The assessment of in-combination effects will consider the changes in baseline conditions at common sensitive receptors (i.e. those receptors that have been identified as experiencing likely significant environmental effects due to the Scheme from multiple environmental topics). The assessment will be based upon residual (post-additional mitigation) effects of 'minor' or greater significance only ('negligible' residual effects will not be considered) and will assess whether multiple minor effects could combine to become significant. The Study Area for the assessment of in-combination effects will be informed by the Study Areas for the individual technical chapters.

2.4.30 The assessment of in-combination effects will be undertaken using a two-stage approach:

#### Stage 1 – Screening

2.4.31 Screening is undertaken to determine whether a sensitive receptor is exposed to more than one type of residual effect during the construction, operation and decommissioning phases of the Scheme. Those sensitive receptors that could experience two or more types of residual effects, with significance of 'minor' or greater, are taken forward to Stage 2 of the assessment.

2.4.32 If there is only one type of effect on a sensitive receptor (i.e., only one environmental factor assessment chapter has identified effects on that sensitive receptor), then it will be considered that there are no potential in-combination effects and the sensitive receptor will not be taken forward to Stage 2 of the assessment. This screening assessment is outlined in **Chapter 25: Cumulative Effects** to the PEIR.

#### Stage 2 – Assessment of intra-project combined effects

2.4.33 Where likely in-combination effects are identified at Stage 1, these are then assessed based on technical information provided in the technical assessment chapters and supporting appendices. As this assessment compares both qualitative and quantitative assessment outcomes, professional judgement will be applied to determining the significance of each intra-project effect.

2.4.34 The evaluation at the receptor level will consider: the magnitude of change at the common receptor; previously identified sensitivity; duration and reversibility of interaction. The focus will be on determining a change in the level of effect likely to be experienced and whether this is significant or not.

2.4.35 The in-combination effects assessed are:

- The combination of individual effects, for example, the combined effects of noise, dust and visual effects on a particular receptor;



- The combination of individual topics, for example, the combined effects of climate change on ground conditions;
- The combination of different works of the Scheme on a particular receptor for example, the in-combination effects of the construction of the Cable Corridor and the energy storage at the same time; and
- The combined effects of the Sites (Green Hill A, A.2, B, C, D, E, F, G and the Green Hill BESS).

### **Cumulative Effects**

- 2.4.36 Chapter 25 of this PEIR sets out the preliminary assessment of cumulative effects generated by the Scheme and other projects and developments proposed in an area of influence. The area of influence has been determined based on the individual topics' own guidance and methodologies.
- 2.4.37 Paragraph (5) of Schedule 4 to the EIA Regulations states that the ES should include “a description of the likely significant effects of the development on the environment resulting from... (e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources”.
- 2.4.38 Planning Inspectorate Advice on Cumulative Effects Assessment relevant to nationally significant infrastructure projects sets out relevant guidance for practitioners. The staged approach detailed in this guidance considers the level of certainty of surrounding projects and the need to assess development plans and future development consents; acknowledging that there will be limited information available on the relevant proposals to base such assessment on.
- 2.4.39 Cumulative effects occur as a result of several actions on an environmental receptor which may overlap or act together.
- 2.4.40 The Planning Inspectorate guidance on Cumulative Effects Assessment identifies a four-stage approach as follows:
- Stage 1 - Establishing the long list of 'other existing development and/or approved development';
  - Stage 2 - Establishing a shortlist of 'other existing development and/or approved development';
  - Stage 3 - Information Gathering; and
  - Stage 4 – Assessment.
- 2.4.41 The final list of shortlisted projects will be agreed with the relevant statutory bodies and the host and neighbouring planning authorities . At the PEIR stage the Applicant has identified a long list of potential projects that may be required to be taken forward in any cumulative assessment. This is provided at Volume 3, **Appendix 2.2**.
- Stage 1 – Establishing the long list of 'other existing development and/or approved development'.
- 2.4.42 Details of the cumulative schemes to be considered for detailed assessment have been identified based on information available on the Councils' planning registers and on the Planning Inspectorate website and from discussions with stakeholders. The long list will be reviewed and revised prior to submission of the ES.
- 2.4.43 The Planning Inspectorate Guidance provides three tiers to assign to the developments identified on the long list, set out in Table 2.4 below. These tiers are based on the level of certainty of an identified development coming forward or being built out, and the level of published detail of proposed developments or projects at the time of the assessment.



**Table 2.4: Categories of certainty for existing/approved development**

Tier 1 (most certain)	<ul style="list-style-type: none"> <li>• Under construction;</li> <li>• Permitted application(s), whether under the Planning Act 2008 or other regimes, but not yet implemented;</li> <li>• Submitted application(s) whether under the Planning Act 2008 or other regimes but not yet determined;</li> <li>• All refusals subject to appeal procedures not yet determined.</li> </ul>
Tier 2	<ul style="list-style-type: none"> <li>• Projects on the Planning Inspectorate’s Programme of Projects (where a scoping report has been submitted).</li> </ul>
Tier 3 (least certain)	<ul style="list-style-type: none"> <li>• Projects on the Planning Inspectorate’s Programme of Projects where a scoping report has not been submitted.</li> <li>• Identified in the relevant Development Plan and emerging Development Plans – with appropriate weight being given as they move closer to adoption, recognising that there will be limited information available on the relevant proposals;</li> <li>• Identified in other plans and programmes (as appropriate) which set the framework for future development consents/approvals, where such development is reasonably likely to come forward.</li> </ul>

2.4.44 It should be recognised that many of the projects that will fall within the Tier 3 categories and may be so small that cumulative effects would be highly unlikely. An example of this would be a home extension or minor commercial development. Using professional judgement, projects have and will therefore be screened for their potential to result in cumulative effects with the Scheme with only those where such potential exists will be considered further. This screening exercise will be detailed within the ES and will also be consulted upon as part of pre-application discussions with North Northamptonshire Council, West Northamptonshire Council, Milton Keynes City Council and Bedford City Council.

Stage 2 – Establishing a shortlist of ‘other existing development and/or approved development’

2.4.45 At Stage 2, any developments of a nature or scale without the potential to result in cumulative effects will be excluded, following discussion with the local planning authorities and consideration of the likely zone of influence for each environmental topic. The justification for including or excluding developments from the long list will be provided in a table based on the Planning Inspectorate Guidance on Cumulative Effects Assessment.

2.4.46 A long list of cumulative developments for the PEIR assessment is presented in **Chapter 25 Cumulative Effects**. This indicates which developments are considered to fall within a zone of influence for a particular environmental topic and will be progressed to the Stage 2 shortlist.

Stage 3 – Information Gathering

2.4.47 Information relating to other developments will be collected from the appropriate source (which may include the local planning authorities, the Planning Inspectorate or directly from the relevant applicant or developer) and will include, but not be limited to:

- Proposed design and location information;
- Proposed programme of demolition, construction, operation and/or decommissioning; and
- Environmental assessments that set out baseline data and effects arising from other existing and/or approved development.

Stage 4 – Assessment

2.4.48 The assessment will include a list of those developments considered to have the potential to generate a cumulative effect together with the Scheme, and this will be documented in a matrix,



in line with Annex 2 of the Planning Inspectorate Guidance on Cumulative Effects Assessment which includes the following:

- A brief description of the development;
- An assessment of the cumulative effect with the Scheme;
- Proposed mitigation applicable to the Scheme including any apportionment; and
- The likely residual cumulative effect.

2.4.49 The criteria for determining the significance of any cumulative effect will be based upon:

- The duration of effect, i.e. will it be temporary or permanent;
- The extent of effect, e.g. the geographical area of an effect;
- The type of effect, e.g. whether additive or synergistic;
- The frequency of the effect;
- The 'value' and resilience of the receptor affected; and
- The likely success of mitigation.

2.4.50 In reporting the overall significance of cumulative effects, it is appropriate to also acknowledge the relative contributions different projects make to a cumulative effect and carefully consider whether the cumulative effect is significant. For example, where a large-scale project is predicted to result in significant effects and a smaller proposed development would not have significant effects, the cumulative assessment should only conclude there is a significant cumulative effect if effects from both projects together are of greater significance than the larger project in isolation. Consequently, care will be taken to not simply define such effects as being cumulative, but rather to focus on the nature and scale to which genuine cumulative effects might result.

2.4.51 Where significant cumulative effects are identified, the assessment will identify measures to reduce or avoid these, as well as any necessary monitoring arrangements.

## 2.5 Mitigation Measures

2.5.1 Paragraph 7 of Schedule 4 of the EIA Regulations notes that an ES should include “A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced, or offset and should cover both the construction and operational phases.”

2.5.2 The mitigation measures specified can relate to both methods of construction and particular design elements. These will be incorporated within the Scheme. Many mitigation measures are accepted good practice during the construction and operation of schemes such as this, and the current regulatory context, and will be integral to the design of the Scheme (and are referred to as 'embedded mitigation'). These measures will be described within the ES but taken account of as part of Scheme when carrying out the assessment of likely effects of the Scheme. At the PEIR stage and given that the design of the Scheme continues to evolve, the preferred embedded mitigation measure may not yet have been selected.

2.5.3 Where potential adverse impacts are identified and those impacts cannot be avoided, further measures will be identified in order to reduce the effects or mitigate the effects to acceptable levels, in accordance with the mitigation hierarchy, where practicable. Any effects that endure following the implementation of additional mitigation measures are defined as 'residual effects'.

### Embedded Mitigation

2.5.4 The design process for the Scheme has and will continue to be influenced by the findings of early environmental appraisals, the EIA process, and engagement with key stakeholders and public consultation. Numerous measures have been incorporated into the design to avoid, minimise, or



mitigate environmental impacts. This approach, including the design evolution, is described in **Chapter 5 Alternatives and Design Evolution**.

2.5.5 Embedded mitigation measures could include, for example:

- Sustainable Drainage Systems ('SuDS');
- Incorporation of buffer distances from environmental receptors;
- Designing the layout of the Scheme to minimise impacts on sensitive receptors;
- Amendments to the size and scale of the Scheme, taking into account particular receptors and the potential impacts to them; and
- Provision of and compliance with an environmental management plan.

2.5.6 The following management plans are typically submitted as part of the DCO application, and secure the implementation of embedded mitigation measures:

- Outline Construction Environmental Management Plan ('OCEMP');
- Outline Operational Environmental Management Plan ('OOEMP');
- Outline Decommissioning Statement;
- Outline Landscape and Ecological Management Plan ('OLEMP');
- Outline Battery Storage Safety Management Plan ('OBSSMP');
- Outline Soil Management Plan;
- Outline Ecological Protection and Mitigation Strategy;
- Outline Construction Traffic Management Plan; and
- Outline Public Rights of Way Management Plan.

#### Additional Mitigation

2.5.7 Additional mitigation measures are measures introduced to reduce or mitigate likely significant impacts resulting from the Scheme. Measures could include for example:

- Provision of bunding to reduce noise impacts.
- Fencing to reduce glint and glare impacts.
- Additional planting and hedgerow improvements to reduce visual impacts.

#### Residual Effects

2.5.8 Each technical chapter of the ES will have a residual effects section that will outline the significance of each environmental effect resulting, after the implementation of the embedded and additional mitigation measures.

## **2.6 Consideration of Alternatives**

2.6.1 Regulation 14(2)(d) of the EIA Regulations (Ref.1) requires an ES to include *"a description of the reasonable alternatives studied by the applicant, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the options chosen, taking into account the effects of the development on the environment"*.

2.6.2 Moreover, paragraph 2 of Schedule 4 of the EIA Regulations notes that an ES should include: *"A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects."*

2.6.3 In addition, Planning Inspectorate Advice Note 7 (Ref.3) states that a good ES is one that *"explains the reasonable alternatives considered and the reasons for the chosen option taking into account the effects of the Proposed Development on the environment"*.



- 2.6.4 Guidance on the pre-application stage for NSIP (Ref.7) confirms that the assessment of alternatives does not extend to the preparation or examination of the application for development consent as a whole, and there is no general requirement to consider alternatives to specific applications. The decision-making process is based on a project's "own merits, not that there may be better or different alternatives either elsewhere or at a later stage". The Guidance does, however, recognise that setting out "*in brief the main alternatives to their preferred scheme*" is encouraged as it "*can demonstrate how project designs have been refined*" to account for environmental, socio-economic, and community effects.
- 2.6.5 To ensure compliance with the policy and legal requirements as identified above, the ES will include a chapter setting out the alternatives considered and the main reasons for selecting the chosen option. The chapter will focus on the following aspects of option selection:
- Site selection;
  - Alternative technologies;
  - The layout of the Scheme;
  - Cable corridor options;
  - The location of supporting infrastructure.
- 2.6.6 Alternatives in respect of site selection, alternative technologies, layouts and design evolution are reported in **Chapter 5 Alternative and Design Evolution**. Further details of alternatives and options considered between PEIR and submission of the DCO application will be provided in the ES that accompanies the DCO application.
- 2.6.7 The consideration of "no development" as an alternative to the Scheme will not be explored in the ES. This is due to the consideration of "no development" being unreasonable as it would not deliver the generation of renewable electrical power and energy storage proposed, which is designated as critical national priority infrastructure by the UK government.

### Summary

- 2.6.8 The assessments provided in this PEIR are preliminary. The design evolution of the Scheme is continuing and the feedback from the statutory consultation stage and ongoing discussions with stakeholders will inform the further assessment work that will be reported in the ES submitted with the DCO application. As such, different conclusions about the significance of effects may be reached in the ES at the DCO application stage.

## 2.7 References

- Ref.1 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, 2017 No.572. *[as amended]*
- Ref.2 Planning Inspectorate (2024) Advice Note 3: EIA: EIA Notification and Consultation  
[Nationally Significant Infrastructure Projects - Advice Note Three: EIA notification and consultation - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/consultations/nationally-significant-infrastructure-projects-advice-note-three-eia-notification-and-consultation)
- Ref.3 Planning Inspectorate (2020) Advice Note 7: EIA: Process, Preliminary Environmental Information and Environmental Statements.  
[Nationally Significant Infrastructure Projects - Advice Note Seven: Environmental Impact Assessment: process, preliminary environmental information and environmental statements - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/consultations/nationally-significant-infrastructure-projects-advice-note-seven-environmental-impact-assessment-process-preliminary-environmental-information-and-environmental-statements)
- Ref.4 Planning Inspectorate (2018) Advice Note 9: EIA: Rochdale Envelope  
[Nationally Significant Infrastructure Projects - Advice Note Nine: Rochdale Envelope - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/consultations/nationally-significant-infrastructure-projects-advice-note-nine-rochdale-envelope)
- Ref.5 Planning Inspectorate (2024) Advice Note 11: EIA: working with public bodies in the infrastructure planning process.



[Nationally Significant Infrastructure Projects - Advice Note Eleven: working with public bodies in the infrastructure planning process - GOV.UK \(www.gov.uk\)](#)

Ref.6 Planning Inspectorate (2015) Advice Note 17: EIA: cumulative effects assessment relevant to nationally significant infrastructure projects.

[Nationally Significant Infrastructure Projects - Advice Note Seventeen: cumulative effects assessment relevant to nationally significant infrastructure projects - GOV.UK \(www.gov.uk\)](#)

Ref.7 Planning Act 2008: Pre-application stage for Nationally Significant Infrastructure Projects. Guidance on the pre-application stage for Nationally Significant Infrastructure Projects.

Ref.8 [Planning Act 2008: Pre-application stage for Nationally Significant Infrastructure Projects - GOV.UK \(www.gov.uk\)](#)



## 3 The Development Site

### 3.1 Introduction

3.1.1 This chapter provides a description of the development site within which the Scheme will be situated and the surrounding area. The development site comprises the following elements:

- Sites for built development; and
- Cable Route Search Area.

3.1.2 This chapter is supported by site plans and figures contained in **Volume 2, Figure 3 series**.

### 3.2 Sites for Built Development

3.2.1 The Scheme consists of nine Sites identified for built development, namely solar PV panels, substations and energy storage, located in an area of countryside to the west and south of Wellingborough and north and southeast of Northampton, within a 20km radius of the grid connection at the Grendon Substation.

3.2.2 The Sites have a combined area of approximately 1,200 hectares (2,950 acres) and are located within the administrative boundaries of North Northamptonshire Council, West Northamptonshire Council and Milton Keynes City Council.

3.2.3 The Cable Route Search Area will be subject to refinement and is not included in the area total at this stage. The maximum extent of land that is expected to be included within the DCO application, including the maximum areas of the Cable Route Search Area, is shown on **Volume 2, Figures 3.2.1 and 3.2.3**.

3.2.4 The Sites and Cable Route Search Area are described below.

#### Green Hill A and A.2

##### Site areas

3.2.5 The location of Green Hill A and Green Hill A.2 are shown on **Volume 2, Figure 3.1.1**. Green Hill A is approximately 173.6 hectares (ha) in area.

3.2.6 Green Hill A.2 is located approximately 800m to the southeast of Green Hill A and is approximately 65.2 ha in area.

##### Use

3.2.7 Green Hill A and A.2 are currently in agricultural use.

##### Features

3.2.8 Green Hill A and A.2 consist of two distinct groups of agricultural fields and are located in the parishes of Old and Walgrave. Green Hill A and A.2 lie entirely within the West Northamptonshire Council authority area, although the eastern boundary of Green Hill A.2 runs adjacent to the authority boundary of North Northamptonshire Council.

3.2.9 The land at Green Hill A and A.2 is characterised by agricultural fields separated by hedgerows and scattered trees. The land in Green Hill A generally slopes gently down from the north to the south, ranging from approx. 105m to 135m above ordnance datum (AOD). A shallow valley is found in the centre-west of Green Hill A formed by a small tree-lined stream.

3.2.10 Green Hill A.2 generally slopes gently down from the east to west, ranging from approx. 110 to 135m AOD. Green Hill A and A.2 benefit from existing agricultural access from the adjacent roads.

3.2.11 An 11 kilovolt (kV) overhead power line crosses north-south through the centre of Green Hill A to the west of, and parallel to, Newland Road. A small, derelict agricultural building can be found in the north of Green Hill A.

3.2.12 A separate 11kV overhead line crosses north to south over the easternmost field of Green Hill A.2. Green Hill A.2 also contains a small telecoms tower to the north of Rectory Farm.



### **Settlements**

- 3.2.13 The village of Walgrave is located 600m to the south, and the village of Old is 300m to the west of Green Hill A. There is also a small hamlet known as Cherry Hill that was developed in the early 2000s located to the southwest of Green Hill A. The nearest properties in the village of Old are approximately 80m distance west of Green Hill A.
- 3.2.14 A small number of isolated properties can be found adjacent to the boundaries of Green Hill A, outside the villages of Old and Walgrave.
- 3.2.15 Green Hill A.2 lies approximately 900m east of Walgrave and 900m northeast of the village of Hannington. Rectory Farm and New Lodge Farm border the site.

### **Roads**

- 3.2.16 Broughton Road runs northeast from the village of Old, bounding Green Hill A to the north before the road meets Newland Road at the most northern part of Green Hill A.
- 3.2.17 Newland Road runs south from the northern part of Green Hill A to the village of Walgrave. Walgrave Road is situated southwest of Green Hill A, becoming Old Road; which connects Old village to Walgrave village.
- 3.2.18 Green Hill A.2 is bounded to the north by Kettering Road, while the eastern boundary lies alongside the A43 (also known as Kettering Road).

### **Public Rights of Way (PRoW)**

- 3.2.19 There are no public rights of way passing through Green Hill A. The nearest footpath, footpath NN|DF|4, runs from close to the westernmost point of Green Hill A in a northeast direction to the village of Mawsley. In contrast, bridleway NN|CT|3 runs east to west directly south of Green Hill A.2 where, after crossing the A43, further bridleways towards Broughton and Pytchley can be accessed.

### **Airfields**

- 3.2.20 No airfields immediately border Green Hill A. Pitsford Airstrip lies approximately 4.4km southwest of Green Hill A. Hold Farm Airstrip lies approximately 500m southeast of Green Hill A.2.
- 3.2.21 Both airfields are private and unpaved. The larger, paved Sywell Aerodrome is located 3.7km south of Green Hill A.2.

### **Rivers**

- 3.2.22 There are no main rivers present within the boundaries at Green Hill A or A.2. A series of land drains is shown to run throughout Green Hill A and A.2. The nearest main river to Green Hill A is an unnamed river which lies 800m to the west and runs into the Scaldwell arm of Pitsford Water.

### **Historic designations**

#### **Conservation Areas**

- 3.2.23 There are no Conservation Areas within the site or a 2km distance of Green Hill A or Green Hill A.2.
- 3.2.24 Scaldwell Conservation Area is the nearest, located approximately 2km to the west of Green Hill A. Cransley Conservation Area is located approximately 2.5km to the north-west of Green Hill A.
- 3.2.25 Broughton Conservation Area is located approximately 2.3km to the northwest of Green Hill A and Green Hill A.2.

#### **Listed Buildings**

- 3.2.26 There is a cluster of 17 listed buildings at Old village to the west of Green Hill A, the nearest being the Grade II listed Jasmine Cottage (NHLE 1376865), approximately 130m from Green Hill A's



western extent. These are all Grade II listed buildings apart from the Church of St Andrew (NHLE 1376651) which is Grade I.

3.2.27 There is a cluster of 10 listed buildings at Walgrave to the south of Green Hill A, the nearest being the Grade II listed North Hall (NHLE 1203361), approximately 615m from Green Hill A's southern boundary. These are all Grade II listed buildings apart from the Church of St Peter (NHLE 1281745) which is Grade I.

3.2.28 White Lodge Farmhouse, approximately 320m to the east of Green Hill A is a Grade II listed building (NHLE 1203302). The Grade II listed Pytchley Lodge (NHLE 1213833) is located 1km northeast of Green Hill A.2.

#### Archaeological Features

3.2.29 Walgrave Moated Site Scheduled Monument (NHLE 1011036) is located approximately 490m to the south of Green Hill A.

3.2.30 Two parts of the abandoned areas of Walgrave Medieval Village Scheduled Monument (NHLE 1418583) are located approximately 865m to the south, and 900m to the southeast of Green Hill A respectively. The easternmost part of the Scheduled Monument is also no more than 500m from Green Hill A.2.

#### Landscape designations

3.2.31 There are no Registered Parks and Gardens within Green Hill A or Green Hill A.2.

3.2.32 Lamport Hall, Grade II (List Entry 1001036) is the nearest Registered Park and Garden, located 2.8km west of Green Hill A. This is the only Registered Park and Garden within 5km of Green Hill A and Green Hill A.2.

3.2.33 There is no designated Ancient Woodland within Green Hill A or Green Hill A.2.

3.2.34 The nearest block of Ancient Woodland is Badsaddle Wood (ancient and semi-natural woodland), located 300m southeast of Green Hill A.2. Withmale Park Wood (a mix of ancient and semi-natural woodland and ancient replanted woodland); and Hardwick Wood (a mix of ancient and semi-natural woodland and ancient replanted woodland) are both also within a 2km distance of Green Hill A.2 at its nearest point.

3.2.35 There are five further blocks of Ancient Woodland located between 2km and 5km of Green Hill A and A.2 which include: Cransley Wood (predominantly ancient and semi-natural woodland); Faxton Corner (ancient replanted woodland); Mawsley Wood (ancient and semi-natural woodland); Short Wood (a mix of ancient and semi-natural woodland and ancient replanted woodland); and Sywell Wood (predominantly ancient replanted woodland).

3.2.36 Green Hill A is located within two of the National Character Areas (NCAs) as defined by Natural England as NCA Profile: 89 Northamptonshire Vales (NE527), and NCA Profile: 95 Northamptonshire Uplands (NE565). Green Hill A.2 is located entirely within NCA Profile: 89 Northamptonshire Vales (NE527).

3.2.37 Green Hill A and A.2 are located within one Landscape Character Type (LCT), LCT 5 Clay Plateau which contains one Landscape Character Area (LCA), LCA 5b Sywell Plateau, as defined by Northamptonshire Council Current Landscape Character Assessment 2010.

3.2.38 There are a further three LCTs located between 2km and 5km of Green Hill A and A.2 being; LCT Profile: 4 Rolling Ironstone Valley Slopes north and west of the Sites LCT 13 Undulating Hills and Valleys and LCT Profile: 17 River Valley Floodplain.

3.2.39 These LCTs are broken down further into LCAs and include; LCA Profile: 4e Pitsford Water; LCA Profile: 4d Hanging Houghton; LCA Profile 4f Kettering and Wellingborough Slopes; LCA Profile: 17c Brampton Valley Floodplain and LCA Profile: 13d Cottesbrooke and Arthingworth.

3.2.40 The nearest playing fields are located in Walgrave, 370m south of Green Hill A, and playing fields located in Old village, 390m west of Green Hill A. The Hannington Allotments are approximately 850m southwest of Green Hill A.2.



## **Ecological designations**

### **Internationally Designated Sites**

- 3.2.41 The Upper Nene Valley Gravel Pits SPA and Ramsar site is approximately 10km southeast from Green Hill A and A.2. The globally important site comprises a chain of exhausted sand and gravel pits, extending for approx. 35km along the alluvial deposits of the River Nene floodplain running from Clifford Hill on the southern outskirts of Northampton, downstream to Thorpe Waterville north of Thrapston. An extensive mosaic of wetland habitats, the site is regularly used by over 20,000 wildfowl and wading birds and support major overwintering bird assemblages. Qualifying features of this site include bittern and golden plover (both Annex 1 species), in addition to gadwall (migratory species).

### **Nationally Designated Sites**

#### **Sites of Special Scientific Interest (SSSI)**

- 3.2.42 Badsaddle, Withmale Park and Bush Walk Woods SSSI is located between 300m and 900m east and south-east of Green Hill A.2. This is ancient coppice woodland with oak and ash on wet calcareous soils.
- 3.2.43 Pitsford Reservoir SSSI is located approx. 1.5km (at the closest point) south-west of Green Hill A. The reservoir and surrounding habitats host large numbers of birds associated with open water, both throughout winter and breeding seasons. Botanical habitats are also very diverse, with many county rarities recorded.
- 3.2.44 Birch Spinney and Mawsley Marsh SSSI is located just over 2km north of Green Hill A. It is a rare type of ash-maple woodland, partly on peat with notable marshes and also includes a stretch of a dismantled railway line.
- 3.2.45 Hardwick Lodge Meadow SSSI is located 2.2km to the southeast of Green Hill A.2. This is a large area of diverse permanent pasture with an exceptionally rich and varied grassland flora that, in turn, supports uncommon invertebrates.

### **Locally Designated Sites**

#### **Local Wildlife Sites**

- 3.2.46 Walgrave East Meadow Local Wildlife Site (LWS) is located 150m west of Green Hill A.2 and 600m south-east of Green Hill A. The neutral grassland meadow, which also contains two streams fringed with rush pasture, supports a diverse range of meadow plants and indicator species.
- 3.2.47 Highcroft Farm Meadow LWS is located 500m north of Green Hill A.2. The meadow, although predominately species poor having declined due to lacking appropriate management, hosts an invertebrate assemblage with supporting habitats.
- 3.2.48 Broughton Green Lane LWS is located 700m east of Green Hill A. This site comprises a green lane, which forms a wildlife corridor, with ancient woodland indicators and diverse range of invertebrates recorded.
- 3.2.49 Old Poors Gorse LWS is located 900m north of Green Hill A and comprises a woodland approximately 9.5 hectares in area.

#### **Wildlife Trust Reserves**

- 3.2.50 Pitsford Water Wildlife Trust Reserves (WTR) is located 1.5km southwest of Green Hill A. Four main streams enter the reserve and form large bays of shallow water across connected valleys. During winter these provide excellent feeding and sheltering areas for wildfowl, whereas lowered water levels in summer expose stretches of mud and foraging areas for migrating waders.

#### **Mineral designations**

- 3.2.51 The majority of both Green Hill A and A.2 lie within two Minerals Safeguarding Areas (sand and gravel) as defined in the adopted Northamptonshire Minerals and Waste Local Plan (2017).



## **Flood Risk and Drainage Designations**

### **Fluvial Flood Risk**

- 3.2.52 A network of land drainage ditches is located within Green Hill A and A.2. Flows within the ditches are expected to flow generally in a south-westerly (Green Hill A) and westerly (Green Hill A.2) direction based on local topography. All the land drains are Ordinary Watercourses and are therefore the responsibility of the Lead Local Flood Authority (LLFA) to maintain.
- 3.2.53 Fluvial flooding could occur if the land drains overtopped their banks during or following an extreme rainfall event.
- 3.2.54 The entirety of Green Hill A and A.2 is situated in Flood Zone 1 and therefore has less than a 1 in 1,000 annual probability of river or sea flooding.
- 3.2.55 The Environment Agency's Historical Flood Map indicates that neither Green Hill A or Green Hill A.2 have historically flooded and neither has the area immediately surrounding either site.

### **Surface Water Flood Risk**

- 3.2.56 The Environment Agency's Flood Risk from Surface Water Map indicates that the land at Green Hill A and A.2 ranges from a very low risk of surface water flooding (less than 0.1% annual probability) to low risk of surface water flooding (between a 1% and 0.1% annual probability) to medium risk of surface water flooding (between a 3.3% and 1% annual probability) to high risk of surface water flooding (greater than 3.3% annual probability).
- 3.2.57 The surface water flooding extents largely match the courses of the land drainage ditches which flow throughout both Green Hill A and A.2.

## **Green Hill B**

### **Green Hill Area**

- 3.2.58 The Green Hill B site is approximately 64.7 ha in area.

### **Use**

- 3.2.59 The entirety of Green Hill B is in agricultural use.

### **Features**

- 3.2.60 Green Hill B is the most western of the Sites and is located south-southeast of Green Hill A. Green Hill B lies entirely within West Northamptonshire, in the civil parish of Holcot and bordering the parish boundary of Overstone.
- 3.2.61 Green Hill B is characterised by agricultural fields separated by hedgerows, with some woodland in the wider western area. The eastern part of Green Hill B is relatively flat, with the western part sloping gently down to the southwest corner. The elevation of Green Hill B is from approximately 120m to 130m AOD. A small pond is located in the easternmost field. Green Hill B is accessed by an existing access from Moulton Road and a proposed access from Sywell Road.

### **Settlements**

- 3.2.62 Green Hill B is situated 850m south from its nearest village, Holcot; and 1.2km north-east of Moulton village. Green Hill B surrounds Tithe Farm Barns, a series of former agricultural barns that have been converted into commercial units. There are also some residential properties scattered nearby to the north and south of Green Hill B.

### **Roads**

- 3.2.63 Holcot Road runs to the west of Green Hill B. This road runs north and turns into Moulton Road (at the parish boundary) nearing the northern boundary of Green Hill B. There is a private entrance for access to Tithe Farm Barns to the northwest which adjoins Green Hill B to Moulton Road. There is also an existing entrance to Green Hill B from Sywell Road, which runs northwest to southeast from Holcot past the east of Green Hill B towards the A43 at New Inn Spinney.



3.2.64 The A43 Kettering Road itself runs 600m southeast of the eastern end of Green Hill B.

**Public Rights of Way (PRoW)**

3.2.65 Footpath NN|CW|1 passes through the easternmost part of Green Hill B heading north to the village of Holcot and south where it is redesignated NN|DG|2 (where it crosses into Overstone parish) before it joins footpath NN|DG|3 from Moulton.

**Airfields**

3.2.66 No airfields are located within or immediately border Green Hill B.

3.2.67 Hold Farm Airstrip lies approximately 1.9km northwest, Sywell Aerodrome lies approximately 2.5km east and Hold Farm Airstrip lies approximately 4.8km northeast of Green Hill B.

**Rivers**

3.2.68 There are no main rivers present at Green Hill B, or within its boundaries. There are two nearby land drains, one located to the south and one to the east.

**Historic designations**

**Conservation Areas**

3.2.69 There are no conservation areas in the immediate area of Green Hill B.

3.2.70 The nearest Conservation Area is Moulton Conservation Area, approximately 1.5km to the south-west of Green Hill B.

**Listed Buildings**

3.2.71 There is a cluster of eight listed Buildings at the village of Holcot, the nearest being Pollys Cottage (NHLE 1067007) which is listed at Grade II and is approximately 725m to the north-east of Green Hill B. All of the listed buildings in the village are grade II apart from the Church of St Mary and All Saints (NHLE 1045863) which is grade I and is approximately 750m to the north-east of Green Hill B.

3.2.72 The Old Farmhouse and Attached Stables approximately 500m to the southeast of Green Hill B is a Grade II listed building (NHLE 1354758).

3.2.73 Overstone Old Rectory approximately 275m to the southeast of Green Hill B is a Grade II listed building (NHLE 1075355).

3.2.74 Rectory Farmhouse, approximately 70m to the southeast of Green Hill B, is a grade II listed building (NHLE 1025896)

**Archaeological Features**

3.2.75 There are no Scheduled Monuments within a 2km radius of Green Hill B.

**Landscape designations**

3.2.76 There are no Registered Parks and Gardens on or within 2km of Green Hill B. The closest Registered Park and Garden is Boughton Hall located approximately 3.3km to the west in the village of Boughton.

3.2.77 There is no Ancient Woodland on Green Hill B.

3.2.78 The nearest block of Ancient Woodland is Badsaddle Wood (ancient and semi-natural woodland), located 1.8km southeast of Green Hill B.

3.2.79 There are three blocks of Ancient Woodland located between 2 and 5km of Green Hill B which include: Sywell Wood (ancient replanted woodland); Hardwick Wood (ancient replanted woodland); and Withmale Park Wood (A mix of ancient and semi-natural woodland and ancient replanted woodland).



- 3.2.80 Green Hill B is located within two of the NCAs as defined by Natural England as NCA Profile: 89 Northamptonshire Vales (NE527), and NCA Profile: 95 Northamptonshire Uplands (NE565).
- 3.2.81 Green Hill B is located within LCT Profile: 5 Clay Plateau and one LCA, LCA Profile: 5b Sywell Plateau, as defined by Northamptonshire Council Current Landscape Character Assessment 2010.
- 3.2.82 There are a further two LCT's located within 2km and 5km south of Green Hill B including; LCT Profile: 4 Rolling Ironstone Valley Slopes and LCT Profile:17 River Valley Floodplain.
- 3.2.83 These are broken down further as LCAs and include; LCA Profile: 4b Moulton Slopes; LCA Profile: 4c Ecton and Earls Barton Slopes; LCA Profile: 4d Hanging Houghton; LCA Profile: 4e Pitsford Water; LCA Profile: 5b Sywell Plateau; and RLCA Profile: 17c Brampton Valley Floodplain.

### **Ecological designations**

#### **Internationally Designated Sites**

##### *Special Protection Areas (SPA) and Ramsar sites*

- 3.2.84 The Upper Nene Valley Gravel Pits SPA and Ramsar site is located approximately 10km east of Green Hill B. The globally important site for birds comprises a chain of exhausted sand and gravel pits, extending for approx. 35km along the alluvial deposits of the River Nene floodplain running from Clifford Hill on the southern outskirts of Northampton, downstream to Thorpe Waterville north of Thrapston. An extensive mosaic of wetland habitats is regularly used by over 20,000 wildfowl and wading birds and support major overwintering bird assemblages. Qualifying features of the site include bittern and golden plover in addition to gadwall (migratory species).

#### **Nationally Designated Sites**

##### *Sites of Special Scientific Interest (SSSI)*

- 3.2.85 Pitsford Reservoir SSSI is located 800m north-east (at the closest point) of Green Hill B. The reservoir and surrounding habitats host large numbers of birds associated with open water, both throughout winter and breeding seasons. Botanical habitats are also very diverse, with many county rarities recorded.
- 3.2.86 Hardwick Lodge Meadow SSSI is located 3.7km to the north-east of Green Hill B. This is a large area of diverse permanent pasture with an exceptionally rich and varied grassland flora that, in turn, supports uncommon invertebrates.
- 3.2.87 Badsaddle, Withmale Park and Bush Walk Woods SSSI is located approx. 5km north-east of Green Hill B. This is ancient coppice woodland with oak and ash on wet calcareous soils.

#### **Locally Designated Sites**

##### *Local Nature Reserves*

- 3.2.88 Crowfields Common Local Nature Reserve (LNR) is located 2km south of Green Hill B. This site comprises three fields, adjacent to the village of Moulton, comprised of rough grassland and wildflower meadow, well-established hedgerows and few mature trees.

##### *Local Wildlife Sites*

- 3.2.89 Hog Hole Spinney local wildlife site (LWS) is located approx. 1.1km south-west of Green Hill B. A large woodland in the locality, the predominantly broadleaved woodland lies on sandy soils with oak, ash and a dense scrub understorey.
- 3.2.90 Cowpasture Spinney LWS is located 1.5km south-east of Green Hill B and comprises a long, narrow shelterbelt spinney with a stream, and associated emergent vegetation, running through the centre. A number of ancient woodland indicator species have been recorded amongst the variable tree cover.



### Wildlife Trust Reserves

- 3.2.91 Pitsford Water Wildlife Trust Reserve is located 1.5km north of Green Hill B. Four main streams enter the reserve and form large bays of shallow water across connected valleys. During winter these provide excellent feeding and sheltering areas for wildfowl, whereas lowered water levels in summer expose stretches of mud and foraging areas for migrating waders.

### Mineral designations

- 3.2.92 The western half of Green Hill B lies within a Minerals safeguarding areas (sand and gravel) as defined in the adopted Northamptonshire Minerals and Waste Local Plan (2017).

### Flood Risk and Drainage Designations

#### Fluvial Flood Risk

- 3.2.93 There are two land drainage ditches located immediately to the south and southeast Green Hill B. Flows within the ditches are expected to flow in a south-westerly direction based on local topography. All the land drains are ordinary watercourses.
- 3.2.94 Fluvial flooding could occur if the land drains overtopped their banks during or following an extreme rainfall event.
- 3.2.95 The entirety of Green Hill B is situated in Flood Zone 1 and therefore has less than a 1 in 1,000 annual probability of river or sea flooding.
- 3.2.96 The Environment Agency's Historical Flood Map indicates that Green Hill B has not historically flooded and neither has the area immediately surrounding Green Hill B.

#### Surface Water Flood Risk

- 3.2.97 The Environment Agency's Flood Risk from Surface Water Map indicates that Green Hill B ranges from a very low risk of surface water flooding (less than 0.1% annual probability) to low risk of surface water flooding (between a 1% and 0.1% annual probability) to medium risk of surface water flooding (between a 3.3% and 1% annual probability) to high risk of surface water flooding (greater than 3.3% annual probability).
- 3.2.98 As described in the fluvial section above, the surface water flooding extents largely match the courses of the and drainage ditches.

### Green Hill C

#### Site areas

- 3.2.99 The Green Hill C site is approximately 56.3 ha in area.

#### Use

- 3.2.100 Green Hill C is predominantly in agricultural use, with fields CF7-CF10 cleared and left fallow.

#### Features

- 3.2.101 Green Hill C consists predominantly of agricultural fields, whilst also containing a cleared area and access road associated with the neighbouring pre-existing solar farm (Sywell Solar farm). Green Hill C sits across both Sywell parish and Mears Ashby parish in North Northamptonshire.
- 3.2.102 The land is characterised by medium-sized fields separated by hedgerows and in some instances substantial tree belts. Green Hill C also lies immediately adjacent to Sywell Wood. The topography of Green Hill C is defined by a shallow valley caused by a small stream running north-south through the centre, with the elevation of Green Hill C ranging from approximately 110m to 120m AOD. Green Hill C benefits from a number of well-established existing internal agricultural tracks, which access from the pre-existing access track to Sywell Solar Farm.

#### Settlements

- 3.2.103 Green Hill C is located some 1.5km northeast of the village of Sywell and approximately 1.3km to the north of Mears Ashby. There are no defined settlements in the immediate area, though there



is a garden centre named Beckworth Emporium opposite the southern part of Green Hill C. Wood Lodge Farm is situated on the western site boundary and can be access via Sywell Road.

- 3.2.104 Green Hill C is also located adjacent to the Sywell Aerodrome, which features a well-established employment area, museum, aerodrome facilities, and hotel.

#### **Roads**

- 3.2.105 The southern boundary of Green Hill C runs along Wellingborough Road. From its junction with Glebe Road, there is gated access into Sywell Solar Farm. The existing access road to the existing solar farm runs through Green Hill C.

#### **Public Rights of Way (PRoW)**

- 3.2.106 Bridleway NN|TN|7 runs along a tree belt through the centre-west of Green Hill C whereafter it turns north and follows the perimeter of Sywell Wood. This route also forms part of the Northamptonshire Round long-distance walking route.

#### **Airfields**

- 3.2.107 Sywell Aerodrome directly neighbours Green Hill C. The aerodrome and its accompanying facilities are situated to the west and southwest of Green Hill C and are accessed from Wellingborough Road. The airfield is largely open for recreational aviation purposes with a 900m paved runway (03L/21R), and three smaller grass runways. Notably, approach to grass runway 23 is taken directly over the western half of Green Hill C, with a distance of no more than 120m between the boundary of Green Hill C and the runway end.

#### **Rivers**

- 3.2.108 Whilst there are no main rivers on Green Hill C, there is a land drain which runs through the centre in a southwards direction and runs south under Wellingborough Road.

#### **Historic designations**

##### **Conservation Areas**

- 3.2.109 Sywell Conservation Area is located approximately 1km to the south-west of Green Hill C.

##### **Listed Buildings**

- 3.2.110 There are no listed buildings within or within 1km of Green Hill C.

##### **Archaeological Features**

- 3.2.111 There are no Scheduled Monuments within 2km of Green Hill C.

##### **Landscape designations**

- 3.2.112 There are no Registered Parks and Gardens on or within 2km of Green Hill C. The closest Registered Park and Garden is the Great Harrowden Hall located 4.6km northeast of Green Hill C. There are no other Registered Parks and Gardens are within 5km of Green Hill C.

- 3.2.113 There is no Ancient Woodland on Green Hill C.

- 3.2.114 The nearest block of Ancient Woodland to Green Hill C is Sywell Wood (Ancient Replanted Woodland), which is located directly north of the northern boundary of Green Hill C. There is only one other block of Ancient Woodland within 2km of Green Hill C, Hardwick Wood (Ancient Replanted Woodland) which is located 1.5km north of Green Hill C.

- 3.2.115 There are a further two blocks of Ancient Woodland between 2km to 5km north of Green Hill C which include Withmale Park Wood (ancient replanted woodland) and Badsaddle Wood (ancient and semi-natural woodland).

- 3.2.116 Green Hill C is located within one NCA as defined by Natural England as NCA Profile: 89 Northamptonshire Vales (NE527).



- 3.2.117 Green Hill C is located at the southeastern edge of the NCA Profile: 89 Northamptonshire Vales and borders NCA Profile: 91 Yardley Whittlewood Ridge.
- 3.2.118 Green Hill C is located within LCT Profile: 5 Clay Plateau and one LCA, LCA 5b Sywell Plateau, as defined by Northamptonshire Council Current Landscape Character Assessment 2010.
- 3.2.119 There are a further two LCT's located between 2km and 5km south of Green Hill C these include; LCT Profile: 4 Rolling Ironstone Valley Slopes; and LCT Profile:18 Broad River Valley Floodplain.
- 3.2.120 These LCT's are broken down further as LCA Profile: 4b Moulton Slopes; LCA Profile: 4C Ecton and Earls Barton Slopes; LCA Profile: 4e Pitsford Water; LCA Profile: 4f Kettering and Wellingborough Slopes; and LCA Profile:18d The Nene - Billing Wharf to Woodford Mill.

### **Ecological designations**

#### **Internationally Designated Sites**

- 3.2.121 The Upper Nene Valley Gravel Pits SPA and Ramsar site is approx. 6.5km south-east from Green Hill C. The globally important site comprises a chain of exhausted sand and gravel pits, extending for approx. 35km along the alluvial deposits of the River Nene floodplain running from Clifford Hill on the southern outskirts of Northampton, downstream to Thorpe Waterville north of Thrapston.
- 3.2.122 An extensive mosaic of wetland habitats is regularly used by over 20,000 wildfowl and wading birds and support major overwintering bird assemblages. Qualifying features of the designated site include bittern and golden plover (both Annex 1 species), in addition to gadwall (migratory species).

#### **Nationally Designated Sites**

##### *Sites of Special Scientific Interest (SSSI)*

- 3.2.123 Hardwick Lodge Meadow SSSI is located 1.5km north of Green Hill C. This is a large area of diverse permanent pasture with an exceptionally rich and varied grassland flora that, in turn, supports uncommon invertebrates.
- 3.2.124 Badsaddle, Withmale Park and Bush Walk Woods SSSI is located approx. 3km north of Green Hill C. This is ancient coppice woodland with oak and ash on wet calcareous soils.
- 3.2.125 Pitsford Reservoir SSSI is located approx. 4.5km (at the closest point) west of Green Hill C. The reservoir and surrounding habitats host large numbers of birds associated with open water, both throughout winter and breeding seasons. Botanical habitats are also very diverse, with many county rarities recorded.

#### **Locally Designated Sites**

##### *Local Wildlife Sites (LWS)*

- 3.2.126 Hardwick Wood LWS is approx. 1.6km north of Green Hill C and comprises an ancient woodland replanted with oak and spruce. At least 20 ancient woodland indicators and neutral grassland indicators were recorded on site.
- 3.2.127 Sywell Reservoir and Country Park LWS is located 1.8km south of Green Hill C. In addition to SSSI status, the Country Park consists of a reservoir and a mosaic of other habitats, including neutral grassland, scrub woodland and swamp edge habitat.
- 3.2.128 Vivians Covert LWS is located 1.8km east of Green Hill C, a small woodland in which at least seven ancient woodland indicators are present.
- 3.2.129 Cowpasture Spinney LWS is located approx. 2km south-west of Green Hill C. It comprises a long, narrow shelterbelt spinney with a stream, and associated emergent vegetation, running through the centre. A number of ancient woodland indicator species have been recorded amongst the variable tree cover.
- 3.2.130 Hardwick Road Verge LWS is located 2km northeast of Green Hill C. Bounding the north and south of Hardwick Road, the grassland communities on the road verges and indicative of neutral grassland habitats.

**Mineral designations**

- 3.2.131 There are no minerals safeguarding areas covering Green Hill C.

**Flood Risk and Drainage Designations****Fluvial Flood Risk**

- 3.2.132 There is one land drainage ditch which runs through the centre of Green Hill C. Flows within the ditches are expected to flow in a south-westerly direction based on local topography. All the land drains are ordinary watercourses.
- 3.2.133 Fluvial flooding could occur if the land drains overtopped their banks during or following an extreme rainfall event.
- 3.2.134 The entirety of Green Hill C is situated in Flood Zone 1 and therefore has less than a 1 in 1,000 annual probability of river or sea flooding.
- 3.2.135 The EA Historical Flood Map indicates that Green Hill C has not historically flooded and neither has the area immediately surrounding it.

**Surface Water Flood Risk**

- 3.2.136 The EA Flood Risk from Surface Water map indicates that Green Hill C ranges from a very low risk of surface water flooding (less than 0.1% annual probability) to low risk of surface water flooding (between a 1% and 0.1% annual probability) to medium risk of surface water flooding (between a 3.3% and 1% annual probability) to high risk of surface water flooding (greater than 3.3% annual probability).
- 3.2.137 As described in the fluvial section above, the surface water flooding extents largely match the courses of the and drainage ditches.

**Green Hill D****Site areas**

- 3.2.138 The Green Hill D site is approximately 42.1 ha in area.

**Use**

- 3.2.139 The entirety of Green Hill D is in agricultural use.

**Features**

- 3.2.140 Green Hill D is located only 240m from the most eastern part of Green Hill C. This site is a slim row of fields stretching north to south some 1.6km and is roughly 300 to 400m wide. Green Hill D lies entirely within Mears Ashby parish in North Northamptonshire. The northeastern boundary of Green Hill D abuts the parish boundaries of Wilby and Wellingborough.
- 3.2.141 Green Hill D is characterised by agricultural fields separated by hedgerows and scattered trees, with a more established tree belt along its western boundary. The land generally slopes gently down from the east to the west, where a stream (a tributary of Swanspool Brook) defines the boundary of Green Hill D. The elevation of Green Hill D ranges from approximately 100m to 120m AOD. Access to Green Hill D is provided by existing agricultural accesses from Highfield Road.

**Settlements**

- 3.2.142 The southern corner of Green Hill D lies immediately to the north of the village of Mears Ashby. Three farmsteads lie dispersed around Green Hill D, including The Grange, which features a relatively prominent water tower which can be seen along the length of Highfield Road.

**Roads**

- 3.2.143 Highfield Road covers the entire eastern boundary of Green Hill D, meeting Moonshine Gap and Wellingborough Road, the latter of which also briefly borders the northern boundary of Green Hill D.

**Public Rights of Way (PRoW)**

- 3.2.144 Footpath NN|TN|3#1 runs north-south from the southernmost point of Green Hill D, running directly through the centre of Green Hill D to its meeting point with Wellingborough Road. Hereon NN|TN|3 continues north to Hardwick, where it is redesignated at Footpath NN|TG|4.

**Airfields**

- 3.2.145 No airfields are located within or immediately border Green Hill D.

**Rivers**

- 3.2.146 There is an unnamed ordinary watercourse which is located along the western boundary of Green Hill D, flowing in a southerly direction, where it later becomes the main river Swanspool Brook approximately 2.6km south-east of Green Hill D.

**Historic designations****Conservation Areas**

- 3.2.147 Mears Ashby Conservation Area is located approximately 115m to the south-west of Green Hill D at its nearest point.

**Listed Buildings**

- 3.2.148 There is a cluster of 29 listed buildings at Mears Ashby, the nearest being the grade II listed Manor Farmhouse (NHLE 1040695), approximately 175m south-west of Green Hill D. These are all grade II listed buildings apart from the Church of All Saints (NHLE 1040692) and Mears Ashby Hall which are both grade II\*.

**Archaeological Features**

- 3.2.149 There are no Scheduled Monuments within the boundaries of or within 2km of Green Hill D.

**Landscape designations**

- 3.2.150 There are no Registered Parks and Gardens on or within 2km of Green Hill D. The closest Registered Park and Garden is Great Harrowden Hall located 4.2km northeast of Green Hill D. There are no other Registered Parks and Gardens are within 5km of Green Hill D.
- 3.2.151 There is no Ancient Woodland on Green Hill D.
- 3.2.152 The nearest block of Ancient Woodland is Sywell Wood (Ancient Replanted Woodland), which is located 770m northeast of Green Hill D. There is one block of Ancient Woodland within 2km of Green Hill D, Hardwick Wood (Ancient Replanted Woodland) which is located 2km northeast of Green Hill D.
- 3.2.153 There are a further two blocks of Ancient Woodland between 2km to 5km north of Green Hill D which include Withmale Park Wood (ancient replanted woodland) and Badsaddle Wood (ancient and semi-natural woodland).
- 3.2.154 Green Hill D is located within one NCA as defined by Natural England as NCA Profile: 89 Northamptonshire Vales (NE527).
- 3.2.155 Green Hill D is located at the southeastern edge of the NCA Profile: 89 Northamptonshire Vales and borders NCA Profile: 91 Yardley Whittlewood Ridge.
- 3.2.156 Green Hill D is located within LCT Profile: 5 Clay Plateau and LCA 5b Sywell Plateau, as defined by Northamptonshire Council Current Landscape Character Assessment 2010.
- 3.2.157 There are a further two LCT's located between 2km and 5km south of Green Hill D; LCT Profile: 18 Broad River Valley Floodplain; and LCT Profile: 4 Rolling Ironstone Valley Slopes.
- 3.2.158 These LCT's are broken down further as LCA and include; LCA Profile: 4b Moulton Slopes; LCA Profile: 4c Ecton and Earls Barton Slopes; LCA Profile: 4f Kettering and Wellingborough Slopes and LCA Profile: 18d The Nene - Billing Wharf to Woodford Mill.



## **Ecological designations**

### **Internationally Designated Sites**

- 3.2.159 The Upper Nene Valley Gravel Pits SPA and Ramsar site is approx. 6km east and southeast of Green Hill D. The globally important site comprises a chain of exhausted sand and gravel pits, extending for approx. 35km along the alluvial deposits of the River Nene floodplain running from Clifford Hill on the southern outskirts of Northampton, downstream to Thorpe Waterville north of the village of Thrapston. An extensive mosaic of wetland habitats is regularly used by over 20,000 wildfowl and wading birds and support major overwintering bird assemblages. Qualifying features of the designated site include bittern and golden plover (both Annex 1 species), in addition to gadwall (migratory species).

### **Nationally Designated Sites**

#### *Sites of Special Scientific Interest (SSSI)*

- 3.2.160 Hardwick Lodge Meadow SSSI is located 1.7km north-west of Green Hill D. This is a large area of diverse permanent pasture with an exceptionally rich and varied grassland flora that, in turn, supports uncommon invertebrates.
- 3.2.161 Badsaddle, Withmale Park and Bush Walk Woods SSSI is located approx. 2km north-west of Green Hill D. This is ancient coppice woodland with oak and ash on wet calcareous soils.

### **Locally Designated Sites**

#### *Local Wildlife Sites*

- 3.2.162 Sywell Reservoir and Country Park LWS is located 1.2km south of Green Hill D. The Country Park comprises reservoir and a mosaic of other habitats, including neutral grassland, scrub woodland and swamp edge habitat.
- 3.2.163 Vivians Covert LWS is located 1.4km northeast of Green Hill D, a small woodland in which at least seven ancient woodland indicators are present with the site considered a good candidate for improvements.
- 3.2.164 Park Farm Industrial Estate LWS is located 1.7km east of Green Hill D. Green Hill D contains a mosaic of grassland, scrub and woodland habitats.
- 3.2.165 Hardwick Wood LWS is approximately 1.8km north of Green Hill D and comprises an ancient woodland replanted with oak and spruce. At least 20 ancient woodland indicators and neutral grassland indicators were recorded on site.

## **Mineral designations**

- 3.2.166 There are no minerals safeguarding areas covering Green Hill D.

## **Flood Risk and Drainage Designations**

### *Fluvial Flood Risk*

- 3.2.167 There is an Unnamed Ordinary Watercourse located along the western boundary of Green Hill D, flowing in a south-westerly direction. Fluvial flooding could occur if the Ordinary Watercourse overtopped its banks during or following an extreme rainfall event.
- 3.2.168 The majority of Green Hill D is situated in Flood Zone 1 and therefore has less than a 1 in 1,000 annual probability of river or sea flooding. However, a limited area to the south-western boundary is identified as being in Flood Zone 3, associated with the Unnamed Ordinary Watercourse.
- 3.2.169 The EA Historical Flood Map indicates that Green Hill D has not historically flooded and neither has the area immediately surrounding it.

### *Surface Water Flood Risk*

- 3.2.170 The EA Flood Risk from Surface Water map indicates that Green Hill D ranges from a very low risk of surface water flooding (less than 0.1% annual probability) to low risk of surface water



flooding (between a 1% and 0.1% annual probability) to medium risk of surface water flooding (between a 3.3% and 1% annual probability) to high risk of surface water flooding (greater than 3.3% annual probability).

- 3.2.171 As describe in the fluvial section above, the surface water flooding extents largely match the courses of the and drainage ditches and ordinary watercourses.

### Green Hill E

#### Site areas

- 3.2.172 The Green Hill E site is approximately 308.1 ha in area.

#### Use

- 3.2.173 Green Hill E is predominantly in agricultural use. Small sections of Green Hill E include woodland, whilst a gas pumping station is present off Wilby Road within the eastern side of Green Hill E.

#### Features

- 3.2.174 Green Hill E is the largest of the Sites. It is situated 300m to the east of Green Hill D. It spans a distance of 3.2km from its northernmost to southernmost points. The Green Hill E is located within Mears Ashby and Wilby parishes in North Northamptonshire.

- 3.2.175 Green Hill E is characterised by agricultural fields separated by hedgerows and scattered trees. A small number of woodland parcels are present within and adjacent to Green Hill E. These include Wilby Spinney along the eastern boundary of Green Hill E. The topography of Green Hill E is defined by a central plateau bordered on both the east and west by small but relatively steep valleys which feed Swanspool Brook. As a result, the elevation of the site ranges from approximately 75m to 115m AOD. Green Hill E benefits from a number of existing agricultural access from the adjacent roads.

- 3.2.176 An 11kV overhead power line (OHL) crosses east-west through the centre of Green Hill E to the south of and parallel to Wilby Road.

#### Settlements

- 3.2.177 Green Hill E is located between a number of settlements. Mears Ashby is located immediately to the west, while Earls Barton is located no more than 500m from the southern boundary of Green Hill E. To the east of Green Hill E are the village of Wilby (1.3km) and the western edge of the town of Wellingborough (2km). There are furthermore a small number of isolated or dispersed properties near to Green Hill E, including The Grange, and Wilby Hall.

- 3.2.178 There is a gas pumping station on the on the south side of Wilby Road, which is surrounded by the eastern side of Green Hill E. This complex also contains a visually prominent transmission tower.

#### Roads

- 3.2.179 Wilby Road runs through the middle of Green Hill E from east to west. The road connects the village of Mears Ashby to Wellingborough. The road name changes to Mears Ashby Road where it crosses into the parish of Wilby.

- 3.2.180 To the west of Green Hill E, there is a separate road also named Mears Ashby Road. This road originates from the western edge of Mears Ashby and runs south to Earls Barton. This road runs down the western boundary of Green Hill E. Mears Ashby Road meets the A4500 Main Road, which runs near to the southern boundary of Green Hill E. The A4500 is a partially-dualed secondary A-route between Wellingborough and Northampton via Wilby and Earls Barton.

#### Public Rights of Way (PRoW)

- 3.2.181 Footpath NN|TN|1 is routed through Green Hill E extending from Mears Ashby Road heading north to the village of Mears Ashby. Together with the adjacent Footpath TN2, these provide foot access from Mears Ashby to the nearby Sywell Country Park and Reservoir. These footpaths also form part of the Northamptonshire Round long-distance route. Footpath TU3/UL23/UL24 is



located within Green Hill E at its northern most point, linking Wilby Hall to Cromwell Spinney on the outskirts of Wellingborough. A dead-end byway TN10 runs for only 200m from Mears Ashby towards Green Hill E but terminated short of the Green Hill E boundary.

#### **Airfields**

- 3.2.182 The William Pitt Airstrip at The Grange is a private grass airstrip immediately to the west of Green Hill E.
- 3.2.183 Sywell Aerodrome is situated 2km north-west and Hold Farm Airstrip lies approximately 4.9km north of Green Hill E.

#### **Rivers**

- 3.2.184 There is an Unnamed Ordinary Watercourse which flows through Green Hill E southwards along the western boundary and then follows around to the southern boundary in an easterly to north easterly direction. A second Unnamed Ordinary Watercourse flows along the whole eastern boundary of Green Hill E before converging with the first Unnamed Ordinary Watercourse 130m south-east of Green Hill E. Once converged, the watercourse becomes Swanspool Brook as it passes under the A4500 Main Road and makes its way past the village of Wilby into Wellingborough where it adjoins the River Nene.

#### **Historic designations**

##### **Conservation Areas**

- 3.2.185 Mears Ashby Conservation Area is located approximately 45m to the south-west of Green Hill E at its nearest point.
- 3.2.186 Earls Barton Conservation Area is located approximately 700m to the south of Green Hill E.

##### **Listed Buildings**

- 3.2.187 There is a cluster of 29 listed buildings at the village of Mears Ashby, the nearest being the grade II listed The Old Farmhouse (NHLE 1371722) approximately 80m west of Green Hill E, and the grade II listed 5, Duchess End (NHLE 1191195) approximately 85m south of Green Hill E. These are all grade II listed buildings apart from the Church of All Saints (NHLE 1040692) and Mears Ashby Hall which are both grade II\*.
- 3.2.188 There is a cluster of 35 listed buildings at the village of Earls Barton, the nearest being the grade II listed Rose Cottage (NHLE 171677), and the grade I listed Church of All Saints (NHLE 1294226) approximately 800m and 900m to the south of Green Hill E respectively. Apart from the latter, all of these are grade II listed buildings.
- 3.2.189 Sandpit Barn (NHLE 1040780) approximately 450m to the east of Green Hill E is a grade II listed building.

##### **Archaeological Features**

- 3.2.190 The Earls Barton motte castle Scheduled Monument (NHLE 1009510) is located approximately 860m to the south of Green Hill E.

##### **Landscape designations**

- 3.2.191 There are no Registered Parks and Gardens on or within 2km of Green Hill E. The closest Registered Park and Garden is the Castle Ashby Estate which is located 3.6km south of Green Hill E. There are no other Registered Parks and Gardens are within 5km of Green Hill E.
- 3.2.192 There is no Ancient Woodland on Green Hill E.
- 3.2.193 The nearest block of Ancient Woodland is Sywell Wood (ancient replanted woodland), which is located 1.5km northeast of Green Hill E. There are two blocks of Ancient Woodland between 2km and 5km of Green Hill E which include Hardwick Wood (ancient replanted woodland) which is located 2.9km northeast of Green Hill E and Withmale Park Wood (ancient replanted woodland) located 4km north of Green Hill E.



- 3.2.194 Green Hill E is located within one NCA as defined by Natural England as NCA Profile: 89 Northamptonshire Vales (NE527).
- 3.2.195 Green Hill E is located at the southeastern edge of the NCA Profile: 89 Northamptonshire Vales and borders NCA Profile: 91 Yardley Whittlewood Ridge.
- 3.2.196 Green Hill E is located within two LCTs, LCT Profile: 5 Clay Plateau; and LCT Profile: 4 Rolling Ironstone Valley Slopes, as defined by Northamptonshire Council Current Landscape Character Assessment 2010. These are broken down further into LCAs, LCA Profile: 5b Sywell Plateau and LCA Profile: 4c Ecton and Earls Barton Slopes.
- 3.2.197 There are a further two LCT's located between 2km and 5km south of Green Hill E; LCT Profile: 18 Broad River Valley Floodplain; and LCT Profile 12 Limestone Valley Slopes.
- 3.2.198 These are broken down further into LCAs and include; LCA Profile: 4b Moulton Slopes; LCA Profile: 4e Pitsford Water; LCA Profile: 4f Kettering and Wellingborough Slopes; LCA Profile: 12a Wollaston to Irchester and LCA Profile: 18d The Nene - Billing Wharf to Woodford Mill.

### **Ecological designations**

#### **Internationally Designated Sites**

- 3.2.199 The Upper Nene Valley Gravel Pits SPA and Ramsar site is located 2.6km south-east of Green Hill E. The globally important designated site comprises a chain of exhausted sand and gravel pits, extending for approx. 35km along the alluvial deposits of the River Nene floodplain running from Clifford Hill on the southern outskirts of Northampton, downstream to Thorpe Waterville north of the village of Thrapston. An extensive mosaic of wetland habitats is regularly used by over 20,000 wildfowl and wading birds and support major overwintering bird assemblages. Qualifying features of the site include bittern and golden plover (both Annex 1 species), in addition to gadwall (migratory species).

#### **Nationally Designated Sites**

##### *Sites of Special Scientific Interest (SSSI)*

- 3.2.200 Hardwick Lodge Meadow SSSI is located 2.5km north-west of Green Hill E. This is a large area of diverse permanent pasture with an exceptionally rich and varied grassland flora that, in turn, supports uncommon invertebrates.
- 3.2.201 Wollaston Meadows SSSI is located 4km east of Green Hill E. This SSSI is on the banks of the River Nene and is composed of two species-rich hay meadows with overgrown hedgerows and ditch habitats.

#### **Locally Designated Sites**

##### *Local Wildlife Sites*

- 3.2.202 Sywell Reservoir and Country Park LWS is located 300m west of Green Hill E. The Country Park comprises reservoir and a mosaic of other habitats, including neutral grassland, scrub woodland and swamp edge habitat.
- 3.2.203 Wilby Meadows Stream LWS is located 700m east of Green Hill E. This is a section of the Wilby Brook that flows through farmland habitats connected to the watercourses bounding the south of Green Hill E and is designated for its water vole colony.
- 3.2.204 Park Farm Industrial Estate LWS is located 1km north-east of Green Hill E. The site contains a mosaic of grassland, scrub and woodland habitats.
- 3.2.205 Vivians Covert LWS is located 1.3km north-east of Green Hill E, a small woodland in which at least seven ancient woodland indicators are present.
- 3.2.206 Wilby Bay Meadows LWS is located 1.9km to the east of Green Hill E and comprised a neutral grassland lowland meadow. Although poor management has comprised the LWS site, species-rich grassland patches and neutral indicator species remain.

**Mineral designations**

3.2.207 There are no minerals safeguarding areas covering Green Hill E.

**Flood Risk and Drainage Designations****Fluvial Flood Risk**

3.2.208 A network of land drainage ditches is located within Green Hill E. Flows within the ditches are expected to flow in a south-westerly direction based on local topography. All the land drains are ordinary watercourses.

3.2.209 The majority of Green Hill E is situated in Flood Zone 1. However, an area to the western boundary, southern boundary and the south-eastern boundary are within the extents of Flood Zone 3. The EA 'Historical Flood Map' indicates that Green Hill E has not historically flooded and neither has the area immediately surrounding it.

**Surface Water Flood Risk**

3.2.210 The EA Flood Risk from Surface Water map indicates that Green Hill E ranges from a very low risk of surface water flooding (less than 0.1% annual probability) to low risk of surface water flooding (between a 1% and 0.1% annual probability) to medium risk of surface water flooding (between a 3.3% and 1% annual probability) to high risk of surface water flooding (greater than 3.3% annual probability).

3.2.211 As described in the fluvial section above, the surface water flooding extents largely match the courses of the land drainage ditches and ordinary watercourses.

**Green Hill F****Site areas**

3.2.212 The Green Hill F site is approximately 291.2 ha in area.

**Use**

3.2.213 The entirety of Green Hill F is in agricultural use.

**Features**

3.2.214 Green Hill F consists of agricultural fields and is located in the parishes of Easton Maudit and Bozeat. Green Hill F lies entirely within North Northamptonshire. The northwestern boundary of Green Hill F follows the parish boundary of Grendon.

3.2.215 The shape of Green Hill F is irregular. The largest extent of Green Hill F is approximately 3.8km from its northernmost to southernmost points. Green Hill F is characterised by irregularly shaped and sized agricultural fields bounded by hedgerows and few scattered trees. The topography of the area is characterised by gently rolling hills separated by small streams. Green Hill F generally slopes up towards the east and to the south. The elevation of Green Hill F ranges from approximately 55m to 105m AOD. Green Hill F benefits from a number of existing agricultural access from the adjacent roads.

3.2.216 A number of overhead electricity transmission lines cross Green Hill F. In the north of Green Hill F, a 132kV OHL crosses the northernmost field northwest to southeast, passing to the north of both the nearby villages of Grendon and Bozeat. A 400kV OHL briefly crosses over the southernmost corner of Green Hill F, although no pylons are situated within the site boundary.

**Settlements**

3.2.217 Green Hill F "wraps" around the north, east and south of the village of Easton Maudit. Green Hill F is located less than 300m west of the village of Bozeat, being separated by the A509. A small number of dispersed properties lie within close proximity of Green Hill F boundary including Slype House, Oakfield, Home Farm, and Low Farm.



### **Roads**

- 3.2.218 The most western field of Green Hill F is separated from the rest of Green Hill F by Grendon Road, which connects Grendon to Easton Maudit. This route continues as Easton Lane, running east-west between Easton Maudit and Bozeat, once again crossing Green Hill F between the villages. The A509 runs to the east of Green Hill F and in three distinct places borders Green Hill F.

### **Public Rights of Way (PRoW)**

- 3.2.219 The area around Green Hill F hosts a network of PRoWs. A number of these cross through Green Hill F in two distinct areas. In the north, Footpaths NN|TA|1, NN|TA|3, NN|TA|4, NN|TD|2, NN|TD|3, NN|TF|5, and NN|TF|11 all cross Green Hill F. Some of these references refer to the same route where they cross into different parishes (namely Bozeat, Easton Maudit, and Grendon).
- 3.2.220 Footpath NN|TA|4 enters Green Hill F at the southern point of Field FF6 before turning northeast and exiting Green Hill F through FF4. Footpath NN|TA|1 and NN|TF|11 branch off NN|TA|4 in the centre of Green Hill F and continues north then west towards Lower End, Grendon. Footpath NN|TD|3 also meets NN|TA|4 in the centre of Green Hill F towards Easton Maudit village. Footpaths NN|TA|3, NN|TD|2 and NN|TF|5 provide a direct walking route between Grendon and Bozeat, and crosses through Green Hill F through fields FF8, FF11 and FF19. This path also intersects Footpath NN|TD|3.
- 3.2.221 In the southern portion of Green Hill F, Footpath NN|TD|5 cuts in a consistent direction from Oakfield, Easton Maudit towards Lavendon. NN|TD|5 is met by NN|TD|7 which tracks west towards Yardley Hastings. Finally, Bridleway NN|TD|8 crosses through the site at field FF28 into Horn Wood, before crossing Green Hill F again at Field FF33, where it crosses the route of Footpath NN|TD|5. The bridleway thereafter goes southwest towards Warrington via Old Pastures woodland.

### **Airfields**

- 3.2.222 Easton Maudit Airfield is a private grass strip associated with Home Farm, immediately adjacent to the boundary of Green Hill F. The runway is situated no less than 50 meters north-northwest of fields FF29 and FF30. Due to the runway orientation and the shape of Green Hill F, approach to the runway from either direction involves flying over Green Hill F.
- 3.2.223 Tower Farm Airstrip lies approximately 3.2km northeast of Green Hill F.

### **Rivers**

- 3.2.224 There is a network of land drainage ditches located within Green Hill F, as well as three tributaries of an unnamed main river which run through the centre in a northerly direction based on local topography towards the confluence of Grendon Brook (to the north of Green Hill F), then gradually making its way to the River Nene.

### **Historic designations**

#### **Conservation Areas**

- 3.2.225 Easton Maudit Conservation Area is located approximately 10m east of Green Hill F at its nearest point.
- 3.2.226 Grendon Conservation Area is located approximately 850m to the north-west of Green Hill F.

#### **Listed Buildings**

- 3.2.227 There is a cluster of 13 listed buildings in the village of Easton Maudit, the nearest being the grade II listed The Old Vicarage (NHLE 1040782) approximately 150m west of Green Hill F. These are all grade II listed buildings apart from the Church of St Peter and St Paul (NHLE 1189610) which is grade I, and 22 High Street (NHLE 1040784) which is grade II\*. To the south of the village, Home Farmhouse (NHLE 1040785) is approximately 25m to the north-west of Green Hill F at its nearest point. This Grade II Listed Building has an incorrect grid reference in its NHLE entry which



places it approximately 620m further to the north, towards the centre of the village of Eastern Maudit.

- 3.2.228 There is a cluster of 29 listed buildings in Grendon, the nearest being the grade II listed 29, Chequers Lane (NHLE 1040738) approximately 700m north-west of Green Hill F. These are all grade II listed buildings apart from the Church of St Mary (NHLE 1190552) and Grendon Hall (NHLE 1040746) which are grade II\*.
- 3.2.229 There is a cluster of 16 listed buildings in the village of Bozeat, the nearest being the grade II listed Bozeat War Memorial (NHLE 1428093) approximately 350m to the east of Green Hill F. These are all grade II listed buildings apart from the Church of St Mary (NHLE 1040795 which is grade I.
- 3.2.230 There is a cluster of four grade II listed buildings at the eastern edge of Castle Ashby Park, the nearest comprising East or Nevitts Lodge (NHLE 1189903), Left Gate pier at East or Nevitt's Lodge (NHLE 1189913) and Right Gate pier at East or Nevitt's Lodge (NHLE 1041611) all approximately 900m to the west of Green Hill F.
- 3.2.231 Low Farmhouse (NHLE 1371681) is approximately 110m to the south-west of Green Hill F at its nearest point and is a grade II listed building.
- 3.2.232 Greenfield Lodge (NHLE 1040669) is approximately 635m to the north-east of Green Hill F and is a grade II listed building.

#### **Archaeological Features**

- 3.2.233 Aerial photography indicates that Easton Lodge Scheduled Monument (NHLE 1003876) is approximately 25m to the south of Green Hill F.

#### **Registered Parks and Gardens**

- 3.2.234 There are no Registered Parks and Gardens on Green Hill F. The closest Registered Park and Garden is the Castle Ashby Grade I Registered Park and Garden (NHLE 1000385) is located 750m west. Other Registered Parks and Gardens within 5km include Hinwick House located 3km northeast of Green Hill F and Hinwick Hall located 3.4km northeast.

#### **Landscape designations**

- 3.2.235 There is no Ancient Woodland on Green Hill F.
- 3.2.236 The nearest block of Ancient Woodland is Horn Wood (ancient and semi-natural woodland), which is adjacent to the southeastern extent of Green Hill F.
- 3.2.237 There are a further nine blocks of Ancient Woodland within 2km of Green Hill F including; Cold Oak Copse (ancient replanted woodland) to the west; Nun Wood (ancient and semi-natural Woodland) to the south east; Three Shrine Wood (ancient and semi-natural woodland) to the south east; The Slipe (ancient and semi-natural woodland) to the south east; Templegrove Spiney (ancient and semi-natural woodland) to the east; and four smaller Spinneys which are unnamed blocks of Ancient and Semi-Natural Woodland to the south.
- 3.2.238 Green Hill F is located within one NCA as defined by Natural England as NCA Profile: 54 Yardley-Whittlewood Ridge (NE501).
- 3.2.239 The site is located at the northern portion of the NCA Profile: 91 Yardley-Whittlewood Ridge. A further two NCA's are located within 2km of Green Hill F and include NCA Profile: 89 Northamptonshire Vales to the north and NCA Profile: 88 Bedfordshire and Cambridgeshire Claylands to the south.
- 3.2.240 Green Hill F is located within three LCTs, LCT Profile: 12 Limestone Valley Slopes; LCT Profile: 6 Undulating Claylands and LCT Profile: 8 Low Wooded Clay Ridge, as defined by Northamptonshire Council Current Landscape Character Assessment 2010.
- 3.2.241 These are broken down further into LCAs and include; LCA Profile: 12a Wollaston to Irchester; LCA Profile: 6c Bozeat Claylands; LCA Profile: 8b Salcey Forest and Yardley Chase.



3.2.242 There are a further eight LCT's located between 2km and 5km south of Green Hill F; LCT Profile: 4 Rolling Ironstone Valley Slopes; LCT Profile: 18 Broad River Valley Floodplain; LCT Profile: 1 Clay Farmland; LCT Profile: 2 Wooded Wolds; LCT Profile: 3 Limestone Valleys; LCT Profile: 1 Clay Plateau Farmland; LCT Profile: 2 River Valley and LCT Profile: 5 Undulating Clay Farmland.

3.2.243 These are broken down further into LCAs and include; LCA Profile: 18d The Nene - Billing Wharf to Woodford Mill; LCA Profile: 4c Ecton and Earls Barton Slopes; LCA Profile: 6b Hackleton Claylands; LCA Profile: 2A Hinwick; LCA Profile: 1B Riseley; LCA Profile: 3A Harrold - Great Ouse; LCA Profile: 1a Yardley Clay Plateau Farmland; and LCA Profile: 5a Ouse Northern Undulating Valley Slopes.

### **Ecological designations**

#### **Internationally Designated Sites**

3.2.244 The Upper Nene Valley Gravel Pits SPA and Ramsar site is located approx. 2km north-west of Green Hill F. The globally important site comprises a chain of exhausted sand and gravel pits, extending for approx. 35km along the alluvial deposits of the River Nene floodplain running from Clifford Hill on the southern outskirts of Northampton, downstream to Thorpe Waterville north of Thrapston. An extensive mosaic of wetland habitats is regularly used by over 20,000 wildfowl and wading birds and support major overwintering bird assemblages. Qualifying features of the designated site include bittern and golden plover (both Annex 1 species), in addition to gadwall (migratory species).

#### **Nationally Designated Sites**

##### *Sites of Special Scientific Interest (SSSI)*

3.2.245 Bozeat Meadow SSSI is located approximately 70m east of Green Hill F, beyond the A509. This protected site comprises unimproved grassland on well drained clay and loam soils. Diverse botanical communities are present across medieval ridge and furrows.

3.2.246 Dungee Corner Meadow SSSI is located 2.2km east of Green Hill F. The well drained hay meadow on boulder clay is traditionally managed, including no use of artificial fertilisers or herbicides, and with diverse flora. A population of locally rare green-winged orchids are also present.

3.2.247 Odell Great Wood SSSI is located 4.8km east of Green Hill F. This is a large wet ash-maple woodland with exceptionally rich flora. The extensive and well-developed system of rides is another important feature, adding greatly to the value of the site for flowering plants, butterflies and other invertebrates.

3.2.248 Yardley Chase SSSI is approx. 3.8km south-west of Green Hill F. Military use of the site has resulted in a long absence of intensive agriculture, supporting the retention of diverse semi-natural habitats (woodland and unimproved grassland) present and increased value for invertebrates. This includes 30 breeding butterfly species records.

3.2.249 Wollaston Meadows SSSI is located approximately 4km north-east of Green Hill F. This site on the banks of the River Nene is composed of two species-rich hay meadows with overgrown hedgerows and ditch habitats.

#### **Locally Designated Sites**

##### *Local Nature Reserves*

3.2.250 Summer Leys LNR is located 2.7km north of Green Hill F. This is an excellent nature reserve easily qualifying as a LWS with fen, swamp and marsh indicators recorded within the gravel pits and neutral grassland indicators in the surrounding grasslands.

##### *County Wildlife Sites*

3.2.251 Nun Wood County Wildlife Sites (CWS) is located 1.2km north-west of Green Hill F. This is a broadleaved ancient woodland, neutral grassland and a pond, which is directly connected to Threeshire Wood.



- 3.2.252 Templegrove Spinney CWS is located 1.8km to the west of Green Hill F. This is a broadleaved, semi-natural, ancient woodland.
- 3.2.253 The Slipe CWS is located 1.2km east of Green Hill F. This is a broadleaved, semi-natural, ancient woodland.
- Local Wildlife Sites*
- 3.2.254 Bozeat Cemetery LWS is located 280m to the east of Green Hill F. This cemetery contains areas of species rich meadow.
- 3.2.255 Bozeat Glebe Meadow LWS is located 510m to the east of Green Hill F. This is a former hay meadow that has still retained a decent meadow flora, in particular on the slopes.
- 3.2.256 Bozeat Verge LWS is located 15m to the south of Green Hill F. This is a species rich wildflower verge formed on the road cutting of the A509 to the west of Bozeat.
- 3.2.257 Bozeat Wood LWS is located 620m to the south-east of Green Hill F. This is a small oak-ash woodland, possibly ancient in origin, with an interesting ground flora.
- 3.2.258 Castle Ashby Parkland LWS is located 1.3km west of Green Hill F. Situated centrally within the Castle Ashby parkland, this woodland extends between the church, ponds and boathouse. A large variety of parkland and semi-natural species, and a largely semi-natural ground flora but with several ancient woodland species have been recorded, alongside some unusual parkland additions.
- 3.2.259 Castle Ashby Woodland LWS is located 2km north-west of Green Hill F. This area of old woodland, probably originating from the establishment of Castle Ashby parkland, is well-established and supports some unusual flora and range of invertebrates.
- 3.2.260 Cold Oak Copse LWS is located 310m to the west of Green Hill F. This site is listed on the Northants Ancient Wood inventory, with six ancient woodland indicators recorded.
- 3.2.261 Grendon Quarter Pond LWS is located 1.5km north-west of Green Hill F and comprises a large fishing lake with a fringe of marginal vegetation and a surround of tall trees.
- 3.2.262 Horn Wood LWS is adjacent to the south-eastern boundary of Green Hill F. This site qualifies as a LWS with 14 ancient woodland indicators recorded.
- 3.2.263 Long Furlong and Old Pastures LWS is located 490m to the south-west of Green Hill F. This is a large area of replanted ancient woodland, with 16 ancient woodland indicators recorded.
- 3.2.264 Menagerie Pond LWS is located 1.2km west of Green Hill F. Areas of thick fringing emergent vegetation and occasional aquatic plants support diverse invertebrate communities associate with the lake situated within Castle Ashby parkland.
- 3.2.265 Par Pond LWS is located 1.1km west of Green Hill F. This is a long lake on the edge of Castle Ashby Park, well-vegetated with emergent and marginal vegetation and surrounded by parkland habitats.
- 3.2.266 Scotland Pond LWS is located 1.7km west of Green Hill F. This is a large angling lake fringed with marginal and emergent vegetation.
- 3.2.267 The Basin LWS is located 1.9km north-west of Green Hill F. This is a narrow lake within the Castle Ashby Estate, with a good cover of emergent and marginal vegetation providing habitat for birds and amphibians.
- 3.2.268 Threshire Wood LWS is located 1.6km south-east of Green Hill F. This is an ancient semi-natural woodland with a good range of ground flora species.
- 3.2.269 Warren Ponds LWS is located 1.3km to the west of Green Hill F. These ponds extend the habitat of Par Pond LWS and provide cover for birds and amphibians. Some of the ponds within Warren Ponds LWS are of significance as an extension to the wetland habitat corridor network.
- 3.2.270 Yardley Brook Field LWS is located 590m to the west of Green Hill F. This field has areas of species rich calcareous grassland associated with the old earthworks.



### **Geological designations**

- 3.2.271 Green Hill F lies within a minerals safeguarding area (sand and gravel) as defined in the adopted Northamptonshire Minerals and Waste Local Plan (2017). In addition, Green Hill F abuts an allocation for future mineral extraction associated with Bozeat Quarry. Green Hill F is within a Minerals Consultation Zone associated with the allocation for future mineral extraction.

### **Flood Risk and Drainage Designations**

#### **Fluvial Flood Risk**

- 3.2.272 A network of land drainage ditches is located within Green Hill F, as well as three tributaries of an unnamed main river flows within the ditches are expected to flow in a northerly direction based on local topography. All the land drains are ordinary watercourses and are therefore the responsibility of the LLFA to maintain, whereas the main rivers are the responsibility of the EA to maintain.
- 3.2.273 The majority of Green Hill F is situated in Flood Zone 1. However, the northern and north-western boundary are shown to be within Flood Zone 3, as well as sections of the unnamed main river tributaries within Green Hill F are within the extents of Flood Zone 3. The EA Historical Flood Map indicates that Green Hill F has historically flooded in the north, due to flooding at the River Nene in March 1947.
- 3.2.274 As areas of Green Hill F are within Zone 3 (High risk) of flooding. EA modelling can detail the flood risk depths and extents from the River Nene; however, this data response is currently awaited. A comprehensive hydraulic modelling exercise is ongoing to refine the flood extents and depths and inform the masterplanning exercise, this will be included within the relevant ES chapter.

#### **Surface Water Flood Risk**

- 3.2.275 The EA Flood Risk from Surface Water map indicates that the site ranges from a very low risk of surface water flooding (less than 0.1% annual probability) to low risk of surface water flooding (between a 1% and 0.1% annual probability) to medium risk of surface water flooding (between a 3.3% and 1% annual probability) to high risk of surface water flooding (greater than 3.3% annual probability).
- 3.2.276 As describe in the fluvial section above, the surface water flooding extents largely match the courses of the course of land drainage ditches and ordinary watercourses.

### **Green Hill G**

#### **Site areas**

- 3.2.277 The Green Hill G site is approximately 170 ha in area.

#### **Use**

- 3.2.278 The entirety of Green Hill G is in agricultural use.

#### **Features**

- 3.2.279 Green Hill G consists of agricultural fields and is located in the parishes of Warrington and Lavendon. Green Hill G lies entirely within Milton Keynes. The northeast corner of Green Hill G is immediately adjacent to the tripoint of North Northamptonshire, Milton Keynes, and Bedford Borough.
- 3.2.280 Green Hill G is characterised by relatively open agricultural fields separated by some hedgerows and few scattered trees. It is however bordered by more substantial woodland to the northeast called Threshire Wood. The land generally slopes gently down from the north to the south, ranging from approximately 70m to 105m AOD. A shallow valley runs through the centre of Green Hill G formed by a small stream. Green Hill G benefits from a well-defined main access from the A428.
- 3.2.281 A 400kV OHL crosses northwest-southeast across the southern half of Green Hill G.



### **Settlements**

- 3.2.282 The village of Lavendon is approximately 500m southeast from Green Hill G, while the hamlet of Warrington consists of a small number of loosely dispersed properties to the west and south. The village of Bozeat is situated 2.4km north and Olney is situated approximately 2.6km to the southwest of Green Hill G. In addition to a small number of isolated properties, including Northey Farm, which is situated immediately to the northwest, there is a petrol service station to the southwest, accessible via the Warrington Toll Bar Roundabout.

### **Roads**

- 3.2.283 Green Hill G is bordered to the west by the A509 London Road, and to the south by the A428 Northampton Road. The A509 and the A428 meet at Warrington Toll Bar Roundabout. moving southeast to the Village of Lavendon. These routes for major links between urban centres in the area: the A428 links Bedford to Northampton, whilst the A509 links Wellingborough to Milton Keynes. The limited access Tinick Lane comes off the A428 into Green Hill G some 750m along its southern boundary.

### **Public Rights of Way (PRoW)**

- 3.2.284 Bridleway MK|Lavendon|002 and Bridleway MK|Lavendon|015#2 form a continuous north-south route along most of the eastern boundary of Green Hill G, including the length of Tinick Lane. The bridleway continues in both directions beyond Green Hill G towards Hinwick to the north, and Clifton Reynes to the south. This route forms part of the Three Shires Way. Bridleway MK|Lavendon|014 links Tinick Lane to Castle Road along the northern boundary of field GF13, while Bridleway MK|Lavendon|004 links Bridleway MK|Lavendon|002 to Castle Road via the north of field GF9. Originating from Northey Farm, Footpath MK|Lavendon|005 cuts through the centre of Green Hill G from the northwest corner to the centre-east of Green Hill G where it meets Bridleway MK|Lavendon|002 and Bridleway MK|Lavendon|015#2. This section forms part of the Milton Keynes Boundary Walk. The footpath continues on as Footpath MK|Lavendon|001 into the village of Lavendon.

### **Rivers**

- 3.2.285 There is a network of land drains (ordinary watercourses) which join and flow southwards through the centre of Green Hill G, the land drains become a more rational watercourse flowing through Lavendon to the south and ultimately discharges to the River Great Ouse (main river).

### **Airfields**

- 3.2.286 Easton Maudit Airfield lies approximately 2.4km from the boundary of Green Hill G. No other airstrips are located within 5km of Green Hill G.

### **Historic designations**

#### **Conservation Areas**

- 3.2.287 The Lavendon Conservation Area is located approximately 575m to the southeast of Green Hill G. There are no other Conservation Areas within 2km.

#### **Listed Buildings**

- 3.2.288 There is a cluster of 13 listed buildings with the village of Lavendon, all of which are located within the Conservation Area, the nearest being at 33 Northampton Road (NHLE 1212621) which is located approximately 600m to the south-east of Green Hill G. These are all grade II listed buildings apart from the Church of St Peter and St Michael (NHLE 1212619) which is grade I.
- 3.2.289 There is also a cluster of five grade II listed buildings at Lavendon Grange, the nearest being Lavendon Grange itself which is approximately 845m to the southeast of Green Hill G.
- 3.2.290 Home Farmhouse (NHLE 128918) is approximately 700m to the southwest of Green Hill G and is a grade II Listed Building.



- 3.2.291 Warrington House Farm (NHLE 1289233) is located approximately 800m to the south-west of Green Hill G and is a grade II listed building.

#### **Archaeological Features**

- 3.2.292 The Lavendon Castle: a motte and bailey and associated enclosures at Castle Farm Scheduled Monument (NHLE 1009542) is located approximately 300m to the east of Green Hill G.
- 3.2.293 The Bury: a ringwork and associated earthworks 100m north of Lavendon Church Scheduled Monument (NHLE 1011295) is located approximately 600m to the south-east of Green Hill G.
- 3.2.294 The Lavendon Abbey: the site of a Premonstratensian abbey, fishponds and field system at Lavendon Grange Scheduled Monument (NHLE 1011309) is located approximately 550m to the south of Green Hill G.

#### **Registered Parks and Gardens**

- 3.2.295 There are no Registered Parks and Gardens within 2km of Green Hill G, the nearest being Historic Park and Garden to Turvey House (NHLE 1431122) which is approximately 2.6km to the south-east and registered at grade II, and Castle Ashby (NHLE 100385) which is located approximately 4.3km to the northeast and which is registered as Grade I listed.

#### **Landscape Designations**

- 3.2.296 There is no Ancient Woodland on Green Hill G.
- 3.2.297 The northern extent of the eastern boundary of Green Hill G is directly bordered by two blocks of Ancient Woodland which include Three Shire Wood and Nun Wood.
- 3.2.298 There are a further eight blocks of Ancient Woodland within 2km of Green Hill G. The closest of which include Barsley Spinney located 15m west of Green Hill G, Broadlane Spinney, Nuniron Spinney and Newland Spinney located between 400 and 800m west of Green Hill G. Other larger blocks of Ancient Woodland within 2km include, the Slipe located 500m to the north, Lavendon Wood located 720m east and Snip Wood located 1.2km southeast of Green Hill G.
- 3.2.299 Green Hill G is located within two NCAs as defined by Natural England as NCA Profile: 91 Yardley-Whittlewood Ridge (NE501) and NCA Profile: 88 Bedfordshire and Cambridgeshire Claylands (NE555).
- 3.2.300 Green Hill G is located within two LCTs, LCT Profile: 1 Clay Plateau Farmland and LCT Profile: 5 Undulating Clay Farmland, as defined by Northamptonshire Council Current Landscape Character Assessment 2010.
- 3.2.301 These are broken down further into LCAs and include; LCA Profile: 1a Yardley Clay Plateau Farmland; LCA Profile: 5a Ouse Northern Undulating Valley Slopes.
- 3.2.302 There are a further eight LCT's located between 2km and 5km south of Green Hill G; LCT Profile: 6 Undulating Claylands; LCT Profile: 8 Low Wooded Clay Ridge; LCT Profile: 12 Limestone Valley Slopes; LCT Profile: 1 Clay Farmland; LCT Profile: LCT 2 Wooded Wolds; LCT Profile: 3 Limestone Valleys; LCT Profile: 2 River Valley and LCT Profile: 5 Undulating Clay Farmland.
- 3.2.303 These are broken down further into LCAs and include; LCA Profile: 6b Hackleton Claylands; LCA Profile: 6c Bozeat Claylands; LCA Profile: 8b Salcey Forest and Yardley Chase; LCA Profile: 12a Wollaston to Irchester; LCA Profile: 1A Cranfield to Stagsden; LCA Profile: 2A Hinwick; LCA Profile: 2B Pavenham; LCA Profile: 3A Harrold - Great Ouse; LCA Profile: 2b Ouse Rural River Valley; and LCA Profile: 5b Ouse Southern Undulating Valley Slopes.

#### **Ecological Designations**

##### **Internationally Designated Sites**

- 3.2.304 The Upper Nene Valley Gravel Pits SPA and Ramsar site is located approx. 6.2km north of Green Hill G. The globally important site comprises a chain of exhausted sand and gravel pits, extending for approx. 35km along the alluvial deposits of the River Nene floodplain running from Clifford Hill on the southern outskirts of Northampton, downstream to Thorpe Waterville north of Thrapston.



An extensive mosaic of wetland habitats is regularly used by over 20,000 wildfowl and wading birds and support major overwintering bird assemblages. Qualifying features of the designated site include bittern and golden plover (both Annex 1 species), in addition to gadwall (migratory species).

### **Nationally Designated Sites**

#### *Sites of Special Scientific Interest (SSSI)*

- 3.2.305 Bozeat Meadow SSSI is located 2.9km north of Green Hill G. This protected site comprises unimproved grassland on well drained clay and loam soils. Diverse botanical communities are present across medieval ridge and furrows.
- 3.2.306 Dungee Corner Meadow SSSI is located 4.2km north-east of Green Hill G. The well drained hay meadow on boulder clay is traditionally managed, including no use of artificial fertilisers or herbicides, and with diverse flora. A population of locally rare green-winged orchids are also present.
- 3.2.307 Yardley Chase SSSI is approx. 3.8km west of Green Hill G. Military use of the SSSI site has resulted in a long absence of intensive agriculture, supporting the retention of diverse semi-natural habitats (woodland and unimproved grassland) present and increased value for invertebrates. This includes 30 breeding butterfly species records.

### **Locally Designated Sites**

#### *Local Nature Reserves*

- 3.2.308 Harrold Odell Country Park LNR is located 4.5km to the north-east of Green Hill G. This site is on the edge of the River Ouse, and contains two lakes, seasonally flooded woodland, osier beds and water meadows.

#### *County Wildlife Sites*

- 3.2.309 Nun Wood County Wildlife Site is located adjacent to the north-eastern boundary of Green Hill G. This is a broadleaved ancient woodland, neutral grassland and a pond, which is directly connected to Threeshire Wood.
- 3.2.310 Templegrove Spinney County Wildlife Site is located 1.6km to the north-east of Green Hill G. This is a broadleaved, semi-natural, ancient woodland.
- 3.2.311 The Slipe County Wildlife Site is located 500m to the north-east of Green Hill G. This is a broadleaved, semi-natural, ancient woodland.

#### *Local Wildlife Sites*

- 3.2.312 Bozeat Wood is located 300m to the north of Green Hill G. This is a small oak-ash woodland, possibly ancient in origin, with associated ground flora.
- 3.2.313 Horn Wood is located 1.4km to the north of Green Hill G. This site qualifies as a LWS with 14 ancient woodland indicators recorded.
- 3.2.314 Lavendon Wood is located 700m to the east of Green Hill G. This is an ancient semi-natural woodland with a good range of ground flora species.
- 3.2.315 Long Furlong and Old Pastures is located 900m to the west of Green Hill G. This is a large area of replanted ancient woodland, with 16 ancient woodland indicators recorded.
- 3.2.316 Threeshire Wood is located adjacent to the north-eastern boundary of Green Hill G. This is an ancient semi-natural woodland with a good range of ground flora species.

### **Mineral designations**

- 3.2.317 The southern edge of Green Hill G lies within two mineral safeguarding areas shown in the Milton Keynes Minerals Local Plan one for sand and gravel and the other for limestone.



## **Flood Risk and Drainage Designations**

### *Fluvial Flood Risk*

- 3.2.318 There is a network of land drains which join and flow southwards through the centre of Green Hill G, the land drains become a more rational watercourse flowing through Lavendon to the south and ultimately discharges to the River Great Ouse. Flows within the ditches are expected to flow in a south-westerly direction based on local topography.
- 3.2.319 Fluvial flooding could occur if the land drains overtopped their banks during or following an extreme rainfall event.
- 3.2.320 The majority of Green Hill G is situated in Flood Zone 1 and therefore has less than a 1 in 1,000 annual probability of river or sea flooding. However, a limited area to the southern boundary is identified as being in Flood Zone 3, associated with the land drain and unnamed Ordinary watercourse. The EA Historical Flood Map indicates that Green Hill G has not historically flooded and neither has the area immediately surrounding Green Hill G.

### *Surface Water Flood Risk*

- 3.2.321 The EA Flood Risk from Surface Water map indicates that Green Hill G ranges from a very low risk of surface water flooding (less than 0.1% annual probability) to low risk of surface water flooding (between a 1% and 0.1% annual probability) to medium risk of surface water flooding (between a 3.3% and 1% annual probability) to high risk of surface water flooding (greater than 3.3% annual probability).
- 3.2.322 As described in the fluvial section above, the surface water flooding extents largely match the courses of the land drainage ditches.

## **The Green Hill BESS**

### **Site areas**

- 3.2.323 The Green Hill BESS site is 24.8 ha in area.

### **Use**

- 3.2.324 The Green Hill BESS includes Grendon Substation and three fields which are in agricultural use.

### **Features**

- 3.2.325 The three agricultural fields on the Green Hill BESS are bounded by substantial hedgerows and tree belts. The Green Hill BESS is entirely within the parish of Grendon, North Northamptonshire.
- 3.2.326 The land is situated at the edge of the valley floor of the River Nene, and so is largely flat at approximately 50m AOD. The character of the Green Hill BESS is dominated by the Grendon Substation and its associated tree planting, whilst the land to the north of the Green Hill BESS is that of the flooded remnants of gravel and sand quarries.
- 3.2.327 The Green Hill BESS is adjacent to the Grendon Substation and a number of OHLs cross the site. The northern field contains a 400kV National Grid OHL and a 132kV distributor OHL. Two further 132kV OHLs cross the proposed access to the northern field near Pastures Farm. A final 132kV OHL crosses over the southern field.

### **Settlements**

- 3.2.328 The village of Grendon is located approximately 600m southeast of the Green Hill BESS. Pastures Farm is located to the west of the Green Hill BESS which includes the existing farm access as a potential access to the north of the Green Hill BESS.

### **Roads**

- 3.2.329 Station Road runs from the northwest of the Green Hill BESS into Grendon. The road runs along the southwestern side of the Green Hill BESS. Station Road provides the existing entrance into the Grendon Substation, and existing agricultural accesses to Pastures Farm.

**Public Rights of Way (PRoW)**

- 3.2.330 There is one public right of way within the Green Hill BESS. Footpath NN|TF|3 originates northwest of the Grendon Substation at Station Road near to the bridge over the River Nene, passing directly through field BESS 3 enroute to Lower End, Grendon.

**Rivers**

- 3.2.331 There is an unnamed main river which runs along the north-western boundary and a second unnamed main river which runs along the south-eastern boundary of the Green Hill BESS. The rivers run from the west and south respectively to Grendon Lakes which are immediately to the northeast.

**Historic designations****Conservation Areas**

- 3.2.332 Grendon Conservation Area is located approximately 530m to the west of Grendon BESS at its nearest point.

**Listed Buildings**

- 3.2.333 There is a cluster of 29 listed buildings in Grendon, the nearest being the grade II listed Gates and Gatepiers approximately 10m east of Grendon Hall (NHLE 1190676) approximately 590m east of the Green Hill BESS. These are all grade II listed buildings apart from the Church of St Mary (NHLE 1190552) and Grendon Hall (NHLE 1040746) which are grade II\*.
- 3.2.334 Station Lodge (NHLE 1294156) approximately 200m to the west of the Green Hill BESS is a grade II listed building.

**Archaeological Features**

- 3.2.335 Medieval Cross 170m west of Hall Farm Scheduled Monument (NHLE 1016320) is approximately 770m to the east of the Green Hill BESS.

**Registered Parks and Gardens**

- 3.2.336 Castle Ashby Grade I Registered Park and Garden (NHLE 1000385) is approximately 10m to the south-west of the Green Hill BESS at its nearest point. There are no registered parks and gardens within the Green Hill BESS.

**Landscape designations**

- 3.2.337 There is no Ancient Woodland on the Green Hill BESS.
- 3.2.338 The nearest block of Ancient Woodland is Cold Oak Copse (ancient replanted woodland), which is located 3km south of the Green Hill BESS. There is only one other block of Ancient Woodland within 5km of the Green Hill BESS, Horn Wood (ancient and semi-natural woodland) which is located 3.6km southeast of the Green Hill BESS.
- 3.2.339 The Green Hill BESS is located within one NCA as defined by Natural England as NCA Profile: 89 Northamptonshire Vales (NE527).
- 3.2.340 The Green Hill BESS is located at the southeastern edge of the NCA Profile: 89 Northamptonshire Vales and borders NCA Profile: 91 Yardley Whittlewood Ridge.
- 3.2.341 The Green Hill BESS is located within two LCTs, these include; LCT Profile: 18 Broad River Valley Floodplain; and LCT Profile 12 Limestone Valley Slopes as defined by Northamptonshire Council Current Landscape Character Assessment 2010. These are broken down into two LCAs, LCA Profile: 18d The Nene - Billing Wharf to Woodford Mill; and LCA Profile: LCA 12a Wollaston to Irchester.
- 3.2.342 There are four further LCT's within the 5km Study Area which include; LCT Profile: 4 Rolling Ironstone Valley Slopes; LCT Profile: 5 Undulating Claylands; LCT Profile: 8 Low Wooded Clay Ridge; and LCT Profile: 6 Undulating Claylands. These are broken down further into LCAs and



include; LCA Profile: 4c Ecton and Earls Barton Slopes; LCA Profile: 6b Hackleton Claylands; LCA Profile: 6c Bozeat Claylands; LCA Profile: 8b Salcey Forest and Yardley Chase; LCA Profile: 18c The Nene – Duston Mill to Billing Wharf.

### **Ecological designations**

#### **Internationally Designated Sites**

- 3.2.343 The Upper Nene Valley Gravel Pits SPA and Ramsar shares the northern boundary of the Green Hill BESS. The globally important site comprises a chain of exhausted sand and gravel pits, extending for approx. 35km along the alluvial deposits of the River Nene floodplain running from Clifford Hill on the southern outskirts of Northampton, downstream to the village of Thorpe Waterville north of the village of Thrapston. An extensive mosaic of wetland habitats is regularly used by over 20,000 wildfowl and wading birds and support major overwintering bird assemblages. Qualifying features of the designated site include bittern and golden plover (both Annex 1 species), in addition to gadwall (migratory species).

#### **Nationally Designated Sites**

##### *Sites of Special Scientific Interest (SSSI)*

- 3.2.344 Wollaston Meadows SSSI is located 3km north-east of the Green Hill BESS. The Green Hill BESS is on the banks of the River Nene and is composed of two species-rich hay meadows with overgrown hedgerows and ditch habitats.
- 3.2.345 Bozeat Meadow SSSI is located 3km south-east of the Green Hill BESS and comprises unimproved grassland on well drained clay and loam soils. Diverse botanical communities are present across medieval ridge and furrows.
- 3.2.346 Dungee Corner Meadow SSSI is located 5km east of the Green Hill BESS. The well drained hay meadow on boulder clay is traditionally managed, including no use of artificial fertilisers or herbicides, and supports diverse flora. A population of locally rare green-winged orchids are also present.
- 3.2.347 Yardley Chase SSSI is located 5km south-west of the Green Hill BESS. Military use of the site has resulted in a long absence of intensive agriculture, supporting the retention of diverse semi-natural habitats (woodland and unimproved grassland) present and increased value for invertebrates. This includes 30 breeding butterfly species records.

#### **Locally Designated Sites**

##### *Local Nature Reserves*

- 3.2.348 Summer Leys LNR is located 2km north-east of the Green Hill BESS. This is an excellent nature reserve easily qualifying as a LWS with fen, swamp and marsh indicators recorded within the gravel pits and neutral grassland indicators in the surrounding grasslands.

##### *Local Wildlife Sites*

- 3.2.349 Grendon Lakes LWS is located 200m north of the Green Hill BESS. This is a mosaic of wetland habitats of huge importance to over-wintering birds.
- 3.2.350 Grendon Lakes North LWS is located 500m north of the Green Hill BESS. This is also a mosaic of wetland habitats including a number of small gravel pits, fragments of wet grassland and mire and good aquatic vegetation.
- 3.2.351 Grendon Quarter Pond LWS is located 500m south of the Green Hill BESS and comprises a large fishing lake with a fringe of marginal vegetation and a surround of tall trees.
- 3.2.352 Earls Barton Meadow LWS is located 700m north-west of the Green Hill BESS. This floodplain meadow site is adjacent to the River Nene, near to gravel extraction, and features neutral grassland indicators and many elements of MG4 grassland communities indicative of well-drained permanent pasture and meadows.



- 3.2.353 Earls Barton Carr LWS is located 800m north-west of the Green Hill BESS. This large area of wet woodland on former gravel workings adjacent to the Nene supports at least 10 indicator species of fen, swamp and marsh habitats, despite declining habitat condition.
- 3.2.354 Earls Barton Lock Lake LWS is located 800m north of the Green Hill BESS and comprises another Nene Valley gravel pit with abundant marginal vegetation.
- 3.2.355 Scotland Pond LWS is located 800m south of the Green Hill BESS. This is a large angling lake fringed with marginal and emergent vegetation.
- 3.2.356 The Basin LWS is located 1km south of the Green Hill BESS. This is a narrow lake within the Castle Ashby Estate, with a good cover of emergent and marginal vegetation providing habitat for birds and amphibians.
- 3.2.357 Menagerie Pond LWS is located 1.3km south of the Green Hill BESS. Areas of thick fringing emergent vegetation and occasional aquatic plants support diverse invertebrate communities associate with the lake situated within Castle Ashby parkland.
- 3.2.358 Castle Ashby Woodland LWS is located 1.4km south-west of the Green Hill BESS. This area of old woodland, probably originating from the establishment of Castle Ashby parkland, is well-established and supports some unusual flora and range of invertebrates.
- 3.2.359 Castle Ashby Parkland LWS is located 1.7km south-west of the Green Hill BESS. Situated centrally within the Castle Ashby parkland, this woodland extends between the church, ponds and boathouse. A large variety of parkland and semi-natural species, and a largely semi-natural ground flora but with several ancient woodland species have been recorded, alongside some unusual parkland additions.
- 3.2.360 Par Pond LWS is located 1.5km south of the Green Hill BESS. This is a long lake on the edge of Castle Ashby Park, well-vegetated with emergent and marginal vegetation and surrounded by parkland habitats.
- 3.2.361 Ecton Gravel Pits LWS is located 1.7km north-west of the Green Hill BESS. This site comprises three gravel pits alongside the River Nene. The pits vary in size and shape and provide a mixture of wildlife habitats.
- 3.2.362 Engine Pond LWS is located 1.9km south-west of the Green Hill BESS. This is a well-established pond, with emergent vegetation and abundant dragonflies and damselflies.
- 3.2.363 Hardwater Meadows LWS is located 2km north-east of the Green Hill BESS and comprises a network of fields adjacent to the River Nene. Species-rich wetland vegetation surrounds the pond and old river channels.
- 3.2.364 Warren Ponds LWS is located 2km south of the Green Hill BESS. These ponds extend the habitat of Par Pond LWS and provide cover for birds and amphibians. Some of the ponds within Warren Ponds LWS are of significance as an extension to the wetland habitat corridor network.

#### **Mineral designations**

- 3.2.365 The Green Hill BESS lies within a Minerals safeguarding areas (sand and gravel) as defined in the adopted Northamptonshire Minerals and Waste Local Plan (2017).

#### **Flood Risk and Drainage Designations**

##### *Fluvial Flood Risk*

- 3.2.366 The nearest watercourse is Whiston Brook, an EA main river that forms the northern boundary of the BESS3 field within the Green Hill BESS site. Whiston Brook is a tributary of the River Nene, also a main river, situated approximately 570m north of the site at its closest point.
- 3.2.367 A further EA main river named Grendon Brook flows in a northerly direction and forms the eastern boundary of BESS1 field within the BESS Site. Whiston Brook and Grendon Brook flow in a general north-eastern direction before they all converge to the River Nene approximately 1km away from the Site.



- 3.2.368 Fluvial flooding could occur if the land drains overtopped their banks during or following an extreme rainfall event.
- 3.2.369 The EA Historical Flood Map indicates that fields BESS 1 and BESS 3 have historically flooded in March 1947 due to the River Nene.
- 3.2.370 All fields within the Green Hill BESS are within Flood Zone 3 (High risk) of flooding. A comprehensive hydraulic modelling exercise is ongoing to refine the flood extents and depths and will be reported in the ES.

#### Surface Water Flood Risk

- 3.2.371 The EA Flood Risk from Surface Water map indicates that the Green Hill BESS ranges from a very low risk of surface water flooding (less than 0.1% annual probability) to low risk of surface water flooding (between a 1% and 0.1% annual probability) to medium risk of surface water flooding (between a 3.3% and 1% annual probability) to high risk of surface water flooding (greater than 3.3% annual probability).
- 3.2.372 As described in the fluvial section above, the surface water flooding extents largely match the courses of the watercourses and land drainage ditches.

### **3.3 Cable Route Search Area**

- 3.3.1 The Cable Route Search Area is shown in the plans provided in **Volume 2, Figures 3.2.1 to .** The Cable Route Search Area consists of land that has been identified as potential areas for the Cable Corridor. The extent of the Cable Corridor to Grendon Substation and connecting the Sites will be determined by the electrical design and decisions on the location of the 33kV to 132kV and 400kV substations. The proposed locations of these are set out on **Volume 2, Figure 4.1 Indicative Masterplan (Appendix 4.1)**. The Cable Route Search Area will be refined as the design of the Scheme is developed and additional technical surveys of the Cable Route Search Area are carried out. Temporary construction compounds will also be proposed within the Cable Corridor.
- 3.3.2 The Cable Route Search Area as shown in the PEIR has been further refined following the version submitted at the time of the Scoping Report, as further environmental assessments have been completed and conversations with landowners have advanced, informing the design process. There is still on-going assessment work in relation to the Cable Route Search Area which will inform the final Cable Corridor to be proposed in the DCO application. Upon selection of the final Cable Corridor, detailed assessments will be completed and outlined within the ES.
- 3.3.3 The Cable Route Search Area includes two areas where alternative routing options have been identified for the Cable Corridor:
- A route heading north from Green Hill C, either east or west of Sywell Wood, providing connectivity to Green Hill A, Green Hill A.2 and Green Hill B; and
  - North of the A45, the Cable Route Search Area allows for a Cable Corridor either west of the village of Earls Barton up to the western site of Green Hill E or to the south and east of the village of Earls Barton up to the eastern side of Green Hill E.
- 3.3.4 Both options converge at Grendon Substation where the Point of Connection lies to the National Grid.



## 4 Scheme Description

### 4.1 Development Summary

- 4.1.1 This chapter provides a description of the Scheme. The physical characteristics of the Scheme are described alongside the key activities that would be undertaken during construction, operation, maintenance and decommissioning. The description of the Scheme as set out in this chapter has informed the preliminary environmental assessments included in the PEIR.
- 4.1.2 This chapter is supported by the following plans and documents:
- Indicative masterplan (**Volume 3, Appendix 4.1**); and
  - Draft Design Principles (**Volume 3, Appendix 4.2**).
- 4.1.3 The Scheme consists of a series of Solar Arrays across Green Hill A, A.2, B, C, D, E, F and G, a battery energy storage system (BESS), two 400kV substations and a number of 132kV and 33kV substations.
- 4.1.4 Two 400kV substations will be required for the Scheme. Their locations will be at Green Hill C and at Green Hill BESS. The voltage and number of 132kV and 33kV substations will be determined as the Scheme's design progresses.
- 4.1.5 The indicative masterplan (**Volume 3, Appendix 4.1**) allows for the provision of BESS at both the Green Hill BESS and Green Hill C.
- 4.1.6 The point of connection (the PoC) for the Scheme to the National Grid would be at the existing Grendon Substation, which is located to the north-west of the village of Grendon. The Scheme will be linked to Grendon Substation via underground cables within the Cable Corridor. The proposed location of the Cable Corridor within the Cable Route Search Area is under consideration and will be refined through ongoing environmental assessments, landowner negotiations and consultation input.
- 4.1.7 Cables, ranging in voltages from 11kV to 400kV will be necessary within the Sites and the Cable Corridor. Cable trenches, with widths typically varying between 1m to 7m, will accommodate these cable circuits, and there will be instances where multiple cables run along the same route and separation distances between them are required. However, the width and spacing of the cable trenches may differ depending on environmental constraints, engineering requirements, or if crossing third-party apparatus (e.g., utilities). The Cable Corridor working width is anticipated to be refined to 50m for submission of the DCO application.
- 4.1.8 The substations, cable circuits, cable connections, and BESS will be required for the duration of the Scheme. The substations and BESS will be removed as part of the decommissioning of the Scheme. The underground cable, cable ducts and joint bays will be decommissioned in accordance with the applicable guidance and regulations at the time. The cables may be removed as part of decommissioning with the cable ducts and joint bays left in situ to minimise environmental impacts. The decommissioning of the Scheme will be addressed within the Outline Decommissioning Environmental Management Plan ('ODEMP').

#### Lifespan of the Project

- 4.1.9 The operational life of the Scheme is anticipated to be up to 60 years. Once the Scheme ceases to operate, it will be decommissioned. A 60-year period for the operational phase of the Scheme will be assessed in the EIA and reported in the ES accompanying the DCO application.

### 4.2 Maximum Design Scenario

#### Flexibility and Design Parameters

- 4.2.1 The ES will adopt a maximum design scenario approach, assessing the Scheme on the basis of the maximum project design parameters relevant to the technical discipline i.e. the worst-case scenario for impacts (known as the "Rochdale Envelope"). This is discussed in more detail in Section 2.3.



- 4.2.2 The need for flexibility in design, layout and technology is recognised in National Policy Statement EN-1 as elements of a development may not be finalised. The ‘Rochdale Envelope’ approach provides for this flexibility, as described in the Planning Inspectorate Advice Note 9 (Ref 1). This involves assessing the maximum (and where relevant, the minimum) parameters for the Scheme where flexibility needs to be retained to ensure that all potentially significant effects (positive or adverse) are considered. The Application will incorporate flexibility into the design of the Scheme to allow the latest technology to be installed at the time of construction. The ES will consider the use of fixed and tracker panels for the Solar Arrays.
- 4.2.3 As the design evolves in response to the environmental assessment and consultation processes, the maximum (or minimum) parameters may be updated from those set out in this PEIR in order to deliver the best environmental outcomes for the Scheme. The maximum (or minimum) parameters assessed in the ES will be set out in a concept design parameters and principles document submitted with the Application and secured in the DCO.
- 4.2.4 **Table 4.1** sets out the parameters that have been used for assessment by each of the technical topics in the PEIR to explain the likely significant effects of the Scheme on the environment and set out the proposed approach and methodology for further assessment.



**Table 4.1: Design parameters used for the PEIR Report**

Scheme Component	Parameter Type	Maximum Design Parameter
<b>Solar Panels</b>		
Option A Tracking Panels	Maximum height of solar panels above ground level	4.5m when at greatest inclination 2.5m when horizontal
	Minimum height of the lowest part of the solar panel above the ground level	0.4m
	Indicative orientation and slope	Solar panels aligned in north-south rows. The panels will rotate to the east and west and tilt up to a maximum inclination of 60° from horizontal.
	Solar panel mounting structure	Metal frames that hold solar panels in rows, either secured via metal posts driven into ground to a depth of 1.5-3.5m (dependant on ground conditions) or, in areas where archaeological protection is required, weighed down using concrete feet or other non-ground penetrative techniques.
	Solar panel type	Bifacial monocrystalline panels
	Separation distance between rows	Separation distance between rows of tracking panels will be a minimum of 2.5m at the closest point, and a maximum distance of 15.0m.
Option B Fixed Panels	Maximum height of solar panels above ground level	3.5m
	Minimum height of the lowest part of the solar panel above the ground level	0.4m
	Indicative orientation and slope	Solar panels aligned in east-west rows with panels facing south at a fixed tilt angle of between +10 to +35° from horizontal.



Scheme Component	Parameter Type	Maximum Design Parameter
	Solar panel mounting structure	Metal frames that hold solar panels in rows, either secured via metal posts driven into ground to a depth of 1.5-3.5m (dependant on ground conditions) or, in areas where archaeological protection is required, weighed down using concrete feet or other non-ground penetrative techniques.
	Solar panel type	Bifacial monocrystalline panels
	Separation distance between rows	Separation distance between rows of fixed panels will be a minimum of 2.5m at the closest point, and there will be a maximum distance of 14m.
Conversion Units/Inverters	Maximum dimensions	15m by 5m with a maximum height of 3.5m  Electrical infrastructure associated with the panels will be elevated by mounting structures so that it is no less than 0.6m above the 0.1% Annual Exceedance Probability (AEP) flood level or, where this is not possible as high as practicable).
	Materials	Units are housed in a container sitting on a concrete base or concrete feet.
Fencing and Security	Compound fencing	Palisade fencing around the compound with a maximum height of 3m.
	Perimeter fencing	Deer type wire and mesh and wooden post fencing with a maximum height of 2.5m
	Security	CCTV camera poles with a maximum height of 3m. Poles to be galvanized steel painted green
<b>Substations</b>		
400kV Substations	Maximum compound area	3.5 ha
	Maximum height	13m to the top of the busbars
	Compound perimeter	3m high palisade fencing around the compound.



Scheme Component	Parameter Type	Maximum Design Parameter
		2.5m high deer type wire mesh and wooden post fencing outside of the palisade fencing
	Access track	Maximum 6m wide constructed of hardcore or gravel over a levelling layer of substrate
	Relay and control Rooms – maximum dimensions	Maximum dimensions of 7m by 19m and maximum height of 4m
	132kV switch room – maximum dimensions	Maximum dimensions of 6m by 13m and maximum height of 4m
	33kV switch room	Maximum dimensions of 7m by 19m and maximum height of 4m
	Housing	Maximum height 6m
132kV Substations	Maximum compound area	0.5 ha
	Maximum height	7m to the top of the busbars
	Compound perimeter	3m high palisade fencing around the compound. 2.5m high deer type wire mesh and wooden post fencing outside of the palisade fencing
	Relay and control rooms – maximum dimensions	Maximum dimensions of 6m by 11m and maximum height of 4m
	33kV switchgear	Maximum dimensions of 5m by 9m and maximum height of 4m
33kV Substations	33kV substation	Maximum dimensions of 4m by 14m and maximum height of 4m
	Maximum height	4m
	Compound perimeter	3m high palisade fencing around the compound. 2.5m high deer type wire mesh and wooden post fencing outside of the palisade fencing
The BESS	BESS units	16m by 3m and maximum height of 3.2m



Scheme Component	Parameter Type	Maximum Design Parameter
	Single BESS compound	Up to 6.5 hectares (based on BESS 1)
	Compound perimeter	3m high palisade fencing around the compound. CCTV cameras will be installed (number to be confirmed)
	Access	Maximum 6m wide constructed of hardcore or gravel over a levelling layer of substrate. Parking bays will be provided (number to be confirmed).
	Access	Maximum 6m wide constructed of hardcore or gravel over a levelling layer of substrate. Parking bays will be provided (number to be confirmed).
Cable Corridor	Maximum width	7m width  This includes separation distances where multiple cables are running in parallel within the same trench or within multiple trenches.
	Maximum typical width (where crossing under roads, watercourses or utilities).	50m*  *May be wider width where the Cable Corridor crosses roads and other utilities.
	Minimum width	1m width
	Maximum depth (trench)	2m depth
	Horizontal Directional Drilling (HDD)	Assumed depth of 12 metres Laydown areas – 25m x 25m
National Grid Connection	Point of Connection	Connection at the existing 400kV Grendon Substation.



### 4.3 Proposed Built Development

4.3.1 The design of the Scheme is an iterative process, based on the various environmental assessments and consultation with statutory and non-statutory consultees. **Chapter 5: Alternatives and Design Evolution** outlines this process further.

4.3.2 The Scheme will consist of the infrastructure as described above and in further detail below. The indicative masterplan showing the layout of the Scheme is set out in Volume 3, Appendix 4.1.

#### Solar Panels

4.3.3 The solar photovoltaic (PV) panels will convert sunlight/daylight into electrical current. They are made up of a series of photovoltaic cells beneath a layer of toughened glass. Other PV technology is developing rapidly and may be available at the time of construction.

4.3.4 There are two options for solar panels being considered: Tracking Panels (Option A outlined in **Image 4.1**) and Fixed Panels (Option B outlined in **Image 4.2**). The use and distribution of these across the Sites will be subject to further consideration as the design of the Scheme progresses.

#### Option A (Tracking Panels)

**Image 4.1: Typical Tracking Panels**





**Option B (Fixed Panels)**

**Image 4.2: Typical Fixed Panels (with Conversion Unit/Inverter)**



**Solar Panel Mounting Structures**

- 4.3.5 The solar panel mounting structures will be metal frames, typically aluminium or steel. In areas where archaeological protection is required, concrete feet or other non-ground penetrative techniques will be considered as an archaeological mitigation option to secure the mounting structures to the ground.

**Conversion Units/Inverters**

- 4.3.6 Conversion units contain the inverters, transformers and associated equipment to convert the Direct Current ('DC') electricity produced by the arrays into Alternating Current ('AC') electricity required for export on to the National Grid. **Image 4.3** and **Image 4.4** below show a typical conversion unit.

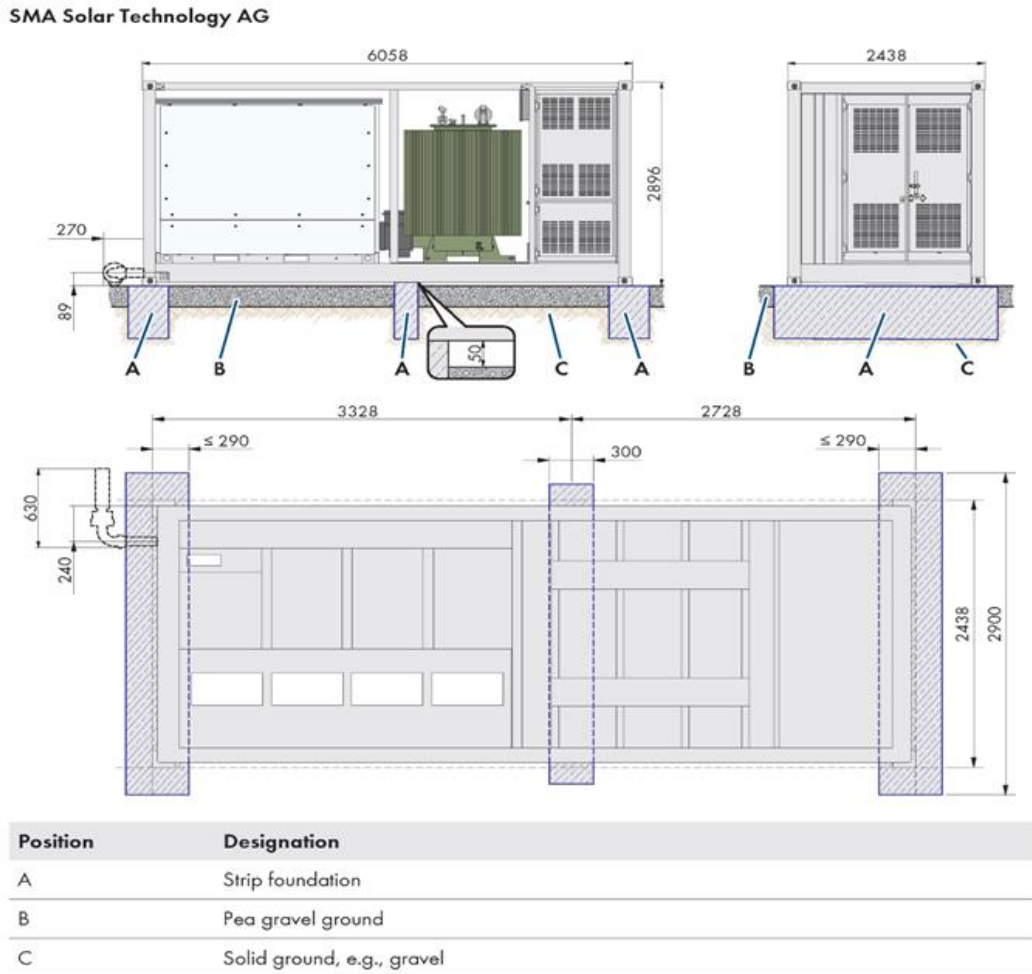


**Image 4.3: Typical Conversion Unit**





**Image 4.4 Typical Inverter Unit**



**Substations**

- 4.3.7 There are different types of substations required across the Scheme as noted in **Table 4.1**. There will be two 400kV substations. These substations are to be located within the Green Hill BESS and within Green Hill C. The locations of the substations within these Sites will be determined through further assessment and consultation. These will either be air insulated switchgear or gas insulated switchgear substations. An example of an air insulated substation is shown in **Image 4.5**.
- 4.3.8 On Green Hill A, B, E, F and G, there will be the need for a 132kV substation on each of the Sites. An example of a 132kV substation is shown in **Image 4.6**. There will be a requirement for 33kV substations, the number of which is to be confirmed as the Scheme design progresses. It is anticipated that Green Hill A.2, D and E will require 33kV substations.



**Image 4.5 Typical (large 400kV) power transformer**



**Image 4.6 Typical 132kV Substation Compound**





### Battery Energy Storage System

- 4.3.9 The Scheme will include an energy storage system and the PEIR has assumed a Battery Energy Storage System (BESS) will be used. This is designed to provide peak generation and grid balancing services to the electricity grid. It will allow excess electricity generated from the solar PV panels to be stored in the batteries and exported to the grid when required. Excess energy from the grid can also be imported to the batteries. The energy storage facility will therefore provide flexibility and enhance grid reliability.

**Image 4.7 Typical BESS Units**



- 4.3.10 The BESS will require heating, ventilation and cooling systems to ensure the efficiency of the technology. These features are integrated into the units within which they are housed. The battery system will comprise bi-directional AC/DC inverters to control the charge of the batteries from the solar PV energy output or the charge of the batteries when drawing energy from the grid.
- 4.3.11 The preferred location for the BESS at the time of writing is shown on **Figure 3.1**, however BESS may also be located on Green Hill C. Ongoing technical studies will determine which Site(s) is/are most appropriate for the BESS. **Image 4.7** shows an example of a BESS arrangement with associated infrastructure.

### Fencing and Security

- 4.3.12 During operation, perimeter fencing will be in place. The location of the fencing will be identified as the design develops so that it can be assessed within the ES and finalised as part of the detailed design of the Scheme post-consent. The design principles of the fencing within the Sites will be deer wire mesh and wooden post fencing with a maximum height of 2.5m as illustrated in **Image 4.8**. Fencing during the construction phase will also be required, the details of which will be confirmed as part of the detailed design post consent.



**Image 4.8 Typical Deer Fencing**



4.3.13 Other fencing may be used around the substations and energy storage. For example, there will be palisade fencing around the substations which will have a maximum height of 3m.

4.3.14 Pole mounted internal facing CCTV systems will be used around the perimeter of the operational elements of the Sites. It is anticipated that these will be galvanised steel painted green poles with a maximum height of 3m.

#### Lighting

4.3.15 Lighting is not required within the Solar Arrays for the operational phase. Motion sensing security lighting will be provided within substations and within the BESS to be used only for maintenance and security purposes.

4.3.16 Temporary site lighting during construction will be required to enable safe working during construction and decommissioning during hours of darkness and will be designed as far as reasonably practicable to minimise potential for light spillage outside the Sites and Cable Corridor, particularly towards houses, traffic and ecological habitats.

4.3.17 Standard good practice measures would be employed to minimise light spill, including glare during construction, operation and decommissioning.

#### Cable Corridor

4.3.18 The electricity generated and stored by the Scheme will be exported to the National Grid at the existing Grendon Substation. The Sites will be linked to Grendon Substation via underground cables within the Cable Corridor. The proposed route of the Cable Corridor within the Cable Route Search Area is under consideration and will be refined for inclusion in the Application through environmental assessments, landowner negotiations and consultation input.

4.3.19 The underground cables will also transfer electricity from National Grid to the BESS.

4.3.20 The voltage of the cables and the number of circuits will affect the width and number of cable trenches required. The range of typical cable trench widths is between 1m and 7m. However, the width and spacing of the cable trenches may differ depending on environmental constraints, engineering requirements or if crossing third party apparatus (e.g. existing cables and pipelines).

4.3.21 It is anticipated that works will be carried out via a combination of open cut trenching and Horizontal Directional Drilling (HDD), with the latter used if needed to avoid and reduce adverse



environmental effects, such as when crossing watercourses or cabling under protected hedgerows.

- 4.3.22 In addition to the trenches, land will be required in the Cable Corridor for access and soil and cable 'lay down'. Construction compounds along this route will also be required. The typical working area for the Cable Corridor is anticipated to be 50m wide but a wider area may be required in some locations.

#### District Network Operator Connections

- 4.3.23 It is envisaged that local grid connections to the distribution network (operated by National Grid Electricity Distribution ('NGED')) will be made for the 400kV substations.
- 4.3.24 These will allow the generating station to connect to the local grid network to obtain short-term auxiliary power to the substations to maintain operation in the event that there is a technical problem with the connection to the National Grid.

#### Site Access

- 4.3.25 Existing access points are proposed to be used wherever practicable, with upgrades to improve visibility splays where required. Additional access points will be provided where existing access points are not available or are unsuitable.
- 4.3.26 The transformers will be classified as an Abnormal Indivisible Load ('AIL') and therefore an additional assessment will be undertaken by an Abnormal and Indivisible Loads specialist to identify suitable routes and access points. The routing and access points used for all identified AIL deliveries will be determined through the design process and in consultation with the relevant highway authorities.

#### Ecological Mitigation and Enhancement

- 4.3.27 The Sites and Cable Route Search Area currently comprise predominantly arable and pastoral fields. There are features within the Sites and Cable Route Search Area such as hedgerows, field margins, ditches and watercourses which are considered to have some ecological value.
- 4.3.28 A Preliminary Ecological Appraisal ('PEA') has been undertaken on the Sites along with protected species surveys which have been carried out at the seasonally appropriate time of year. There will be further surveys carried out in the 2024 and 2025 ecological survey windows and in the Cable Route Search Area as the Cable Corridor is refined. Once the full suite of species surveys has been carried out any new habitat land and/or mitigation that is required will be identified and included in the DCO application. Further detail is provided in **Chapter 9: Ecology and Biodiversity** of this PEIR
- 4.3.29 As a general principle, the Scheme is likely to adopt the following ecological mitigation and enhancement measures typically used on solar projects:
- Land between and under the solar panels to be sown as grassland and meadow management with limited cutting and a mix of some areas being grazed and others not;
  - Gaps within existing hedgerows will be filled with additional native species to increase diversity, and hedgerows will be managed on a rotational basis to enable wildlife to benefit from them year-round;
  - Appropriate vegetated buffers will be maintained comprising native planting; and
  - Installation of bird nest and bat boxes on trees located around the Sites to provide opportunities for a range of species recorded within the local area.
- 4.3.30 Prior to the commencement of any phase of development, a Landscape and Ecological Management Plan ('LEMP') will be prepared and submitted to and approved by the relevant planning authority, and this will be secured by a requirement in the DCO. This will ensure the potential construction and operational impacts are minimised and that, where possible, opportunities for beneficial effects are secured as part of the Scheme.



### Surface Water Drainage

- 4.3.31 A Flood Risk Assessment and a Drainage Strategy are being developed as part of the design process for the Scheme. The assessments will identify how the Scheme will manage surface water and not increase flood risk. The Drainage Strategy will detail the measures to manage the surface water drainage from the Scheme and any required changes needed to existing land drainage.

### Landscaping

- 4.3.32 As part of the PEIR, the Sites have been assessed to establish where the key viewpoints are into and out of the Sites, and to identify where potential mitigation planting would be needed. As a general principle, the Scheme is likely to adopt the following landscape enhancements and mitigation typically used on solar projects:

- The creation of new woodland blocks and belts;
- Planting new hedgerows;
- Reinforcing existing boundary hedgerows; and
- New tree planting.

- 4.3.33 The Scheme's design will seek to increase the green infrastructure and link up ecological networks. This may include enhancing PRowS to improve access to the countryside or the creation of new permissive paths.

### Permissive Paths

- 4.3.34 The indicative masterplan (Appendix 4.1) shows the preliminary design intention for permissive paths. In summary, the following are summarised:

- Green Hill E - A section of permissive paths are proposed connecting the Northamptonshire Round south of Mears Ashby. The Northamptonshire Round currently runs east of Sywell Reservoir and along Mears Ashby Road before heading north towards Mears Ashby. Providing a new permissive route within the field margins east of Mears Ashby Road, would allow for safer access and negate the need to walk along the road.
- Green Hill E - A permissive path is proposed through the middle of Green Hill E providing a new pedestrian route between Mears Ashby and Earls Barton. Throughput non-statutory consultation it became apparent this route is already used in part by local residents and would address the request for a route to connect the two villages.
- Green Hill F - A series of permissive routes surrounding six fields within Green Hill F have been proposed in response to consultation with the neighbouring liveries and routes which they currently hack along hedgerow verges. A proposed 15m offset from existing hedgerows to proposed fence lines, would allow for sufficient space for hacking routes to be maintained.

## **4.4 Construction, Operation and Decommissioning**

### Construction and Phasing

- 4.4.1 The Scheme currently has a grid connection date of 2029. The construction of the Scheme is proposed to be phased over a two-year period and subject to the DCO consenting process, the earliest construction may start is 2027.
- 4.4.2 The construction period will vary across the Sites and Cable Corridor and for the larger Sites there will be opportunities for having multiple construction crews working at the same time.
- 4.4.3 There will be temporary construction compounds required for the Sites and the grid connection works (installation of the underground cables). The temporary construction compounds will comprise:



- Temporary portacabins for construction operatives (the dimension of the portacabins would vary and the maximum size for individual units is expected to be 10m by 3m with a typical maximum height of 3m);
- Perimeter security fencing with a typical maximum height of 3m;
- Parking area for construction and workers vehicles;
- Secure compound for storage;
- Temporary hard standing;
- Wheel washing facilities;
- Storage bins for recyclables and other waste; and
- Lighting will be required during construction periods but will be temporary in nature and normal working hours will be adhered to except in specified circumstances (as set out below).

4.4.4 Construction activities are likely to be carried out Monday to Friday 07:00-18:00 and between 08:00 and 13:30 on Saturdays. However, some activities may be required outside of these times (such as the delivery of abnormal loads, concrete pours for foundations, nighttime working for cable construction works in public highways or horizontal direction drilling activities). Where possible, construction deliveries will be coordinated to avoid HGV movements during the traditional AM peak hour (08:00-09:00) and PM peak hour (17:00-18:00).

#### Construction Environmental Management Plan

4.4.5 Prior to the commencement of any phase of development a Construction Environmental Management Plan ('CEMP') will be submitted to and approved by the relevant planning authority, and this will be secured by a requirement in the DCO. The CEMP for each phase will be in accordance with the Outline CEMP which will be submitted as part of the DCO application. This will ensure the potential construction impacts are minimised.

4.4.6 The CEMP will outline the allocated responsibilities, procedures and requirements for site environmental management. It will include relevant site-specific method statements, operating practices, and arrangements for monitoring and liaison with local authorities and stakeholders.

4.4.7 The main contractor(s) undertaking the construction of the Scheme will need to adopt and comply with the CEMP, allocate environmental management responsibilities to a site manager and ensure that all sub-contractors' activities are effectively managed in accordance with the CEMP.

#### Operational Phase

4.4.8 Once the Scheme is operational, traffic generated by it will be limited to that associated with maintenance work and the ad hoc and scheduled replacement of panels and batteries.

4.4.9 The Scheme will operate for up to 60 years. The components of the Scheme are anticipated to have the following approximate lifespans:

- Photovoltaic Panels: 40 years; and
- Batteries: 20 years.

4.4.10 Following construction, traffic associated with any Site that forms part of the Scheme will be associated with ongoing maintenance. This is expected to be infrequent and result in limited vehicle movements. Those arriving to undertake maintenance would generally be expected to travel by car, appropriate 4x4 type vehicle or light van. Suitable access will be retained from the highway to enable ongoing maintenance to take place.

4.4.11 The frequency of more regular maintenance visits would reasonably be expected to be limited to no more than two visits per month to any of the Sites.

4.4.12 Across the 60-year lifetime of the scheme, it is expected that alongside the regular maintenance of equipment, infrastructure such as panel and batteries will require replacement.



#### Replacement of Solar Panels and Batteries

- 4.4.13 Details relating to an expected programme of replacement equipment is being developed and will be reported as part of the ES. The replacement of equipment will be related to vehicle trips associated with both the movement of workers and the transportation of equipment to and from each site.
- 4.4.14 Notwithstanding the above, the clear expectation, which will be reviewed through the analysis outlined above, is that construction traffic associated with the Scheme is higher than that which may be associated with the operation phase.
- 4.4.15 Further, the programme for maintenance and the replacement of equipment across the Scheme should naturally be staged such that this is not concurrent across all of the Sites so generation of power can continue.
- 4.4.16 The replacement of these elements of the Scheme will be considered within the assessment of operational impacts of the Scheme in the ES.
- 4.4.17 No on-site staff will be required to operate the Scheme but there will be limited staff facilities located in the Control Rooms associated with the substations. Some permanent equipment for monitoring the Scheme will be located in the Relay and Control Rooms. Whilst this would typically be accessed remotely, it would be available for occasional physical access during routine visits.
- 4.4.18 There would be a small amount of noise generated by the vehicle movements across the Sites coupled with the installation of equipment during routine maintenance activities. There will be some noise transmitted from the transformers, substations, the motors required for Option A tracking panels and BESS, but these levels are predicted to be low and will be confirmed through further design work and reported and assessed within the ES.

#### Decommissioning

- 4.4.19 The decommissioning of the Scheme is expected to take 12-24 months and is anticipated to be undertaken in phases. A Decommissioning Statement will be prepared and will be submitted to and approved by the relevant planning authority prior to decommissioning, and this will be secured by a requirement in the DCO. The Decommissioning Statement for each part of the Scheme or phase of decommissioning will be in accordance with the Outline Decommissioning Statement which will be submitted as part of the DCO application. This will ensure the potential decommissioning impacts are minimised.
- 4.4.20 The solar panels and related built infrastructure, ancillary infrastructure, substations and energy storage will be removed and recycled or disposed of in accordance with good practice and market conditions at that time.
- 4.4.21 The underground ducting and joint bays within the Cable Corridor will be decommissioned in accordance with the latest regulations and good practice at that time. Currently, the most environmentally acceptable option is to leave the cables in-situ to minimise adverse environmental effects from disturbance to overlying land and habitats. It may be possible to remove the cable itself by extracting it at the joint bays from within the ducting, avoiding the need to open up the length of the cable route, and enabling the cable to be recycled. This will be considered further in the ES.
- 4.4.22 Whilst decommissioning typically has fewer effects than construction, it will be assessed to be the same as construction effects due to the uncertainty around the legal and policy requirements and the engineering and technologies that may be in place at decommissioning time.

#### Site Reinstatement

- 4.4.23 Following the removal of the panels, substations, converter units/inverters and the BESS (as outlined above), the Sites will be returned to their original use and condition as far as practicable as part of the decommissioning of the Scheme.

#### Waste

- 4.4.24 Waste will be generated during all phases of the Scheme. Solid waste materials generated during construction and decommissioning will be segregated and stored on the Sites and Cable Corridor



prior to transport to an approved, licensed third party recycling facility or, if it cannot be recycled, an authorised facility for recovery or disposal. Management of waste will be addressed further within the Outline Site Waste Management Plan to be submitted with the Application. Waste arisings will be assessed as appropriate within the relevant chapters of the ES.

#### **4.5**      **References**

- Ref.9      Planning Inspectorate (2018). Nationally Significant Infrastructure Projects - Advice Note Nine: Rochdale Envelope. Available at [www.gov.uk](http://www.gov.uk)



## 5 Alternatives and Design Evolution

### 5.1 Introduction

5.1.1 This chapter of the PEIR describes the consideration of alternatives and design evolution in relation to the Scheme.

### 5.2 Legislation, Policy and Advice Notes

#### National Legislation and Policy

#### The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

5.2.1 Regulation 14(2) and *Schedule 4*, paragraph 2 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Ref 5-1) (EIA Regulations) require: “A *description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects*” to be presented in the ES.

#### The Conservation of Habitats and Species Regulations 2017 (as amended) (‘The Habitats Regulations’)

5.2.2 The regulations provide a framework for protection and assessment of important sites, habitats and species at a European level. The amended regulations transpose these into UK law, following the UK’s exit from the EU. They set a requirement to consider alternatives in order to avoid significant harm to biodiversity and geological interests.

#### National Policy Statement EN-1

5.2.3 National Policy Statement (NPS) EN-1 (Ref 5-) Paragraph 4.3.9 states that “as in any planning case, the relevance or otherwise to the decision-making process of the existence (or alleged existence) of alternatives to a proposed development is, in the first instance, a matter of law.” The NPS confirms that there is no “general requirement to consider alternatives or to establish whether the proposed project represents the best option from a policy perspective”.

5.2.4 Paragraph 4.3.10 requires that “*The applicant must provide information proportionate to the scale of the project, ensuring that the information is sufficient to meet the requirements of the EIA Regulations.*”

5.2.5 Paragraph 4.3.15 states:

*“Applicants are obliged to include in their ES, information about the reasonable alternatives they have studied. This should include an indication of the main reasons for the applicant’s choice, taking into account the environmental, social and economic effects and including, where relevant, technical and commercial feasibility;”*

5.2.6 Paragraph 4.3.22 requires that the Secretary of State should give appropriate weight to the consideration of alternatives. However, these alternatives need to be proportionate to the manner of the scheme. Furthermore, only the alternatives that meet the objectives of the proposed should be considered.

5.2.7 Paragraph 4.3.23 states:

*“The Secretary of State should be guided in considering alternative proposals by whether there is a realistic prospect of the alternative delivering the same infrastructure capacity (including energy security, climate change, and other environmental benefits) in the same timescale as the proposed development.”*

5.2.8 Paragraph 4.3.24 states:

*“The Secretary of State should not refuse an application for development on one site simply because fewer adverse impacts would result from developing similar infrastructure on another suitable site and should have regard as appropriate to the possibility that all suitable sites for energy infrastructure of the type proposed may be needed for future proposals.”*



5.2.9 Paragraph 4.3.26 states:

*“if the Secretary of State concludes that a decision to grant consent to a hypothetical alternative proposal would not be in accordance with the policies set out in the relevant NPS, the existence of that alternative is unlikely to be important and relevant to the Secretary of State’s decision”*

5.2.10 Paragraph 4.3.27 requires that any alternatives which mean the necessary development could not proceed can be excluded because they are not relevant to the Secretary of States decision.

#### National Policy Statement EN-3

5.2.11 Section 2.3 of NPS EN-3 sets out at paragraph 2.3.6, 2.10.18 – 2.10.69 the factors that are likely to influence the key considerations involved in the siting of a solar farm. These include irradiance and site topography, availability of grid connection, proximity of a site to dwellings, agriculture land classification and land type, accessibility, and capacity of a site.

5.2.12 Paragraph 2.10.20 states: *“In order to maximise irradiance, applicants may choose a site and design its layout with variable and diverse panel types and aspects, and panel arrays may also follow the movement of the sun in order to further maximise the solar resource.”*

5.2.13 The availability of a grid connection point with capacity is recognised as being an important consideration in terms of project viability and site selection at paragraphs 2.10.22 – 2.10.25 as follows:

*“Many solar farms are connected into the local distribution network. The capacity of the local grid network to accept the likely output from a proposed solar farm is critical to the technical and commercial feasibility of a development proposal.*

*Larger developments may seek connection to the transmission network if there is available network capacity and/or supportive infrastructure.*

*In either case the connection voltage, availability of network capacity, and the distance from the solar farm to the existing network can have a significant effect on the commercial feasibility of a development proposal.”*

5.2.14 Paragraphs 2.10.25-2.10.26 note that: *“To maximise existing grid infrastructure, minimise disruption to existing local community infrastructure or biodiversity and reduce overall costs, applicants may choose a site based on nearby available grid export capacity.*

5.2.15 *Where this is the case, applicants should consider the cumulative impacts of situating a solar farm in proximity to other energy generating stations and infrastructure.”*

5.2.16 In terms of agricultural land classification and land type, paragraph 2.10.29 states:

*“While land type should not be a predominating factor in determining the suitability of the site location applicants should, where possible, utilise suitable previously developed land, brownfield land, contaminated land and industrial land. Where the proposed use of any agricultural land has been shown to be necessary, poorer quality land should be preferred to higher quality land avoiding the use of “Best and Most Versatile” agricultural land where possible. ‘Best and Most Versatile agricultural land is defined as land in grades 1, 2 and 3a of the Agricultural Land Classification.”*

5.2.17 Paragraph 2.10.30 goes on to note:

*“Whilst the development of ground mounted solar arrays is not prohibited on Best and Most Versatile agricultural land, or sites designated for their natural beauty, or recognised for ecological or archaeological importance, the impacts of such are expected to be considered and are discussed under paragraphs [2.10.73 – 92 and 2.10.107 – 2.10.126.]”*

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<sup>1</sup> The paragraph numbers given in NPS EN-3 contain errors and have been corrected here.



Paragraph 2.10.31 requires that applicants “explain their choice of site, noting the preference for development to be on suitable brownfield, industrial and low and medium grade agricultural land”.

5.2.18 Paragraph 2.3.32 states:

*“Where sites on agricultural land, consideration may be given as to whether the proposal allows for continued agricultural use and/or can be co-located with other functions (for example, onshore wind generation, storage, hydrogen electrolyzers) to maximise the efficiency of land use.”*

5.2.19 Paragraph 2.10.34 encourages Applicants to prepare and implement a Soil Resources and Management Plan in order to minimise adverse impacts on soil health and potential land contamination.

#### **National Policy Statement EN-5**

5.2.20 NPS EN-5 includes the following relevant policies on alternatives at paragraphs 2.2.7 – 2.2.9:

*“The connection between the initiating and terminating points of a proposed new electricity line will often not be via the most direct route. Siting constraints such as engineering, environmental, or community considerations will be important in determining a feasible route.*

*There will usually be a degree of flexibility in the location of the development’s associated substations, and applicants should consider carefully their location, as well as their design*

*In particular, the applicant should consider such characteristics as the local topography, the possibilities for screening of the infrastructure and/or other options to mitigate any impacts.”*

#### **National Guidance**

#### **Guidance on the pre-application stage for Nationally Significant Infrastructure Projects (April 2024)**

Guidance from the Ministry of Housing, Communities and Local Government and the Department for Levelling Up, Housing and Communities on the pre-application stage for NSIPs states:

*“Applicants are advised to fully document all optioneering exercises and decision-making on alternatives from the inception of their projects in their application, and reference this appropriately in their Environmental Statement.”* (Paragraph 011 Reference ID 02-011-20240430)

It does, however, note that:

*“There is no general requirement to consider alternatives for specific applications. The decision to make an Order granting development consent for an application is based on its own merits, not that there may be better or different alternatives either elsewhere or at a later stage.”*

Applicants are also encouraged to set out in brief the main alternatives to their preferred scheme, as *“this can demonstrate how project designs have been refined to take into account environmental, socio-economic and community effects”*. (Paragraph 015 Reference ID 02-015-20240430)

### **5.3 Approach to Assessment**

5.3.1 Taking into consideration the policy and legal requirements as well as the iterative approach to the design to date, the following alternatives have been considered for the Scheme and are discussed in this chapter:

- Alternative sites;
- Alternative technologies;
- Alternative design/layouts; and
- Alternative cable route corridors.



- 5.3.2 A ‘no development’ scenario as an alternative to the Scheme has not been considered further in line with EN-1 paragraph 4.3.23. This is because ‘no development’ is not considered to be a reasonable alternative to the Scheme as it would have no prospect, realistic or otherwise, of delivering the additional electricity generation and energy storage proposed.
- 5.3.3 Furthermore, a ‘smaller development’ in terms of energy generating capacity has not been considered further as an alternative to the Scheme, in the context of NPS EN-1 paragraph 4.3.27. The Applicant has entered into a connection agreement with National Grid for the export and import of 500MW of electricity at Grendon Substation. Green Hill Solar Farm aims to fully utilise the capacity allocated in the connection agreement to reduce further need for additional projects to reach 500MW of renewable energy generation and storage capacity. A smaller scheme would not deliver the same 500MW generation capacity or energy security and climate change benefits as the Scheme, and as such would not represent a reasonable alternative.
- 5.3.4 The overarching need for the development is set out in **Section 6.2** of the PEIR. A Statement of Need which addresses the need for large scale solar assets will form part of the DCO application.

## 5.4 Alternative Sites

- 5.4.1 There is no standard methodology for the selection of sites for solar energy generating stations. However, as recognised by NPS EN-3 paragraphs 2.10.22- 2.10.25 (see paragraph 5.2.9 above), a viable grid connection is an essential material consideration for proceeding with a development and is instrumental in defining the search area. The selection of the Scheme’s location has followed a five-stage site selection process, that has sought to identify sites that meet the legislative and policy requirements, whilst recognising the need for the Scheme to be commercially viable. A detailed site selection assessment will be submitted with the DCO application. The site selection process and confirmation of the site suitability when considered against potential alternative sites is summarised in the following sections:

### Stage 1 – Identification of the Area of Search

- 5.4.2 During discussions with National Grid in 2022, the Applicant was notified of grid capacity at Grendon Substation. Due to the immediate availability of this Point of Connection (PoC), and in line with the recognition in NPS EN-1 that all suitable sites for energy infrastructure of the type proposed may be needed for future proposals, the Applicant did not consider any further alternative grid connection points for this project. The Applicant made a grid connection application to National Grid for connection at Grendon Substation and an offer was made by National Grid for 500MW.
- 5.4.3 As the grid connection offer specifies Grendon Substation as the PoC, the Applicant proceeded to look at sites that could accommodate a solar project in this location.
- 5.4.4 A land area of approximately 100 ha of solar panels (including landscaping and ecology mitigation land) is required to provide a solar scheme of 50MW. To supply the grid connection offer of 500MW, a total site size of approximately 1,000 ha (excluding cable route) is needed. The Applicant sought to find a total site which is around 10% larger than is needed for the grid connection offer. Based on Island Green Power’s experience of developing utility scale solar projects, a larger site size provides flexibility for the accommodation of additional mitigation measures and other constraints that may become known through the design development process.
- 5.4.5 An initial search area was identified at a 5km radius from the Grendon Substation. The search area was then enlarged incrementally, with the clear preference of identifying land as close to the Grendon Substation as possible, until sufficient options for the land required for the Scheme were identified with willing landowners within a 20km radius. This is considered by the Applicant to be a viable cable connection distance for a solar project of this scale. The search area is shown on **Volume 2, Figure 5.1**.

### Stage 2 – Exclusion of Planning, Environmental and Spatial Constraints

- 5.4.6 Stage 2 of the site selection process has included the mapping of planning, environmental and spatial constraints within the search area which have been identified through a review of relevant



national planning policies. **Table 5.2** below sets out the constraints that were mapped and considered.

**Table 5.2: Planning and Environmental Constraints Considerations**

Consideration	Discussion
Topography and site orientation	<p>It is important to note the following:</p> <p>Where potential sites are subject of physical obstructions which cannot be removed (such as Public Rights of Way, field boundaries, woodlands, rivers, highways and topography) the site area will need to be increased.</p> <p>The preference is for a site with a southerly aspect; however sites with other aspects cannot be dismissed. If a site with another aspect is pursued there is likely to be a need to increase the overall development footprint as there would be an operational need to increase the distance between arrays in order to avoid overshadowing.</p>
Agricultural Land Classification and land type	<p>Planning policy seeks to minimise impacts on the best and most versatile agricultural land (defined as grades 1, 2 and 3a) and preferably use land that is not classified as best and most versatile (grades 3b, 4 and 5) and where possible utilise previously developed land, brownfield land, contaminated land or industrial land.</p>
Designated international and national ecological and geological sites	<p>The following designations were identified and any land covered by these designations was excluded: Sites of Special Scientific Importance (SSSI), Special Areas of Conservation (SAC), Special Protection Areas (SPA), SPA protection buffer, Ramsar sites and National Nature Reserves (NNR).</p>
Nationally designated landscapes	<p>The presence of any National Landscapes or National Parks were considered and excluded from the area of search.</p>
Proximity to sensitive human receptors	<p>Consideration was given to the proximity of nearby sensitive human receptors which include residential dwellings and workplaces.</p>

**Agricultural Land Classifications**

- 5.4.7 As set out above, NPS EN-3 states that previously developed land, brownfield land, contaminated land and industrial land should be preferred for solar projects. Where use of agricultural land is necessary, poorer quality land should be preferred, avoiding the use of best and most versatile land where possible.
- 5.4.8 Consistent with national policy, as part of the site selection process the Applicant sought to exclude land that the best available data, being the Natural England Agricultural Land Classification (ALC) maps, identified as being within an agricultural land classification category that is, or includes, best and most versatile land: ALC grades 1, 2 and 3a.
- 5.4.9 The Natural England ALC maps do not differentiate between grades 3a and 3b. Therefore, at Stage 2 all land in Grades 1, 2 and 3 was excluded and the Applicant attempted to identify suitable sites within areas of Grade 4, 5 or unclassified land that was not affected by the other identified planning and environmental constraints listed above.

**Stage 3– Identifying Potential Solar Development Areas**

- 5.4.10 Stage 3 of the assessment then applied key operational criteria for large scale solar development - site size and land assembly; and site topography to further refine the areas identified at Stage 2.
- 5.4.11 Large areas of undeveloped, open land are required for large scale solar development as they have less vegetation to be removed prior to installation of the solar infrastructure. The selection of large open areas also reduces the amount of buffering required for tree root protection and the avoidance of shading when compared to using smaller fields or built-up areas, and can therefore reduce the solar development’s impact on vegetation such as hedgerows and trees.
- 5.4.12 An available single site of 1,100 ha. within sufficient proximity to the Grendon Substation was not identified. The Applicant therefore considered smaller individual sites that could be connected. In



the Applicant's experience, the minimum area for an individual site for large scale solar is at least 40 ha of contiguous land. This is the minimum site size threshold considered by the Applicant to be viable to form part of a network of sites, based upon the balance of costs of connecting infrastructure between individual sites and electricity losses from the multiple connection cabling necessary. The sites making up an NSIP-scale scheme should also be located in relative proximity to each other to ensure the level of voltage is maintained. This is the land area (including 10% contingency but excluding the land required for the cable route) required for a solar development to support the 500MW grid capacity available at Grendon Substation.

- 5.4.13 The use of previously developed (brownfield) land and commercial roof-tops was considered. There was no brownfield land that meets the minimum individual site size threshold nor the area of approximately 1,100 ha required for a network of sites in proximity for the Scheme, identified within the 20km search area from the Grendon Substation PoC. **Volume 2, Figure 5.4** which shows all brownfield sites over 1 ha in size taken from the most up to date Brownfield Land Registers of Bedford City Council, West Northamptonshire Council, North Northamptonshire Council, Central Bedfordshire Council and Milton Keynes City Council.
- 5.4.14 No commercial rooftops or combined premises of an adequate area to facilitate a large-scale solar project or provide a viable network of sites in proximity were identified.
- 5.4.15 Individual commercial rooftops would not meet the minimum 40 ha area site threshold as described above. The number of commercial rooftops required to meet this threshold would require multiple land ownerships, and the legal complexities and costs involved in combining multiple sites of this nature is not viable. The government has promoted financial incentives to encourage homeowners to install solar PV systems, and rooftop solar is recognised as being clearly desirable, both on residential and commercial premises. However, rooftop solar is not considered to be an alternative to the Scheme. Commercial premises and houses are both consumers and generators of electricity, which therefore limits the contribution they provide as low carbon and renewable alternatives to conventional sources of electricity production, and rooftop solar is therefore not an alternative to electricity production at grid scale. Roof-mounted solar panels should be deployed in addition to large scale solar farms, rather than instead of them.
- 5.4.16 There is a clear and urgent need for further renewable energy capacity, and this will likely include more distributed generation across the electricity distribution network. The Scheme presents a single, large-scale generating asset which addresses the project aims of delivering clean, cheap electricity to the consumer whilst making a significant contribution to the fulfilment of the UK's legally binding climate change commitments. More, smaller-scale solar PV developments will also be required in order to achieve these commitments, however they do not represent a realistic alternative to the development and are required in addition to large scale solar projects. Larger scale solar projects provide increased decarbonisation benefits and commercial benefits to consumers that are not achieved by smaller scale projects.
- 5.4.17 Stage 4 assessed further the suitability for an additional two potential development areas (PDAs) identified in Stage 3. These were named: PDA1 Yardley Hastings to Olney; and PDA2 Higham Ferrers to Bedford.
- 5.4.18 Each potential development area was evaluated against a series of planning, environmental and other operational assessment indicators which were derived from national and local planning and environmental policy objectives and the operational requirements of the Scheme. Volume 2, Figures 5.9 and 5.10 show the key environmental and planning constraints.
- 5.4.19 These indicators included further site designations (non-statutory), biodiversity, landscape and visual amenity, cultural heritage, flood risk, land use, access for construction constraints as well as operational considerations related to deliverability, such as the connection feasibility the areas to the Grendon Substation PoC.
- 5.4.20 Following the evaluation stage, neither of the two potential development areas proved suitable for inclusion in the Scheme due to a combination of constraints, including presence of ancient woodland and other factors. The evaluation assessment then proceeded to consider areas of Grade 3 ALC on the Natural England ALC maps, as set out at Stage 5 below.



### Stage 5 – Widening the Search to consider Grade 3 Agricultural Land

- 5.4.21 Following the decision that PDAs 1 and 2 were unsuitable for the Scheme, the site search was expanded to include the areas of Grade 3 agricultural land within the 20km search area. Potential areas (**Volume 2, Figure 5.12 Grade 3 Land**) were identified by following Stages 2 and 3.
- 5.4.22 Due to the large extent of Grade 3 agricultural land within the site area and in order to focus the search on available land. Land agents were contacted regarding potentially willing landowners within the area. The availability of willing landowners is an important consideration because it is typical for the land to be leased rather than permanently acquired due to solar farms consisting of temporary structures. In the absence of willing landowners, it would be necessary to acquire land through compulsory acquisition powers which the Applicant sought to avoid. It is also desirable to compile a site in as few land ownerships as possible to minimise project complexities (including engineering, design and mitigation measures), legal complexities and project costs.
- 5.4.23 Three additional PDAs (PDA3 A14 to Wellingborough, PDA4 Irthingborough and PDA5 A428 to Moulton) were identified. These are shown on **Volume 2, Figure 5.15, Figure 5.16 and Figure 5.17**. These PDAs were assessed against the same detailed range of planning, environmental and operational considerations used to assess the Stage 4 PDAs. Other areas of Grade 3 land within the 20km search area were discounted due to similar environmental and planning constraints to those discounted in Stage 4, lack of willing landowners, smaller land ownerships to be viewed as unviable due to project complexity (including engineering, design, costs and mitigation measures). They were not, therefore, investigated any further.

### Summary of the Alternatives Assessment

- 5.4.24 As set out above, the two PDAs identified on Grade 4 and 5 agricultural land and unclassified land and shown on **Volume 2, Figure 5.8** were discounted as unsuitable following evaluation against planning, environmental and other operational assessment indicators. Potential sites on Grade 3 agricultural land were then considered.
- 5.4.25 Three additional PDAs plus the Scheme were identified on Grade 3 agricultural land as shown on **Volume 2, Figures 5.14 to 5.17**. All were evaluated against the same planning, environmental and operational criteria.
- 5.4.26 Some of the additional land presented has come forward recently. The PDAs had higher constraints than the Scheme, which is shown on **Volume 2, Figure 5.11 Green Hill Development Site**. Details of the complete assessment will be provided within the full Site Selection Report to be submitted with the DCO application.
- 5.4.27 The Sites are within ten land ownerships, and this small number of landowners is advantageous in terms of minimising project complexity, legal complexity and cost. The landowners' ongoing operational requirements for farming and other diversified uses within their landholdings mean that not all the land was suitable, or available, for solar development. The combined factors of constraints assessment and landowner requirements influenced the choice and configuration of the Sites within the available landholdings.
- 5.4.28 Detailed ALC surveys and environmental surveys have been undertaken. The Applicant is working closely with the landowners in relation to BMV land identified by ALC surveys, to ensure that the most appropriate land for solar panels is included in the Order Limits for the DCO Application. The Applicant will review the site layout and consider areas of exclusion where practicable. In terms of the specific areas of BMV land that will be retained within the Scheme, these will be justified by factors related to their location and context within the Scheme, the wider landholdings and agricultural businesses, and in relation to adjacent and surrounding land. Details of specific changes made to the Scheme following the detailed ALC assessments and discussion with farmers will be set out within the detailed Site Selection Assessment to be submitted with the DCO application.
- 5.4.29 The focus of the site selection process was on the large-scale landownerships which were identified by agents as having potentially willing landowners. Details of all the constraints researched during the site selection process were mapped over the whole of the 20km search area as shown on **Volume 2, Figure 5.18 Overall Constraints**. This identified that there are few large areas of Grade 3 agricultural land that are free from constraints within the 20km search



area. The Sites that make up the Scheme described in PEIR represent the most appropriate and viable configuration of sites to take advantage of the connection availability at Grendon Substation.

## 5.5 Alternative Generation Technologies

- 5.5.1 As the Applicant is a solar PV and energy storage developer, alternative types of low-carbon forms of electricity generation have not been considered. However, notwithstanding this, it is not considered that the Site would be suitable for other forms of renewable generation at the same scale as the Scheme.
- 5.5.2 Tidal power, offshore wind and hydroelectric storage are considered not viable options due to the location of the Grendon Substation which is located approximately 125km from the coast and within an area of low topography with no local opportunities to source hydroelectric power from rivers. The cost of cabling over the required distance from the coast would be prohibitive.
- 5.5.3 Nuclear power was not considered as an alternative because of the high cost of electricity and the lengthy planning and development timeframe; circa 20 years, that such a project would involve. The Scheme will be able to start generating electricity much more quickly with a grid connection anticipated in 2029.
- 5.5.4 Nuclear power was not considered as an alternative because of the high cost of electricity and the lengthy planning and development timeframe; circa 20 years, that such a project would involve. The Scheme will be able to start generating electricity much more quickly with a grid connection anticipated in 2029. Co-location with battery energy storage will achieve.
- 5.5.5 Onshore wind development a potential alternative source of power generation. This type of technology has been discounted on grounds that the Applicant is a solar power developer with expertise in delivering large scale solar developments and the project objectives (energy output) can be delivered through solar energy.
- 5.5.6 In line with NPS-EN-3, the Applicant has sought to achieve co-location with battery energy storage as part of the Scheme. There is options to continue agricultural use within the Scheme to promote co-located uses.

### Solar Technology

- 5.5.7 The predominantly favoured technology for the solar panels is double height (2P) portrait tracking panels, laid out in north-south rows. These are favoured due to their higher energy output and efficiency, as they are able to track the movement of the sun throughout the day to maximise energy production. However, where glint and glare or landscape and visual issues are identified, an alternative single panel (1P) tracking module can be utilised due to its lower height. Alternatively, a south-facing fixed panel arrangement (laid out in east-west rows) may be required due to site and environmental constraints. Fixed panels tend to have a greater ground cover ratio and therefore shading than tracker panels. However, fixed panels are also less susceptible to flooding and can be positioned in areas that can experience greater flooding depths as it is easier to raise fixed panel frames above flood levels than tracker panels. The use of bifacial solar panels has been indicatively explored for both fixed and tracker options, bifacial panels can achieve a greater peak electrical output per hectare than monofacial panels. Bifacial solar panels feature photovoltaic cells on both sides of the panel, enabling the ability to absorb sunlight from either side whereas monofacial solar panels can only absorb sunlight from the front surface.

### Solar PV Array Foundations

- 5.5.8 There are two main options for fixing the solar panels to the ground. Primarily, the panels will be fixed using piles. These will likely be used for most of the Sites due to their ease of installation, minimal size, and recyclability. The main alternative, which may be used where piling would cause harm to underground archaeological remains, would be shallow concrete foot pads. The impacts of both types of foundation on ground conditions, particularly with regard to soil quality, are to be explored in greater detail in the DCO application. Other options for fixing solar panels to the ground which will be indicatively explored is the use of direct ramming and concrete.



**Battery Energy Storage Systems (BESS)**

The likely design for the energy storage system are container-type units which contain the batteries, and associated AC/DC inverters, heating, ventilation and cooling systems, to maximise efficiency and safety of the storage system. The design (as described in **Chapter 4 Scheme Description**) has been chosen due to industry standard principles; its layout flexibility and the ability to screen its building by way of landscape mitigation planting.

**Substations**

5.5.9 Substation design has been primarily driven by electrical design requirements for the Scheme as a whole. Each of the constituent Sites requires an individual substation, from where energy generated by the solar panel arrays is transported to the PoC by underground cable. The substations have been sized on the basis of the anticipated peak output from the solar arrays.

5.5.10 The use of standard air-insulated substations, or enclosed gas insulated switchgear substations has been explored. The functionality of air and gas insulated switchgear substations is identical, however gas-insulated substations have the benefit of a smaller footprint. However, gas-insulated substations can be taller and thus more visible in the surrounding landscape than air-insulated substations.

**5.6 Alternative Layouts and Design Evolution**

5.6.1 The design and extent of the Scheme is subject to an iterative process involving the developer, the design team, the environmental consultant team and is informed by feedback from statutory consultees, host authorities and local communities through the scoping and consultation process. The stages of iteration that have been and will be carried out are set out in **Table 5.3** below.

**Table 5.3: Scheme Design Iterations**

Stage	Key Design Considerations	Summary of Consultation Events and Activities	Outcome
Non-statutory consultation workshops (March to May 2024)	Outline site areas and initial Cable Route Search Area	Five workshops with stakeholder groups including political representatives, local community groups and technical specialists.  Each workshop included an introductory presentation followed by a question-and-answer session and an interactive ‘masterplanning’ session to inform the first environmental masterplan and layout	Feedback received from the non-statutory consultation has been used to inform the Scheme including but not limited to the location of solar panels and associated development, the provision of setbacks from public rights of way and other receptors, consideration of important views, retention of and enhancement through permissive routes and the potential routes to access the Scheme.
EIA Scoping appraisal, reporting and EIA Scoping Opinion (July to August 2024)	Outline Site areas and initial Cable Route Search Area	PINS consultation in accordance with EIA regulations.  Receipt of Scoping Opinion (August 2024)	Further design refinement to support the indicative masterplan, site layouts to help inform the statutory consultation process.
Statutory consultation November 2024	Confirmation of the developable areas for the preliminary scheme with solar panels and associated development, potential locations for substations, potential	Public and statutory consultee consultation (November to December 2024)  Ongoing stakeholder engagement with Natural England to discuss	Finalising the indicative masterplan for statutory consultation stage.  Further input from technical consultants and key



Stage	Key Design Considerations	Summary of Consultation Events and Activities	Outcome
	<p>mitigation and enhancement opportunities.</p> <p>The Cable Route Search Area further refined.</p>	<p>potential mitigation strategies relating to Upper Nene Valley Gravels SPA.</p>	<p>stakeholders to refine development parameters.</p> <p>Substation and BESS location and layout to be finalised.</p> <p>Cable route corridor to be refined based on landowner engagement, utilities providers, and stakeholder engagement regarding river crossings.</p>
<b>Future Stages to take place prior to DCO application acceptance</b>			
<p>Submission of DCO Application (Quarter 2 2025)</p>	<p>Design concept and parameters will be fixed for the Scheme.</p> <p>Design will take on information gathered from the completion of environmental surveys.</p> <p>Design will take on feedback received from the statutory consultation period.</p> <p>The cable corridor parameters will be defined and presented as part of the Order Limits within the DCO application.</p>	<p>Ongoing stakeholder engagement throughout statutory consultation process</p> <p>Further environmental surveys</p>	<p>Amendments to layout based on public and statutory body comments</p> <p>Full substation and BESS layout provided by electrical design consultants</p> <p>Cable route agreed following further environmental assessments and landowner consultation and agreement.</p>

**Sites**

- 5.6.2 The Scheme layout, as shown in Figure 4.1. Indicative Masterplan, has been informed by the matters set out in **Table 5.4.** below.
- 5.6.3 The high level design principles developed by the Applicant and used to shape the design of the Scheme are set out in Appendix 4.2.
- 5.6.4 Table 5.4 sets out initial parameters that have been used to inform the indicative masterplan. For the indicative masterplan, offset distances were informed by the technical consultant team based on their professional judgement and previous experiences.
- 5.6.5 Areas between the fencing and the developable area boundaries have been considered for ecology and landscape mitigation or enhancement.

**Table 5.4: Preliminary Design Parameters for Sites**

Criteria	Consideration	Parameter
Planning, policy and legislation	Planning applications and allocations	Avoidance of any land subject to pending planning applications and site allocations.
Technical and engineering requirements	Access	<p>Accessibility by vehicle to all fields for maintenance access</p> <p>Accessibility by vehicle to all inverters</p> <p>Accessibility by vehicle to site substations</p>



Criteria	Consideration	Parameter
	Electrical Design	Conversion units will be required on each Site at a maximum rate of one conversion unit per 2.5 MW of peak solar energy generation.
Environmental constraints	Landscape and Visual	Proximity of residential properties – minimum 50m offset to curtilage boundary  Identification of key visual receptors and key views
	Ecology and Biodiversity	Avoidance of national ecological designations  Proximity to local ecological designations and sensitive ecological receptor – minimum 20m offset to designated area.  Buffers for ecological receptors will be defined for the design concepts and parameters for the DCO application.
	Hydrology, Flood Risk, and Drainage	Avoidance of flood storage areas.
	Mineral Resources	Avoid creating an obstruction to the future exploitation of mineral resources subject to minerals resource safeguarding.
	Cultural Heritage	Avoidance of national cultural heritage designations.  Areas of major significance archaeology to be avoided where practicable.  Areas of moderate significance archaeology to be limited to restricted loading and non-penetrative foundations.  Context and settings of cultural heritage assets to be considered.
	Transport and Access	Consideration of existing access points and local highway network.  Accessibility by vehicle to all fields for maintenance access.  Accessibility by vehicle to all inverters.  Accessibility by vehicle to site substation.
	Glint and Glare	Consideration of panel backtracking or additional mitigation to screen glint and glare.
	Agricultural Land Classification	Minimise the use of best and most versatile land developed upon where practicable.
	Telecommunications, Utilities, and Television Receptors	Avoidance of underground utilities – subject to easement widths.  Avoidance of overhead power lines – subject to easement widths, 15m minimum to pylons
Land use and ownership constraints	Landowner agreement to site solar panels within their land.  Seeking to use land in the same ownership for each site to minimise project and legal complexities.	



Criteria	Consideration	Parameter
		Where possible reducing interaction on strategic road infrastructure, utilities and other infrastructure.

5.6.6

The key considerations made between site layout iterations have been shown in **Table 5.5** below. The layouts included within PEIR are subject to on-going review and may change within the DCO application. Please see **Volume 2, Figures 3.3.1 to Figures 3.3.5** for the exact locations for fields (e.g. AF1, BF2) referenced in Table 5.5.

**Table 5.5: Summary of Design Considerations and Iterations made to date for the Sites**

Site Area	Stage of Design	Key Design Considerations and Iterations
Green Hill A	Pre-Statutory Consultation	Field AF11 had solar arrays removed following identification of archaeological potential.  Fields AF10, AF12, AF6, AF19 and AF21 were removed for siting solar arrays for ecology reasons.  Field AF15 –within this area, solar panels were sited further to the east than original concept plan due to topography and views from the existing property on Newland Road.
Green Hill B	Pre-Statutory Consultation	Field BF2 – there is identified archaeology interest in this area. Space has been considered for mitigation buffer accommodated within southern extend of Field BF2.
Green Hill C	Pre-Statutory Consultation	Fields CF3 and CF3a were excluded from siting proposed infrastructure due to landscape, ecology and glint and glare constraints.
Green Hill E	Pre-Statutory Consultation	Fields EF9, EF19, EF20, EF21, EF25 and EF26 were removed from consideration for siting solar panels due to archaeology and landscape impacts.  Fields EF29 and EF30 - solar arrays were discounted due to open elevated views from Earls Barton across two views which would be difficult to mitigate due to landform and cannot mitigate at source.
Green Hill F	Pre-Statutory Consultation	Fields FF12 excluded due to high ecological value.  Fields FF13, FF14, FF16 and FF17 were discounted from solar arrays due to potential visual impacts on Maudit and Grendon Churches and impact on PRoW.  FF14 field was discounted from siting solar arrays due to field having high ecological value.  Field FF2 field margin excluded due to ecology impact.  Field FF20 excluded from the infrastructure parameters.  Fields FF6, FF9, FF22, FF23 and FF24 discounted from siting solar arrays due to higher ecological value.  Field FF27 discounted for siting solar arrays due to dense multiphase archaeology (Roman Villa of potential national importance and burial site).  Field FF5 discounted for siting solar arrays due to potential archaeology and ecology constraints and impacts.  Fields FF7, FF6 and FF18 discounted for siting solar arrays due to land being within Flood Zone 3 (highest zoned land for probability of flooding).



**Alternative Substation Locations**

5.6.7

The positioning of a substation within each of the Sites, and a main substation near to the PoC, are requirements of the Scheme primarily driven by electrical design. The considerations made by the Applicant and consultant team have been listed in **Table 5.6** below. Most of these considerations were adopted as parameters across the Site to ensure consistency of approach, however site-specific requirements – led by the substation size – were also included. Parameters such as offset distances were informed by the technical consultant team based on their professional judgement and previous experiences. Once applied, a red, amber, green (RAG) assessment was undertaken to determine the most suitable areas within the developable area for the positioning of the substations.

**Table 5.6: Preliminary Design Parameters and Design Principles for Substation Location**

Criteria	Consideration	Parameters and Design Principles
Planning, policy and legislation	Planning applications and allocations	Avoidance of any land subject to pending planning applications and site allocations.
Technical and engineering requirements	Access	Accessibility by vehicle to site for maintenance and construction.  Accessibility by oversized loads to substation site.
	Site Area	Large enough size to accommodate substation design (site specific).
	Safety	Avoidance of location within 300m of residential properties.
Environmental constraints	Landscape and Visual	Location and orientation to be considered against key visual receptors and key views.
	Ecology and Biodiversity	Avoidance of national ecological designations.  Avoidance of onsite species-rich habitat.
	Hydrology, Flood Risk, and Drainage	Avoidance of Flood Zone 2 or 3 where practicable.  Avoidance of areas of medium or higher surface water flooding risk.
	Cultural Heritage	Avoidance of national cultural heritage designations.  Areas of significant archaeology to be avoided.  Context and setting of cultural heritage assets to be considered.
	Agricultural Land Classification	Consider avoidance of best and most versatile land.
	Telecommunications, Utilities, and Television Receptors	Avoidance of underground utilities – subject to easement widths.  Avoidance of overhead power lines – subject to easement widths.
	Noise and Vibration	Avoid siting near to sensitive residential receptors.
	Ground conditions	Avoidance of unstable ground.



Criteria	Consideration	Parameters and Design Principles
		Consideration of ground capacity for heavy infrastructure.

## 5.7 BESS Design Evolution

- 5.7.1 The location of the BESS compounds within Green Hill BESS has been based on their technical feasibility, environmental impact, and alignment with planning regulations.
- 5.7.2 A preliminary appraisal of the three fields within Green Hill BESS has been undertaken based on technical feasibility, environmental impact, and alignment with planning regulations.
- 5.7.3 The location and siting of the main substation within Green Hill BESS is another key consideration for the Scheme. A preliminary site appraisal has been undertaken and the pros and cons of each field is set out in Table 5.7

**Table 5.7 BESS Substation Preliminary Site Appraisal**

Field	Pros	Cons
BESS1	<p>The substation footprint can be accommodated within BESS1.</p> <p>Visual impact on Pastures Farm would be less than BESS2.</p> <p>National Grid has confirmed that the Point of Connection will be at the southern end of Grendon Substation, making the cable route from BESS1 more efficient than from BESS3.</p> <p>The majority of BESS1 lies outside the flood zone.</p>	<p>Grendon village, located to the east of the BESS site, forms a Conservation Area. Due to topography (whereby the village sits on a hill), there is good visibility between BESS1 and buildings within the Conservation Area. The agricultural setting of the land adjacent to Grendon contributes to the significance of the Conservation Area. Therefore, siting the substation in this field would negatively impact the Conservation Area. North Northamptonshire’s Heritage Officer has confirmed this and their preference for siting the substation in BESS2.</p> <p>Attempting to screen the substation with additional planting would also impact the heritage setting and is unlikely to provide sufficient screening due to the higher elevation of the village from BESS1.</p> <p>Public Rights of Way (PRoW) passing through the area would expose the substation to views from multiple vantage points, increasing its visibility.</p> <p>BESS1 is more exposed from Station Road, making it less suitable compared to BESS2 in terms of minimising visual impacts to road users.</p>
BESS2	<p>The substation fits within BESS2.</p> <p>The cable route from BESS2 is as efficient as from BESS1, ensuring a direct connection to the southern end of the Grendon Substation.</p> <p>BESS2 provides a greater buffer from Grendon village and its Conservation Area, significantly reducing any adverse heritage impacts.</p> <p>North Northamptonshire’s Heritage Officer has endorsed BESS2 as the preferred location, ensuring alignment with planning guidelines aimed at</p>	<p>While the visual impact on Pastures Farm is somewhat greater than at BESS1, this can be effectively mitigated with targeted planting along the open northern edge, ensuring that the substation remains discreet and as visually unobtrusive as possible.</p>



Field	Pros	Cons
	<p>preserving heritage sites (please see correspondence received below).</p> <p>The existing woodland belts surrounding BESS2 offer natural screening, especially from Station Road, making the substation blend into the landscape with minimal additional screening required.</p> <p>There are no Public Rights of Way with direct views into BESS2, further reducing potential visual impacts.</p> <p>Despite its classification within the flood zone, hydraulic modelling confirms that BESS2 is not at risk of flooding.</p>	
BESS3	<p>BESS3 is well-shielded from Grendon village and its Conservation Area.</p>	<p>BESS3 does not meet the necessary space requirements due to its proximity to overhead lines and public footpaths, making it unsuitable for the substation.</p> <p>Hydrologic modelling reveals that BESS3 lies entirely within a flood zone, increasing the risk of operational disruptions.</p> <p>Its location adjacent to the SSSI (Site of Special Scientific Interest) and SPA (Special Protection Area) raises significant environmental concerns that would complicate planning approval.</p>

5.7.4 Within Green Hill BESS, BESS2 is considered the most suitable location for the substation. This site offers advantages, including compliance with heritage and planning guidelines and natural visual screening.

5.7.5 Table 5.8 sets out the preliminary design parameters that will be taken forward and developed for the design at the BESS.

**Table 5.8 Preliminary Design Parameters for BESS**

Criteria	Consideration	Parameters and Design Principle
Planning, policy and legislation	Planning applications and allocations	Avoidance of any land subject to pending planning applications and site allocations.
Technical and engineering requirements	Access	<p>Accessibility by vehicle to site for maintenance and construction.</p> <p>Accessibility by oversized loads to substation site.</p>
	Site Area	Large enough size to accommodate flexibility for future detailed design.
	Safety	Site BESS away from residential properties.
Environmental constraints	Hydrology, Flood Risk and Drainage	<p>The BESS will protect the water environment through good pollution control practice.</p> <p>The BESS will be resilient from flooding both now and in the future and not increase the risk of flooding elsewhere.</p>



Criteria	Consideration	Parameters and Design Principle
	Landscape and Visual	Location and orientation to be considered against key visual receptors and key views.
	Ecology and Biodiversity	Avoidance of national ecological designations. Avoidance of onsite species-rich habitat where possible.
	Hydrology, Flood Risk, and Drainage	Avoidance of areas of medium or higher surface water flooding risk.
	Cultural Heritage	Avoidance of national cultural heritage designations. Areas of significant archaeology to be avoided. Context and setting of cultural heritage assets to be considered.
	Agricultural Land Classification	Consider avoidance of best and most versatile land.
	Telecommunications, Utilities, and Television Receptors	Avoidance of underground utilities – subject to easement widths. Avoidance of overhead power lines – subject to easement widths.
	Noise and Vibration	Avoid siting near to sensitive residential receptors.
	Ground conditions	Avoidance of unstable ground. Consideration of ground capacity for heavy infrastructure.

## 5.8 Alternative Cable Routes

5.8.1 The proposed Cable Route Search Area has been refined and reduced from that set out at earlier stages of the project. The guiding design parameters for definition of the Cable Corridors are set out in **Table 5.8** below.

**Table 5.8: Design Parameters for Cable Route Corridors**

Site Area	Stage	Key Design Considerations
Planning, policy and legislation	Planning applications and allocations	Avoidance of any land subject to pending planning applications and site allocations.
	Minerals Resource Safeguarding	Avoid creating an obstruction to the future exploitation of mineral resources subject to minerals resource safeguarding. Wherever possible, cable routes should follow existing infrastructure corridors such as roads, railways, drainage routes or existing pipelines or cable routes, or alternatively follow the edge of significant landscape features such as woods rather than directly crossing open fields.
Technical and engineering requirements	Electrical design	Seek to achieve the shortest route between the Sites.
Environmental constraints	Ecology and Biodiversity	Avoidance of national ecological designations



Site Area	Stage	Key Design Considerations
		Proximity to local ecological designations and sensitive ecological receptor Minimisation of crossings of major watercourses Consideration of particular constraints and requirements e.g. HDD drilling.
	Cultural Heritage	Avoidance of national cultural heritage designations
Land use and ownership constraints		Avoidance of residential properties and curtilage Affecting a minimum number of landowners. Where possible reducing interaction on rail network, strategic road infrastructure, utilities and other infrastructure.

5.8.2 Refinement of the wider Cable Route Search Area has helped to produce a more focussed search area to be presented for PEIR. This has been led primarily by landowner consultation. This consultation has been used to determine which landowners would be most supportive of the use of their land for the cable route. Alongside this, a desk-based parameters approach has identified land with extant planning permissions or ongoing planning applications, so that these can be avoided. Consideration has also been made to avoid ecological designations, residential properties, and avoids areas of cultural heritage identified through Historic Environment Records.

5.8.3 As has been identified previously, the Cable Route Search Area presented for the PEIR is still indicative and is to be refined following statutory consultation.

## 5.9 Summary and Conclusions

5.9.1 This chapter of PEIR has described the consideration of alternatives and design evolution in relation to the Scheme so far. Alternative Sites have been considered and the selection of the Scheme's location has followed a systematic step-by-step process as set out above. This has taken a sequential approach to the consideration of potential sites in terms of agricultural land classification based upon publicly available Natural England Land Classification data.

5.9.2 The land for the Scheme performs better or equal to the other assessed PDAs following the site selection process. There Applicant has not identified any alternative suitable locations for the Scheme within the search area.

5.9.3 The Sites would not be suitable for alternative forms of renewable generation at the same scale as the Scheme. Tidal power, offshore wind and hydroelectric storage were not possible due to the location of Grendon Substation which is located approximately 125km from the coast and due to other constraints associated with topography and visual impact. Nuclear power was not considered as an alternative because of the high cost of electricity and the lengthy planning and development timeframe; circa 20 years, that such a project would involve. The Scheme will be able to start generating electricity with a grid connection anticipated in 2029.

5.9.4 Alternative layouts for the solar panel areas, alternative substation locations and alternative cable routes have all been considered from the early scoping stages of the project and will continue to evolve through to submission of the DCO application. This iterative design process has resulted in the Scheme meeting the requirements of the Energy NPSs in the context of efficiently delivering large scale renewable energy infrastructure. It also provides a new network of environmental features which deliver a range of ecosystem services, incorporating biodiversity, heritage, landscape and access.

## 5.10 References

Ref.1 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, 2017 No.572. *[as amended]*.



- Ref.2 DESNZ (2024). Overarching National Policy Statement for energy (EN-1). Department of Energy Security and Net Zero. Available at <https://www.gov.uk/government/collections/national-policy-statements-for-energy-infrastructure>.
- Ref.3 DESNZ (2024). National Policy Statement for electricity networks infrastructure (EN-5). Department of Energy Security and Net Zero. Available at <https://www.gov.uk/government/collections/national-policy-statements-for-energy-infrastructure>.
- Ref.4 DESNZ (2024). National Policy Statement for renewable energy infrastructure (EN-3). Department of Energy Security and Net Zero. Available at <https://www.gov.uk/government/collections/national-policy-statements-for-energy-infrastructure>.
- Ref.5 Planning Inspectorate (2018). Nationally Significant Infrastructure Projects - Advice Note Seven: Environmental Impact Assessment: process, preliminary environmental information and environmental statements. Available at <https://www.gov.uk/government/collections/national-policy-statements-for-energy-infrastructure>.



## 6 Energy Need, Legislative Context and Energy Policy

### 6.1 Introduction

- 6.1.1 This Chapter of the PEIR sets out the legislative policy framework for the Scheme. Regard is had to legislation, national energy policy, national planning policies and guidance, and local planning policies, when undertaking the EIA.
- 6.1.2 A summary of the key legislative and policy provisions is provided below. Each topic chapter clearly identifies the legislative and policy context that is relevant to the particular chapter.
- 6.1.3 The legislative context and the compliance of the proposals with national energy policy will be considered in the Planning Statement (and associated Appendices) to be submitted in support of the Application.

### 6.2 Energy Need

- 6.2.1 The need which the proposals address will be set out in full in the Statement of Need to be submitted as part of the Application.
- 6.2.2 The Climate Change Act 2008 sets out that the UK has targeted 2050 to achieve Net Zero emissions (Ref.1). Carbon Budgets place a restriction on the amount of greenhouse gases the UK can emit over a 5-year period. The Carbon Budget Order 2021 (referred to as the Sixth Carbon Budget) (Ref.2) applies for the period 2033 to 2037 and requires a 78% reduction in UK territorial emissions between 1990 and 2035.
- 6.2.3 Between 2021 and 2050, electricity demand is forecast to increase by between 62 and 100%. New electrification demands require a major expansion of renewable and other low-carbon power generation to ensure that the UK is capable of securely meeting future electricity demand, with a significantly lower carbon intensity. The decarbonisation of the UK's electricity generation sector is therefore vitally important to meet the UK's legal obligations on carbon emissions.
- 6.2.4 Existing generation assets such as nuclear power has historically met circa 20% of domestic demand, but existing nuclear stations began to close in 2021. Only one will remain beyond 2028. One new nuclear project is scheduled to commission in the late 2020s, any others will not be commissioned before the mid-2030s. Just one UK coal station (Ratcliffe-on-Soar, 2.0GW) remained commercially operational beyond September 2021 with operational life at four other units (two at West Burton A and two at Drax, with a combined generation capacity of 2.2GW) extended to respond to system stress events only since 1<sup>st</sup> October 2021 until their closure in March 2023. Ratcliffe-on-Soar coal power station closed on 30<sup>th</sup> September 2024. The decommissioning of existing generation assets increases the requirement to develop new low-carbon generation with urgency in order to “keep the lights on”.
- 6.2.5 In April 2022, HM Government published the British Energy Security Strategy. The Government's energy strategy sets out how Britain's energy security will be boosted following rising global energy prices and volatility in international markets (Ref.4). The Government wants to accelerate the deployment of wind, new nuclear, solar and hydrogen whilst supporting the production of domestic oil and gas which would see 95% of electricity by 2030 being low carbon. The document sets out *“If we're going to get prices down and keep them there for the long term, we need a flow of energy that is affordable, clean and above all, secure. We need a power supply that's made in Britain, for Britain.”* (Ref.4). The strategy outlines that further and faster actions are required to increase UK national energy security and reduce dependency on fossil fuels, and the exposure consumers currently have to volatile prices.
- 6.2.6 Specifically in reference to solar, the ambition is to look to increase the UK's current 14GW of solar capacity up to 5 times by 2035. The Government stated that it will continue supporting the effective use of land by encouraging large scale projects to locate on previously developed, or lower value land, where possible, and ensure projects are designed to avoid, mitigate, and where necessary, compensate for the impacts of using greenfield sites.
- 6.2.7 Solar generation is a critical element of the plan to decarbonise the UK electricity sector with urgency and is already a leading low-cost generation technology in the UK. The national need for



solar generation is urgent and the capacity required is significantly greater than the capacity of projects currently understood to be in development.

- 6.2.8 Solar addresses important aspects of existing and emerging government policy. It will make a critical and timely contribution to decarbonisation and security of supply in the UK, will help shield consumer bills from volatile energy prices, and provides the potential to deliver biodiversity net gains through its development.

### 6.3 Primary Legislation

- 6.3.1 The Planning Act 2008 (Ref.5) sets out the process for the consenting of major infrastructure projects and is the principal legislation governing an application for development consent for a Nationally Significant Infrastructure Project (NSIP). The Planning Act 2008 therefore forms the basis for the decision to grant a DCO.

- 6.3.2 Under the Act the Scheme constitutes an NSIP because:

- It consists of “the construction or extension of a generating station” (Section 14(1)(a) of the Planning Act 2008);
- “It is in England” (Section 15(2)(a) of the Planning Act 2008);
- “It does not generate electricity from wind” (Section 15(2)(aa) of the Planning Act 2008);
- “It is not an offshore generating station” (section 15(2)(b) of the Planning Act 2008); and
- “Its capacity is more than 50 megawatts” (Section 15(2)(c) of the Planning Act 2008).

- 6.3.3 In accordance with Section 104(2) of the Planning Act 2008, the Secretary of State is required to have regard to any relevant National Policy Statement (NPS), amongst other matters, when deciding whether or not to grant a DCO. A DCO, if granted, has the effect of providing consent for development, in addition to a range of other powers, consents and authorisations, where specified, as well as removing the need for some consents (such as planning permission).

- 6.3.4 Section 115 of the Planning Act 2008 also states that a DCO can include consent for ‘Associated Development’, which is development that is not an NSIP in its own right, but which is associated with the NSIP. This may be development that supports the construction, operation and maintenance or decommissioning of the NSIP; which helps to address the impacts of the NSIP; or is of a type normally brought forward with the NSIP.

### 6.4 Energy Policy

- 6.4.1 National Policy Statements (NPS) set out the policy basis for NSIPs. If a NPS has effect in relation to the type of development to which the DCO relates, then the Secretary of State must decide the DCO application in accordance with the relevant NPS (unless an exception applies) (Section 104 of the Planning Act 2008).

- 6.4.2 NPS EN-1 confirms there is a critical national priority for low carbon and renewable energy infrastructure, including large-scale solar development. Solar projects are essential in the UK’s energy landscape, particularly in achieving renewable energy targets set by key Government policies such as the NPSs.

- 6.4.3 The Secretary of State must therefore decide the DCO application in accordance with following NPSs that have effect in respect of the Scheme:

- Overarching National Policy Statement for energy (EN-1), November 2023 (Ref.6);
- National Policy Statement for renewable energy infrastructure (EN-3), November 2023 (Ref.7); and
- National Policy Statement for electricity networks infrastructure (EN-5), November 2023 (Ref.8).

- 6.4.4 NPS EN-3 includes specific policy on solar photovoltaic generation at Section 2.10, which addresses matters including:



- Need;
- Site selection;
- Irradiance and site topography and capacity of site;
- Grid connection;
- Proximity of a site to dwellings;
- Agricultural land quality;
- Accessibility;
- Public rights of way;
- Security and lighting;
- Site capacity;
- Site Layout and appearance;
- Project lifetime;
- Decommissioning;
- Design flexibility;
- Ecology and biodiversity;
- Landscape, visual and residential amenity impacts;
- Glint and glare;
- Cultural heritage;
- Construction impacts;
- Mitigation;
- Decision making; and
- Consideration of impacts.

## 6.5 Other Planning Policy

6.5.1 The following national planning policy documents are of relevance:

### National Planning Policy Framework (NPPF), as amended December 2023

6.5.2 The NPPF (Ref.9) sets out the Government's planning policies for England. NPPF Paragraph 5 sets out that the document does not contain specific policies for NSIPs and that applications in relation to NSIPs are to be determined in accordance with the decision-making framework set out in the Planning Act 2008 and relevant NPSs, as well as any other matters that are considered both important and relevant.

6.5.3 A consultation on a series of proposed reforms to the NPPF was carried out during 2024. The consultation is aimed to seek views on the proposed approach to revising the NPPF to achieve sustainable growth in the planning system.

6.5.4 Following the Deputy Prime Minister's address to the House of Commons on 30 July 2024, the long-awaited proposed reforms to the NPPF, together with other changes to the planning system, have been published for consultation. The consultation includes a proposal to raise the threshold at which solar projects are determined by the Secretary of State under the NSIP regime, increasing the existing threshold of 50MW to 150MW.

### Planning Practice Guidance: Renewable and low carbon energy, June 2019

6.5.5 National Planning Practice Guidance (Ref.11) supports the policies set out within the National Planning Policy Framework. The guidance on 'Renewable and Low Carbon Energy' sets out that:



*“The deployment of large-scale solar farms can have a negative impact on the rural environment, particularly in undulating landscapes. However, the visual impact of a well-planned and well-screened solar farm can be properly addressed within the landscape if planned sensitively.”*

6.5.6 Other factors within the guidance refers to suitability for solar farms are that solar developments are normally temporary structures and planning conditions can be used to ensure that the installations are removed when no longer in use and the land is restored to its previous use.

6.5.7 Other factors for solar farms to consider include: care to ensure heritage assets are conserved in a manner appropriate to their significance including the impact of proposals on views important to their setting. the potential to mitigate landscape and visual impacts through, for example, screening with native hedges; and the energy generating potential, which can vary for a number of reasons including, latitude and aspect.

#### Local Planning Policies

6.5.8 The Host Authorities have adopted the following documents that may constitute important and relevant matters:

- North Northamptonshire Joint Core Strategy 2011-2031 (Adopted 2016) (Ref.12) ;
- Wellingborough Local Plan Part 2 (Adopted 2019) (Ref.13);
- West Northamptonshire Joint Core Strategy Local Plan Part 1 (Adopted 2014) (Ref.14);
- Daventry Local Plan 2011-2029 Part 2 (Adopted 2020) (Ref.15);
- Northamptonshire Minerals and Waste Local Plan (Adopted 2017) (Ref.16); and
- Milton Keynes Plan: MK 2016 to 2031 (Adopted 2019) (Ref.17).

6.5.9 Neighbourhood Plans:

- Earls Barton Neighbourhood Plan 2011-2031 (Made 2016) (Ref.18); and
- Lavendon Neighbourhood Plan 2019 to 2031 (Made 2019) (Ref.19).

6.5.10 Two of the Host Authorities have emerging Local Plans:

- Emerging North Northamptonshire Local Plan (Issues and Scope Consultation March 2022) (Ref.20);
- Emerging West Northamptonshire Local Plan (Regulation 18 draft approved March 2024) (Ref.21); and
- Emerging MK City Plan 2050 (Ref.30).

6.5.11 The following policy documents published by Host Authorities or relating to the Host Authority areas may also constitute important and relevant matters in respect of the Scheme:

- Biodiversity Supplementary Planning Document (SPD) for Northamptonshire August (2015) (Ref.22);
- Biodiversity SPD for Daventry District 2017 (Ref.23);
- Upper Nene Valley Gravel Pits Special Protection Areas SPD (adopted by North Northamptonshire August 2015) (Ref.24);
- Upper Nene Valley Gravel Pits SPD Addendum: Mitigation Strategy (adopted by North Northamptonshire December 2016) (Ref.25);
- Upper Nene Valley Gravel Pits Special Protection Areas SPD (adopted by West Northamptonshire August 2021) (Ref.26);
- Upper Nene Valley Gravel Pits SPD Addendum: Mitigation Strategy (adopted by West Northamptonshire March 2022) (Ref.27);
- Trees and Landscape SPD (East Northamptonshire and Wellingborough Areas February (2013) (Ref.28); and



- South Northamptonshire Air Quality and Emissions Mitigation SPD January (2020) (Ref.29).

## 6.6 References

- Ref.1 Climate Change Act 2008, 2008 c.27. *[as amended]*
- Ref.2 The Carbon Budget Order 2021, 2021 No.750.
- Ref.3 HM Treasury (2020). National Infrastructure Strategy. Available at [www.gov.uk](http://www.gov.uk)
- Ref.4 DESNZ, Prime Minister's Office, BEIS (2022). British Energy Security Strategy. Department for Energy Security and Net Zero; Prime Minister's Office, 10 Downing Street; and Department for Business, Energy & Industrial Strategy. Available at [www.gov.uk](http://www.gov.uk)
- Ref.5 Planning Act 2008, 2008 c.29.
- Ref.6 DESNZ (2024). Overarching National Policy Statement for energy (EN-1). Department of Energy Security and Net Zero. Available at [www.gov.uk](http://www.gov.uk)
- Ref.7 DESNZ (2024). National Policy Statement for renewable energy infrastructure (EN-3). Department of Energy Security and Net Zero. Available at [www.gov.uk](http://www.gov.uk)
- Ref.8 DESNZ (2024). National Policy Statement for electricity networks infrastructure (EN-5). Department of Energy Security and Net Zero. Available at [www.gov.uk](http://www.gov.uk)
- Ref.9 DLUHC (2023). National Planning Policy Framework. Department for Levelling Up, Housing and Communities. Available at [www.gov.uk](http://www.gov.uk)
- Ref.10 Town and Country Planning Act 1990, 1990 c.8. *(as amended)*
- Ref.11 DLUHC and MHCLG (2023). Guidance: Renewable and low carbon energy. Department for Levelling Up, Housing and Communities; and Ministry of Housing, Communities & Local Government. Available at [www.gov.uk](http://www.gov.uk)
- Ref.12 North Northamptonshire Joint Core Strategy 2011-2031 (Adopted 2016)
- Ref.13 Wellingborough Local Plan Part 2 (Adopted 2019)
- Ref.14 West Northamptonshire Joint Core Strategy Local Plan Part 1 (Adopted 2014)
- Ref.15 Daventry Local Plan 2011-2029 Part 2 (Adopted 2020)
- Ref.16 Northamptonshire Minerals and Waste Local Plan (Adopted 2017)
- Ref.17 Milton Keynes Plan: MK 2016 to 2031 (Adopted 2019)
- Ref.18 Earls Barton Neighbourhood Plan 2011-2031 (Made 2016)
- Ref.19 Lavendon Neighbourhood Plan 2019 to 2031 (Made 2019)
- Ref.20 Emerging North Northamptonshire Local Plan (Issues and Scope Consultation March 2022)
- Ref.21 Emerging West Northamptonshire Local Plan (Regulation 18 draft approved March 2024)
- Ref.22 Biodiversity SPD for Northamptonshire August (2015)
- Ref.23 Biodiversity SPD for Daventry District 2017
- Ref.24 Upper Nene Valley Gravel Pits Special Protection Areas SPD (adopted by North Northamptonshire August 2015)
- Ref.25 Upper Nene Valley Gravel Pits SPD Addendum: Mitigation Strategy (adopted by North Northamptonshire December 2016)
- Ref.26 Upper Nene Valley Gravel Pits Special Protection Areas SPD (adopted by West Northamptonshire August 2021)
- Ref.27 Upper Nene Valley Gravel Pits SPD Addendum: Mitigation Strategy (adopted by West Northamptonshire March 2022)



- Ref.28 Trees and Landscape SPD (East Northamptonshire and Wellingborough Areas February (2013)
- Ref.29 South Northamptonshire Air Quality and Emissions Mitigation SPD January (2020)
- Ref.30 Emerging MK City 2050 Plan (accessed <https://www.milton-keynes.gov.uk/planning-and-building/planning-policy/new-city-plan>)