Rosefield Solar Farm

EIA Scoping Report

Volume 1
Main Report

November 2023

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1. Introduction

1.1. Background

1.1.1. Rosefield Energyfarm Limited (hereafter, the 'Applicant') has commissioned RSK Environment Limited to prepare an Environmental Impact Assessment (EIA) Scoping Report to accompany a request for a Scoping Opinion from the Planning Inspectorate (prepared on behalf of the Secretary of State) for the proposed Rosefield Solar Farm (hereafter, the 'Proposed Development').

1.1.2. The Proposed Development comprises the installation of solar photovoltaic (PV) generating modules, battery storage facilities, and grid connection infrastructure across a proposed site in Buckinghamshire (hereafter, the 'Site'). The Site is described further in **Chapter 2: Description of the Proposed Development**.

1.1.3. The Proposed Development is classified as a Nationally Significant Infrastructure Project (NSIP) and will require a Development Consent Order (DCO) under the Planning Act 2008 [**Ref. 1-1**]. The Proposed Development also falls under the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (hereafter, 'EIA Regulations') [**Ref. 1-2**], which require that, before consent is granted for certain types of development, an EIA must be undertaken.

1.1.4. It is important to note that at this stage, **Appendix A** shows the expected maximum extent of land that would be included within the DCO application, which includes all land being considered for the purposes of the Proposed Development, and provides a 'plan sufficient to identify the land' for the purposes of this EIA Scoping Report. It should be noted, this represents the likely maximum extent based on all the options for components that have been, and will be, the subject of consultation and is likely to be refined as the design of the Proposed Development progresses.

1.1.5. This EIA Scoping Report forms a formal request for a Scoping Opinion under Regulation 10(1) of the EIA Regulations.

1.2. Definition of an EIA

1.2.1. The term EIA describes a procedure that must be followed for certain types of projects before 'consent' can be given. The procedure is a means of drawing together, in a systematic way, an assessment of a project's likely significant environmental effects. This helps to ensure that the importance of the predicted effects and the scope for avoiding, preventing, reducing or, if possible, offsetting them are properly understood by the public and the authority granting consent (the 'determining authority') before it makes its decision.

1.3. Requirement for an EIA

1.3.1. The EIA Regulations set out the types of development which must be subject to an EIA (referred to as Schedule 1 development) and other developments, which may be subject to an EIA depending on certain parameters and / or their potential to give rise to significant environmental effects (referred to as Schedule 2 development).

1.3.2. The Proposed Development does not fall under any of the types of development set out in Schedule 1 of the EIA Regulations. However, the Proposed Development is of a type and scale described in Schedule 2 paragraph 3(a) of the EIA Regulations as follows:

"Energy industry

industrial installations for the production of electricity, steam and hot water (projects not included in Schedule 1 to these Regulations)";

1.4. Requirement for a DCO

1.4.1. The Proposed Development is defined as an NSIP under Sections 14(1)(a) and 15(2) of the Planning Act 2008 as an onshore generating station in England, exceeding 50 megawatts (MW).

1.4.2. Regulation 8(1) of the EIA Regulations requires the Applicant to do one of the following before carrying out statutory consultation under Section 42 of the Planning Act 2008:

a) *"ask the Secretary of State to adopt a screening opinion in respect of the development to which the application relates; or*

b) *notify the Secretary of State in writing that the person proposes to provide an environmental statement in respect of that development."*

1.4.3. It is considered that due to the Proposed Development's nature, size or location, it has the potential to have significant effects on the environment. The Applicant has therefore concluded that the Proposed Development does require an EIA and this EIA Scoping Report represents a notification, under Regulation 8(1)(b), that the Applicant will prepare and submit an Environmental Statement (ES) in support of the DCO application without prior request for a Screening Opinion.

1.4.4. The Localism Act 2011 [**Ref. 1-3**] appointed the Planning Inspectorate as the agency responsible for operating the DCO process for NSIPs. The Secretary of State will appoint an Examining Authority from the Planning Inspectorate, who will examine the application for the Scheme and make a recommendation to the Secretary of State, who will make the decision on whether to grant or to refuse the DCO.

1.4.5. Following the completion of the surveys, assessments, and consultation processes outlined in this EIA Scoping Report, an application for a DCO will

be made to the Secretary of State for determination in accordance with the Planning Act 2008. The DCO application will be accompanied by an ES, in accordance with Regulation 5(2)(a) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 ('APFP Regulations') [**Ref. 1-4**]. The ES will set out the methods and findings of a comprehensive EIA undertaken in line with the EIA Regulations.

1.4.6. In accordance with Section 104(2) of the Planning Act 2008 [**Ref. 1-5**], the SoS is required to have regard to the relevant National Policy Statement (NPS), amongst other matters, when deciding whether or not to grant a DCO. Solar PV and battery storage are not currently covered by an NPS and therefore those elements of the application will be determined under Section 105 of the Planning Act 2008 [**Ref. 1-5**].

1.4.7. In lieu of a technology specific NPS for Solar PV and battery storage, account will be taken of the following NPS, which is important and relevant to the Scheme: Overarching NPS for Energy (EN-1) [**Ref. 1-6**].

1.4.8. The SoS will also consider other important and relevant matters, including national and local planning policy. For example, the revised National Planning Policy Framework (NPPF) published in September 2023 [**Ref. 1-7**] is considered relevant national planning policy.

1.4.9. Whilst the NPSs are the primary consideration in deciding applications for DCOs, the local Development Plan can also be an important and relevant matter. The local Development Plans for the land in which the Scheme is located includes the following:

- Vale of Aylesbury Local Plan 2013 – 2033, adopted September 2021 [**Ref. 1-8**]
- Buckinghamshire Minerals and Waste Local Plan 2016 – 2036, adopted July 2019 [**Ref. 1-9**].

1.4.10. The purpose of considering the NPSs and other relevant national and local planning policy referred to above at the scoping stage of the EIA is twofold:

- To identify policy that could influence the sensitivity of receptors (and therefore the significance of effects) and any requirements for mitigation; and;
- To identify planning policy that could influence the methodology of the EIA. For example, a planning policy may require the assessment of a particular impact or use of a particular methodology.

1.4.11. Regulation 10(1) of the EIA Regulations sets out that *"A person who proposes to make an application for an order granting development consent may ask the Secretary of State to state in writing their opinion as to the scope, and level of detail, of the information to be provided in the environmental statement*".

1.4.12. In accordance with Regulation 10(3) of the EIA Regulations and the Planning Inspectorate's Advice Note Seven [**Ref. 1-10**], this EIA Scoping Report has been prepared with the purpose of ensuring that the subsequent

EIA is focused on the key impacts likely to give rise to significant environmental effects, and to obtain agreement on the EIA approach and scope.

1.4.13. As well as identifying matters to be considered in the EIA, this EIA Scoping Report also identifies those matters that are not considered necessary to assess further and are proposed to be scoped out. This approach is in line with the general aim to undertake proportionate EIA, as advocated by industry best practice.

1.4.14. Whilst this EIA Scoping Report seeks to establish the overall framework for the EIA in relation to the environmental factors and associated effects, the exact scope of the EIA will be influenced by the Scoping Opinion received, the on-going design evolution of the Proposed Development and through on-going baseline data collection (e.g., field surveys etc.). In this regard, a list of 'scoping questions' is presented within **Chapter 6** of this EIA Scoping Report, the aim of which is to assist the determining authority and its consultees in forming the Scoping Opinion.

1.4.15. **Table 1-1** sets out what information the EIA Regulations (Regulation 10(3)) state that a request for a scoping opinion must include and where this information can be found in this EIA Scoping Report.

1.4.16. **Table 1-2** sets out what information the Planning Inspectorate's Advice Note Seven recommends that a request for a scoping opinion should include and where this information can be found in this EIA Scoping Report.

Table 1-1: Information required by the EIA Regulations to accompany a request for a scoping opinion.

Information Required	Location within this report
A plan sufficient to identify the land	**Appendix A**
A description of the proposed development, including its location and technical capacity	**Chapter 2**
An explanation of the likely significant effects of the development on the environment	**Chapter 6**
Such other information or representations as the person making the request may wish to provide or make	**Chapters 2 to 6**

Table 1-2: Information required by the Planning Inspectorate's Advice Note Seven to accompany a request for a scoping opinion.

Suggested Information Requirements	Location within this report
The Proposed Development	
An explanation of the approach to addressing uncertainty where it remains in relation to elements of the Proposed Development e.g. design parameters	**Chapters 2 and 3**
Referenced plans presented at an appropriate scale to convey clearly the information and all known features associated with the Proposed Development	**Appendix B and C**
EIA Approach and Topic Areas	
An outline of the reasonable alternatives considered and the reasons for selecting the preferred option	**Chapters 2 and 3**
A summary table depicting each of the aspects and matters that are requested to be scoped out allowing for quick identification of issues	**Chapters 5 and 6**
A detailed description of the aspects and matters proposed to be scoped out of further assessment with justification provided	**Chapters 5 and 6**
Results of desktop and baseline studies where available and where relevant to the decision to scope in or out aspects or matters	**Chapters 5 and 6**
Aspects and matters to be scoped in, the report should include details of the methods to be used to assess impacts and to determine significance of effect e.g. criteria for determining sensitivity and magnitude	**Chapter 4, Chapter 6 and Appendix D**
Any avoidance or mitigation measures proposed, how they may be secured and the anticipated residual effects	**Chapters 4, 5 and 6**
Information Sources and Guidance	
References to any guidance and best practice to be relied upon	**Chapter 4, Chapter 5, Chapter 6 and Chapter 7**
Evidence of agreements reached with consultation bodies (for example the statutory nature conservation bodies or local authorities)	**Chapter 6**

Suggested Information Requirements	Location within this report
An outline of the structure of the proposed Environmental Statement	**Appendix E**

1.4.17. In accordance with the EIA Regulations, the ES will be based on the Scoping Opinion adopted.

1.4.18. The outputs of the EIA will comprise:

- A Preliminary Environmental Information Report (PEIR), produced to inform the statutory consultation process, in accordance with the Planning Act 2008. The PEIR will present the current understanding of the potential likely significant environmental effects at the time of the consultation and its purpose will be to provide information that enables interested parties, including members of the public, local authorities and statutory bodies, to understand those effects so that they can provide meaningful feedback; and
- The PEIR will be followed by the ES, which will be produced in support of the DCO application. The ES will report on a detailed assessment of the likely significant environmental effects resulting from the Proposed Development, to include taking account of the proposed mitigation measures.

1.5. References

Ref. 1-1: The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. Available online: https://www.legislation.gov.uk/uksi/2017/572/contents/made

Ref. 1-2: Planning Act 2008. Available online: https://www.legislation.gov.uk/ukpga/2008/29/contents

Ref. 1-3: HMSO (2011) The Localism Act 2011. Available online: http://www.legislation.gov.uk/ukpga/2011/20/pdfs/ukpga_20110020_en.pdf

Ref. 1-4: Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009. Available online: https://www.legislation.gov.uk/uksi/2009/2264/contents/made

Ref 1-5: HMSO (2008) The Planning Act 2008. Available at: https://www.legislation.gov.uk/ukpga/2008/29/pdfs/ukpga_20080029_en.pdf

Ref 1-6: Department of Energy and Climate Change (DECC) (2011) National Policy Statement for Energy (EN-1). Available online: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_da ta/file/47854/1938-overarching-nps-for-energy-en1.pdf

Ref 1-7: Ministry of Housing, Communities and Local Government (MHCLG) (2023) National Planning Policy Framework (NPPF). Available

online: https://www.gov.uk/government/publications/national-planning-policy-framework--2

Ref 1-8: Buckinghamshire Council (2021), Vale of Aylesbury Local Plan 2013 – 2033. Available online: https://buckinghamshire-gov-uk.s3.amazonaws.com/documents/Aylesbury_local_plan_L46JWaT.pdf

Ref 1-9: Buckinghamshire Council (2019), Buckinghamshire Minerals and Waste Local Plan 2016 – 2036. Available online: https://buckinghamshire-gov-uk.s3.amazonaws.com/documents/buckinghamshire-minerals-and-waste-local-plan-2016-2036_yiYUGSb.pdf

Ref. 1-10: Planning Inspectorate (June 2020) Advice Note Seven: Environmental Impact Assessment: Process, Preliminary Environment Information and Environmental Statements (Version 7). Available online: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-seven-environmental-impact-assessment-process-preliminary-environmental-information-and-environmental-statements/

2. Description of the Proposed Development

2.1. Introduction

2.1.1. This chapter provides a description of the Proposed Development for the purposes of identifying and reporting the potential environmental impact and likely significant environmental effects in this EIA Scoping Report. In addition, this chapter draws attention to the need for flexibility in the design process and provides a description of the Site.

2.1.2. The description of the Proposed Development represents the current understanding of the design parameters. However, as part of an ongoing design process, the detail provided in this chapter will be further refined for the PEIR. Following statutory consultation, further alteration to the description of the Proposed Development will be included in the ES which will confirm details for which development consent will be sought. This will include the final design parameters and any limits of deviation.

2.1.3. The construction and decommissioning methods to be utilised will eventually be determined by the appointed contractor(s). However, all works will be required to be undertaken within the parameters assessed for the Proposed Development and in line with the measures detailed within the associated management plans as detailed in **Section 2.4.3 – 2.4.7** below. The ES will clearly set out the construction and design parameters and the works that will be involved for each of the parcels comprising the Proposed Development. With this in mind, the EIA will ensure a clear understanding of assumptions and cumulative construction impacts to represent a 'worst case', ensuring a robust assessment of the likely significant environmental effects.

2.2. Approach to assessing uncertainty

2.2.1. In order to define the Proposed Development, determine where detail is to be included at DCO application stage and where it may be deferred until after consent is granted, the Applicant will identify the level of flexibility required, e.g. in relation to the number of solar photovoltaic (PV) modules or construction methods.

2.2.2. Many promoters of NSIPs seek to maximise flexibility in their consents given the long lead in times to consent and subsequent engagement of contractors. It is typical for a DCO to contain the ability to finalise the design of a scheme post-consent within set "limits of deviation" and / or parameters.

2.2.3. In order to maintain flexibility in the design, it is the Applicant's intention to use the 'Rochdale Envelope' approach within parameter ranges. The Planning Inspectorate's Advice Note Nine 'Rochdale Envelope' [**Ref. 2-1**] provides specific guidance to applicants on the degree of flexibility that could be considered appropriate under the Planning Act 2008 regime. The Advice Note acknowledges that there may be aspects of the design that are not yet fixed, and therefore, it will be necessary for the EIA to assess likely

worst case variations to ensure that all foreseeable significant environmental effects of the Proposed Development will be assessed.

2.2.4. The Rochdale Envelope is an acknowledged way of dealing with an application comprising EIA development where details of a project have not been fully resolved by the time the application is submitted. The term is used to describe those elements of a scheme that have not yet been finalised, but can be accommodated within certain limits and parameters, allowing the likely significant environmental effects of a project to be presented in the ES as a 'worst case'. It also provides the opportunity to assess aspects of a development where the detailed design is to be developed by the Applicant and approved by the determining authority under a DCO Requirement, subsequent to the DCO being made.

2.2.5. Furthermore, such flexibility may be useful where a slight change in the design or capacity of the Proposed Development is anticipated, but not yet certain. Therefore, it may be possible that a particular element of the design will be subject to on-going technological advancements. It will be important that a lack of flexibility in the DCO application does not unduly hinder the Applicant's ability to consider and adopt such future technological advancements. This is of particular importance due to the rapid pace of change in solar PV and battery storage technologies.

2.2.6. It is therefore necessary for the EIA to assess an 'envelope' within which the works will take place. To remain in accordance with the EIA Regulations, it will be essential that the parameters are defined to ensure that 'likely significant environmental effects' are identified, rather than unrealistically amplified effects, which could be deemed unlikely. These parameters will be considered in detail by the competent experts in the PEIR and ES to ensure the realistic 'worst case' effects of the Proposed Development are assessed for each potential receptor.

2.2.7. The parameters for the purposes of this EIA Scoping Report have been defined in **Section 2.4** of this report. The locations of potential development for solar PV development, Collector Compounds, Battery Energy Storage System (BESS), Rosefield Substation and mitigation and / or enhancement, are displayed in **Appendix B** and will be refined as the design of the Proposed Development develops. The 'worst case' scenario for each receptor has been assessed in this EIA Scoping Report.

2.2.8. Further detail on draft design approach that is being used to inform the EIA is presented in **Section 2.4**. Design parameters will be further developed for statutory consultation and presented in the PEIR. Final parameters and limits of deviation will be presented in the ES, Development Consent Order and works plans. A series of design principles will be developed and will be secured via the Development Consent Order.

2.3. Description of the Site

Site location and boundary

2.3.1. The Site is located within the administrative boundary of Buckinghamshire Council, in the county of Buckinghamshire (Grid reference: 472319, 224013). The Site measures approximately 875.47 ha (excluding the East Claydon National Grid substation) and extends across four separate parcels of land (Parcels 1, 1a, 2 and 3). The Site Boundary and land parcels are presented in **Appendix B**. The East Claydon National Grid substation is included in the red line boundary as it is the point of connection to the Grid however, it does not form part of the Rosefield Solar Farm hence why it is excluded from the Site's measurements.

2.3.2. The expected area of land potentially required for the construction, operation, maintenance, and decommissioning of the Proposed Development, which includes land required for permanent and temporary purposes, is shown at **Appendix A**. It is important to note that this will be subject to change as the design and EIA progress; however, **Appendix A** shows the envisaged current maximum extent of temporary and permanent land take for the Proposed Development, including the potential cable route options between each parcel.

2.3.3. Together with the description of the Proposed Development set out in **Section 2.4**, **Appendix A** represents the current maximum land expected to be required for the full range of possible development options which could form part of the Proposed Development. This allows for consideration of the potential environmental effects of the full range of options under consideration, to ensure that the likely significant environmental effects of each of the component options has been scoped into the assessment.

2.3.4. At this stage of the process, there is no known existing infrastructure within the Site that will need to be removed as part of the Proposed Development.

Site and surrounding area

Site location

2.3.5. The Site lies in close proximity to the settlements of Calvert, Middle Claydon, Botolph Claydon, East Claydon and Hogshaw. Steeple Claydon, Edgecott, Shipton Lee, Quainton, Granborough and Winslow are also located within 3 km of the Site.

2.3.6. The High Speed Rail 2 (HS2) works area is located adjacent to the western edge of Parcel 1 and Parcel 1a. It is approximately 100 m from Parcel 1 and 1a and less than 500 m from Parcel 2. This section of HS2 is currently in its construction phase.

2.3.7. There is variation in the features immediately surrounding each of the distinct land parcels within the Site, as presented below:

- **Parcel 1**: Parcel 1 is the westernmost parcel of the Site and 183 ha. The parcel is bordered by several woodland blocks including Shrubs Wood, Decoypond Wood and Sheephouse Wood. Calvert Road sits on the northern boundary of Parcel 1. The parcel of land is located in close proximity to the active HS2 works area, which is located approximately 100 m south of the Site Boundary. The mitigation planting associated with the HS2 works area intrudes within the parcel by approximately 50 m along the western boundary.
- **Parcel 1a**: Parcel 1a is the smallest parcel (15 ha) and is located to the southeast of Parcel 1. This parcel of land is bordered by Sheephouse Wood to the northwest and Romer and Greatsea Wood to the east. The parcel is bounded by hedgerows to the south. The parcel of land is located in close proximity to the active HS2 works area, which is located approximately 100 m west of the Site Boundary. Their mitigation planting extends along the public right of way which runs through the centre of the parcel.
- **Parcel 2**: Parcel 2 is located approximately 1 km east of Parcel 1a and is 228 ha. The parcel is bordered by Runt's Wood to the west, Finemere Wood to the south and the residential settlement of Botolph Claydon directly to the north.
- **Parcel 3**: Parcel 3 is the northern most parcel of land within the Site and is 55 ha. Adjacent to this Parcel lies the existing East Claydon National Grid Substation which will be the point of grid connection for the Proposed Development.

2.3.8. The land within the Site predominantly consists of agricultural fields, hedgerows and mature trees.

2.3.9. The area between each of the parcels within the Site (394 ha) is being investigated for underground cabling routes, access routes and temporary construction compounds, as detailed in **Appendix B**. The locations of these elements will be defined as the project design progresses.

2.3.10. To provide a wider understanding of the Site, a high-level overview of the following topics is provided below:

- Water resources (further detail in **Section 5.10**)
- Access and recreation (further detail in **Section 6.9**)
- Biodiversity (further detail in **Section 6.1**)
- Landscape (further detail in **Section 6.6**)
- Cultural Heritage (further detail in **Section 6.4**)
- Geology (further detail in **Section 6.5**)
- Existing infrastructure.

Water resources

2.3.11. There are no main rivers located within the Site. The closest is River Ray which is located approximately 200 m south of Parcel 2. The nearest other main river is Padbury Brook which is about 5.3 km north of the Site.

2.3.12. A number of minor ordinary watercourses and drainage ditches are indicated in the western section of Parcel 1, directly north of Parcel 1a, and directly east of Parcel 3.

2.3.13. These watercourses are unnamed but appear to form the headwaters of the Padbury Brook (in the northwest), the Claydon Brook (in the north / northeast) and the River Ray (to the south).

2.3.14. The Site is predominantly located within Flood Zone 1, including the entirety of Parcel 1 in the west and Parcel 2 located centrally. Areas of Flood Zones 2 and 3 do encroach into some areas of the Site, particularly in the north east of the Site area along the eastern boundary of Parcel 3. In the south there is an area of Flood Zone 3 that encroaches slightly onto the western fringe of Parcel 1a.

2.3.15. The Site is not located within a Source Protection Zone; however, it is located within a Drinking Water Safeguard Zone for surface water.

Access and recreation

2.3.16. Parcels 1 and 2 are bordered by a main road, Calvert Road, which provides direct access to Botolph Claydon and Calvert. East Claydon Road, which sits to the north of Parcel 3, provides direct access to the East Claydon National Grid Substation and the settlement of East Claydon. Parcel 1a is bounded by Sheephouse Wood, Greatsea Wood, and Muxwell Brook and is only accessible via a Public Right of Way heading south from Knowl Hill.

2.3.17. There is an extensive network of public rights of way (PRoW) within the Site which link with the surrounding settlements.

2.3.18. The following PRoW and bridleways identified below and displayed in **Appendix C** lie within the Site or intersect the Site Boundary.

- Public Bridleway (MCL/18/2) – Middle Claydon;
- Public Bridleway (MCL/19/1) – Middle Claydon;
- Public Bridleway (MCL/20/1) – Middle Claydon;
- Public Bridleway (MCL/20/2) – Middle Claydon;
- Public Footpath (MCL/22/1) – Middle Claydon;
- Public Footpath (MCL/23/1) – Middle Claydon;
- Public Footpath (SCL/12/1) – Steeple Claydon;
- Public Footpath (SCL/12/2) – Steeple Claydon;
- Public Footpath (SCL/13/1) – Steeple Claydon;
- Public Footpath (SCL/13/2) – Steeple Claydon;

- Public Bridleway (HOG/6/1) – Hogshaw;
- Public Footpath (HOG/7/1) – Hogshaw;
- Public Footpath (ECL/3/2) – East Claydon;
- Public Footpath (ECL/4/1) – East Claydon;
- Public Footpath (ECL/4/2) – East Claydon;
- Public Bridleway (ECL/5/1) – East Claydon;
- Public Footpath (ECL/7/1) – East Claydon;
- Public Footpath (ECL/7/2) – East Claydon;
- Public Footpath (ECL/8/1) – East Claydon;
- Public Footpath (ECL/8/2) – East Claydon;
- Public Footpath (ECL/9/1) – East Claydon;
- Public Footpath (ECL/9/2) – East Claydon;
- Public Bridleway (ECL/10/1) – East Claydon;
- Public Bridleway (ECL/10/2) – East Claydon;
- Public Bridleway (ECL/10/3) – East Claydon;
- Public Bridleway (ECL/10/4) – East Claydon;
- Public Bridleway (ECL/10/5) – East Claydon;
- Public Bridleway (QUA/38/1) – Quainton
- Public Footpath (QUA/39/1) – Quainton (Bernwood Jubilee Way Section 6)
- Public Bridleway (QUA/40/1) – Quainton (Bernwood Jubilee Way Section 6)
- Public Bridleway (QUA/40/2) – Quainton
- Public Bridleway (QUA/40/3) – Quainton
- Public Bridleway (QUA/40/4) – Quainton
- Public Bridleway (QUA/41/1) – Quainton
- Public Bridleway (QUA/42/2) – Quainton (Bernwood Jubilee Way Section 5)
- Public Bridleway (GUN/28/1) – Grendon Underwood
- Public Bridleway (GUN/33/1) – Grendon Underwood
- Public Footpath (GRA/2/1) – Granborough

2.3.19. The Site is currently accessible from several existing field accesses capable of accommodating large agricultural machinery.

Biodiversity

2.3.20. There are no statutory designations for nature conservation located within the Site. However, there are two Sites of Special Scientific Interest (SSSI) located in close proximity to the Site, as displayed in **Appendix C**. Sheephouse Wood sits in between the south of Parcel 1 and to the west of

Parcel 1a and is designated for its invertebrate fauna. Finemere Wood is located directly adjacent to southern extent of Parcel 2 and is designated for its invertebrate fauna and plant species.

2.3.21. There are several ancient woodlands that border or sit within 100 m of the Site. Shrubs Wood, Decoypond Wood, Sheephouse Wood and Home Wood lie in close proximity to Parcel 1. Parcel 1a is bordered by Sheephouse Wood and Romer Wood to the west and east. Parcel 2 is bordered to the West by Runt's Wood.

Landscape

2.3.22. The Site is not covered by any statutory landscape designations. The Chilterns Area of Outstanding Natural Beauty (AONB) is the closest statutory landscape designation to the Site, located approximately 18 km from the Site.

2.3.23. Parcels 1 and 1a and the northern section of Parcel 2 are located within Landscape Character Area (LCA) 7.3 Claydon Bowl with the southern section of Parcel 2 within LCA 9.1 Finemere Hill. Parcel 3 and an eastern portion of Parcel 2 are within LCA 5.7 Hogshaw Claylands.

2.3.24. In addition, the southern area of Parcel 2 is also located in a local designation of Quainton-Wing Hills Area of Attractive Landscape (AAL). This AAL is defined as "*defining the special qualities of local landscape designations in Aylesbury Vale District … [a] large area of undulating hills and ridges spanning east – west and populated with a series of small* villages". The extent of the AAL is displayed in **Appendix C**.

2.3.25. The topography of Parcel 1 and Parcel 1a is gently undulating. The highest point within this area of the Site, is the peak of Knowl Hill at approximately 116 m Above Ordnance Datum (AOD). However, this hill is relatively isolated with the remainer of Site 1 at approximately between 80 and 90 m AOD.

2.3.26. The topography of the eastern portion of the Site, which encompasses Parcel 2 and Parcel 3, is undulating. A low ridge extends through the area with the ridge crest at approximately 136 m AOD, north of Finemere Wood, and gradually declines to north of East Claydon. Parcel 2 is situated along the ridge crest and on the eastern face of the ridge. Parcel 3 is situated on the northeast of this ridge, and is on relatively flat ground at approximately 90 m to 94 m AOD.

Cultural heritage

2.3.27. There are no listed buildings located within the Site however, there are several in the surrounding area. The closest Grade I building is Claydon House located approximately 800 m north east of Parcel 1. The closest Grade II* building is Botolph House located approximately 350 m north of Parcel 2. There are 438 listed buildings within 5 km with several in close proximity to the Site, including:

- Pond Farmhouse Grade II (adjacent to Parcel 1).
- 23 Orchard Way Grade II, Quamby Grade II, and Pond Cottage Grade II (adjacent to Parcel 2).
- Weir Cottage Grade II (adjacent to Parcel 2).

2.3.28. The Site is situated adjacent to two Conservation Areas, namely Botolph Claydon and Middle Claydon. Botolph Claydon Conservation Area lies directly adjacent to the northern boundary of Parcel 2. Middle Claydon Conservation Area lies approximately 150 m to the north of Parcel 1 and approximately 390 m north west of Parcel 2.

2.3.29. Claydon Registered Park and Garden is located to the north of Parcel 1, approximately 200 m from the Site and overlaps with Middle Claydon Conservation Area.

2.3.30. There are no Scheduled Monuments located within the Site. However, the closest is 'Preceptory of the Knights Hospitallers, associated fishponds, medieval settlement of Hogshaw and the site of the medieval church of St John the Baptist, 200 m south of Hogshaw Farm'. This is located approximately 500 m east of Parcel 2.

2.3.31. There are no Registered Battlefields or World Heritage Sites within 3 km of the Site Boundary.

Geology

2.3.32. The bedrock geology across the land parcels comprises the following units, all of which are made up of mudstone layers:

- West Walton Formation
- Weymouth Mudstone Member
- Stewartby Member
- Peterborough Member

2.3.33. The superficial geological units within the Site include alluvium, till, glaciofluvial deposits and glacial deposits.

2.3.34. Made ground is potentially present in localised areas associated with farm buildings or tracks, and along the route of the historical railway within Parcel 3.

2.3.35. There are no operational mineral extraction sites within the Site Boundary and there is no evidence of historical quarrying or mineral extraction.

2.3.36. West of Parcel 1 forms an extensive area of quarrying associated with Calvert brickworks, parts of which have historically been used as landfills.

2.3.37. There are a number of mineral safeguarding areas across the land parcels. These all relate to alluvial deposits, which are present along the routes of watercourses as presented in **Appendix H, Figure 1**.

2.3.38. The bedrock deposits underlying the Site form unproductive strata, with superficial geological units defined as secondary A aquifers or secondary aquifers (undifferentiated). A secondary A aquifer is defined as permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.

2.3.39. No designated geological sites are recorded within or close to the Site.

Existing infrastructure

2.3.40. Three overhead power lines (400 Kilovolt (kV) transmission line), carried by pylon structures, traverse Parcel 3 from East Claydon Substation across to the east and south of this parcel of land.

2.3.41. A desk-based search of utilities within the Site has identified the presence of BT, Gigaclear, NGFibre, LV electric, EHV electric, and HV electric cables in the area. In addition, water and sewer utilities are present. The majority of these are located along Calvert Road with branches off to properties. The locations of existing utilities will be considered in the ongoing design development.

2.4. Description of the Proposed Development

Introduction

2.4.1. This section describes the main features of the Proposed Development, which consist of the following elements:

- Ground mounted solar PV generating station which comprises; solar PV modules and mounting structures.
- Balance of Solar System (BoSS) which comprises; inverters, transformers, switchgear.
- Collector Compounds comprising; switchgear, transformers, ancillary equipment, and operation, maintenance and welfare facilities, and security cabins.
- Rosefield Substation compound, which will include; substation including transformers, switching and control equipment, office / control / welfare buildings, storage areas, and provisions for vehicular parking and material laydown.
- Battery Energy Storage System (BESS) compound(s) which will include; office / control / welfare buildings and associated inverters, transformers, switchgear and ancillary equipment and their containers, enclosures, monitoring systems, air conditioning, electrical cables, and fire safety infrastructure.
- Ancillary infrastructure works including; underground cables, boundary treatments, security equipment, lighting, landscaping, access tracks, earthworks, surface water management, and any other works identified as necessary to enable the development.

- Landscaping, habitat management, biodiversity enhancement and amenity improvements.
- Highway works to facilitate vehicular access to the Site.

2.4.2. Each of the components outlined above and their associated key features are set out in the following sections.

2.4.3. The potential areas within the Site for the above elements are detailed in **Appendix B**.

Ground mounted solar PV generating station

Potential areas for solar PV generating station

2.4.4. Based on the site selection work completed by the Applicant (further detail provided in **Chapter 3**), the potential areas within the Site considered suitable for the solar PV generating station are presented in **Appendix B**.

Solar PV modules

2.4.5. Solar PV modules convert sunlight into electrical current (as direct current (DC)). Solar PV modules, commonly known as solar panels, are made up of individual bifacial photovoltaic cells that are arranged beneath layers of toughened glass.

2.4.6. The solar PV modules would contain bifacial cells which are located at the rear of the solar PV module and are transparent (glass or polymer) so that each solar PV module is exposed to light at the back and front to increase the energy generation.

2.4.7. The solar PV modules would measure approximately 2.3 m in length and up to 1.3 m wide.

2.4.8. The solar PV modules are typically dark blue/black in colour and held together by a metallic frame.

2.4.9. The solar PV modules are fixed to a mounting structure and are known as a ‘table’. Once the solar PV modules are electrically connected together in groups they are known as ‘strings’. Various factors will help inform the number and arrangement of the solar PV modules and it is likely some flexibility will be required to accommodate for future technology developments.

Mounting structure

2.4.10. The solar PV modules are typically mounted on a galvanised steel structure supported by vertical posts, known as a mounting structure.

2.4.11. There is an option for some structure legs to be supported by concrete footings to reduce piling depths or by shallow tripod-style piles, if required, due to the ground conditions or to reduce impacts on areas of archaeological sensitivity.

2.4.12. The mounting structure carrying the fixed solar PV modules will be designed to face southwards and angled at a slope of 10 to 30 degrees from horizontal to optimise daylight absorption.

2.4.13. Once attached to the mounting structure, the minimum height of the lowest part of the solar PV modules would be approximately 0.8 m above ground level (AGL). It is anticipated that the solar PV modules would be up to 3.5 m AGL in height.

2.4.14. The height of the solar PV modules can be influenced by several design factors including flood risk (and associated historic flood levels), local topography, visual receptors, land use practices, and the solar PV module type and configuration.

2.4.15. Archaeological investigation surveys (in the form of geophysical surveys and trial trenching surveys) and ground investigation surveys are being undertaken. Both sets of surveys will help inform the mounting structure design and construction method.

Balance of solar system

2.4.16. The Balance of Solar System (BoSS) refers to the components and equipment that convert the direct current (DC) electricity collected by the solar PV modules into alternating current (AC) and provide control and onward distribution of electricity across the site. Primarily, this includes inverters, transformers, switchgear and the associated cables.

2.4.17. This section sets out the different configuration options available for the Proposed Development, including the use of Collector Compounds.

Inverters

2.4.18. Inverters are required to convert the DC electricity collected by the PV modules into AC, which allows the electricity generated to be distributed to the collector compounds and then onto the Rosefield Substation where the voltage is increased for export to the National Grid. Inverters are typically sized to match characteristics of the DC electricity output from the solar PV modules.

2.4.19. It is currently expected that either string or central inverters would be used. String inverters are small enough to be mounted underneath the modules, as shown indicatively on **Plate 2.1**. A string inverter would be required for every PV string.

Plate 2.1: Typical String Inverter

2.4.20. Alternatively, centralised inverters may be used, which would be sited at regular intervals amongst the solar PV modules. Centralised inverters are typically housed in a steel or fiberglass enclosure, similar size to a shipping container as shown below in **Plate 2.2**.

Plate 2.2: Typical Centralised Inverter

Transformers

2.4.21. Transformers are required to step up the voltage of the electricity generated across the Site before it reaches the Rosefield Substation or Collector Compound.

2.4.22. Transformers would either be located standalone outdoors adjacent to the inverters and switchgear, as displayed in **Plate 2.3**, or housed indoors, alongside the inverters and switchgear within a container of similar size to a shipping container.

Plate 2.3: Typical outdoor transformer

Switchgears

2.4.23. Switchgears are the combination of electrical disconnect switches, fuses or circuit breakers to control, protect and isolate electrical equipment. Switchgear is used both to de-energise equipment to allow work to be done and to maintain safe operation. Switchgears are typically housed indoors within a container (as outlined below in **Section 2.4.29**) or can be located independently outdoors, adjacent to the outdoor transformer, as shown in **Plate 2.4**.

Plate 2.4: Typical outdoor switchgear

Configuration options for BoSS

2.4.24. There are two options under consideration, for the equipment to be located independently outdoors adjacent to each other or housed within an Inverter and Transformer Station (ITS) container. Both options would be located within fields identified as suitable for the ground mounted solar PV generating station.

2.4.25. As the design develops, the configuration of the BoSS will be determined post-consent based upon environmental and technical factors. A reasonable worst-case scenario will be assessed and presented in the PEIR and ES.

Independent outdoor equipment

2.4.26. As presented in **Plate 2.5**, with the independent outdoor equipment option, the inverter, transformer and switchgear are placed outdoors and are independent of each other. The approximate footprint for locating the inverter, transformer and switchgear together outdoors within the same compound is up to 20 m x 5 m in plan, and up to 4 m in height.

Plate 2.5: Example of independent outdoor equipment.

Inverter and Transformer Station (ITS)

2.4.27. As shown indicatively in **Plate 2.6**, with the ITS option, equipment (inverter, transformer and switchgear) is enclosed within a container. Typically, within a field containing approximately 20 MW of solar PV modules, there would be a requirement for approximately 4-8 ITS.

2.4.28. The ITS are typically the size of a shipping container, approximately 6.1 m by 2.4 m by 2.9 m. When including the foundations, the complete ITS dimensions will be approximately 6.1 m x 3 m in plan, and up to 4m in height. The ITS would be painted in a colour in keeping with the prevailing

surrounding environment, often with either a grey or dark green painted finish.

Plate 2.6: Example of an Inverter Transformer Station .

Collector Compounds

2.4.29. Consideration has been given to the potential use of Collector Compounds to reduce the underground cabling across the Site. It is anticipated that Collector Compounds would be located in Parcels 1, 2 and 3. The Collector Compounds would receive the medium voltage (33 kV) underground cables from the independent outdoor equipment or ITSs within the surrounding solar fields, depending on the final configuration. Underground cabling would then connect the Collector Compounds to the Rosefield Substation.

2.4.30. If required, the Collector Compounds would include switchgear and transformers to step up the voltage to 66 kV or 132 kV. The switchgear and transformers would be either housed within a contained indoor unit or within an independent outdoor fenced area. The Collector Compounds would also include an operation, maintenance and welfare building, and a security cabin, expected to be single storey.

2.4.31. The Collector Compounds are anticipated to be up to approximately 50 m x 50 m in plan, and the maximum height of the equipment within each compound may be up to 6 m.

2.4.32. Based on the early site selection work completed by the Applicant (further detail provided in **Chapter 3**), the potential areas considered suitable for Collector Compounds are presented in **Appendix B.**

2.4.33. The location of the Collector Compounds will be determined as the design of the project progresses with further detail presented in the PEIR and ES.

Rosefield Substation compound

Potential areas for Rosefield Substation

2.4.34. Based on the early site selection work completed by the Applicant (further detail provided in **Chapter 3**), the potential areas considered suitable for the Rosefield Substation are presented in **Appendix B**, which comprise several fields within the east of Parcel 2 and fields within Parcel 3 of the Site.

2.4.35. The location of the Rosefield Substation will be determined as the design of the project progresses with further detail presented in the PEIR and ES.

Description

2.4.36. The Proposed Development has secured a 500 MW grid connection agreement to allow export and import of electricity to and from the National Grid. The Rosefield Substation will facilitate the export and import of electricity from the Proposed Development to the National Grid.

2.4.37. The Rosefield Substation would consist of electrical infrastructure such as transformers, switchgear and metering equipment. This would also include a control building alongside office space, material storage and welfare facilities, and a security cabin and parking, as well as operational monitoring and maintenance equipment. The building(s) housing the above facilities would be of painted block or of prefabricated construction with external colours and finishes sensitive to the context to be confirmed prior to construction.

2.4.38. The Rosefield Substation compound is anticipated to have a footprint of approximately 40,000 m^2, with the majority of equipment approximately 6 – 7.5 m in height with some electrical infrastructure reaching up to 15 m in height.

2.4.39. It is considered likely that the BESS, detailed further below, would be located in close proximity to the Rosefield Substation. The configuration of the Rosefield Substation will be determined as the design progresses.

Battery Energy Storage System (BESS)

Potential areas for the BESS

2.4.40. Based on the early site selection work completed by the Applicant (further detail provided in **Chapter 3**), the potential areas considered suitable for the BESS are presented in **Appendix B,** which comprise several fields within the east of Parcel 2 and fields within Parcel 3 of the Site. The location of the BESS will be determined as the design of the project progresses with further detail presented in the PEIR and ES.

Description

2.4.41. The BESS is designed to provide peak generation and grid balancing services to the electricity grid. It would do this primarily by allowing excess electricity generated from the solar PV generating station to be stored in batteries and dispatched when required. It may also import surplus energy from the electricity grid when energy available to the grid exceeds demand.

2.4.42. The BESS units each comprise an enclosure for BESS electro-chemical components and associated equipment including transformers, inverters, switchgear, power conversion systems, monitoring and control system, Heating, Ventilation and Air Conditioning (HVAC) systems, electrical cables and fire infrastructure including water storage tanks and a shut off valve.

2.4.43. The BESS typically comprises a number of shipping container units, which could be either individual enclosures or housed within a large building.

2.4.44. The BESS may comprise DC / DC and AC / DC converters to control the charge of the batteries from the PV energy output and / or AC / DC inverters to control their charge using energy drawn from the National Grid.

2.4.45. Each BESS will require a HVAC system to ensure the efficiency of the batteries, which are integrated into the containers. This may involve a HVAC system that is external to the containerised unit located either on the top of the unit or attached to the side of the unit. If this uses air to heat and cool, it will have a fan built into it that is powered by auxiliary power.

2.4.46. A switchgear / control room operates, isolates and controls the exported power from the BESS. This would be located adjacent to the BESS within the same compound.

2.4.47. The BESS compound is anticipated to have an approximate footprint of 80,000 m^2, with a height of up to 7.6 m.

2.4.48. As the design develops, the configuration of the BESS will be determined based upon environmental and technical factors and informed by the feedback received during the consultation process. A reasonable worst-case scenario will be assessed and presented in the PEIR and ES.

Works to facilitate vehicular access to the Site

2.4.49. Due to the layout of the Site, there would be up to two principal access points to facilitate construction and operational traffic access to each of the proposed parcels. There would be one access point to facilitate access to Parcel 1, Parcel 1a and Parcel 2 and internal access tracks would be constructed to facilitate access between them. The second access point would facilitate access to Parcel 3.

2.4.50. The proposed access route would approach the Site from the southwest from the M40 corridor via the A41, bypassing the sensitive communities of Calvert, Quainton, Botolph Claydon and East Claydon.

2.4.51. The principal site access junction will be located on Quainton Road, where the Site Boundary is contiguous to the public road. The access for the BESS element will be located on Granborough Road, to the west of Lower Farm. Access to both site junctions will be via the A41, South Station Road, Snake Lane and Quainton Road.

2.4.52. Discussions with Buckinghamshire Council will be undertaken to confirm the access strategy and arrangements.

2.4.53. Operational access traffic will be limited to occasional van movements and would share the same access points as the construction traffic or utilise alternative existing access tracks.

2.4.54. Abnormal Indivisible Loads (AIL) heavy load route will be agreed in consultation with Buckinghamshire Council for the small number of AIL movements that would be undertaken during the temporary construction phase.

2.4.55. It is assumed that the access tracks within the Site for internal access and transportation within and between the land parcels will follow the alignment of existing agricultural tracks, wherever possible. The access tracks will typically be constructed of permeable materials such as gravel and will have a maximum running width of up to approximately 7.5 m. Where possible, existing trees and hedgerows will be retained.

Ancillary infrastructure works

On site cabling

2.4.56. Low voltage on-site electrical cabling is required to connect the solar PV modules and BESS units to inverters (typically via 1.5 / 1.8 kV cables), and the inverters to the transformers on-site (typically via 0.6 / 1.0 kV cables). Higher rated cables (around 33 kV) are then required between the transformers and the switchgears and from switchgears (Collector Compounds) to the on-site electrical infrastructure (typically via 33 kV cables).

2.4.57. On-site cabling will be laid underground. The dimensions of the trenches will vary depending on the number of cables they contain and are assumed to be up to approximately 16 m in width and generally down to approximately 1.5 m in depth. Cabling between solar PV modules and the inverters are typically required to be above ground level (along a row of racks), fixed to the mounting structure, and then underground (between racks and the inverter input).

2.4.58. Open-cut trenching methods would be used for a majority of the cable routing. However, subject to on-going engagement with utility providers and other stakeholders, there may be a requirement for trenches deeper than 1.5 m or specialist trenchless techniques (e.g., Horizontal Directional Drilling) for crossings of roads, environmental receptors, and other existing sensitive infrastructure.

Fencing and security

2.4.59. Fencing would enclose the operational areas of the Proposed Development. The fields encompassing the solar PV modules and supporting infrastructure would likely be fenced using 'deer fence' with wooden or metal post supports which typically have a maximum height of 2.5 m.

2.4.60. Permanent palisade steel fencing (up to 3 m high) would be installed around the perimeter of the Rosefield Substation, BESS and Collector Compounds.

2.4.61. Pole mounted close circuit television (CCTV) systems which typically have a maximum height of 5 m, are assumed to be deployed around the perimeter of the operational areas of the Site, including the Rosefield Substation compound.

2.4.62. The Rosefield Substation compound, BESS compound, and Collector Compounds would include manually operated or sensor activated lighting, in accordance with relevant standards, but would not be permanently lit. External lighting will be assessed in a lighting assessment which will detail measures that are proposed to minimise light spill and impacts to sensitive receptors.

Drainage

2.4.63. A detailed operational drainage design will be carried out pre-construction with the objective of ensuring that drainage of the land to the present level is maintained. It will follow one of two options. The first is that a new drainage system will be designed that takes into account the proposed new infrastructure (access tracks, cable trenches, structure foundations) and would be constructed. The second being that if during the construction any of the infrastructure interrupts the existing section of land drainage, then new sections of drainage would be constructed.

2.4.64. The design of new drainage systems will be based on the Flood Risk Assessment and hydrological assessment to be undertaken in support of the DCO application.

2.4.65. Infiltration drainage design will be in accordance with Building Research Establishment (BRE) Digest 365: Soakaway Design and Sewers for Adoption [**Ref. 2-2**].

2.4.66. Drainage and sewage systems are likely to be required at the Rosefield Substation and BESS compound. This will be determined following further design development.

Landscaping, habitat management and biodiversity enhancement

2.4.67. The Proposed Development will include landscaping, habitat management, biodiversity enhancement, and amenity improvements, which will be explored as the design progresses. The potential areas for landscaping, habitat management and biodiversity enhancement are outlined in **Appendix B**. It is not anticipated that there would be landscaping

improvements or enhancements to the siting area of the cable route corridor that is shown in grey in **Appendix B**.

2.4.68. This will be sensitively designed to retain and enhance ecological and recreational connectivity. The location, extent, type of habitat creation, establishment timeframe, and maintenance requirements will be set out in the Outline Landscape and Ecology Management Plan.

Construction phase

Construction programme

2.4.69. It is anticipated that the construction of the Proposed Development would be completed in one phase, which will be defined as the design progresses.

2.4.70. Subject to obtaining development consent and following a final investment decision, construction is scheduled to last for approximately 18 to 24 months, followed by a commissioning period of approximately 6 months.

Construction activities

2.4.71. The PEIR and ES will provide further details of the proposed construction activities, their assumed duration, along with an indicative programme of works. The types of construction activities that would be required include:

- Site preparation.
- Import of construction materials, plant and equipment to Site.
- Establishment of Site entrances, Site construction compounds, and welfare facilities.
- Upgrading existing tracks and construction of new access roads within the Site.
- The upgrade or construction of crossing points (bridges / culverts) at drainage ditches within the Site.
- Marking out the location of infrastructure.
- Erection of module mounting structures and mounting of modules.
- Installation of electric cabling, inverters, transformer cabins, and battery storage units.
- Construction of Project Substation, BESS compound, Collector Compounds and installation of equipment.
- Cable installation.
- Installation of temporary construction compounds.
- Trenching in sections.
- Appropriate storage and capping of soil.
- Appropriate construction drainage.
- Sectionalised approach of duct installation.

- Excavation and installation of jointing pits.
- Cable pulling.
- Testing and commissioning.
- Site reinstatement (i.e., returning any land used during construction, for temporary purposes, back to its previous condition).
- Landscaping and biodiversity enhancements.

Construction site compound and access

2.4.72. Temporary compounds would be established before commencement of the main construction works for the storage of materials, plant and equipment. The compounds would also include staff welfare facilities, waste storage, and offices.

2.4.73. Washing facilities would be provided at the Site entrances where required to allow site vehicles to be cleaned prior to re-joining the public highway. Such facilities may include static wheel washes, towable jet wash units, and pressure washers.

2.4.74. The temporary compounds would include hardstanding areas, with haul road connections comprising stone laid on a geotextile membrane. The construction compounds may require temporary lighting to ensure safety and security, especially in the winter months.

2.4.75. Temporary access tracks would be provided to link the temporary compounds to the Site access points. Where required, temporary access tracks would be constructed of stone laid on a geotextile membrane.

2.4.76. Further work will be undertaken to identify suitable locations and the land that is likely to be required for the temporary construction compounds (including laydown/storage areas), and access routes connecting to the Site from the local highway.

2.4.77. Street works may be required to the public highway outside of the Site in order to facilitate construction access. This will be determined following further work on the likely traffic impacts associated within the construction of the Proposed Development. This is expected to be confirmed for the PEIR, and in the DCO application.

Construction environmental management

2.4.78. An Outline Construction Environmental Management Plan will be submitted in support of the DCO application and will set out the key measures to be employed during construction to control and minimise the impacts on the environment.

2.4.79. The details and implementation of this will be secured by a DCO requirement. The purpose of the Outline Construction Environmental Management Plan is:

- To ensure nuisance levels as a result of construction and operation activities are kept to a minimum.
- To comply with relevant regulatory requirements and environmental commitments.
- To ensure procedures are put into place to minimise environmental effects during construction.

Soils management

2.4.80. An Outline Soils Management Plan will be prepared and submitted in support of the DCO application. The Outline Soils Management Plan will follow the principles of best practice to mitigate, manage and maintain the physical properties of the soil during the construction phase.

Construction traffic management

2.4.81. An Outline Construction Traffic Management Plan will be submitted in support of the DCO application, which will propose measures to ensure road safety for all users during the construction phase and to effectively manage any disruption that may be caused during the construction phase.

Construction reinstatement and habitat creation

2.4.82. A programme of construction reinstatement and habitat creation will commence during the construction phase. This will be detailed in the Outline Landscape and Ecology Management Plan.

Operational phase

2.4.83. Minor maintenance works are expected to occur throughout the operating life of the Proposed Development. It is assumed that inspections will be carried out and access will use the previously built construction roads and / or access points. Maintenance activities are likely to include:

- Regular visual inspection of all infrastructure.
- Regular scheduled inspections and testing of equipment.
- Replacement of consumable items (e.g. inverter filters).
- Cleaning of solar PV modules, if required.
- Repair or replacement of panels or other components, if damaged.
- Delivery of spare parts, replacement equipment items and consumables.
- Water management (e.g., clearing of drainage ditches).
- Vegetation management (e.g., cut back of grass, hedges, trees).

Operational environmental management

2.4.84. An Outline Operational Environmental Management Plan will be submitted in support of the DCO application, which will set out the principles and key measures that will be employed during the operation of the Proposed Development to control and minimise the impacts on the environment.

Soils management

2.4.85. An Outline Soils Management Plan will be prepared and submitted in support of the DCO application. The Outline Soils Management Plan will follow the principles of best practice to maintain the physical properties of the soil, with the aim of restoring the land to its pre-construction condition at the end of the lifetime of the solar farm.

Landscape and ecology establishment

2.4.86. A programme of landscape and ecology establishment will be carried out. An Outline Landscape and Ecological Management Plan will be submitted in support of the DCO application, which will set out the principles for how the land will be managed and monitored throughout the operational phase, following the completion of construction.

Public rights of way

2.4.87. In accordance with Section 55 Acceptance of Applications Checklist (version October 2019), the DCO application will be supported by a plan identifying any new or altered means of access, stopping up of streets or roads or any diversions, extinguishments or creation of rights of way or public rights of navigation. An Outline Public Rights of Way Management Plan will also be submitted in support of the DCO application.

2.4.88. The Outline Public Rights of Way Management Plan will include a schedule of public rights of way within the Site and outline the proposed measures to manage any requirements to temporarily ‘stop up’ public rights of way within the Site during construction with a suitable diversion in place.

Battery safety

2.4.89. A management plan for battery safety will be prepared and submitted in support of the DCO application in a document entitled Battery Safety Commitments. The Battery Safety Commitments will detail the regulatory guidance reviewed to ensure that all safety concerns around the BESS element of the Proposed Development are addressed insofar as is reasonably practicable.

Decommissioning phase

Ground mounted solar PV generating station, Rosefield Substation and BESS

2.4.90. For the purposes of the EIA, the decommissioning assessment will assume a 40-year operational life span for the ground mounted solar PV generating stations, Collector Compounds, Rosefield Substation, BESS and related access tracks and ancillary infrastructure.

2.4.91. At the end of the operational phase, any above ground infrastructure would be dismantled and removed in accordance with industry best practice at the time. It is assumed that all concrete, hardstanding areas, foundations for the infrastructure and any internal tracks will be removed to a depth of up to 1m. The use of decommissioned materials would follow the waste hierarchy such that they would be reused where possible before recycling and disposal were considered.

2.4.92. At the time that decommissioning would take place, the regulatory framework, good industry practices and the future baseline could have altered. The Applicant would implement a Decommissioning Environmental Management Plan taking account of good industry practice, its obligations to landowners under the relevant agreements and all relevant statutory requirements. An Outline Decommissioning Environmental Management Plan will be submitted in support of the DCO application, which will be secured by a DCO requirement.

2.4.93. The ES will outline the activities and works which would likely be required during the decommissioning of the Proposed Development, alongside any known proposals for the restoration of the Site.

2.5. References

Ref. 2-1: Planning Inspectorate (July 2018) Advice Note Nine: Rochdale Envelope (Version 3). Available at: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-nine-rochdale-envelope/

Ref. 2-2: Building Research Establishment (BRE) (2012), 'Digest 365: Soakaway Design and Sewers for Adoption' (7th Edition). Watford: BRE.

3. Reasonable alternatives considered

3.1. Introduction and approach

3.1.1. Regulation 14(2)(d) of the EIA Regulations states that an ES should 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 option chosen, taking into account the effects of the development on the environment'.

3.1.2. Section 9.3 of the Planning Inspectorate's Advice Note Seven [**Ref. 3-1**] 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'*. The ES will include a description of the reasonable alternatives that have been considered, including a clear narrative on the main reasons for selecting the chosen option, including a comparison of the environmental effects. The reasonable alternatives assessment will focus on; the site selection process, design layouts / opportunities within the Site, the sizing and scale of infrastructure, and alternative technologies.

3.1.3. A 'no development' alternative would not deliver the additional electricity generation capacity associated with the Proposed Development and will therefore not be considered further.

3.1.4. The consideration of alternatives and design evolution will be undertaken with the aim of avoiding and / or reducing significant adverse environmental effects, maintaining operational efficiency and cost-effective design solutions, and with consideration of other relevant matters such as available land and planning policy. This will be aided by the implementation of project design principles which will help guide the design of the Proposed Development.

3.2. Constraints analysis

3.2.1. The design work completed to date for the Proposed Development has focussed on identifying constraints / key receptors at the Site (and in close proximity to the Site) which are relevant to the type of infrastructure being proposed, as presented in **Appendix C**. Constraints analysis is an invaluable tool in decision making and can help 'avoid' and 'reduce' potential impacts on environmental, engineering, and technical receptors from the outset of the design process.

3.2.2. Information has been drawn from publicly accessible datasets, site surveys, desk-based research, consultation with the landowner and tenants, and consultation with utility providers. This early design work has been used to inform the scope of the EIA by identifying fields within each land parcel which are considered to be 'less constrained' and potentially suitable for development.

3.2.3. The size, scale, and preferred location for key features (permanent and temporary) of the Proposed Development will require careful consideration as the design process evolves. The early constraints work has focussed on identifying potentially suitable fields for the following design elements:

- Solar PV development;
- Collector Compounds;
- Rosefield Substation compound;
- BESS compound;
- Grid connection cable route; and
- Main construction access route.

3.2.4. To help guide this process, specific themes have been identified which will continue to inform the design (and parameters) of the Proposed Development. These include:

- Operational impact: Including consideration of operational assets and maintenance.
- Ecology: Including consideration of statutory / non-statutory designations, protected habitats and protected species.
- Landscape and visual: Including consideration of landscape character and visual amenity.
- Cultural heritage: Including consideration of known statutory / non-statutory designations and potential archaeological assets.
- Residential properties and sensitive activities: Including consideration of amenity impacts from construction activities and operation.
- Transport and access: Including consideration of linkages to the existing highway network and PRoW.
- Construction impacts: Including consideration of high level costs and logistic requirements.
- Hydrology and flood risk: Including proximity to watercourses, flood zones, and private water supply.
- Agricultural land: Where possible, avoidance of areas of Best and Most Versatile (BMV) land based on information available.
- Land and property: Including consideration of any restrictions associated with landowner agreements.
- Land use: Including proximity to existing infrastructure, local planning allocations, and known planning applications.
- Community and socio-economic: Including consideration of community facilities and accessibility.

3.2.5. A collaborative and multidisciplinary approach to the evaluation of each land parcel has led to the development of broad zones of potential development, as presented in **Appendix B**.

3.2.6. The evolving design of the Proposed Development will consider feedback from the scoping opinion, the non-statutory and statutory consultation process, continued engagement with landowners, engagement with statutory consultees and further environmental and technical surveys. Further detail on the design process will be provided within the PEIR and ES.

4. Approach to EIA

4.1. Introduction

4.1.1. This chapter sets out the overall approach that will be taken in the EIA for the Proposed Development. The ES will contain the information specified in Schedule 4 of the EIA Regulations. The approach to the assessment has been informed by current best practice guidance.

4.1.2. An overview of the guidance and methodology adopted for each environmental factor assessment is provided within **Chapter 6**.

4.1.3. The environmental factors listed under Regulation 5(2) of the EIA Regulations are presented below.

- Air quality.
- Biodiversity.
- Climate.
- Cultural heritage.
- Population.
- Human health.
- Land and soil (factors combined for the purposes of reporting).
- Landscape and visual.
- Material assets and waste.
- Water.

4.1.4. It should be noted that although not listed as specific environmental 'factors' under Regulation 5(2) of the EIA Regulations, the following are also considered within this EIA Scoping Report:

- Glint and glare.
- Heat and radiation.
- Major accidents and disasters.
- Noise and vibration.
- Utilities.
- Transport and access.
- Electric, magnetic and electromagnetic fields.

4.1.5. The proposed structure of the ES is set out in **Appendix E**.

4.2. Consultation

4.2.1. Consultation alongside the EIA process is critical to the development of a comprehensive and proportionate ES. The views of statutory and non-statutory consultees are important to ensure that the EIA from the outset focuses on specific issues where significant environmental effects are likely, and where further investigation is required.

4.2.2. The consultation, as an ongoing process, enables embedded and additional mitigation measures to be incorporated into the Proposed Development to limit adverse environmental effects and optimise environmental benefits.

4.2.3. Early and ongoing engagement with consultees will be important to influence the design process of the Proposed Development by seeking an appropriate level of feedback from consultees, to ensure that comments are considered in the evolving design. The consultation responses will be recorded in a Consultation Report, which will be submitted in support of the DCO application.

4.2.4. Non-statutory consultation was held from 28th September until 10th November 2023. The aims of non-statutory consultation are to:

- Outline the broad parameters of the Proposed Development;
- Gather feedback on the early design;
- Understand key community and stakeholder concerns, insights and proposed design enhancements;

4.2.5. Statutory consultation is expected to be held in Q2 / Q3 2024. The aims of statutory consultation are to:

- Set out current proposals, demonstrating how the early consultation feedback has been accounted for and considered within the Proposed Development design.
- Take formal feedback to ensure that regard has been had to the views of local community and identify opportunities for further design enhancements.
- Identify opportunities for further design refinements, if any.

4.2.6. As part of the EIA process, consultation will be undertaken with a range of statutory and non-statutory consultees. It is anticipated at this stage that consultees will include (but is not limited to):

- Buckinghamshire Council;
- Natural England;
- Historic England;
- Environment Agency;
- Berkshire, Buckinghamshire, and Oxfordshire Wildlife Trust;
- National Highways; and
- Buckinghamshire Fire and Rescue Service.

4.2.7. The consultation undertaken to date, and the consultation planned, for each of the environmental factor assessments is provided in further detail in **Chapter 6**.

4.3. General difficulties and uncertainties

4.3.1. Factor-specific difficulties and uncertainties are set out in **Chapter 6**. The following key general difficulties and uncertainties apply to a number of environmental factor assessments:

- The detailed design of the Proposed Development is still emerging, as are the environmental surveys and assessments required to support the planning and EIA process. This EIA Scoping Report is provided based on the information available at the time of writing. Where relevant, the proposed scope will be reviewed and updated to reflect developments in the Proposed Development design that may occur post-scoping and agreed with relevant statutory consultees. Any changes to the scope of the EIA will be reported as necessary in the PEIR and the ES.
- As the location and area of the components that the Proposed Development comprises are not yet defined or fixed, there is potential for uncertainty regarding the scope of assessment for each factor. However, the description of the Proposed Development presented in **Chapter 2** details the maximum parameters of the Proposed Development components as they are currently known, therefore outlining the 'worst case scenario'. The 'worst case' is the scenario that will be assessed within the PEIR and ES and therefore whatever location or footprint is decided and applied, the PEIR and ES will ensure that the maximum level of significant environmental effects is considered.
- Data from third parties relied upon for the baseline against which any effects will be assessed could potentially be out of date or inaccurate. However, any such data will be procured from reputational and industry standard sources. It will be reviewed and used by competent and experienced professional experts. The combination of appropriate data sources being used by competent and experienced experts should ensure that the data is suitable for its purpose and will therefore provide an appropriate evidence base on which the existing environmental baseline will be informed.

4.4. Defining the study area

4.4.1. Study areas have been defined individually for each environmental factor, taking into account the geographic scope of the potential impacts relevant to that factor and the information required to assess those impacts. The proposed study areas for each environmental factor assessment are described within **Chapter 6**.

4.5. Establishing baseline conditions

4.5.1. Environmental effects of the Proposed Development will be described in the PEIR and ES in relation to the extent of changes to the existing baseline environment as a result of the construction, operation and decommissioning of the Proposed Development.

4.5.2. The baseline environment will comprise the existing environmental characteristics and conditions, based upon desk-top studies and field surveys undertaken and information available at the time of the assessment.

4.5.3. Baseline conditions will be established by:

- Site visits and surveys;
- Desk based studies; and
- Modelling.

4.5.4. The baseline conditions for each environmental factor assessment will be set out within the respective assessment chapters. Currently known baseline conditions relevant to the individual factor assessments are presented in **Chapter 6**.

4.5.5. As stated above in **Section 4.3**, there is potential that data obtained from third parties is not up to date. The origin of all third-party data used will be clearly identified, alongside any difficulties, uncertainties and assumptions.

4.6. Establishing future baseline conditions

4.6.1. Schedule 4(3) of the EIA Regulations requires consideration of the likely evolution of the current state of the environment (baseline scenario) in the absence of the Proposed Development, as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge (the 'future baseline'). Whilst there are considerable limitations to the predictions that can be made about natural baseline conditions at a future point in time, reasonable effort will be made to characterise the future baseline in the absence of the Proposed Development in each environmental factor assessment. In addition, some assessments require projections to account for future change, such as traffic growth within the assessment of likely significant environmental effects associated with the Proposed Development.

4.7. Assessment scenarios

4.7.1. The assessment scenarios that are being considered for the purposes of the EIA are as follows:

- Existing baseline (without Proposed Development) – Reported at the time that the baseline data has been collected.

- Future baseline (without the Proposed Development) – For comparison with the construction phase, operational phase and decommissioning phase.
- Construction of the Proposed Development – As presented in Chapter 2, construction is scheduled to last for approximately 18 to 24 months. The environmental factor assessment chapters will assess the relevant 'worst case' construction scenario and where necessary, the relevant period or 'peak' of activity within the construction programme.
- Operation of the Proposed Development – The environmental factor assessment chapters will assess the relevant 'worst case' scenario where necessary.
- Decommissioning of the Proposed Development.

4.8. Approach to mitigation

4.8.1. Mitigation can be relied on to reduce any potential significant environmental effects from the Proposed Development. The sequential steps of the mitigation hierarchy are as follows:

- **Avoidance**: Take measures to avoid creating impacts from the outset;
- **Minimisation**: Measures taken to reduce the duration, intensity and extent of the impact if they cannot be avoided;
- **Restoration**: Measures taken to improve ecosystems following exposure to unavoidable impacts; and
- **Offset**: Measures taken to compensate for any residual impacts.

4.8.2. The Institute of Environmental Management and Assessment's (IEMA) 'Environmental Impact Assessment Guide to Shaping Quality Development' [**Ref. 4-1**] refers to three distinct forms of mitigation:

- **Primary**: An intrinsic part of the project design
- **Secondary**: Typically described within the factor chapters of the ES, but often are secured through planning conditions and / or management plans.
- **Tertiary**: Required regardless of any EIA, as it is imposed, for example, as a result of legislative requirements and / or standard sectoral practices.

4.8.3. For the purposes of this EIA Scoping Report, the PEIR and the ES, embedded 'primary' mitigation measures will form part of the Proposed Development for which consent is sought. **Table 4.1** describes the embedded (primary) environmental mitigation measures that are considered to be an inherent part of the Proposed Development to date i.e., the project design principles adopted to avoid or prevent adverse environmental effects, based on the design of the Proposed Development to date. It should be noted that these will likely evolve over the course of the design evolution, up to submission of the DCO application.

4.8.4. These embedded (primary) environmental mitigation measures should not be confused with additional (secondary and tertiary) mitigation measures proposed in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment, which are described under the 'Additional (Secondary and Tertiary) Mitigation Measures' section within each environmental factor assessment section (**Chapter 6**).

Table 4-1: Embedded (primary) environmental mitigation measures.

Environmental Factor to which the Embedded (Primary) Mitigation Measure Relates	Embedded (Primary) Mitigation Measure
Landscape and visual Noise and vibration Air quality Electric, magnetic and electromagnetic fields (EMF)	There will be a minimum 250 m offset from ITS / standalone central inverters and transformers, BESS, Rosefield Substation and Collector Compounds to residential properties.
Biodiversity	Boundary fencing will not be constructed through existing hedgerows or across ditches, where practicable.
	There will be a minimum 20 m offset from the Proposed Development to existing ancient woodlands.
	There will be a minimum 15 m offset from the Proposed Development to existing woodlands.
	An appropriate offset informed by the ecological surveys will be provided from the Proposed Development to all existing hedgerows.
	There will be a minimum 20 m offset from the Proposed Development to statutorily and locally designated wildlife sites.
	There will be a minimum 30 m offset from the Proposed Development to main badger setts.
	Proposed hedgerows will be planted using locally native species where possible, with a variety of fruiting and nut bearing species providing foraging opportunities.

Environmental Factor to which the Embedded (Primary) Mitigation Measure Relates	Embedded (Primary) Mitigation Measure
	All internal access tracks and cable routes will use existing tracks, hedgerow crossings and / or gaps in the hedgerows wherever possible.
Biodiversity Cultural heritage Land, soils and groundwater	Grid connection route will comprise below ground cables – cabling routes will run alongside access tracks as much as possible to avoid wider excavations.
Transport and access Population Human health	All existing PRoW will be retained in their existing alignment, wherever practicable, and any diversions will take the shortest feasible route.
Landscape and visual Noise and vibration Electric, magnetic and electromagnetic fields (EMF)	There will be a minimum 50 m offset of ITSs / standalone central inverters and transformers from PRoW.
Landscape and visual Noise and vibration	All Proposed Development will be set back from existing or proposed PRoW, except where crossings are necessary.
Climate	All members of the supply chain will provide a carbon reduction plan.
Biodiversity Water	Provide offsets of at least 10m either side from main rivers and 6m from ditches.
Land, soils and groundwater	All fields comprising solely of Grade 1 or 2 land within the Site will remain in arable production.

4.9. Assessment of likely significant environmental effects

4.9.1. The PEIR and ES will report on the likely significant environmental effects for the site preparation, earthworks and construction (hereafter referred to as ‘construction’), operational (i.e., once completed and open to use, and including maintenance) and decommissioning phases of the Proposed Development.

4.9.2. The following criteria will be taken into account when determining significance:

- The receptors / resources (natural and human) which would be affected and the pathways for such effects;
- The geographic importance, sensitivity or value of receptors/resources;
- The duration (short-term, medium-term or long-term); permanence (permanent or temporary) and changes in significance (increase or decrease);
- Reversibility - e.g., whether the change is reversible or irreversible, permanent or temporary;
- Environmental and health standards (e.g., local air quality standards) being threatened; and
- Feasibility and mechanisms for delivering mitigating measures e.g., Is there evidence of the ability to legally deliver the environmental assumptions which are the basis for the assessment?

4.9.3. The method for assessing significance of effects varies between environmental factors but, in principle, will be based on the environmental sensitivity (or value / importance) of a receptor / resource and the magnitude of change from the baseline conditions. The approach to assessing the significance of effects for each individual environmental factor assessment is outlined within **Chapter 6** and **Appendix D**.

4.9.4. Summary of effect tables that summarise the likely significant environmental effects associated with each of the environmental factors will be provided in the ES at the end of each environmental factor assessment chapter. These tables will outline sensitive receptors, additional mitigation measures and residual effects. A distinction will be made between direct, indirect, secondary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects. Cumulative effects will be considered as a single coordinated assessment.

4.10. Opportunities for enhancing the environment

4.10.1. Where possible, there will be a commitment to identifying opportunities for enhancement within the relevant environmental factor assessments. Enhancement is defined as *'a measure that is over and above what is required to mitigate the adverse effects of a project'* [**Ref. 4-2**]. Therefore, any identified enhancement measures will not be taken into account when determining the significance of effects.

4.10.2. Enhancement measures will be assessed in accordance with steps set out in the National Planning Policy Framework.

4.11. References

Ref. 4-1: IEMA (2015), 'Environmental Impact Assessment Guide to Shaping Quality Development', Available at:

https://www.iaia.org/pdf/wab/IEMA%20Guidance%20Documents%20EIA%20Guide%20to%20Shaping%20Quality%20Development%20V6.pdf

Ref. 4-2: Ministry of Housing, Communities and Local Government (2023), 'National Planning Policy Framework', Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1182995/NPPF_Sept_23.pdf

5. Environmental factors proposed to be scoped out of further assessment

5.1. Introduction

5.1.1. As part of the EIA process and based on the information available to date, there are a number of environmental factors, as listed under **Section 4.1** above, for which it is considered an assessment as part of the EIA is not justified, and therefore are proposed to be scoped out of further assessment.

5.2. Glint and glare

5.2.1. Solar PV modules are specifically designed to absorb light rather than reflect it. Light reflecting from solar PV modules results in the loss of energy output. Solar PV modules are dark in colour due to their anti-reflective coatings and are manufactured with low-iron, ultra-clear glass with specialised coatings and textures to enable maximum absorption. The combination of these factors significantly increases electrical energy production of the panels and significantly reduces reflected rays at the same time.

5.2.2. There are no guidelines setting out a particular methodological approach to delivering a glint and glare assessment. The Draft National Policy Statement EN-3 [**Ref. 5-1**] states in Sections 3.10.149 and 3.10.150:

"Solar PV panels are designed to absorb, not reflect, irradiation. However, the Secretary of State should assess the potential impact of glint and glare on nearby homes, motorists, public rights of way, and aviation infrastructure (including aircraft departure and arrival flight paths)".

"Whilst there is some evidence that glint and glare from solar farms can be experienced by pilots and air traffic controllers in certain conditions, there is no evidence that glint and glare from solar farms results in significant impairment on aircraft safety. Therefore, unless a significant impairment can be demonstrated, the Secretary of State is unlikely to give any more than limited weight to claims of aviation interference because of glint and glare from solar farms".

5.2.3. It is therefore proposed to exclude glint and glare from the scope of the EIA. However, a detailed stand-alone glint and glare assessment will be undertaken and appended to the ES submitted in support of the DCO application, considering ground-based (residential dwellings, PRoW, road, and rail) and airborne (airfields, Air Traffic Control Towers, and approaching aircrafts) receptors. Detailed geometric analysis will be undertaken using a bespoke glint and glare model for all receptors potentially affected by the Proposed Development. These outputs of the assessment will inform the design development and landscape mitigation plan, as well as the relevant assessments in the ES, particularly that relating to LVIA.

5.2.4. Residential receptors identified within 1 km of the Site Boundary will be considered as sensitive receptors, along with any PRoW (used by walkers, cyclists and horse riders), significant road junctions and railway signal locations within 1 km of the Site Boundary. It is likely that any receptors to the north of the Site will not be materially impacted as the panels will be directed towards the southern sky. Furthermore, there are very few residential / road receptors immediately to the south of the site with much of the site bordered by woodland and farmland.

5.2.5. The desktop study demonstrated a good range of ground-based receptors within a 1 km radius of the Site Boundary and this was deemed sufficient to assess the potential impact of the Proposed Development. Furthermore, the further distance a receptor is from a solar panel, the lower the opportunity for it to experience glint or glare due to the likely increase in obstructions, atmospheric attenuation and increased scattering of reflected solar energy.

5.2.6. The HS2 rail link passes to the west of the site near Calvert. However, the section of railway track which is closest to the Site Boundary is located within a cutting and so, based on a desktop review, are not likely to experience glint or glare from the Proposed Development. This will be verified as part of the assessment and engagement will be undertaken with HS2 as appropriate.

5.2.7. Aviation receptors (e.g., airports, airfields, air traffic control towers), within 10 km of the edge of the Site will be considered as sensitive receptors. The assessment will consider the path of approach for landing as well as flight paths more distant from the receptor in question. The approach phase (arrival flight paths) will be considered in the estimation of impact as this is deemed to be the most sensitive phase of a flight. Departing aircraft will have the nose pointing upwards and the visibility of objects (i.e., reflective panels) located on the ground will be reduced and therefore this will not be considered.

5.2.8. A description of any relevant proposed mitigation measures and safety considerations of the Proposed Development will be included within the Proposed Development description chapter of the ES.

5.3. Heat and radiation

5.3.1. Due to the scale and nature of the Proposed Development, it is not anticipated that there will be any significant sources of heat or radiation during either construction, operation or decommissioning. It is therefore proposed to exclude heat and radiation from the scope of the EIA.

5.4. Electric, magnetic and electromagnetic fields (EMF)

5.4.1. Electric fields are produced by voltage, which is the pressure behind the flow of electricity, and depends on the operating voltage of the equipment. Magnetic fields are produced by current, which is a measure of the flow of electricity.

5.4.2. Electrical fields can be blocked by fences, shrubs and buildings and the intensity of the electric and magnetic fields decreases from the source.

5.4.3. The Department for Business, Energy and Industrial Strategy (BEIS) guidance, alongside the 1998 guidelines published by International Commission on Non – Ionizing Radiation Protection (ICNIRP) [**Ref. 5-2**] states that underground cables and overhead power lines at voltages up to and including 132 kV are not capable of exceeding the ICNIRP exposure guidelines. The majority of the Proposed Development will use up to 132 kV underground cables, apart from the 400 kV underground cable that will be required to connect the Rosefield and East Claydon Substation; therefore due to the minimal amount of 400 kV underground cabling, no significant electric, magnetic and electromagnetic impacts are anticipated.

5.4.4. The Proposed Development will be guided by several design principles which include a minimum 250 m offset from standalone inverters and transformers, ITS, BESS, Rosefield Substation and Collector Compounds to residential properties and a minimum of 15 m offset from standalone inverters and transformer and ITS to PRoW to avoid the potential for any EMF effects on sensitive receptors.

5.4.5. It is therefore proposed to exclude electric, magnetic and electromagnetic fields from the scope of the EIA.

5.5. Major accidents and disasters

5.5.1. Guidance on the consideration of major accidents and disasters is provided in 'Major Accidents and Disasters in EIA: An IEMA Primer' [**Ref. 5-3**]. This focuses on the consideration of low likelihood / high consequence events which would result in serious harm or damage to environmental receptors, and which could encompass risks exacerbated by climate change. This includes accidents or disasters originating from a proposed development as well as external events (man-made or natural).

5.5.2. In considering the potential for significant effects from the vulnerability of the Proposed Development to risks of accidents and disasters, it is important to note that the UK already has a structured framework of risk management legislation in place. Vulnerability to major accidents and / or disasters for infrastructure and other built environment developments is covered by a wide range of other safety and non-safety-related legislation, as detailed below:

- Health and Safety at Work Act 1974 [**Ref. 5-4**].
- Construction (Design and Management) Regulations 2015 [**Ref. 5-5**].
- The Construction (Health, Safety and Welfare) Regulations 1996 [**Ref. 5-6**].
- Electricity Safety, Quality and Continuity Regulations 2002 [**Ref. 5-7**].

5.5.3. The risk of major accidents and disasters will be considered throughout the design process of the Proposed Development and any mitigation measures

will be included within the Outline Construction Environmental Management Plan, Outline Operational Environmental Management Plan, Outline Decommissioning Environmental Management Plan and Battery Safety Commitments. This will include siting the potentially hazardous equipment, such as the BESS and grid infrastructure, at a suitable distance from sensitive receptors.

5.5.4. The construction, operation and decommissioning phases of the Proposed Development have the potential for limited interactions which may give rise to major accidents and / or disaster. **Table 5-1** presents a list of possible major accidents and disasters that will require consideration.

Table 5-1: Possible major accidents and disasters.

Major Accident and/or Disaster	Potential Receptor	Comments
Fire	Properties Local residents Local habitats and species	There is a potential fire risk associated with the BESS. This will be managed by a cooling system, which will form part of the BESS, which is designed to regulate temperatures to safe conditions to minimise the risk of fire. The BESS and associated grid infrastructure will be sited a suitable distance from sensitive receptors in accordance with BESS standards (UL9540). Buckinghamshire Fire and Rescue Service will be consulted as part of the DCO process. Plume Assessment will be undertaken and submitted in support of the DCO and will be referenced within the Air Quality chapter of the ES. This will assess the impact of a fire event within the BESS battery components. Battery Safety Commitments will be produced and submitted in support of the DCO application to account for the potential safety risks and the relevant mitigation and management procedures.
Flooding	Properties Local residents	The majority of the Site is located within Flood Zone 1 and is at low risk of surface water flooding. Therefore, the Site is not considered to be at significant risk of river flooding or surface water flooding.

Major Accident and/or Disaster	Potential Receptor	Comments
		The vulnerability of the Proposed Development to flooding and its potential to exacerbate flooding will be set out in a Flood Risk Assessment, which will be submitted in support of the DCO.
Aircraft disasters	Pilots	The potential for glint and glare to affect aircraft will be considered within the glint and glare assessment which will form a technical appendix to the ES (refer to **Section 5.2** above).
Rail accidents	Rail Users	The potential for glint and glare to affect rail users will be considered within the glint and glare assessment which will form a technical appendix to the ES (refer to **Section 5.2** above).
Plant disease	Habitats and species	New planting may be susceptible to biosecurity issues, such as increased prevalence of pests and disease, due to source of provenance and climate change. The landscaping design and Outline Landscape and Ecology Management Plan will take account of and manage biosecurity risks.

5.5.5. Those major accidents and disasters that are not considered within the scope of the existing technical assessment will continue to be reviewed and addressed as part of the design process. The construction, operation and decommissioning of the Proposed Development are not considered to have a risk of major accidents or disasters that could affect existing, or future receptors, which are not already considered through existing design mitigation and regulatory regimes.

5.5.6. The mitigation in place is generally sufficient to manage vulnerabilities to major accidents and / or disasters without the need for additional mitigation in most circumstances. It is not expected that inclusion of major accidents and disasters in the EIA scope would add any greater level of safety performance to that already established process. By implementing recognised and approved safety legislation and regulation, no significant effects in relation to major accidents and disasters are anticipated during the construction, operation and decommissioning phases. It is therefore proposed to exclude major accidents and disasters from the scope of the EIA.

5.6. Utilities

5.6.1. The Proposed Development has the potential to affect existing utility infrastructure located at the Site. Given the nature of the Proposed Development, potential impacts on existing utility assets would be limited to the construction phase. To identify any existing infrastructure constraints, a utility search (including consultation with the utility provider) covering the Site (and 2 km from the Site Boundary) has been undertaken.

5.6.2. The utility search identified several assets within the Site Boundary that will require careful consideration as the design of the Proposed Development evolves, including:

- National Grid extra high voltage transmission lines.
- Electricity distribution high voltage transmission lines.

5.6.3. Further consultation will be carried out with the relevant utility companies to confirm the information drawn from the utility search is accurate and up to date. In addition, consideration and advice will be sought regarding separation distances and methods of construction in close proximity to each utility to avoid any risk of impact during construction of the Proposed Development. This information will be used to inform the layout of the Proposed Development and reported within the ES as embedded (primary) mitigation.

5.6.4. The Outline Construction Environmental Management Plan will include any additional mitigation measures to protect against interference with below ground utilities during construction. The Applicant would also expect to agree protective provisions with each utility owner, in order to ensure the DCO includes appropriate protections and restrictions on the Applicant's exercise of its powers, for the protection of utilities.

5.6.5. Taking the above into account, it is not proposed to prepare a separate utilities chapter as part of either the PEIR or ES. The relevant utility owners will be provided with protective provisions as part of the Development Consent Order which will ensure that no detriment will occur to their assets during the undertaking of the Proposed Development.

5.7. Human health

5.7.1. It is proposed that consideration of the potential effects to human health as a result of the Proposed Development will be covered through the findings of other assessments undertaken as part of the EIA process, as follows:

- Air quality;
- Landscape and visual;
- Noise and vibration;
- Transport and access; and
- Population.

5.7.2. Each of these chapters within the EIA Scoping Report and subsequent PEIR and ES will consider the potential effects to human health within their own assessments. Outside of the EIA process, a glint and glare assessment will be undertaken (see **Section 5.2** above), which will consider the potential human health effects from glint and glare.

5.7.3. As any potential human health impacts will be captured by the aforementioned assessments and there are not expected to be any significant human health impacts outside of these assessments, it is proposed that human health is not subject to dedicated assessment and therefore excluded from the scope of the EIA.

5.8. Material assets and waste

5.8.1. Material assets can be defined as "*substances used in each lifecycle stage of a development, with particular focus on the construction, operation and maintenance, and decommissioning or 'end of first life' (deconstruction, demounting, demolition and disposal) phases*" [**Ref. 5-8**]. Material assets can include 'material' (i.e., physical resources that are used across the lifecycle of a development) and 'excavated arisings' (i.e., soil, rock, or similar resource generated by excavations).

5.8.2. Waste is defined as '*any substance or object which the holder discards or intends or is required to discard*' [**Ref. 5-8**]. The Waste Framework Directive [**Ref. 5-9**] definition includes any substance or object that is discarded for disposal or that has not been subject to acceptable recovery (including reuse and recycling).

5.8.3. The main impacts (changes) and effects (consequences) of materials consumption and waste disposal are presented in **Table 5-2**.

Table 5-2: Material Assets (from IEMA guide to Materials and Waste in Environmental Impact Assessment).

Matter	Direct Impacts	Adverse Effects	Applicable Development Phase
Materials	Consumption of resources	Depletion of resources, resulting in the temporary or permanent degradation of the natural environment	Construction, decommissioning
Waste	Generation and disposal of waste	Reduction in landfill capacity Unsustainable use or loss of resources to landfill that results in the temporary or permanent degradation of the natural environment	Construction, decommissioning

5.8.4. The indirect impacts associated with materials consumption and waste disposal (e.g., release of greenhouse gas emissions, water consumption, amenity impacts, ecological impacts, etc) will be assessed elsewhere within the EIA. Similarly, the indirect impacts of any off-site waste management facilities and material production facilities are expected to be assessed (and where necessary, mitigated) under the planning and permitting regime for those sites and thus do not form part of an EIA for a development that uses such facilities for material supply or waste management.

5.8.5. A description of the potential streams and volumes of construction materials and waste disposal will be described within the Proposed Development chapter within the ES. In addition to this, the Outline Construction Environmental Management Plan will set out how construction materials and waste will be managed on-site, and opportunities to recycle waste will be explored. Where possible, development-specific commitments for sustainable resource management will be presented within the ES. As part of the detailed Construction Environmental Management Plan, prepared by the Contractor following the making of the DCO, there would be a requirement to develop and implement a Site Waste Management Plan (SWMP) and Materials Management Plan (MMP) in advance of the construction works.

5.8.6. It is also not intended to remove significant quantities of excavated arisings from the Site during construction (there are currently no demolition works proposed, for example). There may, however, be a need to remove some soils from the Site for treatment or disposal, if found to be contaminated, and it is not practical to treat this on-Site. However, where possible, soil arisings will be balanced through a cut and fill exercise to retain volumes on Site.

5.8.7. For the operational phase, the potential streams and volumes of construction materials and waste disposal will be described within the Proposed Development chapter of the ES. There will be relatively little waste produced during the operation phase and the requirement for material assets will be limited to maintenance and replacement parts, as required.

5.8.8. For the purposes of the decommissioning assessment, the Proposed Development is assumed to be operational for a period of 40 years (this depends on the operational capability of the Proposed Development as a result of its maintenance regime as with any generating asset). Following the operational phase, all above ground infrastructure will be dismantled and recycled where practicable, in line with the waste hierarchy. Solar PV modules are up to 99% recyclable, and the major panel components including glass, aluminium and copper can all be recovered.

5.8.9. An Outline Decommissioning Environmental Management Plan will be submitted in support of the DCO application, which will set out how the waste will be managed and detail the measures that will be put in place to ensure that components are able to be diverted from the waste chain and

managed in line with the waste hierarchy prioritising re-use and recycling, based on available technology at the time.

5.8.10. Taking the above into account, it is not proposed to prepare a separate material assets and waste chapter as part of either the PEIR or ES.

5.9. Water

Water, flood risk and hydrology baseline

5.9.1. The Site is located on relatively high ground located at topographic levels of between 80 m AOD and 137 m AOD. The Site is located on a watershed between two major river catchments. The northern section of the Site draining north / northeast towards the Padbury Brook and the Claydon Brook that form part of the wider Great Ouse catchment generally draining to the northeast, and the southern section of the Site draining towards the River Ray to the south / southwest that forms part of the wider River Thames catchment that drains to the south / southeast.

5.9.2. The onsite drainage pathways flow to the north, east, south and west from a central high point in Parcel 1 on Knowl Hill, with the majority of Parcel 1 draining to the north. Parcel 1a slopes from east to west / southwest. Parcel 2 can be split into two sub areas, the northern area sloping generally to the northwest, north and northeast, with the southern area draining generally to the south / southwest. Parcel 3 drains west to east toward the watercourse that forms the eastern Site Boundary.

5.9.3. According to the Environment Agency flood map for planning [**Ref. 5.10**] (reproduced as **Plate 5.1**), the Site is predominantly located within Flood Zone 1, including the entirety of Parcel 1 in the west and Parcel 2 located centrally. Areas of Flood Zones 2 and 3 do encroach into some areas of the Site, particularly in the north east of the Site area along the eastern boundary of Parcel 3. In the south of the Site, there is an area of Flood Zone 3 that encroaches slightly onto the western fringe of Parcel 1a.

Plate 5.1: Flood Zone 2 and Flood Zone 3 Mapping.

5.9.4. **Plate 5.2,** which is taken from the Gov.uk Surface Water Flood Mapping [**Ref. 5-11**], illustrates that the majority of the Site search area is typically at a low or very low risk of surface water flooding, though some field parcels, mostly located around the periphery of Parcel 1, Parcel 1a and Parcel 2 have areas of low to high surface water flood risk. Typically these flow paths originate on Site, indicating a limited upstream catchment. Parcel 3 has an area of low to high risk of surface water flooding along the eastern boundary. These areas of surface water flood are generally attributable to localised topographical depressions or flow paths following the topography of the land, some of which contain drains or minor watercourses (described below).

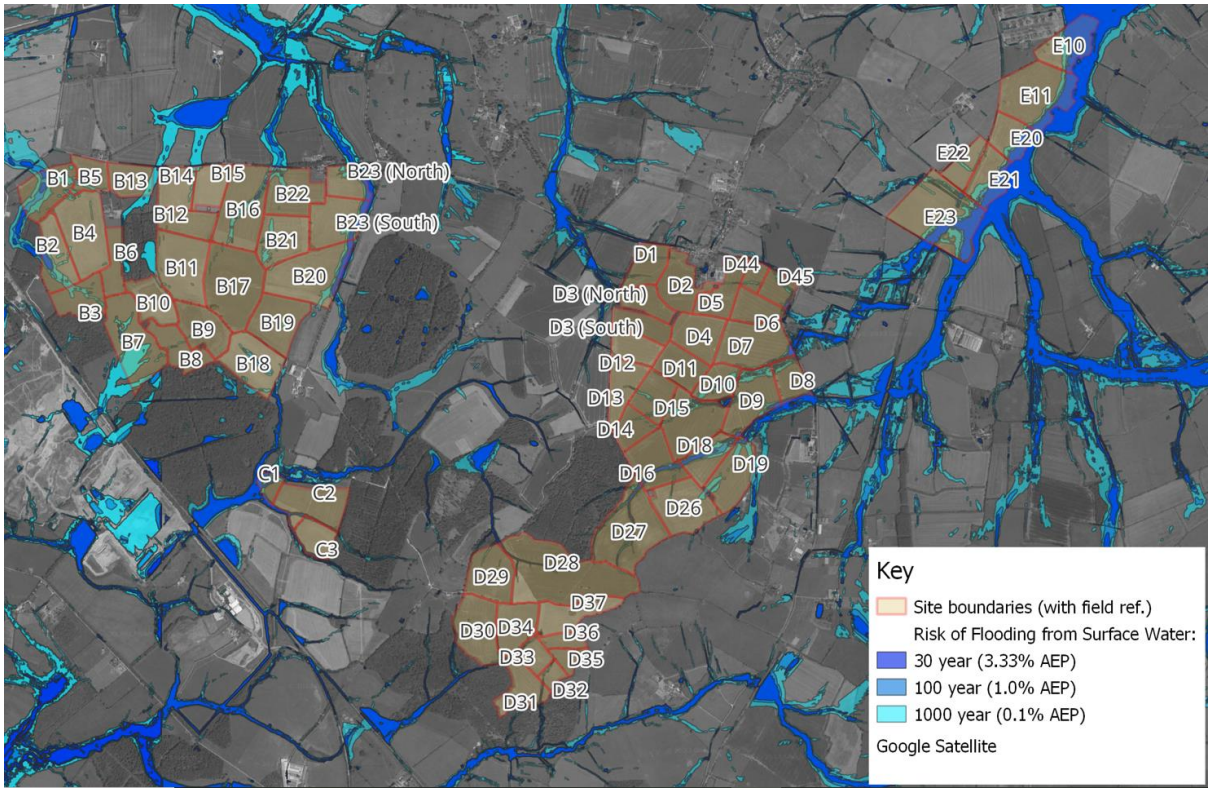

Plate 5.2: Risk of Flooding from Surface Water Mapping

5.9.5. A number of minor ordinary watercourses and drainage ditches are indicated in the western section of Parcel 1, directly north of Parcel 1a, and directly east of Parcel 3.

5.9.6. These watercourses are unnamed but appear to form the headwaters of the Padbury Brook (in the northwest), the Claydon Brook (in the north / northeast) and the River Ray (to the south). These features are all classified as Ordinary Watercourses and would therefore be under the jurisdiction of the Buckinghamshire Council as the Lead Local Flood Authority or The Buckingham & River Ouzel Internal Drainage Board.

5.9.7. The Association of Drainage Authorities mapping [**Ref. 5-12**] indicates that the Buckingham & River Ouzel Internal Drainage Board is responsible for a small area in the far west and immediately north of Parcel 1, an area immediately to the east of Parcel 2, and a significant proportion of Parcel 3.

5.9.8. From the Environment Agency's mapping [**Ref. 5-13**], the nearest Main River watercourses are the River Ray, located 200 m to the south of Parcel 2 directly south of Finemere Wood, and a tributary of the River Ray located 400 m to the southwest of Parcel 1a, and directly south of Sheephouse Wood.

5.9.9. Two 'well' features are shown within Parcel 1 on Ordnance Survey (OS) mapping [**Ref. 5-14**], together with a number of ponds within Parcel 1 and Parcel 2. Most of the ponds appear not to be linked to the surrounding watercourse network.

5.9.10. Any private water supplies will be identified through the Preliminary Risk Assessment that will also identify any risks to controlled waters, including surface water, groundwater and potable water supplies. The Preliminary Risk Assessment will also identify any water abstraction and discharge points that could potentially be affected by the Proposed Development. Refer to **Section 6.5** for further details.

5.9.11. **Plate 5.3** illustrates the various Water Framework Directive watercourses (as identified in the River Basin Management Plan [**Ref. 5-15**]) in the vicinity of the Site.

5.9.12. Padbury Brook (ordinary watercourse upstream of Padbury Mill), which drains the north and northwestern areas of the Site, is designated with a moderate ecological status under the Water Framework Directive / River Basin Management Plan (Cycle 3 – 2019).

5.9.13. Claydon Brook Tributary Water Body (ordinary watercourse), which drains the northeastern areas of the Site, is designated with a moderate ecological status under the Water Framework Directive / River Basin Management Plan (Cycle 3 – 2019).

5.9.14. The River Ray and tributaries Northeast of Grendon Underwood Water Body (Main River watercourse), which drains the southern areas of the Site, is designated with a moderate ecological status under the Water Framework Directive / River Basin Management Plan (Cycle 3 – 2019).

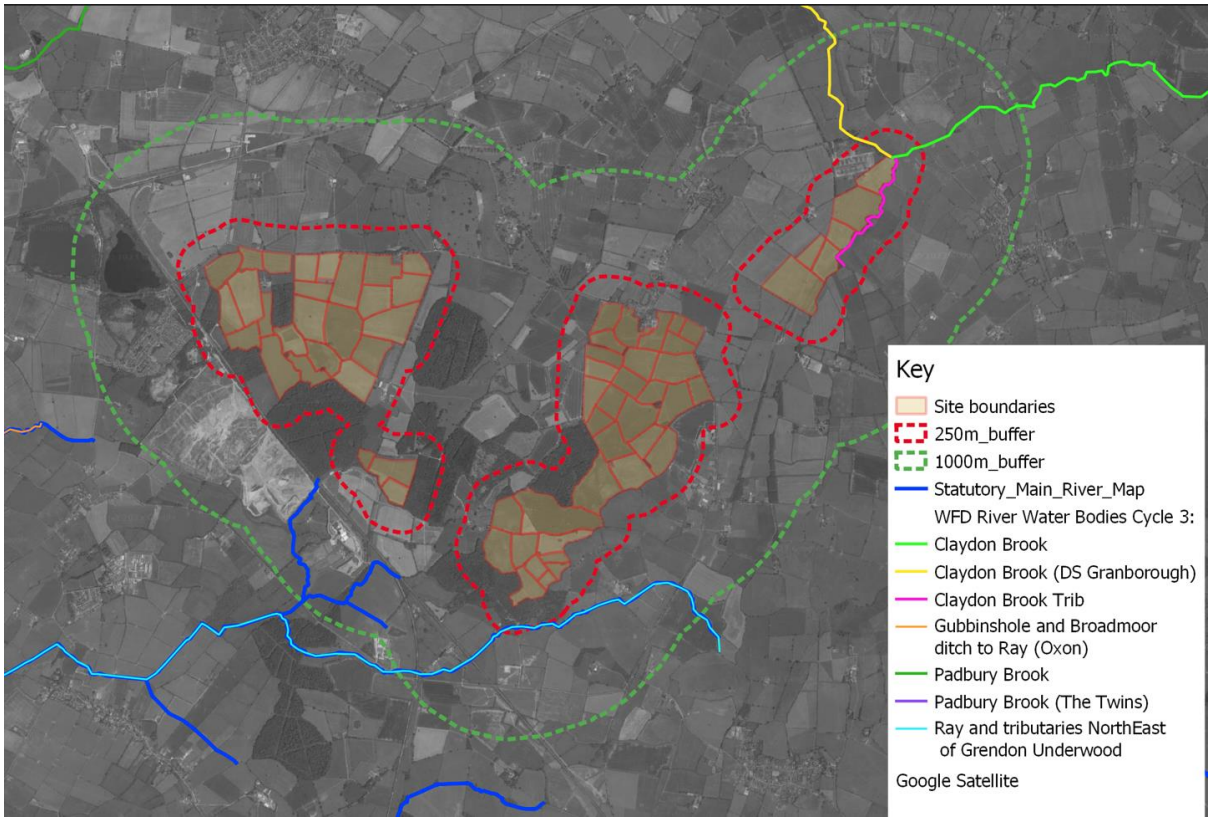

Plate 5.3: Water Framework Directive Water Bodies

5.9.15. There are no Source Protection Zones within 1 km of the Site. The nearest Source Protection Zones are located over 10 km to the east of the Site. Groundwater is discussed further in the **Section 6.5**.

5.9.16. The Site is not shown to lie above a Drinking Water Safeguard Zone for groundwater, nor is it located within a Drinking Water Protected Area; however, it is located in a Drinking Water Safeguard Zone for surface water.

5.9.17. There are no designated sites (Site of Special Scientific Interest, Special Area of Conservation, Ramsar, Special Protection Area) located within the Site. The closest designated site to the Site is Sheephouse Wood SSSI, located immediately to the south of Parcel 1 and west of Parcel 1a, and Finemere Wood SSSI, located immediately south of Parcel 2. The entire Site area is therefore classified as being within various SSSI Impact Risk Zones. As the SSSIs are associated with woodlands, there is not considered to be any specific aspect of this designation relating to the water environment.

Mitigation measures

5.9.18. Appropriate mitigation will be secured through the Outline Construction Environmental Management Plan, the Outline Operational Environmental Management Plan and the Outline Decommissioning Environmental Management Plan, which will identify good working practices in line with appropriate standards. It is anticipated that these will be agreed with Buckinghamshire Council. Measures will include the use of appropriate measures as outlined in the Pollution Prevention Guidelines. Whilst it is noted that these Guidelines were withdrawn in 2015, they still contain detailed information on good working practices and principles. The following example mitigation measures are proposed:

On-site working

- Site access points would be regularly cleaned to prevent build-up of dust and mud.
- Earth movement would be controlled to reduce the risk of silt combining with the site run-off.
- Properly contained wheel wash facilities will be used (where required) to isolate sediment rich run-off.
- Cut-off ditches and / or geotextile silt-fences would be installed around excavations and exposed ground, stockpiles to prevent the uncontrolled release of sediments from the Site.
- Surface water run-off would be collected from hard standing area in a sump.
- Sediment traps would be installed on all surface water drains within the Site Boundary.

- Any vehicle or plant washing would be carried out on designated areas of hardstanding at least 10 m from any watercourse or surface water body.

Safe storage and use of concrete and cement, concrete and cement mixing and washing areas

- Where possible the concrete used will be pre-mixed and delivered from an off-site source, thereby negating the need to mix concrete on-site and thus reducing the creation of alkaline wastewater on-site.
- Wherever possible, any mixing and handling of wet concrete that is required on-site will be undertaken in designated areas.
- A designated area will be used for any washing down or equipment cleaning associated with concrete or cementing processes and facilities provided to remove sediment prior to disposal.
- The designated area will be sited 10 m from any watercourse / waterbody or surface water drain to minimise the risk of runoff entering a watercourse.
- Have settlement and re-circulation systems for water re-use, to minimise the risk of pollution and reduce water usage.
- Dispose of contained water to either foul sewer if possible, or tanker off-site.

Safe storage and use of oils and chemicals

- Wherever possible, plant and machinery will have drip trays beneath oil tanks / engines / gearboxes / hydraulics, which will be checked and emptied regularly, and the contents of the trays will be correctly disposed of via a licensed waste disposal operator.
- Oils and hydrocarbons will be stored in designated locations with specific measures to prevent leakage and release of their contents, including the siting of the storage area away from the drainage system on an impermeable base, with an impermeable bund that has no outflow and is of adequate capacity to contain 110% of the contents. Valves and trigger guns will be protected from vandalism and kept locked when not in use.
- To deal with the accidental spillage of oils and fuels, an emergency spillage action plan will be produced, which Site staff will have read and understood. On-site provisions will be made to contain a serious spill or leak through the use of booms, bunding and absorbent material.

Vehicle and wheel washing on Site

- Vehicle washing and cleaning will be carried out in areas that are clearly marked and isolated from surface water drainage systems, unmade ground and porous surfaces (designated washing bays).

- A designated washing bay will be designed so that runoff is isolated using channels, gullies, gradients, directed to a silt trap or sediment tank to remove larger particles, and either collected in a sealed system for reuse or authorised disposal or discharged to public foul sewer (subject to approval).

Uncontrolled (and particulate) runoff from construction areas and access tracks

- Any compounds should, where possible, utilise a wide strip of geotextile laid on the ground covered by a nominal layer of stone to form the compound. Areas of the construction compound such as portacabins, storage systems etc, would result in the potential increase in surface water runoff.
- Generally, the compounds will maintain a permeable nature however, as there would be an increase in hard standing, a form of attenuation will be required on Site to maintain flow rates at the pre-development level.
- Any excess flows will be stored in an attenuation feature and would not impact upon on land outside of the Site. The specifications of the attenuation features would be determined at the detailed design stage.
- Where stone is used as a capping layer, the content of the stone should not include a high percentage of fines so as to not increase the risk of sediment contamination of the adjacent area and watercourses.

Potential effects during construction

5.9.19. Construction activities have the potential to result in increased localised flood risk due to earthworks and excavation activities which are likely to change overland run-off routes. Flooding events, if significant enough, have the potential to harm construction workers on-site, particularly if they are working in excavations which have the potential to fill with water, causing temporary or permanent health and safety risks (e.g., injuries). In addition, changes in surface water flood risk have the potential to affect existing properties and land surrounding the Site and existing and future Site users.

5.9.20. The flood risk to the Site typically ranges from low to high with respect to fluvial and surface water risk (as outlined above) and it is anticipated that any significant areas of development will be located outside of these zones through appropriate planning phase spatial constraints analysis and planning. Where less vulnerable aspects of the Proposed Development are sought within the mapped flood zones, the impacts will be assessed within a Flood Risk Assessment, which will be submitted as a stand-alone document in support of the DCO application. Therefore, the primary sources of flood risk at the Site are associated with fluvial and surface water / pluvial flooding.

5.9.21. Changes in flood risk from the construction of the Proposed Development will be managed by the good practice principles which will be documented in the Outline Construction Environmental Management Plan, which will include a construction surface water management plan and awareness training / talks for construction workers so that they are aware of the risks and how to mitigate them through working practices. It is also anticipated that a temporary drainage system will be implemented during construction (as outlined above).

5.9.22. When considering the design of the Proposed Development and the additional (secondary and tertiary) mitigation measures proposed, increases in flood risk to and from the Proposed Development during construction is not considered to be a potentially significant environmental effect and therefore, it is proposed to exclude flood risk during construction from the scope of the EIA.

5.9.23. Construction activities (e.g., soil stripping activities / trench excavations for cables on-site) have the potential to result in silt laden runoff, resulting in the sedimentation and pollution of local watercourses. Silt / soil laden runoff produced during construction activities will be controlled through the implementation of the Outline Construction Environmental Management Plan and the provision of a construction drainage management plan. The Outline Construction Environmental Management Plan will be informed by the Pollution Prevention Guidance and will include the prevention measures stated above. Therefore, watercourse pollution as a result of silt laden runoff from construction activities is not considered to be a potentially significant environmental effect and therefore, it is proposed to exclude it from the scope of the EIA.

5.9.24. Construction activities have the potential to result in chemical spillages resulting in the pollution of local watercourses. Spillages which could occur during construction activities will be controlled through the implementation of the Outline Construction Environmental Management Plan. This will be informed by the Pollution Prevention Guidance and will include the prevention measures stated above. Therefore, water pollution as a result of chemical spillages used during construction activities is not considered to be a potentially significant environmental effect and therefore, it is proposed to exclude it from the scope of the EIA.

5.9.25. Construction activities have the potential to result in cement and concrete dusts being mobilised in surface water runoff resulting in the pollution of local watercourses. Particle laden runoff which could occur during construction activities will be controlled through the implementation of the Outline Construction Environmental Management Plan. This will be informed by the Pollution Prevention Guidance and will include the prevention measures stated above. Therefore, watercourse pollution as a result of cements and concretes being mobilised in surface water runoff as a result of construction activities is not considered to be a potentially

significant environmental effect and therefore, it is proposed to exclude it from the scope of the EIA.

5.9.26. The development and utilisation of the Site have the potential to result in increased localised flood risk due to increases in impermeable area associated with cabinets, equipment housing and the larger substation development, and an associated reduction in the natural infiltration of water into the ground. The siting of solar panels will only have a negligible impact on the impermeable nature of the Site.

5.9.27. There will also likely be alterations to the surface water regime and overland flow routes due to the placement of built development and landscaping which could potentially result in increased surface water runoff. Due to increased surface water runoff rates, existing users and future users either within the Site (workers) or off-site (residents) may be subjected to risks associated with flooding. The temporal risk associated with flooding is greater during the operational phase than the construction phase with the anticipated lifetime of the Proposed Development.

5.9.28. The Proposed Development is not expected to have any impact on the public foul water sewers in the vicinity of the Site as it is considered unlikely that any wastewater will be produced as a result of the type of development proposed. Onsite welfare facilities will be provided during the construction phase, but these will be temporary in nature and likely comprise Portaloo systems or similar, that will not discharge effluent or wastewater to the surrounding water environment.

5.9.29. Therefore, increased foul flows to the foul sewers network during construction is not considered a potentially significant environmental effect and therefore, it is proposed to exclude it from the scope of the EIA.

5.9.30. Any private water supplies, abstraction licenses and discharge consents that could potentially be affected by construction activities will be identified through the Preliminary Risk Assessment. This will also identify any risks to controlled waters, including surface water, groundwater and potable water supplies. The impacts to private water supplies and any abstraction and discharge consents will be fully appraised in the Preliminary Risk Assessment. Given the environmental setting of the site and identified onsite watercourses, there is not considered to be any potentially significant environmental effects and therefore, it is proposed to exclude water quality from the scope of the EIA.

Potential effects during operation

5.9.31. The flood risk to the Site typically ranges from low to high with respect to fluvial and surface water risk (as outlined above) and it is anticipated that any significant areas of development will be located outside of these zones with the possible exception of parts of Parcel 3.

5.9.32. Any firewater storage considered necessary onsite will require containment prior to offsite disposal. The drainage design should fully appraise and

include for this, ensuring no significant effects with respect to fire water storage and disposal.

5.9.33. Where less vulnerable aspects of the Proposed Development are sought within the mapped flood zones and risk areas, the impacts will be assessed within the Flood Risk Assessment (that would assess flood risk from all sources) to be submitted as a stand-alone report in support of the DCO application. Therefore, the primary sources of flood risk at the Site are associated with fluvial and surface water / pluvial flooding.

5.9.34. The Proposed Development will include a surface water drainage measures which will be designed in line with local and national policy (e.g., National Planning Policy Framework, Planning Practice Guidance and local guidance (Buckinghamshire Council) and in agreement with relevant stakeholders (i.e., the Lead Local Flood Authority and Buckingham & River Ouzel Internal Drainage Board where relevant). The network, where possible, will seek to reduce the surface water runoff from the Site to agreed rates. However, the utilisation of the existing drainage network at the Site may be sought which will ensure there is no increase in flood risk downstream as a result of the Proposed Development.

5.9.35. When considering the design of the Proposed Development and the additional (secondary and tertiary) mitigation measures proposed, increases in flood risk to and from the Proposed Development during operation is not considered to be a potentially significant environmental effect and therefore, it is proposed to exclude it from the scope of the EIA.

5.9.36. Activities at the Site during operation have the potential to result in accidental spillages (operational / process chemicals) and potential contaminants (diffuse highway pollution i.e., hydrocarbons) entering the surface water runoff from the Site resulting in the pollution of local watercourses.

5.9.37. The Proposed Development will include, where required, a surface water drainage network which will be designed in line with local and national policy whilst considering the existing drainage network at the Site. Appropriate surface water treatment will be inherent in the drainage design through the incorporation of sustainable drainage systems (SuDS) and pollution prevention measures (e.g., interceptors) where possible. The potential magnitude of accidental spillages is also very low with failsafe measures inherent within the design of the Proposed Development and health and safety protocol standard practice within the operational working structure of the Proposed Development. Therefore, water pollution as a result of general pollution / diffuse pollution entering local watercourses / water features as a result of the operation of the Proposed Development is not considered to be a potentially significant environmental effect and therefore, it is proposed to exclude it from the scope of the EIA.

5.9.38. The Proposed Development is not expected to have any impact on the public foul water sewers in the vicinity of the Site as it is considered unlikely

that there would be low amounts of wastewater produced as a result of the type of development and anticipated low number of operational staff proposed during the operational phase. Therefore, increased foul flows to the foul sewers network during operation is not considered to be a potentially significant environmental effect and therefore, it is proposed to exclude it from the scope of the EIA.

5.9.39. The operational Proposed Development could potentially result in the increased demand for potable water. However, with the site unlikely to be fully manned 24 hours a day, this is unlikely to be significant. Therefore, increased demand for drinking water supplies during operation is not considered to be a potentially significant environmental effect and therefore, it is proposed to exclude it from the scope of the EIA.

5.9.40. Any private water supplies, abstraction licenses and discharge consents that could potentially be affected by operational activities will be identified through the Preliminary Risk Assessment. This will also identify any risks to controlled waters, including surface water, groundwater and potable water supplies. The impacts to private water supplies and any abstraction and discharge consents will be fully appraised in the Preliminary Risk Assessment. Therefore, there is not considered to be a potentially significant environmental effects and therefore, it is proposed to exclude water quality from the scope of the EIA.

Potential effects during decommissioning

5.9.41. The potential effects during decommissioning will be similar to those expected during the construction phase. As a result, it is anticipated that there will not be any significant effects to flood risk, surface water drainage or water quality as a result of the decommissioning works. As such, the impact of the decommissioning works is proposed to be excluded from the scope of the EIA.

Flood risk assessment

5.9.42. In light of the above, it is proposed to exclude water from the scope of the EIA, subject to ensuring no deterioration of water quality or increase in flood risk and agreeing design and mitigation measures with the Environment Agency and the Lead Local Flood Authority through the production of the Outline Construction Environmental Management Plan. However, flood risk will be considered separately within a Flood Risk Assessment to be submitted in support of the DCO application, which will focus on the following:

- Obtaining and reviewing relevant data and background information from the Environment Agency and other relevant authorities, including modelled flood level and flow data for any nearby watercourses, details of historical flood events and any other pertinent information.

- Contacting the relevant Local Authority to obtain the findings of any Strategic Flood Risk Assessment, Preliminary Flood Risk Assessment and Surface Water Management Plan commissioned by them.
- Contacting the local sewerage company for details of any existing drainage apparatus in the Site area.
- Provide general advice on the feasibility of SuDS that could potentially be incorporated into the development and the drainage design.
- Provide an assessment of the flood risk to the Proposed Development and any flood risk impacts arising from the Proposed Development and identify any mitigation requirements to reduce these risks to an acceptable level.
- Preparation of a Flood Risk Assessment report and outline surface water drainage strategy principles (where relevant) to address the management of surface water run-off from the Proposed Development such that flood risk to the surrounding area is not increased and with due consideration of flows to the local drainage system.

5.10. Transboundary effects

5.10.1. Regulation 32 of the EIA Regulations requires the consideration of any likely significant effects on the environment of another European Economic Association (EEA) State. The consideration of transboundary effects is also detailed within the Planning Inspectorate's Advice Note Seven [**Ref. 5-16**].

5.10.2. Due to the nature and location of Proposed Development, it is not anticipated that the Proposed Development will lead to potential for any likely significant effects on the environment of another European Economic Association (EEA) State. Therefore, a transboundary screening matrix has not been included within this EIA Scoping Report.

5.11. References

Ref. 5-1: Draft National Policy Statement for Renewable Energy Infrastructure (NPS EN 3), Department for Business, Energy and Industrial Strategy, September 2023. Available online: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1015236/en-3-draft-for-consultation.pdf

Ref. 5-2: International Commission on Non-Ionizing Radiation Protection (ICNIRP) (1998) ICNIRP Guidelines: For limiting exposure to time-varying electric, magnetic and electromagnetic field (up to 300GHz), Health Physics 74 (4): 494-522. Available online https://www.icnirp.org/cms/upload/publications/ICNIRPemfgdl.pdf

Ref. 5-3: IEMA 'Major Accidents and Disasters in EIA: A Primer', Available online https://www.iema.net/resources/reading-room/2020/09/28/major-accidents-and-disasters-in-eia-an-iema-primer

Ref. 5-4: HMSO (1974), 'Health and Safety at Work Act 1974'. Available online https://www.legislation.gov.uk/ukpga/1974/37/pdfs/ukpga_19740037_en.pdf

Ref. 5-5: HMSO (2015), 'The Construction (Design and Management) Regulations 2015'. Available online http://www.legislation.gov.uk/uksi/2015/51/pdfs/uksi_20150051_en.pdf

Ref. 5-6: HMSO (1992), 'The Workplace (Health, Safety and Welfare) Regulations 1992'. Available online http://www.legislation.gov.uk/uksi/1992/3004/made/data.pdf

Ref. 5-7: HMSO (2022), 'The Electricity Safety, Quality and Continuity Regulations 2002'. Available online https://www.legislation.gov.uk/uksi/2002/2665/contents/made

Ref. 5-8: IEMA (2020a), 'IEMA guide to Materials and Waste in Environmental Impact Assessment, Available online https://www.iema.net/resources/reading-room/2020/03/30/materials-and-waste-in-environmental-impact-assessment

Ref. 5-9: European Parliament and of the Council (2008), Waste Framework Directive, Available online Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (Text with EEA relevance) (legislation.gov.uk)

Ref. 5-10: Flood Map for Planning: https://flood-map-for-planning.service.gov.uk/

Ref. 5-11: Surface Water Flood Risk Mapping: https://www.gov.uk/check-long-term-flood-risk

Ref. 5-12: Association of Drainage Board Mapping: https://www.ada.org.uk/member_type/idbs/

Ref. 5-13: Environment Agency Main River Map: Statutory Main River Map (arcgis.com)

Ref. 5-14: Ordnance Survey 1:25,000 scale base mapping taken from Promap: https://www2.promap.co.uk/#/

Ref. 5-15: Water Framework Directive River Basin Management Plan Mapping: River Basin Management Plan: maps (arcgis.com)

Ref. 5-16: Planning Inspectorate (June 2020) Advice Note Seven: Environmental Impact Assessment: Process, Preliminary Environment Information and Environmental Statements (Version 7). Available online https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-seven-environmental-impact-assessment-process-preliminary-environmental-information-and-environmental-statements/

6. Environmental factors proposed to be scoped into further assessment

6.1. Air quality

6.1.1 Consultation

No consultation to inform the air quality assessment has been undertaken to date.

Consultation with Buckinghamshire Council will be carried out to agree the following:

- The appropriate data for baseline characterisation.
- Receptor locations to be assessed in the study (such as human receptors and ecologically sensitive sites).
- The assessment methodology.

6.1.2 Study area

Construction and decommissioning

Based on the Institute of Air Quality Management (IAQM) construction dust guidance V2.1 (IAQM, 2023), the study area for sensitive human receptors for demolition (decommissioning phase only), earthworks and general construction activities will be up to 250 m from the Site Boundary.

As per the IAQM guidance the study area for sensitive ecological receptors for demolition (decommissioning phase only), earthworks and general construction activities will be up to 50 m from the Site Boundary.

For trackout[1] activities, the study area for both sensitive human and ecological receptors will be up to 50 m from the edge of the roads likely to be affected by trackout.

6.1.3. Data sources to inform the EIA baseline characterisation

A desk-based baseline air quality review will be carried out to establish existing air quality conditions within the study area. Information on air quality will be gathered from the monitoring stations that form a part of the national and / or local networks and from the estimated background air quality maps published by the Department for Environment, Food and Rural Affairs (DEFRA).

6.1.4. Surveys to inform the EIA baseline characterisation

Based on local monitoring data from Buckinghamshire Council and estimated background data from DEFRA, it is considered that air quality is good in the local area (see **Section 6.1.5** below) and therefore it is anticipated that on-site air quality monitoring will not be required to inform the assessment.

[1] Trackout is defined as the transport of dust and dirt from the construction/demolition sites onto public road network, where it may be deposited and then re-suspended by vehicles using the network.

6.1.5. Baseline conditions

The Proposed Development is located within the administrative area of Buckinghamshire Council. There are currently nine Air Quality Management Areas (AQMAs) declared within the district. The closest AQMA is located in the administrative area of Cherwell District Council in Bicester approximately 14 km from the Proposed Development. Therefore, the Proposed Development is not located within or close to an AQMA.

According to the Buckinghamshire Council 2023 Air Quality Annual Status Report, Buckinghamshire Council undertook non-automatic nitrogen dioxide (NO_2) monitoring at two locations and non-automatic NO_2 diffusion tube monitoring at 149 locations during 2022. The nearest monitoring location is a NO_2 diffusion tube location (Buckinghamshire Council ref: AV8 - 29 High Street, Winslow) situated approximately 7.5 km from the Site. The measured annual average NO_2 concentrations at this diffusion tube site, for years 2017 - 2021, ranged between 23.0 $\mu g/m^3$ and 28.8 $\mu g/m^3$, which are well below the annual mean NO_2 Air Quality Objective.

Estimated background air quality data are available from the UK-AIR website operated by Defra. The website provides estimated annual average background concentrations of NO_2, PM_{10} and $PM_{2.5}$ on a 1 km^2 grid basis from Local Air Quality Management (LAQM) background maps. It is noted that estimated 2023 annual average background NO_2, PM_{10} and $PM_{2.5}$ concentrations at the Site are well below the relevant air quality objectives.

There are several isolated farmhouses and residences in the area around the Site. More densely populated areas include the villages of Calvert, Botolph Claydon East Claydon, and Steeple Claydon.

The Site itself is not covered by any statutory ecological designations. However, the Site is located adjacent to (within 50 m) Sheephouse Wood and Finemere Wood Sites of Special Scientific Interest (SSSI) which are considered sensitive ecological receptors.

It is noted that HS2 and East West Rail related works are ongoing in the vicinity of the proposed Site, any construction works will be considered cumulatively during the construction phase assessment.

6.1.6. Additional (secondary and tertiary) mitigation

Construction and decommissioning

Construction phase site-specific dust mitigation measures will be recommended based on the results of pre-mitigation dust impacts assessment, which will also be applied in the decommissioning phase where relevant. The mitigation measures will be incorporated into the Outline Construction Environmental Management Plan (OCEMP) and Outline Decommissioning Environmental Management Plan (ODEMP) which will be submitted in support of the DCO.

6.1.7. Description of likely significant effects

Construction and decommissioning

Construction and decommissioning works for the Proposed Development will have the potential to release dust, including fine particulate matter, and impact on nearby sensitive human and ecological receptors. Appropriate dust control measures can be highly effective for controlling emissions from potentially dust generating activities, and adverse effects can be greatly reduced or eliminated. With suitable dust mitigation measures in place, the effect of dust and particulate matter emissions during construction is likely to be 'not significant'.

Construction and decommissioning traffic will comprise haulage / construction vehicles and vehicles used for workers' trips to and from the Site. The greatest impact on air quality due to emissions from construction vehicles will be in areas adjacent to the Site access and nearby road network. Based on the temporary nature of the construction and decommissioning activities, it is considered unlikely that a significant number of vehicle movements associated with staff commuting to and from the Site will be generated to result in a significant effect on local air quality. This will be assessed against the EPUK screening criteria within the ES.

6.1.8. Receptors / matters to be scoped into further assessment

Receptor / Matter	Phase	Justification
Dust and particulate matter emissions resulting from Site activities (demolition (during decommissioning phase only), earthworks, construction and trackout), including the operation of the equipment	Construction and decommissioning	Sensitive receptors are located within 250 m of the Site. A qualitative, desk-based assessment of the site activities is proposed to identify the type of mitigation required. Similarly, operation of the site equipment and machinery during construction will result in emissions to atmosphere of exhaust gases. A qualitative, desk-based assessment is proposed to identify the type of mitigation required.
Traffic exhaust emissions (including emissions from haulage/ construction vehicles and vehicles used for workers' trips to and from the Site)	Construction and decommissioning	A screening level qualitative assessment is proposed. Road traffic data is required to undertake the qualitative assessment, which is not yet available. However, based on the temporary nature of the construction and decommissioning activities, it is anticipated that vehicle movements associated with staff commuting to and from the Site during the construction and decommissioning phase will not have a

		significant effect on local air quality. However, this will be confirmed by the qualitative assessment.

6.1.9. Receptors / matters to be scoped out of further assessment

Receptor / Matter	Phase	Justification
Dust and particulate matter emissions resulting from demolition works	Construction	There are no demolition works proposed during the construction phase.
Dust and particulate matter emissions resulting from Site activities (operation of the Proposed Development and maintenance activities) and road traffic exhaust emissions	Operation	The operation of site construction equipment and machinery will result in emissions to atmosphere of exhaust gases, but with suitable controls and site management, impacts of such emissions are unlikely to be significant. Furthermore, there will only be limited movement of vehicles to the Site for maintenance. Such levels of movement are not expected to lead to a significant effect on air quality. Traffic movements will be confirmed and presented within the ES, however, it is not anticipated that that the level of movements would lead to a significant effect on air quality.
Potential air quality impacts of a fire incident at the BESS Compound forming part of the Scheme	Operation	In the unlikely event of a fire at the BESS compound there is unlikely to be any significant effects on sensitive receptors. However, a plume assessment will be undertaken and submitted in support of the DCO and will be referenced within the ES.

6.1.10. Opportunities for enhancing the environment

The Proposed Development will produce energy from the sun, which is a clean, sustainable source of energy. It will help to reduce the energy requirements from fossil fuels, which will emit harmful air emissions, such as carbon dioxide, nitrogen dioxide, sulphur dioxide, and particulate matter.

6.1.11. Proposed assessment methodology

Construction and decommissioning

The potential construction and decommissioning activities will be separately assessed and reported on within the ES.

Dust and Particulate Matter Emissions

An assessment of the likely significant effects of construction phase dust and particulate matter at sensitive receptors will be undertaken following the IAQM's guidance note 'Assessment of dust from demolition and construction 2023, v2.1', using the available information for this phase of the Proposed Development provided by the project team and professional judgement.

The assessment will consider the risk of potential dust and particulate matter effects from the following four sources: demolition (decommissioning phase only),earthworks; general site construction activities; and trackout. It will take into account the nature and scale of the activities undertaken for each source and the sensitivity of the area to increases in dust and particulate matter levels to assign a level of risk. Risks will be described in terms of there being a low, medium or high risk of dust effects. Once the level of risk has been ascertained, the site-specific mitigation, proportionate to the level of risk, will be identified and the significance of residual effects determined.

Road Traffic Exhaust Emissions

A screening level qualitative assessment will be undertaken with reference to the Environmental Protection (UK) and IAQM guidance entitled "Land-Use Planning & Development Control: Planning for Air Quality" (Moorcroft *et al.*, 2017), using professional judgement and by considering the following information, where available:

- The number and type of road traffic and site equipment likely to be generated.
- The number and proximity of sensitive receptors to the Site and along the likely routes to be used by construction vehicles.
- The likely duration and the nature of the construction/decommissioning activities undertaken.

6.1.12. Difficulties and uncertainties

No difficulties or uncertainties with regards the air quality assessment have been identified at this stage. It is assumed that development traffic flows during construction phase will be below the relevant criteria at this stage. The Applicant will be able to confirm whether a detailed construction phase traffic emissions modelling assessment is required following a review of the relevant traffic data at a later stage.

6.1.13. References

- Institute of Air Quality Management (2023), 'Guidance of the Assessment of dust from demolition and construction, V2.1' [pdf] Available at: https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-dust-2023-BG-v6-amendments.pdf

- Department of Environment, Food and Rural Affairs. UK-AIR Air Information Resource. [online] Available at: http://uk-air.defra.gov.uk
- Department of Environment, Food and Rural Affairs (2022), Part IV of the Environment Act 1995 as amended by the Environment Act 2021: Local Air Quality Management: Technical Guidance LAQM.TG(22), London: Crown.
- Moorcroft *et al*., (2017), Land-Use Planning & Development Control: Planning for Air Quality v1.2, Environmental Protection and Institute of Air Quality Management, London.

6.1.14. Scoping questions

- Do you agree with the proposed list of consultees?
- Do you agree with the proposed study areas?
- Do you agree that the data sources listed to inform the EIA baseline characterisation are appropriate?
- Are any receptors/assets/resources not identified that you would like to see included in the EIA?
- Do you agree with the receptors/matters that are proposed to be scoped in and out of further assessment?
- Do you agree with the proposed factor-specific assessment approach?

6.2. Biodiversity

6.2.1 Consultation

An initial project introduction and scoping meeting has been undertaken with Natural England (14th September 2023).

Further consultation to inform the biodiversity assessment will be undertaken with the following parties to agree the assessment methodology and biodiversity assets of sufficient importance to be considered in the assessment:

- Buckinghamshire Council
- Natural England
- Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust

6.2.2 Study area

The study area includes the four parcel areas (Parcel 1, Parcel 1a, Parcel 2 and Parcel 3), proposed cable routes and appropriate buffer zones. These vary per receptor as discussed below and have been chosen based on best practice survey guidance:

- Background data searches for statutory and non-statutory designated sites and protected species records will focus on the Site and a 2 km buffer, extended to 10 km for Special Protection Areas (SPAs), Special Areas of

Conservation (SACs) and Ramsar sites. Therefore, the Site and 2 km surrounding it is considered to be the Zone of Influence.

- The survey study area for preliminary ecological appraisal (PEA) is the entire Site.
- The survey study area for hedgerows and invasive species is the entire Site.
- The survey study area for rare and notable arable (non-crop) plants is the entire Site.
- The survey study area for aquatic preliminary surveys are the watercourses and ponds located within the Site and up to 25 m from the Site Boundary.
- The survey study area for the river condition assessment survey are the watercourses located within the Site.
- The survey study area for great crested newts (GCN) is the ponds and terrestrial habitat within the Site and ponds within 500 m from the Site Boundary.
- The survey study area for bat activity surveys is the entire Site.
- The survey study area for preliminary bat roost assessments is all trees and woodland within the Site, and along cable route 1- south, cable route 2 – north and cable route 2 – south. All trees within the Site have been subject to a ground level tree assessment. In addition, areas of woodland outside of the Site Boundary have also been subject to assessment (Shrubs Wood, Decoypond Wood, woodland block north-west of Decoypond Wood, Sheephouse Wood, Romer Wood, Balmore Wood and Runt's Wood).
- The survey study area for breeding bird surveys is the entire Site due to the need to assess the overall significance of the breeding bird assemblage present and inform potential enhancement measures.
- The survey study area for wintering bird surveys is the entire Site due to the need to assess the overall significance of the wintering bird assemblage present and inform potential enhancement measures.
- The survey study area for otter and water vole are the watercourses and ponds located within the Site and up to 200 m outside of the Site Boundary.
- The survey study area for considering reptile suitability is the entire Site.
- The survey study area for badgers comprises the entire Site.

6.2.3. Data sources to inform the EIA baseline characterisation

The proposed assessment scope has been based on:

- A background data search from Buckinghamshire and Milton Keynes Environmental Records Centre which included a search for non-statutory designated sites and protected and notable species records within 2 km of the Site.
- MAGIC (the Multi-Agency Geographic Information website) to view statutory designated nature conservation sites within 10 km of the Site.

- Previous ecology reports prepared by AECOM of surveys undertaken at the Site in 2021-2022 which covered the partial Site Boundary (See **Appendix F**).
- Updated ecology survey reports undertaken by RSK Biocensus undertaken in 2023 which covers the current Site Boundary (See **Appendix F**).

The assessment to be presented in the Preliminary Environmental Information Report and ES will also be informed by surveys undertaken between 2021-2024 (see **Section 6.2.4** below for more details).

6.2.4. Surveys to inform the EIA baseline characterisation

The following surveys of the Site have been undertaken to date. The surveys prior to 2023 were based on an earlier, reduced version of the Site Boundary, excluding the cable route search area. Since the Site Boundary has expanded, further surveys have been undertaken to encompass the additional areas (excluding the cable route search area). Therefore, all four Parcel areas (Parcel 1, Parcel 1a, Parcel 2 and Parcel 3) have been captured in the following reports. Further survey work of the cable search area is currently ongoing to inform the design and will be presented in the Preliminary Environmental Information Report.

- PEA undertaken by AECOM: September 2021 (See **Appendix F-1**)
- Wintering bird surveys by AECOM: October 2021-March 2022 (See **Appendix F-2**)
- Badger survey by AECOM: December 2021-March 2022
- Bat preliminary roost assessment by AECOM: March 2022
- Breeding bird surveys by AECOM: March-June 2022 (See **Appendix F-3**)
- GCN eDNA survey by AECOM: May 2022 and April 2023 (See **Appendix F-4**)
- Bat activity surveys (static monitoring) by AECOM: April-September 2023
- PEA by RSK: June, July, August and October 2023 (See **Appendix F-5**)
- Hedgerow Regulations survey by RSK: June, July, August and October 2023 (See **Appendix F-5**)
- Arable (non-crop) plant survey by RSK: June 2023 (See **Appendix F-5**)
- Otter and water vole surveys by RSK: June and August 2023 (See **Appendix F-6**)
- Aquatic preliminary surveys by RSK: June 2023 (See **Appendix F-7**)
- River condition assessment survey by RSK: September 2023 (to inform the Biodiversity Net Gain (BNG) assessment)

The following surveys are due to be undertaken in 2023-2024:

- Wintering bird surveys: November 2023-March 2024 (updating as initial survey data is out of date and a robust baseline is required to inform the EIA)
- Breeding bird surveys: March-June 2024 (updating as initial survey data is out of date and a robust baseline is required to inform the EIA)

- Badger surveys: 2024 (updating as initial survey data is out of date and a robust baseline is required to inform the EIA)
- Bat roost surveys (if required) – hibernation surveys, endoscope inspections, tree climbing and emergence surveys. These will only occur if any trees identified with bat roost potential could potentially be directly or indirectly impacted by the construction of the Proposed Development, although it is currently envisaged this will not occur.

As stated in **Section 6.2.1** above, consultation with Natural England will be undertaken to determine any further survey requirements, in addition to those proposed above.

6.2.5. Baseline conditions

The existing ecological baseline is based on both desk and field-based studies undertaken to date (see **Sections 6.2.3 and 6.2.4** above).

The Site predominantly consists of agricultural fields (mostly arable with some grassland) interspersed with hedgerows, small woodland blocks, ponds and farm access tracks. Several minor watercourses run adjacent to the Site, including the Claydon Brook and tributaries, alongside small field drains and ditches that run parallel to numerous field boundaries.

A more detailed description of the Site is provided in **Chapter 2: Description of the Proposed Development**.

The following habitat types were recorded as present on and adjacent to the Site during the PEA survey undertaken in June-August 2023:

- Cereal crops (c1c)
- Non-cereal crops (c1d)
- Other neutral grassland (g3c)
- Modified grassland (g4)
- Lowland mixed deciduous woodland (w1f)
- Other woodland; broad-leaved (w1g)
- Line of trees (w1g6)
- Mixed scrub (h3h)
- Bramble scrub (h3d)
- Buildings (u1b5)
- Artificial unvegetated, unsealed surface (u1c)
- Hedgerow (priority habitat) (h2a)
- Standing open water (r1) - ponds
- Other rivers and streams (r2b)
- Individual rural trees

Statutory designated sites

There are no internationally protected statutory designated nature conservation sites within 10 km of the Site Boundary.

There are three nationally protected statutory designated nature conservation sites within 2 km; however, currently none are located within the Site Boundary. Initial discussions with Natural England have indicated that the boundary of the SSSIs listed below will be extended. It is not yet known whether this will include areas within the Site:

- Sheephouse Wood Site of Special Scientific Interest (SSSI) – adjacent to Parcel 1 and 1a boundary
- Finemere Wood SSSI – adjacent to Parcel 2 boundary
- Grendon and Doddershall Woods SSSI - 1.36 km southwest of Parcel 1a

In addition, Ham Home-cum-Hamgreen Woods SSSI is located 3.2 km south-west from the Site Boundary. The SSSI impact risk zone boundary for this site and all of the above sites intersect the Site Boundary.

Non-statutory designated sites

There are 23 non-statutory designated sites within 2 km of the Site Boundary, namely 14 Local Wildlife Sites (LWS), five Biological Notification Sites (BNS), two Wildlife Trust Reserves (WTR) and two Biodiversity Opportunity Areas (BOA). One is located within the Site Boundary:

- Bernwood BOA – overlaps with Parcel 1, 1a and 2

Those adjacent to the Site are:

- Shrub Woods LWS – north of Site 1
- Decoypond Wood LWS – west of Site 1
- Romer Wood LWS – north-east of Parcel 1a
- Runts Wood LWS – adjacent to Parcel 2
- Finemere WTR – south Parcel 2

The remaining sites are:

- Home Wood, Middle Claydon LWS – 85 m east of Parcel 1
- Balmore Wood LWS – 105 m west of Parcel 2
- Calvert Railway Station LWS – 185 m west of Parcel 1
- Greatsea Wood LWS – 207 m east of Parcel 1a
- Calvert Jubilee WTR – 360 m west of Parcel 1
- Calvert Jubilee Nature Reserve LWS – 365 m west of Parcel 1
- Area north-west of Calvert Brickworks BNS – 741 m west of Parcel 1
- Track leading to railway BNS – 790 m south of Parcel 1a
- Grendon and Doddershall Meadows LWS – 804 m south of Parcel 2
- Calvert Brick Pits, Great Moor Sailing Club LWS – 986 m west of Parcel 1
- Redland Bridge, Steeple Claydon BNS – 1.35 km north of Parcel 1

- Wood between Lawn Hill and Dunsty Hill LWS – 1.37 km south-west of Parcel 1
- Grendon Underwood Meadows LWS – 1.45 km south-west of Parcel 1a
- Upper Ray BOA – 1.46 km south-east of Parcel 1a
- Stonehill Lane LWS – 1.68 km south-east of Parcel 3
- Grassland near Addington BNS – 1.94 km north-west of Parcel 3
- South Lake, Addington BNS – 1.95 km north-west of Parcel 3

Other notable sites

No areas of ancient woodland are located within the Site Boundary. There are 52 areas of ancient woodland within 2 km of the Site Boundary of which 33 are areas of ancient semi-natural woodland and 19 are areas of replanted ancient woodland. The closest areas of ancient woodland are both ancient semi-natural woodland and replanted ancient woodland that are directly adjacent to the Site Boundary in multiple locations.

Protected and notable species

Invasive non-native species

The background desk study did not identify any invasive non-native floral or faunal species within the Site Boundary. However, it did identify several invasive non-native floral species within 2 km of the Site Boundary including:

- Indian Balsam (*Impatiens glandulifera*);
- Canadian Waterweed (*Elodea canadensis*);
- Variegated Yellow Archangel (*Lamiastrum galeobdolon subsp. Argentatum*); and
- Wall Cotoneaster (*Cotoneaster horizontalis*).

The background desk study also identified several invasive non-native faunal species within 2 km of the Site Boundary, including:

- Mandarin duck (*Aix galericulata*);
- Ruddy duck (*Tadorna ferruginea*);
- Barnacle goose (*Branta leucopsis*);
- Bar-headed goose (*Anser indicus*);
- Canada goose (*Branta canadensis*);
- Snow goose (*Anser caerulescens*);
- Ring-necked parakeet (*Psittacula krameri*)
- Black swan (*Cygnus atratus*)
- Zander (*Stizostedion lucioperca*);
- Wels catfish (*Silurus glanis*);
- Chinese water deer (*Hydropo*tes inermis); and
- American mink (*Mustela vison*).

During the surveys undertaken, no evidence of invasive non-native species was identified within the Site Boundary.

Plants

The background desk study returned records of 22 notable plant species within 2 km of the Site Boundary, including True Fox-sedge (C*arex vulpina*), Juniper (*Juniperus communis*), Grape-hyacinth (*Muscari neglectum*), Tubular Water-dropwort (*Oenanthe fistulosa*) (species listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006) and Bluebell (*Hyacinthoides non-scripta*) (Schedule 8 of the Wildlife and Countryside Act 1981 (as amended)). No records were identified within the Site Boundary; however, several records were located within the areas of woodland adjacent to the Site.

During the PEA survey undertaken in June-August 2023, Bluebell was recorded within areas of woodland; however, no other notable plant species were recorded within the Site Boundary.

Invertebrates

The background desk study identified 143 records of protected or otherwise notable invertebrates within 2 km of the Site. Of particular note are black hairstreak (*Satyrium pruni*), wood white (*Leptidea sinapis*) and white admiral (*Limenitis camilla*), species that are included within the citations for Sheephouse Wood SSSI and Finemere Wood SSSI which are located adjacent to the Site Boundary.

During the PEA survey undertaken in June-August 2023, the majority of the habitats present within the Site were considered likely to support common assemblages of invertebrate species, typical of arable field margins, hedgerows, woodland and scrub, and grassland habitats. However, the three butterfly species included within the citations for Sheephouse Wood SSSI and Finemere Wood SSSI will use both woodland and hedgerow margin habitat and the food source for black hairstreak caterpillar, Blackthorn (*Prunus spinosa*), was recorded abundantly across the Site within hedgerows and woodland areas. Areas of standing and fallen deadwood were also noted throughout the Site which was considered suitable to support invertebrate species.

Species observed during the PEA survey undertaken in June-August 2023 included:

- Cinnabar moth (*Tyria jacobaeae*);
- Marbled white (*Melanargia galathea*);
- Meadow brown (*Maniola jurtina*);
- Ringlet (*Aphantopus hyperantus*);
- Comma (*Polygonia c-album*);
- Gatekeeper (*Pyronia tithonus*);
- Small heath (*Coenonympha pamphilus*);
- Large white (*Pieris brassicae*);
- Small skipper (*Thymelicus sylvestris*);
- Small tortoiseshell (*Aglais urticae*);
- Large skipper (*Ochlodes sylvanus*); and

- Purple hairstreak (*Favonius quercus*).

Several yellow meadow ant (*Lasius flavus*) hills were also recorded within the Site Boundary.

Fish

The background desk study identified records of five fish species within 2 km of the Site including spined loach (*Cobitis taenia*) a species listed under Section 41 of the NERC Act 2006, bullhead (*Cottus gobio*), common carp (*Cyprinus carpio*) and the invasive non-native species wels catfish (*Silurus glanis*) and zander (*Stizostedion lucioperca*). No records were identified within the Site Boundary.

The Claydon Brook, along with several larger waterbodies, were considered to provide suitable habitat for supporting fish species.

Amphibians

The background desk study identified records of GCN within 2 km of the Site Boundary; however, no records were located within the Site Boundary. A total of eight GCN class survey license returns between 2016-2017 were identified within Parcel 1.

The background desk study also identified records of common toad (*Bufo bufo*), common frog (*Rana temporaria*), palmate newt (*Lissotriton helveticus*) and smooth newt (*Lissotriton vulgaris*) within 2 km of the Site Boundary; however, no records were located within the Site Boundary. A review of previous reports of Habitat Suitability Index (HSI) and environmental DNA (eDNA) surveys undertaken within the Site and 500 m from the Site Boundary in 2022 identified multiple ponds as supporting GCN or having suitability to support this species.

The areas of woodland, grassland margins and hedgerows were considered suitable to provide foraging, refuge and hibernation opportunities for amphibian species, including great crested newts.

Reptiles

The background desk study identified records of grass snake (*Natrix helvetica*), common lizard (*Zootoca vivipara*) and slow-worm (*Anguis fragilis*) within 2 km of the Site. However, no records were identified within the Site Boundary.

Within the Site, most of the land comprised arable and modified grassland fields which are considered sub-optimal to support reptiles. However, smaller areas of rough grassland and scrub habitats were considered suitable sheltering and foraging habitat to support common reptile species, but these were limited in extent.

Birds

The background desk study identified records of 147 priority bird species within 2 km of the Site (red and amber list species included on the Birds of Conservation Concern list, UK priority species under NERC Act 2006 and Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). Whilst no records are located within the Site Boundary, multiple records were identified adjacent to the Site, predominantly within the areas of woodland.

A total of 59 bird species were recorded during wintering bird surveys for the Site between October 2021 and March 2022. Of these 59 bird species, 34 species met

at least one of a range of criteria relating to conservation importance including species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) such as little egret (*Egretta garzetta*), red kite (*Milvus milvus*), golden plover (*Pluvialis apricari*), peregrine falcon (*Falco peregrinus*), fieldfare (*Turdus pilaris*) and redwing (*Turdus iliacus*).

Initial wintering bird surveys have identified species diversity for the Site is of County importance and, individually, Parcel 1 and 2 support an assemblage of wintering birds which may be of importance at a District level. However, individually, species diversity at Parcel 1a and 3 are only of Local importance. Species populations are of Local importance within the Site, with the exception of snipe (*Gallinago gallinago*) (which occurs in numbers of County importance).

A total of 57 species (including species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and Annex 1 of the EU Birds Directive) were recorded during the breeding bird surveys undertaken between March and June 2022. Of the 57 species recorded within the survey area, territories of 39 species were confirmed and territories of a further ten species were considered to be probable or possible within the survey area, resulting in a breeding bird assemblage of 49 species. Species recorded breeding within the Site included species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) such as red kite and hobby (*Falco subbuteo*), with barn owl (*Tyto alba*) considered to be possibly breeding. A number of trees across the Site were also identified as suitable nesting habitat for barn owl.

During the PEA survey undertaken in June-August 2023, a number of species were recorded within the arable fields including:

- Yellowhammer (*Emberiza citrinella*);
- Skylark (*Alauda arvensis*);
- Yellow wagtail (*Motacilla flava*);
- Reed bunting (*Emberiza schoeniclus*);
- Linnet (*Carduelis cannabina*);
- Lesser whitethroat (*Sylvia curruca*);
- Dunnock (*Prunella modularis*);
- House sparrow (*Passer domesticus*);
- Robin (*Erithacus rubecula*);
- Swallow (*Hirundo rustica*); and
- Swift (*Apus apus*).

Within woodland/scrub habitat, species recorded included:

- Blackcap (*Sylvia atricapilla*);
- Chiffchaff (*Phylloscopus collybita*);
- Chaffinch (*Fringilla coelebs*);
- Greenfinch (*Chloris chloris*);
- Blue tit (*Cyanistes caeruleus*);

- Great tit (*Parus major*);
- Song thrush (*Turdus philomelos*); and
- Great spotted woodpecker (*Dendrocopos major*).

Foraging raptors were also recorded frequently across the Site, including red kite and buzzard (*Buteo buteo*).

The areas of woodland and hedgerow within the Site were assessed as suitable for providing foraging and breeding opportunities for a range of breeding birds, in particular passerine species. The areas of grassland and arable field margins were considered suitable habitat for ground nesting species such as skylark and lapwing (*Vanellus vanellus*).

Bats

The background desk study returned multiple records of bat roosts, foraging and commuting activity for 13 bat species and four groups that could not be identified to species level within 2 km of the Site Boundary comprising:

- Bechstein's bat (*Myotis bechsteinii*);
- Brandt's bat (*Myotis brandtii*);
- Serotine (*Eptesicus serotinus*);
- Leisler's bat (*Nyctalus leisleri*);
- Noctule bat (*Nyctalus noctule*);
- Daubenton's bat (*Myotis daubentonii*);
- Whiskered bat (*Myotis mystacinus*);
- Whiskered/Brandt's bat (*Myotis mystacinus/brandtii*);
- Natterer's bat (*Myotis nattereri*);
- Myotis species (*Myotis* spp.);
- Western barbastelle (*Barbastella barbastellus*);
- Common pipistrelle (*Pipistrellus pipistrellus*);
- Soprano pipistrelle (*Pipistrellus pygmaeus*);
- Nathusius's pipistrelle (*Pipistrellus nathusii*);
- Pipistrelle species (*Pipistrellus* spp.);
- Brown long-eared bat (*Plecotus auritus*); and
- Unidentified bat species (*Chiroptera*).

Whilst no records were identified within the Site Boundary, high concentrations of records were located within the woodland blocks located adjacent to the Site Boundary.

A review of previous reports identified multiple trees within the Site Boundary as having potential to support roosting bats, including trees of high and moderate roost potential.

During the PEA survey undertaken in June-August 2023, multiple trees and woodland blocks were assessed as having potential to support roosting bats and an old barn. The arable and modified grassland fields were assessed to be of limited

value to foraging bats; however, the hedgerows, field margins, woodland and pond habitats were assessed as offering highly suitable foraging and commuting habitat.

Hazel Dormouse

The background desk study identified no records of hazel dormouse (*Muscardinus avellanarius*) within 2 km of the Site Boundary.

During the PEA survey undertaken in June-August 2023, the areas of woodland within the Site were considered sub-optimal to support dormice, given that the majority of the woodland areas had a lack of diverse and dense understorey and limited amounts of Hazel (although other species used by dormice, including Oak (*Quercus* spp.), Bramble (*Rubus fruticosus*), Ash (*Fraxinus excelsior*), Birch (*Betula* spp.), and Hawthorn (*Crataegus monogyna*), were recorded).

The hedgerows within the Site were considered to provide suitable habitat for dormice and provide connectivity to the wider landscape.

Otter and water vole

The background desk study identified records of otter (*Lutra lutra*) and water vole (*Arvicola amphibius*) within 2 km of the Site Boundary. However, no records were located within the Site Boundary.

During the otter and water vole surveys undertaken in June and August 2023, no signs of water voles were observed. The majority of watercourses and ditches present within the Site were dry and lacked substrate suitable for burrowing and emergent vegetation for foraging. The Claydon Brook was considered suitable to provide commuting and foraging opportunities for otter, whilst woodland habitat could provide suitable resting or lying up opportunities.

Badger

The background desk study identified multiple records of badger within 2 km of the Site Boundary, including a single record of a badger sett located within the Site Boundary.

A review of previous reports identified multiple badger setts located within and adjacent to the Site Boundary including main, annex, subsidiary and outlier setts.

During the PEA survey undertaken in June-August 2023, habitats within the Site were noted as being potentially suitable for badger, comprising grassland, scrub, and woodland which together provides suitable foraging and resting opportunities for badgers. Several badger setts were identified and multiple badger latrines and mammal paths were recorded throughout the Site Boundary.

Other species

The background desk study identified records of polecat (*Mustela putorius*), brown hare (*Lepus europaeus*), European hedgehog (*Erinaceus europaeus*) and harvest mouse (*Micromys minutus*).

During the PEA survey undertaken in June-August 2023, several brown hare and roe deer (*Capreolus capreolus*) were noted within arable field areas.

Habitats within the Site, including woodland, hedgerows and grassland, were considered suitable for European hedgehog. Hedgehogs occupy a range of lowland habitats with enough cover to allow nesting. The areas of woodland, hedgerows and

grassland within the Site provide suitable foraging habitat for European hedgehogs, with the hedgerows providing connectivity to suitable habitat in the wider landscape, however no evidence of European Hedgehog was noted during surveys

Polecat favour a range of habitat types including woodland and farmland habitats; these are present abundantly within the Site Boundary, however no evidence of polecat was noted during surveys.

Habitats suitable to support harvest mouse present within the Site included the hedgerows and areas of grassland around the arable field margins, however no evidence of harvest mouse was noted during surveys

6.2.6. Additional (secondary and tertiary) mitigation

Where ecological constraints within the Site cannot be avoided through primary mitigation (i.e. through changes to the Proposed Development layout and / or construction methods), it is anticipated that additional mitigation to offset adverse impacts will be set out in the following documents:

Construction

- Outline Landscape and Ecological Management Plan.
- Biodiversity Design to ensure BNG is achieved.
- Outline Construction Environmental Management Plan to include measures to safeguard ecological receptors during construction.
- GCN licence.
- Badger licence (if required).
- Bat licence (if required).

Operation

- Continued adherence to, and implementation of, the Outline Landscape and Ecological Management Plan and the Outline Operational Environmental Management Plan.

Decommissioning

The impacts from decommissioning (removal of solar panels) will be similar to construction impacts. The Outline Decommissioning Environmental Management Plan will include measures to safeguard ecological receptors during decommissioning.

6.2.7. Description of likely significant effects

Statutory Designated Sites

Recent discussions with Natural England have indicated that the citation features of Sheephouse Wood SSSI and Finemere Wood SSSI will be updated to include Bechstein's bat. Further assessment and consultation with Natural England is ongoing to assess the potential for the Proposed Development to impact the interest features of the SSSIs and the integrity of the sites.

Ground nesting birds

Much of the Site, being large open arable and grassland fields, is suitable for ground nesting birds and initial breeding bird surveys have identified that the Site supports moderate numbers of ground nesting birds. Open fields, with good long-range visibility, are important for ground nesting birds as they do not provide cover for predators. The construction, operation and decommissioning of the Proposed Development would cause loss of the 'openness' of fields which would directly impact upon ground nesting birds breeding habitat as well as loss of suitable foraging habitat, and disturbance or displacement of species.

Wintering birds and Calvert Jubilee WTR

The Proposed Development could lead to habitat loss, habitat fragmentation, and disturbance or displacement of species during construction, operation and decommissioning of the Proposed Development.

Calvert Jubilee WTR is located 380 m west of the Parcel 1 boundary; the site is known to support a range of wintering wildfowl species. Updated wintering bird surveys will be undertaken in 2023-2024 to assess the importance of the Site to wintering birds.

Bats (foraging and commuting)

The Site includes a significant number of hedgerows and arable field margins and is bounded by large woodland areas which are highly suitable foraging and commuting habitat..

A number of other solar developments are also proposed within the local area which could cause a significant long-term cumulative effect to foraging and commuting bats.

6.2.8. Receptors / matters to be scoped into the assessment

Receptor / Matter	Phase	Justification
Statutory designated sites: • Sheephouse Wood SSSI • Finemere Wood SSSI • Grendon and Doddershall Woods SSSI • Ham Home-cum-Hamgreen Woods SSSI	Construction, operation and decommissioning	Sheephouse Wood SSSI and Finemere Wood SSSI are located adjacent to the Proposed Development boundary, whilst Grendon and Doddershall Woods SSSI and Ham Home-cum-Hamgreen Woods SSSI are located 1.36 km and 3.2 km from the Site Boundary respectively. The embedded Proposed Development design principles will include a minimum standoff distance from solar panels and associated infrastructure, however further assessment will be needed to consider the impact of the Proposed Development

		(See **Appendix F-1** and **Appendix F-5**).
Ground nesting birds	Construction, operation and decommissioning	Much of the Site consists of large open fields which are suitable for ground nesting birds. Therefore, the Proposed Development would cause loss of breeding habitat and directly impact upon these species. Disturbance to these species during the construction and decommissioning phase is also considered likely. Updated breeding bird surveys in 2024 will determine the importance of the breeding bird assemblage present and will inform the design of the Proposed Development and any mitigation required to provide continued availability for open space for ground nesting birds and food supply during breeding and wintering periods (See **Appendix F-3**)
Wintering birds and Calvert Jubilee WTR	Construction, operation and decommissioning	Much of the Site consists of large open arable fields. The Proposed Development could cause loss of foraging habitat for overwintering bird assemblages during operation. Disturbance to these species during the construction and decommissioning phase is also considered likely. Any requirements for mitigation will be confirmed following updated wintering bird surveys undertaken in 2023-2024 (See **Appendix F-2**).
Bats (foraging and commuting)	Construction, operation and decommissioning	The Site is predominantly comprised of monoculture arable and modified grassland which is sub-optimal foraging and commuting habitat for bats.

		However, the Site also includes a significant number of hedgerows and arable field margins and is bounded by large woodland areas which are highly suitable foraging and commuting habitat. Buffer zones between the solar panels, associated infrastructure and boundary features will be implemented. There is potential to enhance foraging habitat by sowing species-rich grassland or diversity of herbs under and between solar panels which would enhance invertebrate populations resulting in an increased food source for foraging bats. In addition, boundary features will be enhanced and other habitat creation and enhancement works will be secured through the Outline Landscape and Ecological Management Plan and through a detailed biodiversity design which will outline how net gain in biodiversity will be achieved (See **Appendix F-5**).

6.2.9. Receptors / matters to be scoped out of the assessment

Receptor / Matter	Phase	Justification
Eight non statutory designated sites within / adjacent to the Site Boundary: • Bernwood BOA • Shrub Woods LWS • Decoypond Wood LWS • Romer Wood LWS • Runts Wood LWS • Finemere WTRHome Wood,	Construction, operation and decommissioning	It is noted that these sites are important foraging and commuting habitats for bats, as indicated by Natural England during initial scoping discussions. However, when considered in isolation of the fauna interest features, these sites are avoided by the current Proposed Development design (**Appendix B**). The current masterplan design is the worst case scenario in terms of extent of the

Middle Claydon LWS • Balmore Wood LWS		development and in this scenario it shows clear avoidance of the LWS's. Therefore, there will be no direct habitat loss and protection measures will be included within the Outline Construction Environmental Management Plan and the Outline Decommissioning Environmental Management Plan (See **Appendix F-1** and **Appendix F-5**).
Other 14 non-statutory designated sites within 2 km of Site	Construction, operation and decommissioning	Their distance from the Site and a lack of relevant links or impact pathways.
Ancient woodland adjacent to the Site Boundary	Construction, operation and decommissioning	It is noted that these sites are important foraging and commuting habitats for bats. However, when considered in isolation of the fauna interest features, these sites are avoided by the current Proposed Development design. The current masterplan design is the worst case scenario in terms of extent of the development and in this scenario shows clear avoidance of the ancient woodland sites. Therefore, there will be no direct habitat loss and protection measures including minimum 20 m buffers from ancient woodland boundaries will be included within the Outline Construction Environmental Management Plan and the Outline Decommissioning Environmental Management Plan (See **Appendix F-1** and **Appendix F-5**).
Other ancient woodland sites within 2 km of Site.	Construction, operation and decommissioning	Their distance from the Site and a lack of relevant links or impact

		pathways (See **Appendix F-1** and **Appendix F-5**).
Arable field margins	Construction, operation and decommissioning	It is noted that this habitat is important foraging and commuting habitat for bats. However, when considered in isolation of the fauna interest features, the Proposed Development will be designed to include a buffer from panels to arable field margins and protection measures will be included within the Outline Construction Environmental Management Plan and the Outline Decommissioning Environmental Management Plan. Mitigation for any habitat loss will be included in the Outline Landscape and Ecological Management Plan and through a detailed biodiversity design which will outline how net gain in biodiversity will be achieved (See **Appendix F-1** and **Appendix F-5**).
Lowland mixed deciduous woodland and other woodland; broad-leaved	Construction, operation and decommissioning	It is noted that this habitat is important foraging and commuting habitat for bats. However, when considered in isolation of the fauna interest features, the Proposed Development will be designed to include a buffer from panels to areas of woodland and protection measures will be included within the Outline Construction Environmental Management Plan and the Outline Decommissioning Environmental Management Plan (See **Appendix F-1** and **Appendix F-5**).

Mixed scrub and Bramble scrub	Construction, operation and decommissioning	Any loss of scrub habitat within the Site Boundary is considered to be minor. Mitigation for any habitat loss will be included in the Outline Landscape and Ecological Management Plan and through a detailed biodiversity design which will outline how net gain in biodiversity will be achieved (See **Appendix F-1** and **Appendix F-5**).
Other neutral grassland	Construction, operation and decommissioning	It is noted that this habitat has some importance for foraging and commuting bats, in particular where this habitat is located adjacent to woodland blocks and hedgerows. Habitat modification is considered likely due to the areas of other neutral grassland being located in areas of the Site where panels will be installed. However, none of the areas of other neutral grassland were considered to be species-rich or to have botanical importance. Mitigation for any habitat modification will be included in the Outline Landscape and Ecological Management Plan and through a detailed biodiversity design which will outline how net gain in biodiversity will be achieved, including enhancement to species-rich grassland underneath panels to increase the diversity and abundance of invertebrate species to improve the foraging value of the habitat bats and farmland bird species (See **Appendix F-1** and **Appendix F-5**).
Modified grassland	Construction, operation and decommissioning	It is noted that this habitat has some importance for foraging and commuting bats, in particular

		where this habitat is located adjacent to woodland blocks and hedgerows. Habitat modification is considered likely due to the areas of modified grassland being located in areas of the Site where panels will be installed. However, none of the areas of modified grassland were considered to have botanical importance. Mitigation for any habitat modification will be included in the Outline Landscape and Ecological Management Plan and through a detailed biodiversity design which will outline how net gain in biodiversity will be achieved, including enhancement of modified grassland to species-rich grassland underneath panels to increase the diversity and abundance of invertebrate species to improve the foraging value of the habitat bats and farmland bird species (See **Appendix F-1** and **Appendix F-5**).
Cereal and non-cereal crops	Construction, operation and decommissioning	It is noted that this habitat may be used by foraging and commuting bats. However, the value of this foraging habitat is likely to be low given the intensity of the management and likely application of insecticides and herbicides. Mitigation for any habitat modification will be included in the Outline Landscape and Ecological Management Plan and through a detailed biodiversity design which will outline how net gain in biodiversity will be achieved, including conversion of arable habitat to herbal lay and species-rich grassland underneath panels

		to increase the diversity and abundance of invertebrate species to improve the foraging value of the habitat bats and farmland bird species (See **Appendix F-1** and **Appendix F-5**).
Arable (non-crop) plants	Construction, operation and decommissioning	Survey has indicated that there are no notable non-crop plants within the Site Boundary. Therefore, no significant effects and these have been scoped out of further assessment (See **Appendix F-1** and **Appendix F-5**).
Hedgerows, and hedgerow trees	Construction, operation and decommissioning	It is noted that this habitat is important foraging and commuting habitat for bats. However, when considered in isolation of the fauna interest features, the Proposed Development will be designed to include a buffer from panels to boundary features, including hedgerows and trees, and protection measures will be included within the Outline Construction Environmental Management Plan and the Outline Decommissioning Environmental Management Plan. Mitigation for any habitat loss will be included in the Outline Landscape and Ecological Management Plan and through a detailed biodiversity design which will outline how net gain in biodiversity will be achieved (See **Appendix F-1** and **Appendix F-5**).
Individual trees and lines of trees	Construction, operation and decommissioning	The Proposed Development will be designed to include a buffer from panels to individual trees and protection measures will be

		included within the Outline Construction Environmental Management Plan and the Outline Decommissioning Environmental Management Plan. An Arboricultural Impact Assessment will be submitted in support of the DCO application (See **Appendix F-1** and **Appendix F-5**).
Watercourses	Construction, operation and decommissioning	No watercourses will be lost to the Proposed Development. If small sections of watercourses are affected (e.g., culverted to allow for installation of cables if horizontal directional drilling is not possible), then standard mitigation measures will be implemented including offsets of at least 10 m either side from main rivers and 6 m from ditches. The implementation of the Outline Construction Environmental Management Plan, Outline Operational Environmental Management Plan and Outline Decommissioning Environmental Management Plan will include standard practice pollution prevention measures (See **Appendix F-1** and **Appendix F-5**).
Ponds	Construction, operation and decommissioning	No ponds will be lost to the Proposed Development. The implementation of the Outline Construction Environmental Management Plan, Outline Operational Environmental Management Plan and Outline Decommissioning Environmental Management Plan will include standard practice pollution prevention measures . (See

		Appendix F-1 and **Appendix F-5**).
Invasive species	Construction, operation and decommissioning	No invasive species were identified during PEA survey. If any are found during further surveys, then an invasive species method statement will be implemented to prevent the spread of this species during the construction, operation and decommissioning of the Proposed Development. This will be secured through the Outline Construction Environmental Management Plan and the Outline Decommissioning Environmental Management Plan (See **Appendix F-1** and **Appendix F-5**).
Invertebrates	Construction, operation and decommissioning	Boundary features within the Site will be mostly retained in their entirety and are the features of importance for those notable invertebrate species listed as citation features of the SSSIs adjacent to and associated with the Site. Although limited small-scale removals could be required to facilitate access or underground cabling, there is not expected to be loss of suitable habitat for these species as boundary features will be enhanced and other habitat creation and enhancement works secured through the Outline Landscape and Ecological Management Plan and through a detailed biodiversity design which will outline how net gain in biodiversity will be achieved, which is likely to benefit invertebrate species (See

		Appendix F-1 and **Appendix F-5**).
Amphibians (including GCN)	Construction, operation and decommissioning	Although construction of the project substation, BESS and associated compounds and cable routes would result in loss of habitat during the construction and operational phase most of this habitat is considered unsuitable for GCN. Ponds which provide suitable breeding habitat for GCN will be retained, and the implementation of the Outline Construction Environmental Management Plan, Outline Operational Environmental Management Plan and Outline Decommissioning Environmental Management Plan will include standard practice pollution prevention measures. There is likely to be a small number of hedgerows, field margins and scrub habitat lost which support high habitat suitability for newts during their terrestrial phase outside of the breeding season. Mitigation for any habitat loss during the construction, operational and decommissioning phases of the Proposed Development is likely to be dealt with through a District Level Licence (See **Appendix F-4**).
Reptiles	Construction, operation and decommissioning	The Site, being mostly arable and modified grassland, is largely unsuitable for reptiles. Precautionary measures detailed in the Outline Construction Environmental Management Plan and Outline Decommissioning Environmental Management Plan will safeguard low numbers of reptiles that may be present

		within the Site in the small areas of suitable habitat. Mitigation for any suitable habitat loss during the construction, operational and decommissioning phases of the Proposed Development will be detailed in the Outline Landscape and Ecological Management Plan and through a detailed biodiversity design which will outline how net gain in biodiversity will be achieved. Therefore, the installation of solar panels and associated infrastructure (substation, BESS and associated compounds and cable routes) is not considered likely to cause significant loss of suitable reptile habitat (and could in fact provide opportunities to enhance habitat for reptiles) (See **Appendix F-1** and **Appendix F-5**).
Non-ground nesting birds	Construction, operation and decommissioning	Retention of the majority of boundary hedgerows and trees and scrub and implementation of precautionary measures detailed in the Outline Construction Environmental Management Plan, the Outline Operational Environmental Management Plan and the Outline Decommissioning Environmental Management Plan will sufficiently safeguard nests during the construction, operation and decommissioning phases. Mitigation for loss of any suitable habitat for nesting birds such as hedgerows and scrub will be included in the Outline Landscape and Ecological Management Plan and through a detailed biodiversity design which

		will outline how net gain in biodiversity will be achieved. No effects are anticipated during operation (See **Appendix F-1** and **Appendix F-5**).
Barn owl	Construction, operation and decommissioning	If nesting barn owl are present in trees or buildings adjacent to works, they may be disturbed during construction and / or decommissioning. Pre-construction surveys will be undertaken to confirm nesting locations, and if present will inform the mitigation requirements. This is likely to include buffer zones between the solar panels and associated infrastructure and boundary features. There is not expected to be a loss of barn owl foraging habitat as boundary features will be enhanced and other habitat creation and enhancement works secured through the Outline Landscape and Ecological Management Plan and through a detailed biodiversity design which will outline how net gain in biodiversity will be achieved which is likely to benefit foraging barn owls (See **Appendix F-1**, **Appendix F-3** and **Appendix F-5**).
Red kite	Construction, operation and decommissioning	If red kite are nesting in trees adjacent to works, they may be disturbed by construction and decommissioning. Pre-construction surveys will be undertaken to confirm nesting locations, and if present will inform the mitigation requirements. This is likely to include buffer zones between the solar panels and associated infrastructure and boundary

		features. There is not expected to be a loss of foraging habitat as boundary features will be enhanced and other habitat creation and enhancement works secured through the Outline Landscape and Ecological Management Plan and through a detailed biodiversity design which will outline how net gain in biodiversity will be achieved which is likely to benefit foraging red kite (See **Appendix F-1**, **Appendix F-3** and **Appendix F-5**).
Bats (roosting)	Construction, operation and decommissioning	A significant number of trees within the Site have been assessed as having potential to support roosting bats. If bats are roosting in trees or buildings adjacent to works then they may be disturbed during construction and decommissioning. However no significant effects to roosting bats are anticipated due to proposed embedded mitigation measures including retention of such features, standoff distances from these features and lighting proposals being designed sensitively to include directional and on demand lighting which will be positioned facing away from these features. If in the unlikely event that trees identified as having bat roost potential are required to be removed (e.g. to facilitate access or cable routes), then these individual trees will be subject to climbing and / or emergence surveys at the pre-construction stage. If trees are found to support bat roosts then a licence from Natural England will be applied for and appropriate

		mitigation measures implemented.
Otter	Construction, operation and decommissioning	No ponds or watercourses will be lost to the Proposed Development. If small sections of watercourses are affected (e.g., culverted to allow for installation of cables if horizontal directional drilling is not possible), then standard mitigation measures will be implemented including offsets of at least 10 m either side from main rivers. The implementation of the Outline Construction Environmental Management Plan, Outline Operational Environmental Management Plan and Outline Decommissioning Environmental Management Plan will include standard practice pollution prevention measures (See **Appendix F-6**).
Water vole	Construction, operation and decommissioning	Water voles are considered absent from the Site due to limited suitable habitat and surveys have confirmed absence, therefore there is no potential for impact (See **Appendix F-6**).
Dormouse	Construction, operation and decommissioning	Dormice are considered likely absent from the Site. However, habitats within the Site have been assessed as suitable to support this species. The Proposed Development will be designed to include a buffer from panels to boundary features including hedgerows and woodland. Measures outlined in the Outline Construction Environmental Management Plan and Outline Decommissioning Environmental Management Plan will safeguard hedgerow and woodland. Mitigation for any habitat loss will

		be included in the Outline Landscape and Ecological Management Plan and through a detailed biodiversity design which will outline how net gain in biodiversity will be achieved (See **Appendix F-1** and **Appendix F-5**).
Badger	Construction, operation and decommissioning	Updated pre-construction badger surveys are proposed for 2024. All known, and any newly discovered, badger setts will be retained with an appropriate buffer (minimum 30 m). Implementation of precautionary measures detailed in the Outline Construction Environmental Management Plan, Outline Operational Environmental Management Plan and the Outline Decommissioning Environmental Management Plan will mitigate for any residual risk (See **Appendix F-1** and **Appendix F-5**).

6.2.10. Opportunities for enhancing the environment

Opportunities for ecological enhancement are diverse given the majority of habitats within the Site are generally intensively farmed of low biodiversity value. No specific enhancement measures have yet been agreed however, a detailed biodiversity design will be produced and implemented outlining how a net gain in biodiversity will be achieved. The biodiversity design will be cognisant of local biodiversity priorities already identified for the areas and in consultation with Natural England, Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust and Buckinghamshire Council. These measures will focus on compensating adverse effects on habitats and species already known, and to improve the Site for species that could feasibly colonise the Site in the future given the surrounding landscape. Therefore, enhancement measures are likely to include (but will not be limited to) the following:

- Creation of herbal ‘ley’ habitat or similar underneath solar panels to restore soil health and create a nectar source for invertebrates - in particular pollinators.
- Enhancement of field margins and boundary features to provide greater habitat connectivity and foraging / commuting opportunities for various species, including bats and black hairstreak butterflies.

- Creation of species-rich grassland where panels are not proposed, to mitigate loss of ground-nesting bird habitat and improve foraging for bat and farmland bird species.
- Creation of new ponds and restoration of defunct ponds to improve habitat for GCN and foraging bats.
- Tree and shrub planting to further provide additional bat foraging habitat.
- Winter food for farmland birds – leaving over winter stubbles and or provision of specific seed source within buffer strip margins between panels and boundary features.
- Ensuring any fencing is permeable to mammal species such as badger, brown hare and European hedgehog.

6.2.11. Proposed assessment methodology

The assessment will follow the Chartered Institute of Ecology and Environmental Management's (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland, referred to here as 'the CIEEM Guidelines' (CIEEM, 2018).

The significance criteria proposed for the biodiversity assessment are presented in **Appendix D**.

6.2.12. Difficulties and uncertainties

To ensure transparency within the EIA process, the following difficulties and uncertainties have been identified:

- Some species-specific surveys have not yet been competed or undertaken. As stated in **Section 6.2.4** above, these will be completed / undertaken in 2023/2024.

6.2.13. References

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- Natural England (1990), Finemere Wood Site of Special Scientific Interest Citation. Available at: https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1005592.pdf
- Natural England (1984), Grendon and Doddershall Woods Site of Special Scientific Interest Citation. Available at:

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- The British Standards Institution (2013), 'BS 42020:2013 Biodiversity – Code of practice for planning and development', BSI Standards Limited.

6.2.14. Scoping questions

- Do you agree with the proposed list of consultees?
- Do you agree with the proposed study areas?
- Do you agree that the data sources listed to inform the EIA baseline characterisation are appropriate?
- Are any receptors/assets/resources not identified that you would like to see included in the EIA?
- Do you agree with the proposed additional (secondary and tertiary) mitigation measures and is this mitigation appropriate?
- Do you agree with the receptors/matters that are proposed to be scoped in and out of further assessment?
- Do you agree with the proposed factor-specific assessment approach?

6.3. Climate

6.3.1 Consultation

No consultation to inform the climate assessment has been undertaken to date and no specific consultation in relation to climate is envisaged, over and above the consideration of comments received to this EIA Scoping Report.

6.3.2 Study area

The study area is defined as the area within the Site Boundary for climate change mitigation (i.e., assessment of greenhouse gas (GHG) emissions from the Proposed Development). Within the GHG assessment, scope 1 emissions will include those emitted directly from all facilities and infrastructure under the operational control of the Proposed Development, and likely within the Site Boundary. However, scope 2 and any relevant scope 3 emissions will occur outside the proposed Site Boundary (i.e. globally). These emissions will be estimated based upon project-specific data that may relate to activities outside the Site Boundary (e.g., water provision and wastewater treatment outside of the Site Boundary, or the embodied carbon within construction materials and solar PV modules as a result of the energy used for production).

The receptor to GHG emissions is the global climate, and so when assessing the impact and significance of GHG emissions, the national (Climate Change Act 2008

and associated Carbon Budgets) and global context (Paris Agreement) is considered.

6.3.3. Data sources to inform the EIA baseline characterisation

Standard emission factors will be applied, sourced from reputable agencies, such as the Department for Energy Security and Net Zero (DESNZ) UK Government GHG Conversion Factors for Company Reporting (2023a). The national GHG baseline data will be obtained from the UK Government (BEIS, 2022).

This assessment will consider Buckinghamshire Council's (2023) aim for achieving net zero within Buckinghamshire by 2050.

Flood risk at the Site has been assessed using the UK Government's Flood map for Planning tool (2023), which ranks an areas flood risk probability on a scale of low, medium and high.

Data pertaining to the expected construction and operational activities will be sourced from the Applicant to estimate applicable scope 1, 2 and 3 emissions. This includes construction energy consumption, expected maintenance requirements, product specification (e.g., solar PV modules and BESS), total materials needed for construction and details on construction workforce.

6.3.4. Surveys to inform the EIA baseline characterisation

No baseline surveys have been undertaken to date and none are expected to be undertaken to inform the climate assessment.

6.3.5. Baseline conditions

The baseline conditions describe the conditions of a business-as-usual scenario whereby the Proposed Development is not undertaken. The baseline comprises existing carbon stock and sources of GHG emissions within the Site Boundary of the existing activities on-site.

The land within the Site predominantly consists of agricultural fields, hedgerows and mature trees, with animal grazing taking place. There are numerous separate ancient woodland areas located within the Site Boundary (**Appendix C**). It is likely that the Site currently sequesters carbon.

The Site is within a Flood Zone 1 location, with the majority of the area being at very low risk of surface water flooding. The Proposed Development falls within Flood Zone 1, based on the UK Government's flood map (2023). Flood Zone 1 indicates an area has a low probability of flooding, defined as less than 0.1% annual probability of river or sea flooding.

With regards to the national baseline, the UK Government set out a legally binding framework to cut GHG emissions by at least 80% by 2050 in the Climate Change Act (2008); this was amended by the Climate Change Act 2008 (2050 Target Amendment) Order 2019, changing the 80% reduction to a 100% reduction, or net zero, by 2050.

The total UK GHG emissions for 2021 was 505 million tCO_2e, up by 6% from the year before. Overall, however, the trend of total UK GHG emissions shows a

decreasing trajectory from 1990 to 2020. Emissions relating to 'Electricity, gas, steam and air conditioning supply' specifically show a significant reduction trend over the past decade, halving from 176 million tCO_2e in 2010 to 81 million tCO_2e in 2020 (BEIS, 2022).

6.3.6. Additional (secondary and tertiary) mitigation

Construction

The generation of GHG emissions is inevitable due to construction activities. Embodied GHG emissions will also be present due to production of solar panels and associated infrastructure. An Outline Construction Environmental Management Plan will be implemented to identify good working practices in line with appropriate standards, including low carbon practices. Some mitigation measures that are anticipated to be taken account of, which would be outlined within the Outline Construction Environmental Management Plan are detailed below:

- Embed carbon reduction practices as a core principle for the design team. Where reduction ideas are suggested, they should be recorded and the potential impact quantified. Earlier engagement with carbon reduction allows for the greatest returns.
- Where technical specifications allow, maximise the recycled content of construction materials such as concrete and steel.
- Maximise the specification of materials with an environmental product declaration with the aim of reducing embodied carbon emissions.
- Incentivise use of local suppliers with a view to shorten project supply chains and environmental footprint, where practicable.
- Onsite mobile and non-mobile plant should conform to the latest emissions standards, with mobile vehicles conforming to EURO 6 standards as a minimum. All plant should investigate the option of using HVO fuels or electric versions where possible.
- Require main contractors to report on energy data, water usage and waste disposal and their GHG emissions as part of the Outline Construction Environmental Management Plan.

Operation

While emissions will be caused during the operational phase as a result of maintenance, repair, and replacement of solar PV modules and BESS, the operation of the Proposed Development is anticipated to have an overall positive effect on the climate. Nonetheless, there is scope to further improve the Site in terms of ecological enhancements and habitat creation, which can have a positive effect in terms of carbon sequestration. These will be documented within, managed and secured by the Outline Landscape and Ecology Management Plan.

Decommissioning

The decommissioning process is likely to result in GHG emissions, particularly from waste disposal of solar PV modules and any BESS. Additional mitigation can be

employed that aligns with the hierarchy for managing project-related emissions (avoid, reduce, substitute and compensate).

6.3.7. Description of likely significant effects

Construction

With regards to GHG emissions, the global climate is the sensitive receptor. During construction and product manufacture, there will be unavoidable GHG emissions that result in a negative effect on the stability of the global climate.

Operation

During operation, renewable energy will be generated, replacing fossil-based energy in the National Grid. This has the net effect of reducing GHG emissions generated elsewhere in the national energy supply chain. Given the assumed operational lifespan of 40 years for the purposes of the EIA, the cumulative effect of these GHG reductions will likely provide significantly beneficial effects on the stability of the climate.

Decommissioning

Decommissioning activities will result in unavoidable GHG emissions, predominantly from transport and waste disposal activities. It is anticipated these may be as much as 20% of all GHG emissions from the Proposed Development.

6.3.8. Receptors / matters to be scoped into further assessment

Receptor / Matter	Phase	Justification
GHG emissions	Construction	It is important to include construction-related emissions when considering the overall lifecycle emissions of the Proposed Development. Important emissions sources to be assessed include the raw material extraction and manufacturing of products required to build the equipment for the Proposed Development, transportation of these materials to Site, on-site construction activity, travel of construction workers to Site and waste generated by the construction process.
GHG emissions	Operation	Given the assumed operational lifespan of 40 years for the purposes of the EIA, the cumulative effect of GHG reductions associated with the operation of the Proposed Development will likely provide significant beneficial effects.

GHG emissions	Decommissioning	The decommissioning process is likely to result in GHG emissions, particularly from the disposal and transportation of waste. It is important to include all emissions when considering the overall lifecycle emissions of the Proposed Development. The Institute of Environmental Management and Assessment (IEMA) 'Environmental Impact Assessment Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance' (2022 edition) requires all life cycle stages to be assessed assuming each stage contributes greater than 1% of total lifetime GHG emissions, which is likely to be the case for solar developments.

6.3.9. Receptors / matters to be scoped out of further assessment

Receptor / Matter	Phase	Justification
Climate resilience	Construction, operation and decommissioning	The UK Climate Projections published in 2018 (UKCP18) projections suggest that climate change will lead to hotter drier summers, warmer wetter winters, increased likelihood of extreme weather events (e.g., heat waves, high rainfall events) and sea-level rise. Due to the embedded resilience of solar PV modules to high heat and wind speeds, and the low risk of flooding at the Site, these factors are not expected to significantly impact on the construction, operation or decommissioning of the Proposed Development.
In-combination impact assessment	Construction, operation and decommissioning	The resilience of receptors identified in other chapters is unlikely to be affected by a combination of future climate change (e.g., temperature change, sea level rise or wind), and the impacts of the Proposed Development. Climate change may lead to an increase in extreme rainfall events. However, no significant impact on surface water or groundwater levels are expected as a result of precipitation

		changes, in combination with the Proposed Development, as the flow of precipitation to ground will not be significantly hindered.

6.3.10. Opportunities for enhancing the environment

The operational Proposed Development is expected to have a net beneficial impact on the climate, in that it will reduce GHG emissions associated with fossil fuel generated electricity consumption on a national scale.

Opportunities exist to further increase the environmental benefit of the Proposed Development by ensuring that emissions associated with the construction and decommissioning process are kept to a minimum. This can be ensured by the adoption of various mitigation measures, as detailed in **Section 4.8** above.

6.3.11. Proposed assessment methodology

The assessment of the effects of GHG emissions arising from the Proposed Development will be carried out in accordance with:

- The IEMA Environmental Impact Assessment Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance (2022 edition);
- PAS 2080:2023 Carbon Management in Infrastructure; and
- Royal Institute of Chartered Surveys (RICS) Whole life carbon assessment for the built environment (2023).

The assessment will quantify applicable Kyoto Protocol GHGs as measured in tonnes of carbon dioxide equivalence (tCO_2e), where equivalence means having the same warming effect as CO_2 over 100 years.

The GHG baseline characterisation will be conducted using a desk-based assessment of current land use, existing carbon stock and any activities that could cause GHG emissions. However, in line with the IEMA Guide, any agricultural land can generally be considered to have zero baseline emissions to ensure reasonable worst-case approach to establishing net GHG effect.

Data associated with the activities contributing to the construction, operation and decommissioning of the Proposed Development will be provided by the Applicant. Where it is not possible to collect these data, as this assessment represents a forecast of emissions and some information may not yet be known, secondary data (such as estimates, extrapolations, benchmarks and proxy data such as distance travelled) will be used. Emissions will then be quantified by applying the most relevant and up-to date emission factors.

The significance criteria that will be applied in the assessment is set out in **Appendix D**.

6.3.12. Difficulties and uncertainties

To ensure transparency within the EIA process, the following difficulties and uncertainties have been identified:

- The accuracy of a GHG assessment depends on the quality of the data provided. Primary data should always be used where available. Where it is not possible to collect these data, as this assessment represents a forecast of emissions and some information may not yet be known, secondary data (such as estimates, extrapolations, benchmarks and proxy data such as distance travelled) will be used, based upon industry approximations and professional best practice. Assessments such as this, based largely on secondary data, should only be viewed as an estimate of GHG emissions impact, and actual emissions may vary significantly. Thus, when necessary, a conservative approach will be undertaken to ensure a robust assessment of possible emissions sources. All assumptions and limitations, including exclusions, will be documented as part of the assessment.
- An emission factor is a representative value that relates the quantity of a pollutant released into the atmosphere with an activity associated with the release of that pollutant. Emission factors are typically available from government publications, independent agencies, and scientific research journals; however, the quality and accuracy of such factors can vary significantly. Factors can differ depending on the research body and / or underlying methodologies applied. Emission factors will therefore only be sourced from reputable sources, such as DESNZ (2023).

6.3.13. References

- BEIS (2022) Final UK greenhouse gas emissions national statistics: 1990 to 2020. Available at: https://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-to-2020
- Buckinghamshire Council (2023) Climate Change and Air Quality Strategy https://www.buckinghamshire.gov.uk/environment/climate-change-and-sustainability/how-were-responding-to-climate-change/the-climate-change-and-air-quality-strategy/
- DESNZ (2023), UK Government GHG Conversion Factors for Company Reporting.
- IEMA (2022), Environmental Impact Assessment Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance.
- Milton Keynes Council (2019), MK Sustainability Strategy MK Sustainability Strategy.pdf (milton-keynes.gov.uk)
- PAS 2080:2023 (2023), Carbon Management in Infrastructure.
- Royal Institute of Chartered Surveys (2023), Whole life carbon assessment for the built environment.
- The Greenhouse Gas Protocol (2004) Corporate Accounting and Reporting Standard.

- The Greenhouse Gas Protocol, A Corporate Accounting and Reporting Standard (Revised Edition) https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf
- UK Government (2022) Net Zero Strategy: Build Back Greener Net Zero Strategy: Build Back Greener - GOV.UK (www.gov.uk)
- UK Government (2023) Flood map for Planning https://flood-map-for-planning.service.gov.uk/

6.3.14. Scoping questions

- Do you agree with the receptors/matters that are proposed to be scoped in and out of further assessment?

6.4. Cultural heritage

6.4.1 Consultation

The Buckinghamshire Historic Environment Record (HER) has been consulted in the preparation of this EIA Scoping Report for data on known heritage assets.

Buckinghamshire Council has also approved a Written Scheme of Investigation (WSI) for geophysical survey of the Site.

Further consultation with Buckinghamshire Council will be carried out to confirm the scope and timing of any intrusive evaluation following completion of the geophysical survey. Historic England will be consulted regarding potential impacts on designated heritage assets arising from changes in their setting. Buckinghamshire Council's Conservation Officer will be consulted regarding potential impacts on Conservation Areas and Grade II Listed Buildings as these commonly lie outside of the remit of Historic England. The council may also comment on assets covered by Historic England.

6.4.2 Study area

Following consultation and agreement with Buckinghamshire Council, a 1 km study area surrounding the Site Boundary will be used for consideration of non-designated heritage assets, and a study area of up to 5 km surrounding the Site Boundary, informed by the Zone of Theoretical Visibility (ZTV) model provided in **Appendix I**, will be used for consideration of potential effects on designated heritage assets.

6.4.3. Data sources to inform the EIA baseline characterisation

The following sources of information have been used to inform this EIA Scoping Report:

- Information on designated heritage assets from the National Heritage List for England (NHLE), downloaded 23 July 2023;

- Data on non-designated heritage assets, previous archaeological investigations and historic landscape characterisation from the Buckinghamshire HER, obtained as a digital data extract on 23 May 2023;
- Historic Ordnance Survey mapping;
- LiDAR data; and,
- Stage 1 Setting Assessment.

The following additional sources will be used to inform the EIA (post-scoping):

- Aerial photographs held by Historic England Archives, Buckinghamshire HER, and Cambridge University Collection of Aerial Photography;
- Maps and other relevant primary and secondary sources held in Buckinghamshire archives;
- Portable Antiquities Scheme (PAS) data; and
- Any geological records.

Aerial investigation and mapping of LiDAR data and aerial photographs will be presented as a technical appendix to the ES.

6.4.4. Surveys to inform the EIA baseline characterisation

The following surveys are proposed to inform the EIA:

- Full historic environment desk-based assessment, supplemented by a field visit (already undertaken);
- Geophysical survey (a WSI for this has already been approved by Buckinghamshire Council).

The need for, scope, and timing of intrusive evaluation will be negotiated and agreed with the statutory consultees following completion of the desk-based assessments and geophysical survey.

6.4.5. Baseline conditions

The baseline conditions for the Site have been ascertained using data from Buckinghamshire HER and the NHLE. Further information will be known regarding the archaeological baseline conditions of the site once the geophysics is complete.

The Buckinghamshire HER contains 17 records within the Site, of which five are find spots of artefacts and four are records of ridge and furrow earthworks. The records date from the Roman period through to the modern period. Historic mapping indicates a number of lost field boundaries and post-medieval farm buildings within the Site which have not previously been recorded in the HER.

There are no designated assets located within the Site. Within the 5 km study area beyond the Site Boundary there are six scheduled monuments. Five of these are medieval in date and form a Preceptory of the Knights Hospitallers, two deserted villages, a standing cross, and a moated site. One is an Iron Age slight univallate hillfort. There are also three Registered Parks and Gardens (two Grade I and one Grade II), and 14 Conservation Areas.

There are a further eight Grade I Listed Buildings, 26 Grade II* Listed Buildings, and 404 Grade II Listed Buildings within the 5 km study area. These include churches, houses, farmhouses, agricultural buildings, and others.

The closest designated heritage assets to the Site are the Grade II listed Pond Farmhouse (NHLE1214849), the Conservation Area and Grade II Registered Park and Garden of Claydon (NHLE1000597), the Conservation Area of Botolph Claydon and the listed buildings within the village, as well as the scheduled monument of the Preceptory of the Knights Hospitallers (NHLE1405586).

Further information on all heritage assets within the Site and surrounding study areas can be found within the gazetteer in **Appendix G**.

6.4.6. Additional (secondary and tertiary) mitigation

Where archaeological remains within the Site do not require preservation in situ and cannot be avoided through primary mitigation (i.e. through changes to the Proposed Development layout and / or construction methods), it is anticipated that additional mitigation to offset adverse impacts will take the form of a programme of archaeological investigation and recording secured by a DCO Requirement. Such a programme may include pre-commencement phases of archaeological excavation and / or archaeological “watching brief” during construction. The need for and scope of such mitigation would be agreed with Buckinghamshire Council’s archaeological advisor and Historic England where necessary. The scope and methodology of the mitigation will be set out in an Outline WSI.

No additional mitigation during the operational and decommissioning phase is currently proposed, as it is anticipated that any impacts would have been mitigated prior to or during the construction phase.

Where impact on the setting of heritage assets within the study area cannot be avoided through primary mitigation (i.e. through changes to the Proposed Development layout), it is anticipated that additional mitigation to offset any operational phase adverse impacts will be required. This would most likely involve planting and landscaping.

6.4.7. Description of likely significant effects

The layout of the Proposed Development is still being designed and surveys to establish the archaeological resources of the Site are ongoing. As such there remains some uncertainty regarding both the direct physical impacts on heritage assets within the Site as a result of construction activities, and the extent of visual change within the setting of heritage assets in the wider study area. A site visit has been undertaken to inform a Stage 1 Setting Assessment (see **Appendix G**). This has therefore resulted in assets being scoped into further assessment (see **Section 6.4.8** below) which may, following further design, be scoped out of further assessment as effects will have been avoided. Similarly, there are assets proposed to be scoped out of further assessment (see **Section 6.4.8** below) which may, following changes to design, be scoped back into further assessment should the asset then be affected.

The list of receptors outlined in **Section 6.4.8** below is therefore a "long list" of the heritage assets which will be considered in the assessment; however, not all are likely to experience significant effects. Assets that have been scoped out of further assessment at this stage (see **Section 6.4.9** below) are those where their particular characteristics and the contribution made by their setting to their significance will be unaffected by the Proposed Development regardless of its final layout.

6.4.8. Receptors / matters to be scoped into the assessment

Receptor / Matter	Phase	Justification
Non-designated heritage assets (buildings and monuments) recorded in the HER within the Site, except those scoped out (see **Section 6.4.9** below)	Construction and operation	Construction activity has the potential to directly impact on these assets. The operation of the Proposed Development may impact on the contribution that setting makes to their significance.
Currently unknown heritage assets within the Site	Construction and operation	There remains uncertainty about the extent and significance of heritage assets within the Site and therefore the potential for significant effects is unknown.
Claydon Grade II Registered Park and Garden (NHLE1000597) Middle Claydon Conservation Area Grade I Listed Building of Claydon House (NHLE1288461)	Operation	Depending on the layout of the Proposed Development, these assets may experience visual change in their setting.
Botolph Claydon Conservation Area and the following listed buildings within the Conservation Area: 5 Orchard Way (NHLE1289627), Quamby (NHLE1289628), 23 Orchard Way (NHLE1212262), Weir Cottage (NHLE1212347), 1 and 3 Orchard Way	Operation	Depending on the layout of the Proposed Development, these assets may experience visual change in their setting. Other listed buildings within the Conservation Area are not considered to derive significance from views of the Site so have been scoped out of further assessment (see **Section 6.4.9** below).

(NHLE1212259), Pond Cottage (NHLE1212261)		
Agricultural Listed Buildings: Finemerehill House (NHLE1117815), Pond Farmhouse (NHLE1214849), Dry Leys Farmhouse (NHLE1319271)	Operation	Depending on the layout of the Proposed Development, these assets may experience visual change in their setting. Other agricultural Listed Buildings are not considered to derive significance from views of the Site so have been scoped out of further assessment (see **Section 6.4.9** below).
Catherine Farm (MBC26340)	Operation	Depending on the layout of the Proposed Development, this asset may experience visual change in its setting.

6.4.9. Receptors / matters to be scoped out of the assessment

Receptor / Matter	Phase	Justification
Setting effects on all heritage assets within the study areas	Construction	Construction phase effects resulting from changes in the setting of heritage assets will be temporary and for visual changes, would be no worse than the effects during operation. Potential effects resulting from noise, vibration or dust would be controlled through the Outline Construction Environmental Management Plan and significant effects are therefore unlikely. Therefore, it is not considered necessary to repeat the settings assessment for the construction phase.
Designated heritage assets within the study area that are not scoped in above.	Operation	The positive contribution made by setting to the significance of these designated heritage assets is either confined to their immediate street scene or rural setting and do not draw on views of the wider surroundings. Therefore, no significant effects are predicted.

Findspots recorded by the HER within the Site: (MBC10751) Roman pottery and metalwork; (MBC10752) Roman pottery and metalwork; (MBC40233) PAS Findspot of Roman vessel; (MBC40259) PAS Findspot of Roman coin hoard.	Construction and operation	As findspots, these have been removed from the Site and the heritage significance of their former locations will not be harmed by the Proposed Development.
Non-designated heritage assets within the 1 km study area but outside the Site, other than those scoped into further assessment (see **Section 6.4.8** above).	Construction and operation	As these are located without the Site, there will be no direct impact on these assets. Any effects resulting from changes in the setting of non-designated heritage assets are not anticipated to result in a level of harm sufficient to cause significant effects.
All heritage assets within the study areas	Decommissioning	Decommissioning will not result in impacts upon any heritage assets that were not affected during the construction and operational phases. Decommissioning phase effects resulting from changes in the setting of heritage assets in the surrounding area will be no worse than the construction or operational phase effects. Decommissioning will reverse any adverse effects resulting from changes to the setting of heritage assets during operation and any potential impacts will be mitigated and managed through the implementation of an Outline Decommissioning Environmental Management Plan.

6.4.10. Opportunities for enhancing the environment

Potential enhancement opportunities include replanting of lost hedgerow boundaries. Where residual effects remain during operation, measures to enhance the significance of heritage assets that are not affected by the Proposed

Development would provide additional beneficial effects to be counted in the planning balance.

6.4.11. Proposed assessment methodology

The Proposed Development would result in a change to the existing baseline; this change might be considered as impacts according to the degree of change in relation to heritage significance. In accordance with EIA Regulations, the assessment would identify impacts and effects as direct or indirect, adverse or beneficial, and short-term, long-term or permanent.

Direct impacts are those which physically alter an asset and, therefore, its heritage significance. Impacts upon setting are those which affect the heritage significance of an asset by causing visual or sensory change within its setting. The assessment of effects resulting from change within the setting of heritage assets will follow the four-stage process set out in *Historic England's Good Practice Advice Note 3: The Setting of Heritage Assets.*

The assessment of effects will follow the significance criteria in **Appendix D**. This assessment will consider all heritage assets that have been positively identified during the baseline studies as potentially subject to significant effects. The assessment will also take into account comments from consultees and PINS.

The residual effect is a product of the importance of the heritage asset and the magnitude of impact following mitigation. The importance of a heritage asset reflects any statutory or non-statutory designation or, in the case of non-designated heritage assets, the professional judgement of the assessor with reference to regional research frameworks.

Conclusions of the assessed magnitude of impacts is a product of the consideration of the elements of an asset and its setting that contribute to its heritage significance and the degree to which the Proposed Development would change these contributing elements. The assessment therefore reflects the varying degrees of sensitivity of different assets to change brought about by different types of development.

6.4.12. Difficulties and uncertainties

To ensure transparency within the EIA process, the following difficulties and uncertainties have been identified:

- Existing records for the historic environment do not record all heritage assets. This will be addressed through the desk-based assessment and aerial investigation and mapping survey to identify previously unrecorded assets and to assess the potential for below ground archaeological remains to be present within the Site. The geophysical survey will also further investigate the potential for below ground archaeological remains.

6.4.13. References

- Ministry of Housing, Communities and Local Government (2023) National Planning Policy Framework

- Historic England (2017) Good Practice Advice in Planning Note 3: The Setting of Heritage Assets (Second Edition) Historic England: Swindon

6.4.14. Scoping questions

- Do you agree with the proposed list of consultees?
- Do you agree with the proposed study areas?
- Do you agree that the data sources listed to inform the EIA baseline characterisation are appropriate?
- Are any receptors/assets/resources not identified that you would like to see included in the EIA?
- Do you agree with the proposed additional (secondary and tertiary) mitigation measures and is this mitigation appropriate?
- Do you agree with the receptors/matters that are proposed to be scoped in and out of further assessment?
- Do you agree with the proposed factor-specific assessment approach?

6.5. Land, soils and groundwater

6.5.1 Consultation

No consultation regarding land, soils and groundwater has been undertaken to date. The Environment Agency, the British Geological Survey (BGS), Natural England and Buckinghamshire Council (including the Minerals Planning Authority) will be consulted as part of the assessment.

6.5.2 Study area

The Site plus a 1 km buffer has been considered with regard to identifying land and soil related receptors that could be impacted by the construction, operation and decommissioning of the Proposed Development. The size of the study area is considered appropriate to identify features that may impact on the Proposed Development.

The assessment will also consider the potential impacts of the Proposed Development on groundwater receptors on-site and within a 1 km buffer for the construction, operation and decommissioning phases of the Proposed Development.

6.5.3. Data sources to inform the EIA baseline characterisation

The baseline conditions of the study area have been determined using a number of sources comprising:

- Geological maps (bedrock and superficial geology).
- Hydrogeological and groundwater vulnerability maps.
- Soil survey maps.

- Abstraction and discharge records relating to groundwater, plus aquifer designation and source protection zones.
- Environment Agency, local authority and British Geological Society (BGS) data on the location of waste sites, pollution incidents and potentially contaminated sites.
- Mineral sterilisation and geological conservation review sites.
- Historical mapping for the Site.
- A site-specific Agricultural Land Classification survey, completed by ADAS Consultants in June 2023 (reported in July 2023).

A significant amount of site-specific information has been obtained from an Envirocheck Report (environmental database search) covering the Site. The Envirocheck Report incorporates records from bodies such as local authorities, the Environment Agency and BGS. Other information has been obtained from the BGS Onshore GeoIndex, SoilScapes mapping, the MAGIC map application and publicly available local authority information (see **Section 6.5.13**).

A Preliminary Risk Assessment report will be prepared to provide a desk-based analysis of the Site.

6.5.4. Surveys to inform the EIA baseline characterisation

A walkover survey of the Site and surrounding area will be undertaken as part of the baseline assessment relating to land, soils and groundwater.

An Agricultural Land Classification (ALC) survey has been completed for the Site (excluding the cable search area and East Claydon Substation) at observations at a rate of one sample per two hectares.

Ground Investigation works are scheduled to take place on the Site to obtain data relating to soil conditions, contamination status and groundwater.

6.5.5. Baseline conditions

Designated geological sites

There are no recorded geological conservation review sites or regionally important geological and geomorphological site (RIGS) within or close to the Site.

Mineral extraction sites and mineral safeguarding areas

There are no operational mineral extraction sites within the Site Boundary and there is no evidence of historical quarrying or mineral extraction (**Appendix H Figure 1**).

Off-site, to the west of Parcel 1, an extensive area of quarrying was present associated with Calvert brickworks, parts of which were later used as landfills (**Appendix H Figure 1**).

There are a number of mineral safeguarding areas across the land parcels. These all relate to alluvial deposits, which are present along the routes of watercourses. These areas are shown on **Appendix H Figure 1**.

Geology

The bedrock geology across the land parcels comprises the following units, all of which are made up of mudstone layers:

- West Walton Formation
- Weymouth Mudstone Member
- Stewartby Member
- Peterborough Member

The superficial geological units within the Site include alluvium, till, glaciofluvial deposits and glacial deposits.

Made ground is potentially present in localised areas associated with farm buildings or tracks, and along the route of the historical railway within Parcel 3 (**Appendix H Figure 1**).

BGS borehole records were assessed, and although these were all shallow, they were in agreement with the recorded geological succession.

Soils

An ALC survey was completed during October 2022, January 2023 and June 2023. This indicated that the soil within Parcels 1a and 3 is entirely classified as Grade 3b (moderate quality agricultural land). Parcel 1 is predominantly Grade 3b, with two small areas to the south of the parcel classified as Grade 2 (very good quality) and Grade 3a (good quality), as displayed in **Appendix H Figure 2**. Parcel 2 is also predominantly Grade 3b, with a small area of Grade 3a in the northern section, just south of Botolph Claydon.

The percentages of each soil grade for the Site are presented below:

- 96% of land is classified as Grade 3b (moderate).
- 2% of land is classified as Grade 3a (good).
- Less than 1% of land is classified as Grade 2 (very good).

The remaining land (approximately 1%) is not classified with respect to soils, due to the presence of buildings or built-up areas.

An ALC survey for the potential area suitable for the cable route connection has not yet been undertaken. It is anticipated that this survey will be undertaken once the location of the cable route has been refined.

Land that is classified as Grade 1, Grade 2 or Grade 3a is considered to be Best and Most Versatile agricultural land (BMV). For the Proposed Development, BMV land accounts for less than 3% of the Site (excluding the cable search area and East Claydon Substation) (**Appendix H Figure 2**).

Hydrogeology

The bedrock deposits underlying the Site form unproductive strata, with superficial geological units defined as secondary A aquifers or secondary aquifers (undifferentiated). Unproductive strata is defined as low permeability rocks with negligible significance for water supply or river base flow.

A secondary A aquifer is defined as permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.

Depth to groundwater is unconfirmed. It is anticipated that the regional direction of groundwater flow is in line with local topography and towards surface watercourses.

The Site and wider study area are not located in a Source Protection Zone (SPZ) with respect to a groundwater abstraction source.

The environmental database search did not identify any other groundwater abstractions within the Site.

Discharge consents

There are two discharge consents within Parcel 1, but none within any of the other land parcels. There are a number of off-site discharge consents, most of which relate to the release of final effluent.

Historical Site usage

Since earliest historical mapping (1885), the Site has undergone little significant change and comprised mainly fields, with a small number of tracks, watercourses and farm buildings.

Landfill sites and waste transfer sites

No licensed waste management facilities or landfill sites have been recorded within the Site. Off-site, there are numerous licences associated with the landfill operations at Calvert Pit (former brickworks), with several phases of landfilling having been completed/underway (**Appendix H Figure 1**).

Land contamination

The Site history indicates that land use has been agricultural. Contamination may be present, associated with agriculture and with the historical railway line that was present within Parcel 3 (**Appendix H Figure 1**). Made ground may be present in limited locations along tracks and close to farm buildings or structures located within the Site. There is the potential for asbestos-containing materials to be present if made ground deposits are identified.

No significant pollutions incidents on or close to the Site have been recorded in the last 20 years.

Natural geological hazards

According to the Envirocheck Report, there is the potential for low to moderate risks from geological hazards within some sections of the Site.

6.5.6. Additional (secondary and tertiary) mitigation

The PRA report will incorporate consideration of the necessary mitigation for the Proposed Development, and will inform the mitigation that would be incorporated in the Outline Construction Environmental Management Plan and Outline Soil Management Plan.

Construction

The following measures are expected to be incorporated into the Outline Construction Environmental Management Plan and Outline Soil Management Plan. so that damage to land, soils, and groundwater can be reduced during the construction phase (please note that these are examples, and not a full list of measures):

- Soil management during works will incorporate guidelines for soil handling.
- During construction works, surface water drains should be designed to carry only uncontaminated water. Foul drains should carry contaminated water to a sewage treatment works under suitable discharge consent. Further mitigation measures to prevent water contamination are detailed in **Section 5** of this EIA Scoping Report.
- Concrete mixing would be undertaken in designated areas to reduce the potential for impact on watercourses.

Standard mitigation to be applied will be protective of all groundwater resources and this will mean that there are no negative effects on the groundwater.

Operation and decommissioning

No additional mitigation measures would be expected to be required during operational or decommissioning phases beyond the embedded mitigation incorporated into the design of the Proposed Development and the measures detailed in the Outline Operational Environmental Management Plan, the Outline Decommissioning Environmental Management Plan and the Outline Soil Management Plan.

6.5.7. Description of likely significant effects

Mineral safeguarding will require consideration, given the location of several mineral safeguarding areas within the land parcels, as detailed within the Buckinghamshire Minerals and Waste Local Plan.

There may be contamination issues present within Parcel 3, due to the historical presence of a railway line crossing the Site from north to south.

Due to the nature of the Proposed Development, soils will be impacted to a degree during construction works. Soil grades present across the land parcels are shown on mapping to be categorised as mainly Grade 3b, with small areas of Grade 3a and Grade 2.

The ground mounted solar PV generating stations, BoSS, Rosefield Substation, Collector Compounds and BESS would be removed from the Site during decommissioning; therefore, the loss of the ability to use the agricultural land in these areas would not be permanent.

6.5.8. Receptors / matters to be scoped into further assessment

The following receptors / matters have been scoped into further assessment on a precautionary basis at present. It is envisaged that once further baseline information has been obtained and the design of the Proposed Development is further progressed, these receptors / matters may be scoped out of further assessment. If this is the case, justification for this decision will be clearly outlined in the PEIR and / or ES.

Receptor / Matter	Phase	Justification
Land (potential contamination in Parcel 3)	Construction	Land contamination is possible within Parcel 3 associated with a known historical railway that crossed the Site from north to south. Further assessment of this feature will be completed as part of the Preliminary Risk Assessment report for the Site. A map showing the location of this feature is provided as **Appendix H Figure 1**.

6.5.9. Receptors / matters to be scoped out of further assessment

Receptor / Matter	Phase	Justification
Land (geological units)	Construction, operation and decommissioning	There are no sensitive geological units identified within the study area. Geology comprises bedrock units of mudstone with superficial units derived from glacial and glaciofluvial actions.
Land (geological conservation sites)	Construction, operation and decommissioning	There are no geological sites of scientific interest within the site or within 1 km of the Site.
Land (mineral safeguarding)	Construction, operation and decommissioning	Although no historical mineral extraction sites have been identified within any of the land parcels, there are a number of mineral safeguarding areas within the Site. As a result, it is proposed that an assessment of mineral safeguarding issues will be undertaken in support of the DCO application and presented in the Planning Statement, outwith the EIA. This will include consultation with the Mineral Planning Authority (Buckinghamshire Council).
Land (geological hazards)	Construction, operation and decommissioning	The baseline review has not identified any geological

		hazards that require specific consideration during construction, operation or decommissioning of the Proposed Development.
Land (potential contamination in all areas except part of Parcel 3)	Construction	A review of the historical usage of the Site has identified the land parcels have been in use as agricultural fields since the earliest historical mapping. Although there may be limited discrete areas of contamination associated with agricultural land use, the only feature of significance with respect to contamination is identified as the railway line within Parcel 3, which is proposed to be scoped into further assessment (see **Section 6.5.8** above and **Appendix H Figure 1**).
Land (potential contamination)	Operation and decommissioning	Potential contamination associated with the railway line will be addressed during the construction phase as part of intrusive site investigation work. There would not be anticipated to be any further impacts on the Proposed Development during operation or decommissioning as a result of existing contamination. Any issues relating to contamination resulting from project activities would be controlled by the requirements of the Outline Operational Environmental Management Plan and the Outline Decommissioning Environmental Management Plan (e.g., issues relating to storage and use of fuels). These documents would also address

		the potential for the Proposed Development to affect existing contamination.
Land (soils and agricultural land)	Construction, operation and decommissioning	Soils are a key resource in the area of the Proposed Development and require appropriate handling in order to prevent physical damage to the resource. There is also the potential for the Proposed Development to impact this resource due to the location of infrastructure restricting access to the soils for agricultural usage. Information on the ALC of soils is important when assessing the significance of effects on this resource. The ALC of soils within the Site (excluding the potential area suitable for the cable route connection) has been identified as Grade 3b across most land parcels, with small areas of Grade 3a within Parcel 1 and Parcel 2 and a small area of ALC Grade 2 within Parcel 1 as displayed in **Appendix H, Figure 2**. Land categorised as Grade 2 or Grade 3a is classified as BMV agricultural land, and for the Proposed Development, that accounts for less than 3% of the area of development (equating to approximately 14 hectares – excluding the potential area suitable for the cable route connection) and this will be avoided, where practicable. , Therefore, it is not anticipated that there would be a significant effect based on the proportion of Site occupied by BMV land.

		Appropriate handling of soils during construction, operation and decommissioning would be prescribed in the Outline Construction Environmental Management Plan, Outline Operational Environmental Management Plan, Outline Decommissioning Environmental Management Plan and the Outline Soil Management Plan to ensure that physical damage to soils is reduced . Changes to the hydrogeological regime are not anticipated, however, to avoid any impact on the existing soils, appropriate mitigation measures relating to protection of groundwater will be incorporated into the Outline Construction Environmental Management Plan, Outline Operational Environmental Management Plan, Outline Decommissioning Environmental Management Plan and Outline Soil Management Plan. Therefore, no significant effects to soil are anticipated.
Groundwater	Construction, operation and decommissioning	The groundwater in bedrock deposits is unproductive, and in superficial geological units it is either a secondary A aquifer or a secondary aquifer (undifferentiated). The quality of groundwater will be appropriately protected by mitigation measures implemented via the Outline Construction Environmental Management Plan, Outline Operational Environmental Management Plan and Outline

		Decommissioning Environmental Management Plan. This will include measures such as implementation of a surface water management plan, bunded fuel storage tanks and control measures when refuelling. If piling is required for the mounting structure, a piling risk assessment will be undertaken prior to construction commencing. This will ensure potential risks to groundwater from piling operations are managed appropriately (information to be collected during the site investigation will be required to feed into this risk assessment). It is possible that changes to the surface water regime could have a negative impact on the Site groundwater. However, adhering to industry best practice with respect to protection of surface water will ensure that any adverse effects to surface water are minimised, reducing the potential for corresponding changes within the groundwater.

6.5.10. Opportunities for enhancing the environment

No opportunities for environmental enhancement have been identified in respect of land, soils and groundwater at this stage.

6.5.11. Proposed assessment methodology

The following documents are relevant to the preparation of the land, soils and groundwater assessment:

- Part IIA, Environmental Protection Act 1990 (relevant in terms of assessment of contaminated land).
- The Environmental Permitting Regulations (England & Wales) 2016 (last revised March 2020) (relevant with respect to environmental permits).

- National Planning Policy Framework, Department for Levelling Up, Housing and Communities, September 2023.
- Overarching National Policy Statement for Energy (NPs EN-1) (2011)
- Draft Overarching National Policy Statement for Energy (NPS EN-1) (2023) incorporates principles relating to geological conservation, land use and resource and waste management.
- A new perspective on Land and Soil in Environmental Impact Assessment, IEMA, February 2022
- Land Contamination Risk Management (LCRM), October 2020.
- Natural England Technical Information Note TIN049: Agricultural Land Classification: protecting the best and most versatile land, 2nd edition (2012).
- Buckinghamshire Minerals and Waste development plan, 2016 to 2036, July 2019.
- Land East of Calvert, Buckinghamshire - Agricultural Land Classification, ADAS, July 2023.

A desk-based Preliminary Risk Assessment report will be prepared in support of the EIA, which assesses the potential risks on the existing land, soil and groundwater baseline, including contamination issues. The Preliminary Risk Assessment report conclusions and results of ground investigations will determine necessary mitigation measures to ensure that the construction, operation and decommissioning of the Proposed Development do not result in significant effects on the receiving land, soil and groundwater environment.

The assessment of baseline data will include a review of the information obtained for the Site for the matters that are to be scoped in, and each will be considered using professional judgement to determine whether the level of available information is acceptable.

The significance of potential effects is assigned based on a set of definitions, as provided in **Appendix D**, and professional judgement will be used as appropriate to assess potential risks.

6.5.12. Difficulties and uncertainties

To ensure transparency within the EIA process, the following difficulties and uncertainties have been identified:

- Data on site history have been obtained from historical maps and there may be developments that occurred between map editions that are not evident.
- No intrusive site survey data relating to soil contamination or groundwater quality was available at this stage of the EIA process, however, this will be presented within the PEIR and ES.

6.5.13. References

- Environment Agency (2020), Land contamination risk management, https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm, April 2021.
- Site-specific Envirocheck Reports (September 2023: Land Parcel 1, reference 317083323_1_1; Land Parcel 1a, reference 317083336_1_1; Land Parcel 2, reference 317083339_1_1; Land Parcel 3, reference 317083347_1_1).
- BGS Onshore GeoIndex datasets https://mapapps2.bgs.ac.uk/geoindex/home.html?_ga=2.124698826.1900942433.1696859911-2142205260.1696859911
- Defra mapping https://magic.defra.gov.uk/MagicMap.aspx
- Institute of Environmental Management and Assessment (2022) A new perspective on Land and Soil in Environmental Impact Assessment.
- SoilScapes (2023) https://www.landis.org.uk/soilscapes/
- Buckinghamshire Minerals and Waste development plan, 2016 to 2036, July 2019.

6.5.14. Scoping questions

- Do you agree with the proposed list of consultees?
- Do you agree with the proposed study areas?
- Do you agree with the proposed surveys?
- Do you agree that the data sources listed to inform the EIA baseline characterisation are appropriate?
- Are any receptors or resources not identified that you would like to see included in the EIA?
- Do you agree with the proposed additional (secondary and tertiary) mitigation measures and is this mitigation appropriate?
- Do you agree with the receptors/matters that are proposed to be scoped in and out of further assessment?

6.6. Landscape and visual

6.6.1 Consultation

No consultation to inform the Landscape and Visual Impact Assessment (LVIA) has been undertaken to date.

Following submission of the EIA Scoping Report, discussions will be held with the following to agree the finer detail of the LVIA:

- Natural England
- Buckinghamshire Council

Agreement will be sought on a selection of assessment viewpoints to be used in the LVIA, including the illustrative techniques to be used for any visualisations of the Proposed Development.

6.6.2 Study area

Best practice guidance for the assessment of landscape and visual effects (Guidelines for Landscape and Visual Impact Assessment - GLVIA 3) states:

'Scoping should … identify the area of landscape that needs to be covered in assessing landscape effects. This should be agreed with the competent authority, but it should also be recognised that it may change as the work progresses, for example as a result of fieldwork, or changes to the proposal. The study area should include the site itself and the full extent of the wider landscape around it which the proposed development may influence in a significant manner.'

and:

'Scoping should identify the area that needs to be covered in assessing visual effect, the range of people who may be affected by these effects and the related viewpoints in the study area that will need to be examined. The study area should be agreed with the competent authority at the outset and should consider the area from which the proposed development will potentially be visible. The emphasis must be on a reasonable approach which is proportional to the scale and nature of the proposed development.'

To assist in the determination of an appropriate and proportionate study area for the LVIA, a series of preliminary Zone of Theoretical Visibility (ZTV) plans have been prepared and these are presented in **Appendix I Figures 1-4**. The ZTVs illustrate the 'worst case scenario' of visibility for various elements of the Proposed Development, based on the maximum parameters set out in **Chapter 2: Description of the Proposed Development**. The purpose of the ZTVs at this scoping stage is simply to identify the maximum possible extents of visibility and to help identify potential visual receptors.

It should be noted that the ZTVs presented in **Appendix I Figures 1-4** take account of the screening effect of significant blocks of woodland and also buildings, but do not take account of walls, hedgerows, tree lines, or smaller tree groups. As is typical for all such ZTVs, the visibility shown on the plans is exaggerated and the actual extent of visibility of any development on the Site would be considerably more constrained than is indicated on these preliminary ZTVs.

The following ZTVs have been produced (**Appendix I**):

- **Figure 1** – ZTV of the maximum extents of the solar PV modules at 3.5m. This ZTV tests the theoretical visibility of just the 3.5 m solar PV modules.
- **Figure 2** – ZTV of the potential Collector Compound locations assuming a maximum height of 6 m.
- **Figure 3** - ZTV of the Project BESS located within Parcels 2 and 3 assuming a maximum height of 7.6 m.

- **Figure 4** – ZTV of the Project Substation located within Parcels 2 and 3 assuming a maximum height of 15 m.
- **Figure 5b** – ZTV overlaid on landscape character areas. This ZTV illustrates the theoretical visibility of the 3.5 m solar PV modules in relation to published landscape character areas in the Aylesbury Landscape Character Assessment.

The ZTV for the 3.5 m solar PV modules (**Appendix I Figure 1**) assumes that the entire extent of the potential zone for solar is filled with solar PV modules. This ZTV is also used in the case of the landscape character areas (**Appendix I Figure 5b**)

With the ZTVs for the potential Collector Compound, BESS and Project Substation locations (**Appendix I Figures 2-4**), the ZTVs each assume that the full extent of the potential zones identified for these structures are filled with them. In reality, the collector compounds, BESS and Project Substation would occupy a fraction of the land area modelled and therefore visibility could be less than implied by these ZTVs.

Based on analysis of the ZTVs (**Appendix I Figures 1-4**) and field work undertaken to date, it is noted that there may theoretically be views of the solar PV modules or the Collector Compounds, BESS and Project Substation beyond 5 km of the Site Boundary. Assessment of similar projects has shown that visibility beyond 5 km would most likely not be significant. It is therefore proposed that a 5 km study area offset from the boundaries of the Site is more than adequate and proportionate for the consideration of landscape and visual effects arising as a result of the solar PV modules and Project Substation / distributed BESS.

The study area proposed is considered adequate to identify any significant effects on landscape and visual receptors. Whilst there may be glimpses of the Proposed Development beyond this distance, any effects arising are unlikely to be significant due to distance.

It is therefore proposed that the study area of the LVIA will be within 5 km of the Site Boundary. The extent of the proposed study area will be agreed with the relevant local planning authority.

6.6.3. Data sources to inform the EIA baseline characterisation

The LVIA will draw upon information in the following published landscape character assessments:

- National Character Area (NCA) Profile 108 – Upper Thames Clay Vales (Natural England, 2014).
- Aylesbury Vale Landscape Character Assessment (Jacobs, 2008).
- Steeple Claydon Neighbourhood Plan 2013-2033 (Sept 2017).
- Quainton Neighbourhood Plan 2015-2033 (June 2022).

Buckinghamshire Council is preparing a new Local Plan (by April 2025). Development of the draft Buckinghamshire Local Plan will be taken into account as the DCO application progresses through examination together with relevant policy from the extant Aylesbury Local Plan.

The LVIA will also consider the following sources of baseline information as appropriate:

- Defining the special qualities of local landscape designations in Aylesbury Vale District' (Final Report, 2016).

6.6.4. Surveys to inform the EIA baseline characterisation

Several visits to the Site and the surrounding landscape have already been undertaken and the majority of the footpaths within the Site Boundary have been walked.

Further site visits will be undertaken in winter 2023 and again in summer 2024 to photograph the baseline views from a variety of locations (viewpoints) within and surrounding the Site to represent a range of views and visual receptors of the Site. The location of the viewpoints will be agreed through further consultation with statutory consultees.

Where possible and access to private property can be arranged, visits will also be made to selected residential properties within approximately 200 m of the Site to assess the potential for visual effects on residential amenity.

6.6.5. Baseline conditions

Landscape designations

No part of the Site falls within a statutory designated landscape. The nearest Area of Outstanding Natural Beauty (AONB) or National Park to the Site is the Chilterns AONB which is located approximately 18 km to the southeast and would not be affected by any development within the Site.

Claydon Registered Park and Garden is located to the north of the Site Boundary with potential visibility of the Proposed Development at distances of less than 500 m.

The Vale of Aylesbury Local Plan Policies Map identifies "*areas of attractive landscape (AALs) and local landscape areas (LLAs) which have particular landscape features and qualities considered appropriate for particular conservation and enhancement opportunities. Of the two categories, the AALs have the greater significance. Development in AALs and LLAs should have particular regard to the character identified in the report 'Defining the special qualities of local landscape designations in Aylesbury Vale District'…"*

As illustrated by **Appendix I Figure 5a**, AAL 3: Quainton-Wing Hills covers the southern portion of Parcel 2 and is described as a "*large area of undulating hills and ridges spanning east – west and populated with a series of small villages*". The AAL within Parcel 2 exhibits a number of the special qualities of AAL 3, including its typical undulating landform, which is visible within panoramic views to and from the area from publicly accessible routes and locations, and which provides a backdrop and sense of enclosure to Aylesbury vale.

Landscape character

The Site extends across a broad and undulating farmland landscape within National Character Area (NCA) 108 Upper Clay Vales. Landform across the vale varies from an undulating landform in the vicinity of Parcels 1, 1a and 2 to a much flatter topography in the vicinity of Parcel 3. Vegetation structure and the degree of enclosure created by hedgerows, woodland blocks and tree groups across the Site is variable. The landscape is more open to the east, particularly within Parcels 2 and 3 and somewhat more enclosed in the west within Parcel 1a, albeit Knowl Hill is a notable landform in the landscape of Parcel 1.

Settlement is relatively sparse and focussed in a series of nucleated villages separated by large areas of mixed farmland interspersed with isolated farmsteads. The alignment of HS2 lies close to the southwestern boundary of the Site.

The Aylesbury Vale Landscape Character assessment identifies a series of Landscape Character Types (LCTs) which are further sub-divided into Landscape Character Areas (LCAs). LCTs and LCAs within the proposed study area are shown on **Appendix I Figure 5a**. Parcels 1 and 1a are located within LCT 7 Wooded Rolling Lowlands and specifically LCA 7.3 Claydon Bowl, which also contains the northern portion of Parcel 2. The southern section of Parcel 2 is located in LCT 9 Low Hills and Ridges and specifically LCA 9.1 Finmere Hill whilst the remaining central/eastern section is within LCT 5 Shallow Valleys and LCA 5.7 Hogshaw Claylands. Parcel 3 is also contained within LCT 5 with the majority in LCA 5.7, with just the northern most field in LCA 5.6 Claydon Valley.

Visual receptors

There are several public rights of way (PRoW) in the surrounding area and across the four land parcels, including locally promoted routes as shown on **Appendix I Figure 6**.

The Bernwood Jubilee Way (a regionally promoted recreation walk) is a 61 mile walking and cycling route which circles the former Royal Hunting Forest of Henry II and passes through Parcel 2.

The North Buckinghamshire and Midshires Way Long Distance Walks (regionally promoted recreation walks) share the same route which passes through Parcel 3. Both walks extend south to Quainton Hill where there is a confluence of other recreational walking routes in the form of the Outer Aylesbury Ring and Swan's Way. As indicated by the ZTV on **Appendix I Figure 1**, there is potential for visibility of the Site from sections of these routes from areas of Quainton Hill and also Conduit Hill which lies just to its north.

In addition to these routes, there are further local PRoW within all of the four land parcels, with particular concentrations within the western extents of Parcel 1 and scattered through Parcel 2. Recreational users of PRoWs would likely be some of the most sensitive visual receptors of any change in the landscape.

Areas of the Site are partially visible from the local road network, with Orchard Way to the north of Parcels 1 and 2 which provides direct access to Botolph Claydon and Calvert, whilst East Claydon Road sits to the north of Parcel 3 and provides direct

access to the East Claydon National Grid Substation and the settlement of East Claydon.

The line of HS2 is located approximately 250 m from the western boundary of Parcel 1, but will likely be screened by landform and vegetation.

The village of Calvert lies some 300 m to the west of Parcel 1, but views of the Site would likely be screened by intervening topography, built form and vegetation. Steeple Claydon is located 1.5 km to the north of Parcel 1 and may have views of the Site from its southern extents. Botolph Claydon is located to the north of Parcel 2 and is approximately 0.9 km west of Parcel 3 and may have views towards either one or both of these areas. East Claydon is located some 0.8 km west of Parcel 3, but views of the Site appear limited by intervening topography and vegetation. Depending on the final design and layout of the Proposed Development, there is the potential for there to be views of the Proposed Development from the fringes of all these villages but there is also potential through design and mitigation to minimise the view from properties within these villages.

Elsewhere there are isolated residential properties and farmsteads which will be considered as necessary in the LVIA.

Claydon House is a National Trust Property and a tourist attraction. Claydon Registered Park and Garden which surrounds the house is accessible to the public via footpaths surrounding the house.

6.6.6. Additional (secondary and tertiary) mitigation

Construction

Consideration will be given to the site selection for compounds and equipment laydown areas to reduce landscape and visual effects as far as practicable. There is, however, limited potential for additional mitigation of short-term landscape and visual construction effects. An Outline Construction Environment Management Plan will be prepared and seek to reduce landscape or visual effects during construction.

Lighting of any construction compounds will be designed to minimise visual intrusion.

Existing trees, woodlands and hedgerows will be protected in accordance with relevant British Standards, principally BS5837.

Operation

A high-quality design will be secured firstly through careful site selection for the various components of the Proposed Development, taking account of the potential landscape and visual effects of the Proposed Development. Removal or disruption to any existing landscape fabric (I.e., trees, hedgerows) will be minimised to that which is absolutely necessary to facilitate construction.

A detailed landscape and habitat mitigation strategy will be developed in accordance with the principles of good design as outlined in **Table 4-1** within this EIA Scoping Report to integrate the Proposed Development into the landscape and mitigate visual effects as far as practicable. The landscape strategy will be complementary to any biodiversity and other environmental objectives. The landscape design will seek to deliver landscape enhancements over and above the requirement to simply mitigate adverse effects.

The landscape strategy will seek to manage and restore existing vegetation and habitats within the Site, as well as implement the planting of extensive areas of new native vegetation and creation of new biodiverse habitats.

An Outline Landscape and Ecological Management Plan will be developed in consultation with relevant consultees to secure the establishment and long-term management of the landscape and biodiversity strategy.

Decommissioning

This stage of the Proposed Development will be similar to the construction stage, albeit in reversal. Given the anticipated operational duration (40 years), mitigation landscaping will have reached maturity and short-term landscape and visual decommissioning effects will be more filtered and / or screened than at the construction stage, albeit some significant landscape and visual effects may remain. An Outline Decommissioning Environment Management Plan will be prepared and seek to reduce landscape or visual effects during decommissioning. No additional mitigation is envisaged during this phase.

6.6.7. Description of likely significant effects

At this stage, prior to any formal assessment and in the absence of fixed development proposals, it is acknowledged that there is the potential for significant landscape and visual effects to arise during construction, operation and decommissioning. It is also, however, noted that further assessment based on firm development proposals and taking account of mitigation may result in a finding of limited significant effects.

The LVIA will therefore consider the potential effects upon:

- landscape fabric;
- landscape character; and
- visual receptors including residential, transport and recreational receptors.

Initial ZTVs have been undertaken to 5 km in order to identify receptors for inclusion in further study. Based on Site analysis to date and previous experience of assessing the significance of landscape and visual effects for solar farms in similar landscapes, it is considered likely that any significant landscape and visual effects arising from the Proposed Development will be limited to within a distance of 5 km.

6.6.8. Receptors / matters to be scoped into further assessment

Receptor / Matter	Phase	Justification
LCA 7.3 Claydon Bowl	Construction, operation and decommissioning	Parcels 1, 1a and the northern portion of Parcel 2 are located within this LCA and there is likely to be a direct, large scale of change to characteristics of the landscape within part of this LCA.

LCA 9.1 Finmere Hill	Construction, operation and decommissioning	The southern section of Parcel 2 is located within this LCA and there is likely to be a direct, large scale of change to characteristics of the landscape within part of this LCA.
LCA 5.7 Hogshaw Claylands	Construction, operation and decommissioning	The majority of Parcel 3 is contained within this LCA and there is likely to be a direct, large scale of change to characteristics of the landscape within part of this LCA.
LCA 5.6 Claydon Valley.	Construction, operation and decommissioning	The northern most field of Parcel 3 is within this LCA and there is likely to be a direct, large scale of change to characteristics of the landscape within part of this LCA.
LCA 5.4 Twyford Vale/ LCA 4.2 Preston Bisset Plateau Edge	Construction, operation and decommissioning	Rising ground to the north west of Parcel 1 from where there is potential to be an indirect, large scale of change to characteristics of the landscape.
LCA 5.8 North Marston Undulating Claylands	Construction, operation and decommissioning	Rising ground to the east of Parcels 2 and 3 from where there is potential to be an indirect, large scale of change to characteristics of the landscape.
LCA 5.9 Westcott Claylands	Construction, operation and decommissioning	ZTV indicates high level of visibility from rising ground to the south of Parcel 2 from where there is potential to be an indirect, large scale of change to characteristics of the landscape.
LCA 7.4 Kingswood Wooded Farmland	Construction, operation and decommissioning	ZTV indicates considerable level of visibility to the south and west of Parcel 2 from where there is potential to be an indirect, large scale of change to characteristics of the landscape.
LCA 9.2 Quainton Hill/ LCA 9.3 Pitchott Whitchurch Ridge	Construction, operation and decommissioning	High ground to the east and south of Parcels 2 and 3 respectively from where there is potential to be an

		indirect, large scale of change to characteristics of the landscape.
Area of Attractive Landscape (AAL) 3: Quainton-Wing Hills	Construction, operation and decommissioning	The southern part of Parcel 2 is located within the AAL 3: Quainton-Wing Hills and there is likely to be a direct, large scale of change to characteristics and special qualities of the landscape within this part of the AAL.
Users of the PRoWs and local road network which passes through and within 5 km of the Site (including the Bernwood Jubilee Way, Midshires Way, Outer Aylesbury Ring and Swan's Way LDWA), National Cycle Route 51	Construction, operation and decommissioning	Higher sensitivity receptors which may have views of the Proposed Development.
Residents and visitors to the villages of Steeple Claydon, Botolph Claydon, East Claydon, Winslow, Granborough and Grendon Underwood	Construction, operation and decommissioning	Depending on the final layout and design of the Proposed Development, there may be views of the Proposed Development from these villages, although it is intended to minimise as far as possible visual intrusion on these receptor groups.
Isolated farmsteads and residential properties within 5km of the Site	Construction, operation and decommissioning	Higher sensitivity receptors – consideration will be required of residential visual amenity.
Claydon House and Garden	Construction, operation and decommissioning	Depending on the final layout and design of the Proposed Development, there may be views of the Proposed Development for visitors to this tourist attraction.

6.6.9. Receptors / matters to be scoped out of further assessment		
Receptor / Matter	**Phase**	**Justification**
Chilterns AONB	Construction, operation and decommissioning	This AONB is situated some 18 km from the Site and there would be no intervisibility at this distance.
Other LCAs in the Aylesbury Landscape Character Assessment	Construction, operation and decommissioning	Despite the fact that the ZTVs indicate some distant visibility from other LCAs, professional analysis informed by fieldwork has established that there would be limited intervisibility between the Site and any other LCAs. Detailed ZTV will be reviewed in conjunction with the final scheme and presented in the ES.
Other AALs in the 5 km study area	Construction, operation and decommissioning	Despite the fact that the ZTVs indicate some distant visibility from other AALs in the study area, distance and the minimal extent of visibility in these areas means that significant effects are unlikely to arise. Detailed ZTV will be reviewed in conjunction with the final scheme and presented in the ES.
Other Registered Parks and Gardens within the 5 km study area	Construction, operation and decommissioning	Despite the fact that the ZTVs indicate limited visibility from Waddesdon Manor and Wotton Underwood Registered Park and Garden, distance and the minimal extent of visibility in these areas means that significant effects are unlikely to arise. Detailed ZTV will be reviewed in conjunction with the final scheme and presented in the ES.
Villages/hamlets of Twyford, Hillesden, Padbury, Adstock, Addington, Swanburn, North Marston, Oving, Calvert, Waddeston, Westcott, Edgcott,	Construction, operation and decommissioning	Despite the fact that the ZTVs indicate some distant visibility in some cases from the edges of these villages, once intervening hedgerows and other vegetation is taken into account, it is highly unlikely there would be any views of

Marsh Gibbon, Poundon, Calvert, Middle Claydon, Charndon, Quainton		the Proposed Development from these settlements. Any glimpses would be distant, filtered and negligible.
PRoW and local roads beyond 5 km	Construction, operation and decommissioning	It is unlikely that there would be any views of the Proposed Development at this distance and any glimpses of the Site beyond this distance are not likely to result in effects which would reach the threshold of a significant effect.
Users of the rail network, specifically HS2 and East West Rail	Construction, operation and decommissioning	Medium / Low sensitivity receptor which would have potential limited intermittent views of activity during construction, operation and decommissioning. The potential for significant effects to occur is considered low.

6.6.10. Opportunities for enhancing the environment

A comprehensive landscape mitigation strategy for the entire site will be developed and will seek to deliver significant landscape as well as biodiversity enhancement.

6.6.11. Proposed assessment methodology

The LVIA will be undertaken in accordance with published best practice, namely the Guidelines for Landscape and Visual Impact Assessment (Third Edition), Landscape Institute and IEMA 2013 (GLVIA3). GLVIA3 states that:

'Landscape and Visual Impact Assessment is a tool used to identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right and people's views and visual amenity.' (GLVIA3, paragraph 1.1).

In addition to GLVIA 3, other associated technical guidance notes of relevance to the assessment published by the Landscape Institute include:

- Technical Guidance Note 06/19: Visual Representation of Development Proposals, published by the Landscape Institute (2019).
- Technical Guidance Note 02/21: Assessing landscape value outside national designations.
- Technical Guidance Note 02/19: Residential Visual Amenity Assessment.
- Technical Guidance Note 04/20: Infrastructure.

Wherever possible, identified effects are quantified but the nature of landscape and visual assessment requires interpretation using professional judgement. In order to provide a level of consistency to the assessment, the prediction of magnitude and

assessment of significance of the residual landscape and visual effects will be based on pre-defined criteria.

GLVIA3 states that *'professional judgement is a very important part of the LVIA' (paragraph 2.23) and that 'in all cases there is a need for the judgements that are made to be reasonable and based on clear and transparent methods so that the reasoning applied at different stages can be traced and examined by others.' (paragraph 2.24).* It goes on at paragraph 3.32 to state that *'there are no hard and fast rules about what effects should be deemed 'significant" but LVIAs should always distinguish clearly between what are considered to be the significant and non-significant effects.'*

The LVIA will define the existing landscape and visual baseline environment; assess its sensitivity to change; describe the key landscape and visual related aspects of the Proposed Development; describe the nature of the anticipated changes and assess the effects arising during construction, operation and decommissioning.

Although linked, landscape and visual effects are considered separately. Landscape effects derive from changes in the landscape fabric, which may result in changes to the character, whereas visual effects are the effect of these changes as experienced by people (visual receptors).

The specific significance criteria to be used in the LVIA are set out in **Appendix D**.

All above ground primary and secondary elements of the Proposed Development will be considered in the LVIA as visible features which either individually, or collectively, have the potential to give rise to significant landscape and visual effects.

A selection of viewpoints, agreed with relevant consultees, will be used in the LVIA to consider effects on different receptor groups at various distances from the Site and to illustrate any particularly sensitive views identified through scoping.

Annotated photographs will be provided for each of the assessment viewpoints used in the LVIA. The annotated photographs will accord with guidance for 'Type 1' visualisations, as defined in Landscape Institute Technical Guidance Note 06/19 (Technical Guidance Note 06/19).

A series of photomontages will be presented for key viewpoints (locations to be determined through further consultation). The photomontages will be produced using the same base photographs as the annotated photographs and accord with guidance for 'Type 3' or 'Type 4' visualisations as defined in Technical Guidance Note 06/19.

Mitigation measures will be developed as appropriate and taken into consideration in the assessment of effects. Operational phase effects will be assessed in Year 1 to provide a 'worst case' assessment without mitigation and Year 10 when mitigation planting is well established.

The LVIA will conclude by summarising which if any effects are considered to be 'significant'.

As set out within LI Technical Guidance Note 02/19 'Residential Visual Amenity Assessment (RVAA)':

'Changes in views and visual amenity are considered in the planning process. In respect of private views and visual amenity, it is widely known that, no one has 'a right to a view.'

and:

'It is not uncommon for significant adverse effects on views and visual amenity to be experienced by people at their place of residence as a result of introducing a new development into the landscape. In itself this does not necessarily cause particular planning concern. However, there are situations where the effect on the outlook / visual amenity of a residential property is so great that it is not generally considered to be in the public interest to permit such conditions to occur where they did not exist before.'

The LVIA will present, as an appendix to the main assessment, a residential amenity assessment of visual effects on residential properties for any property where there is a possibility that the visual effects may approach the threshold described above.

Cumulative landscape and visual effects will be assessed as appropriate. Other projects to be considered in the cumulative LVIA will be identified through stakeholder consultation.

6.6.12. Difficulties and uncertainties

To ensure transparency within the EIA process, the following difficulties and uncertainties have been identified:

- There is currently some uncertainty in terms of the extent of other proposed renewable energy and large-scale developments within the study area. Otherwise, no other difficulties or uncertainties with regards the LVIA have been identified at this stage.

6.6.13. References

- Guidelines for Landscape and Visual Impact Assessment, Third Edition, Landscape Institute and Institute of Environmental Management & Assessment (2013).
- Landscape Institute Technical Guidance Note 06/19: Visual Representation of Development Proposals, published by the Landscape Institute (2019).
- Landscape Institute Technical Guidance Note *02/21: Assessing landscape value outside national designations.*
- Landscape Institute Technical Guidance Note 02/19: Residential Visual *Amenity Assessment.*
- Landscape Institute Technical Guidance Note 04/20: Infrastructure.
- NCA Profile:108 Upper Thames Clay Vales (NE570) published by Natural England on 02 June 2014. Available at: https://publications.naturalengland.org.uk/publication/5865554770395136#:~:text=The
- Aylesbury Vale *Landscape Character Assessment,* Jacobs May 2008. Available at: https://www.buckinghamshire.gov.uk/planning-and-building-control/planning-policy/landscape-policy-and-assessments/landscape-character-assessments/

- Vale of Aylesbury *Local Plan 2013-2033 (adopted 2021).* Available at: https://www.buckinghamshire.gov.uk/planning-and-building-control/planning-policy/local-development-plans-and-guidance/local-development-plans/
- B*uckinghamshire Public rights of Way Map (2023).* Available at: https://prow.buckscc.gov.uk/
- SUSTRANS, National Cycle Network https://www.sustrans.org.uk/find-a-route-on-the-national-cycle-network/route-51/
- Long Distance Paths UK, April 2022, https://ldwa.org.uk/ldp/public/ldp_public_home.php

6.6.14. Scoping questions

- Do you agree with the proposed list of consultees?
- Do you agree with the proposed study area?
- Do you agree that the data sources listed to inform the EIA baseline characterisation are appropriate?
- Are there any specific viewpoints to consider?
- Are any receptors/assets/resources not identified that you would like to see included in the EIA?
- Do you agree with the proposed additional (secondary and tertiary) mitigation measures and is this mitigation appropriate?
- Do you agree with the receptors/matters that are proposed to be scoped in and out of further assessment?
- Are there any specific developments to be considered for the cumulative assessment?
- Do you agree with the proposed factor-specific assessment approach?

6.7. Noise and vibration

6.7.1 Consultation

No consultation regarding the noise and vibration assessment has been undertaken to date.

The Environmental Health department at Buckinghamshire Council will be consulted regarding the methodology detailed below. Consultation will be sought in order to seek agreement on the following primary items:

- Baseline noise survey locations and programme of monitoring.
- Guidance and standards pertinent to the assessment(s).
- Receptors for inclusion in the assessment(s) where necessary.
- Agreement on relevant criteria.

6.7.2 Study area

The study area for the construction and decommissioning phase assessments will consider noise and vibration sensitive receptors that are located within 300 m of the Proposed Development. This has been determined based on the guidance set out in BS 5228:2009+A1:2014 and other related documents, including DMRB document ref. 'LA 111 - Noise and Vibration'.

The study area for the operational phase assessment will include the nearest or most exposed noise sensitive receptors which are considered to be representative of residential properties and Sites of Special Scientific Interest (SSSI) in the surrounding area that may be subject to the effects of noise from the operation of the Proposed Development.

The Site Boundary is provided within **Appendix A**.

Indicative area plans are provided in **Appendix B** for the location of the solar photovoltaic panels and option areas for the BESS and substation elements.

The receptors selected for inclusion within the assessment will be determined using aerial imagery/mapping and initial noise predictions undertaken once a more detailed design is available. These will be presented graphically and agreed during consultation with Buckinghamshire Council.

6.7.3. Data sources to inform the EIA baseline characterisation

The data which have been used to characterise the baseline conditions comprise:

- Aerial imagery and mapping – to determine locations of nearest receptors to inform both the baseline survey and future assessment(s);
- Defra strategic noise mapping;
- HS2 route alignment plans;
- Site Boundary – detailing extents of the Proposed Development location and proximity to nearby receptors.

Additional data sets which will be used to inform the assessment (post-scoping) include:

- Third-party noise assessments, where available and applicable.
- Baseline noise surveys for the Proposed Development at selected noise sensitive receptors, to establish the prevailing pre-development acoustic environment (as defined in **Section 6.7.4** below).

6.7.4. Surveys to inform the EIA baseline characterisation

To determine the impacts of the Proposed Development, a comprehensive baseline noise survey is proposed to quantify and characterise the existing noise environment across the study area.

It is proposed that a baseline noise monitoring exercise will be undertaken in accordance with British Standard (BS) 7445-1:2003 'Description of environmental noise – Guide to quantities and procedures', and the equipment used will conform to the Class 1 requirements of BS EN 61672-1:2013 'Electroacoustics. Sound level

meters. Specifications' and BS EN IEC 60942:2018 'Electroacoustics, Sound calibrators'.

Monitoring will be undertaken in the form of long-term noise measurements, typically of 1-week duration, in order to quantify the existing acoustic environment and nature of sound sources experienced by the surrounding receptors. Monitoring would encompass continuous periods throughout daytime and night, accounting for the likely operational times of the Proposed Development (i.e. 24 hours per day, 7 days per week). Baseline monitoring would be used to inform the criteria for both the construction and operational phases.

Monitoring would occur at positions representative of the nearest receptors.

6.7.5. Baseline conditions

The baseline noise environment is likely characterised by noise sources such as wind-swept vegetation, birdsong, watercourses, farm machinery and animals and traffic from local roads, which vary in influence according to weather conditions and time of day.

A review of aerial imagery shows industrial sites situated to the west and south of the Site with East Claydon Substation located immediately north of Parcel 3. The Greatmoor Energy from Waste facility is located approximately 500 m from the southern boundary of the Proposed Development.

The receptors likely to be considered in the assessment are largely residential in nature and therefore have the highest level of sensitivity. It is also noted that there are three SSSIs receptors in the local area (within ~1.3 km of Site Boundary):

- Sheephouse Wood SSSI
- Finemere Wood SSSI
- Grendon and Doddershall Woods SSSI

The proximity of HS2 to the Site will also influence baseline conditions, currently resulting from the ongoing construction works. The future baseline conditions across the Site will be influenced by the operation of high speed trains associated with HS2.

6.7.6. Additional (secondary and tertiary) mitigation

Potential measures to mitigate noise and vibration during the construction, operational and decommissioning phases are outlined below:

Construction

In developing the control measures during the construction phase, best practicable means (BPM), as defined in Section 72 of the Control of Pollution Act 1974 and Section 79 of the Environmental Protection Act 1990, would be applied during all construction works to reduce noise and vibration at neighbouring residential properties and other sensitive receptors. In doing so, due consideration would be given to the recommendations contained within BS5228:2009+A1:2014.

Measures to reduce levels of noise and vibration during the construction phase may include:

- The use of lower emitting noise level plant items.
- Management of operations to more appropriate periods.
- Use of noise barriers / temporary enclosures.
- Sensitive routing of construction traffic, both within the Site and on the public highway.
- Preparation of a Noise and Vibration Management Plan, forming part of a wider Outline Construction Environmental Management Plan.

Operation

If deemed necessary following the outcome of the operational phase assessment, noise control measures will be introduced. When choosing attenuation measures or implementing an effective noise reduction program, there are two possible approaches for treatment:

- Mitigation at source – modify the source or adopt alternative plant / equipment to radiate at a lower sound power level.
- Mitigation through transmission – deflect or block the acoustic path of noise.

It should be noted that this list of mitigation is not exhaustive, the specifics of which (and the extent) would be determined as part of the assessment when the location and type of noise-generating equipment is known.

Decommissioning

Measures outlined above as part of the construction phase would likely be applied during the decommissioning phase in accordance with BS5228:2009+A1:2014.

6.7.7. Description of likely significant effects

Construction

Noise and vibration levels associated with construction related activities and traffic have the potential to impact nearby sensitive receptors, resulting in significant adverse effects.

Operation

Noise arising due to the operation of the solar PV, BESS and substation elements of the Proposed Development have the potential to lead to significant noise effects at residential receptors surrounding the Site.

Noise impacts associated with each element would be assessed in detail (accounting for mitigation where necessary) to ensure the Proposed Development can operate within the appropriate and relevant noise limits.

Decommissioning

Noise and vibration levels associated with decommissioning related activities and traffic have the potential to impact nearby sensitive receptors, resulting in significant adverse effects.

6.7.8. Receptors / matters to be scoped into further assessment		
Receptor / Matter	**Phase**	**Justification**
Noise and vibration	Construction and decommissioning	Noise and vibration due to construction activities (large earthmoving / lifting plant items) has the potential to impact sensitive receptors surrounding the Site.
Road traffic	Construction and decommissioning	Increase in HGV / vehicle movements in the short term has the potential to impact sensitive receptors surrounding the Site.
Noise	Operation	Noise arising from the operation of inverters, transformers, HVAC, and other ancillary electrical infrastructure required for the solar PV / BESS infrastructure has the potential to impact sensitive receptors surrounding the Site.
6.7.9. Receptors / matters to be scoped out of further assessment		
Receptor / Matter	**Phase**	**Justification**
Vibration	Operation	Levels of vibration associated with the solar PV and BESS will be low and are highly unlikely to be perceptible over the distance ranges between the plant and the nearest residential dwelling.
Road traffic	Operation	Increase in road traffic during the operational phase is likely to be negligible, with vehicles only likely to be required for routine maintenance on the facility. The anticipated trip generation, including the number of vehicles, required for the routine maintenance during operation will be outlined in the PEIR and ES.
6.7.10. Opportunities for enhancing the environment		
No opportunities to enhance the environment from a noise and vibration perspective are envisaged at present.		
6.7.11. Proposed assessment methodology		
The proposed assessment methodology for the construction, operational and decommissioning phases are outlined below. The proposed significance criteria to be adopted is set out in **Appendix D**.		

Construction

The construction assessment would account for the following (primary) activities:

- Groundworks – general earthworks, access tracks, site establishment.
- Cable installation works, including trenchless techniques.
- Vehicle / HGV movements.
- Installation of infrastructure including PV system, BESS and Project Substation, grid connections.

The contribution of the different construction activities would be assessed in line with the guidance in BS 5228-1:2009+A1:2014 *'Code of practice for noise and vibration control on construction and open sites – Noise'*, plus any specific requirements of Buckinghamshire Council. Where construction noise levels are considered to be excessive or intrusive, recommendations for noise control measures would be made.

The effect of construction traffic on the existing road network would be calculated using the methodology set out in the Calculation of Road Traffic Noise Memorandum (CRTN) and assessed in accordance with the requirements of Design Manual for Roads and Bridges (DMRB) 'LA 111 Noise and Vibration, 2020'. The assessment would determine the level of noise increase in the short term, due to the inclusion of construction traffic on the existing network.

In terms of vibration impacts, sensitive receptors and possible vibration generating construction activities would be identified. Activities which may have the potential to generate perceptible levels of vibration at sensitive receptors, or levels which may cause early signs of cosmetic or structural damage include, but are not limited to, piling, rolling and compaction. Where these activities are identified as occurring within the construction programme and within a short separation distance from a sensitive receptor, predictions of possible vibration levels will be made using guidance contained within BS 5228-2:2009+A1:2014 *'Code of practice for noise and vibration control on construction and open sites – Vibration'*, and through empirical formulae. Predicted vibration levels would be assessed against appropriate criteria within BS 5228-2. Where the impact is predicted to be high or significant as a result of construction induced vibration, control measures will be recommended, including the specification of minimum distances from construction.

Operation

An operational phase assessment of the noise emitting infrastructure associated with the Proposed Development (substation, solar PV and BESS) will be undertaken to the requirements of BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'.

Noise predictions of the proposed infrastructure will be derived from computer noise modelling or spreadsheet calculations, as appropriate, and will be compared with the measured prevailing background sound level (L_{A90}) at the nearest, or most exposed, receptors to determine the magnitude of impacts and significance of effects.

The assessment will utilise information regarding the location, number, type and noise emission data for the proposed plant operating on the Site. Where the

assessment identifies potential and unreasonable impacts, guidance on potential noise control methods for the fixed plant and machinery will be provided (typically noise barriers, enclosures etc.). This will ensure the final design of the proposed installations can be developed to incorporate the required noise mitigation.

Where receptors may be exposed to noise from the Proposed Development and one or more third-party development, a cumulative noise impact assessment will be carried out.

Decommissioning

The impact of decommissioning will follow the assessment outlined above as part of the construction phase. At this stage, it is assumed that activities would not be significantly different to those proposed during construction, merely in reverse order.

6.7.12. Difficulties and uncertainties

To ensure transparency within the EIA process, the following difficulties and uncertainties have been identified:

- The overview of baseline acoustic conditions is based on desk-based studies only at scoping stage.
- The construction assessment will assume the use of standard construction techniques appropriate for the type of works being undertaken. The final techniques, plant selection and programme are expected to be determined by the appointed contractor, in consultation with relevant authorities prior to commencement of construction.
- Details of noise emitting plant / equipment (i.e. their specification) associated with the Proposed Development have not been defined at this stage.
- Verification of residential dwellings considered in the assessment will be achieved through the consultation process and through visit(s) to the Site and the surrounding area and along its surrounding local road networks.
- The nature of the ongoing HS2 construction works and the influence this may have on the baseline noise survey.
- The influence of noise emissions generated by other proposed developments in the surrounding area.

6.7.13. References

- British Standards Institution (2019) British Standard 4142:2014+A1:2019, Methods for rating and assessing industrial and commercial sound. London: British Standard Institution.
- British Standards Institution (2014) British Standard 5228:2009+A1:2014, Code of practice for noise and vibration control on construction and open sites (Part 1: Noise and Part 2: Vibration). London: British Standard Institution.

- British Standards Institution (2003) British Standard 7445-1:2003, Description and measurement of environmental noise – Part 1: Guide to quantities and procedures. British Standards Institution, 2003
- British Standards Institution (2013) British Standard 61672-1:2013 'Electroacoustics. Sound level meters. Specifications'
- British Standards Institution (2018) British Standard IEC 60942:2018 'Electroacoustics, Sound calibrators'.
- Calculation of Road Traffic Noise Memorandum (1988)
- Control of Pollution Act (1974)
- Design Manual for Roads and Bridges (2020), LA 111 Noise and Vibration
- Environmental Protection Act (1990)
- Extrium (2023) England Noise and Air Quality Viewer. Available at: http://www.extrium.co.uk/noiseviewer.html (Accessed: 31st October 2023).
- HS2 (2023) HS2-The Route. Available at: https://www.hs2.org.uk/the-route/high-speed-network-map (Accessed: 31st October 2023).

6.8.14. Scoping questions

- Do you agree with the proposed list of consultees?
- Do you agree with the proposed study areas?
- Do you agree that the data sources listed to inform the EIA baseline characterisation are appropriate?
- Are any receptors/assets/resources not identified that you would like to see included in the EIA?
- Do you agree with the proposed additional (secondary and tertiary) mitigation measures and is this mitigation appropriate?
- Do you agree with the receptors/matters that are proposed to be scoped in and out of further assessment?
- Do you agree with the proposed factor-specific assessment approach?

6.8. Transport and access

6.8.1 Consultation

The key consultee for the transport and access elements of the Proposed Development will be Buckinghamshire Council as the local highways authority for the area surrounding the Site.

To date, no substantive consultation has been undertaken with Buckinghamshire Council.

The location of the Proposed Development is remote to the trunk and strategic road network and given the nature of the Proposed Development, it is not considered that a significant impact on the trunk road network can be expected. As such, no consultation with National Highways is considered necessary.

Consultation on the route(s) for Abnormal Indivisible Load (AIL) access will be undertaken with the statutory structure and road agencies via the Department for Transport (DfT) Electronic Service Delivery for Abnormal Loads (ESDAL) system. The consultees will depend upon the selected route and details of this consultation will be reported in the ES and supporting Transport Assessment.

6.8.2 Study area

The extent of the study area will be developed from the likely origin and destination points for construction staff and materials. The exact Site access junction details have yet to be confirmed, however the access strategy is based upon the need to avoid traffic causing unnecessary disruption and distress to sensitive receptors and communities.

Locally sourced material will be used where feasible and traffic will avoid impacting on local communities as far is possible.

The extent of the study area will be discussed and agreed with the local highway authority prior to the assessment following the agreement of the access locations and the anticipated construction traffic routeing.

6.8.3. Data sources to inform the EIA baseline characterisation

Data for use in the assessment will comprise the following desk top sources:

- Active travel data from OS mapping, Buckinghamshire Council public right of way (PRoW) Interactive map and the Sustrans National Cycle Route (NCR) map;
- The online accident statistics database Crashmap.co.uk;
- Online public transport timetables for services operating on the study area roads;
- DfT traffic count data for the A41;
- The transport update notes provided by High Speed 2 (HS2) and East – West Rail (EWR) to gain details of potential vehicle movements and traffic management plans; and
- Aerial photography, OS mapping and other map data sources.

6.8.4. Surveys to inform the EIA baseline characterisation

New Automatic Traffic Count (ATC) traffic surveys will be undertaken on all of the study area road links to capture traffic flow, vehicle composition and speed for a neutral period over one full week.

Data for ongoing HS2 and East West Rail construction activities will be collected to allow an estimate to be made of traffic conditions without these two large scale construction projects. As the Proposed Development is likely to be constructed following the completion of the majority of major construction activities associated with these two projects, a future baseline with the exclusion of current construction traffic will present a more robust baseline for assessment.

6.8.5. Baseline conditions

A full description of the baseline traffic conditions and network condition will be detailed in the ES and supporting Transport Assessment at both the PEIR and final submission stages. This will review all of the links noted in the study area to ensure that proposed access route is reviewed in detail from the nearest A class distributor road (A41) through to the proposed site access junction on Quainton Road.

The Proposed Development is remote to the trunk road network (circa 18mile journey), with local supply opportunities for bulk materials available on local access routes.

To create a future year baseline, National Road Traffic Forecasts (NRTF) Low Growth estimates will be used.

6.8.6. Additional (secondary and tertiary) mitigation

The design of suitable access arrangements with full consideration given to the road safety of all road users. Standard additional mitigation measures will include:

- Production of an Outline Construction Traffic Management Plan;
- A Travel Plan providing for staff sustainable access; and
- A Framework Abnormal Load Transport Management Plan.

All mitigation measures will only be relevant to the construction phase of the Proposed Development.

6.8.7. Description of likely significant effects

The assessment will consider the effects on transport link users and residents within the study area, focussing on the following during the construction phase.

Construction traffic will include staff and material deliveries to and from the Site. The greatest concentration will occur at the Site access junctions.

During the construction phase, a peak of construction traffic will be generated. The assessment will quantify the level of construction traffic and the potential impact with regard to the effects noted below:

- Severance;
- Driver delay;
- Pedestrian delay:
- Non-motorised user amenity;
- Fear & intimidation;
- Road safety;
- Road Safety Audits; and
- Large loads.

6.8.8. Receptors / matters to be scoped into further assessment		
Receptor / Matter	**Phase**	**Justification**
Users of the A41	Construction	Potential for a temporary, but significant increase in traffic volumes on the A41 as a result of construction activities.
Users of the C Class and unclassified (U Class) road network	Construction	Potential for a temporary, but significant increase in traffic volumes on the local road network as a result of construction activities.
Residents along the A41 in Bicester	Construction	Potential for a temporary, but significant increase in traffic volumes on the A41 as a result of construction activities.
Residents of Kingswood	Construction	Potential for a temporary, but significant increase in traffic volumes on the A41 as a result of construction activities.
Residents living alongside the C Class and unclassified road network	Construction	Potential for a temporary, but significant increase in traffic volumes on the local road network as a result of construction activities.
6.8.9. Receptors / matters to be scoped out of further assessment		
Receptor / Matter	**Phase**	**Justification**
All	Operation	The operational phase will result in occasional traffic for maintenance of the solar arrays and BESS. The traffic associated with this phase (up to two van trips per day) will be insufficient to trigger the 30% threshold for assessment (taken from the Environmental Assessment of Traffic and Movement Guidelines) and as such, it is proposed that this phase can be scoped out of further assessment.
All	Decommissioning	The decommissioning phase would result in fewer traffic movements than the construction phase as elements such as the improved junction and some access tracks may be retained for future agricultural / land uses. Given that the

		decommissioning phase is assumed to be 40 years on from the commencement of operation for the purposes of the EIA, it would be impossible to ascertain the future baseline with any degree of certainty. As such, it is proposed to scope out the decommissioning phase from further assessment. It is, however, proposed that a commitment for a Decommissioning Traffic Management Plan is made within the DCO application to protect the future road authority's interests and to ensure the safe movement of all road users at that time. This would be secured by a requirement to the DCO.

6.8.10. Opportunities for enhancing the environment

Enhancements to existing PRoW could be delivered as part of the Proposed Development. As the traffic impacts of the Proposed Development are temporary in nature, there would be no other ability to provide further future transport enhancements.

6.8.11. Proposed assessment methodology

The assessment would be undertaken in accordance with the Institute of Environmental Management and Assessment (IEMA) Environmental Assessment of Traffic and Movement (2023).

This guidance notes two rules to be used as a screening process to identify the appropriate extent of the assessment area and likelihood of impacts. These are:

- **Rule 1** – Include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%); and
- **Rule 2** – Include highway links of high sensitivity where traffic flows have increased by 10% or more.

Where the predicted increase in traffic flow is lower than these thresholds, then the impact is considered insignificant and as such, no further assessments are required.

Where construction traffic flows meet, or exceed these thresholds, the significance of traffic and transport effects (including any cumulative development) will be determined by assessing the sensitivity of receptors against the magnitude of change to categorise significance as Major, Moderate, Minor or Negligible (**Appendix D**). The effects that are considered are noted in **Section 6.8.7** above.

It is not anticipated that a formal Transport Assessment will be required as these are not generally considered necessary for temporary construction works. A

reduced scope Transport Assessment is therefore proposed and will be submitted in support of the DCO application.

Where large scale High Voltage (HV) component loads are required for the electrical grid connection, these will be delivered as AILs. Detailed swept path analyses will be undertaken for the main constraint points on the route from the nearest suitable trunk road junction through to the proposed substation access junction to demonstrate that components can be delivered to Site and to identify any temporary road works which may be necessary. A Route Survey Report and AIL Transport Management Plan describing the route and the proposed operational management of the deliveries will be submitted in support of the DCO application.

Cumulative assessment of traffic effects from nearby projects that are of a significant scale (and where traffic flows are publicly available) and have been determined will be undertaken. Projects that are in scoping, or that do not have a planning determination, will not be included in cumulative reviews.

6.8.12. Difficulties and uncertainties

The assessment of construction traffic will assume the use of standard construction techniques appropriate for the type of works being undertaken. The final techniques, plant selection and programme are expected to be determined by the appointed contractor, in consultation with relevant authorities prior to commencement of construction.

6.8.13. References

- Buckinghamshire Council PRoW Interactive map. Available online : https://prow.buckscc.gov.uk/standardmap.aspx
- Sustrans National Cycle Route map. Available online : https://explore.osmaps.com/?lat=51.925531&lon=-0.932319&zoom=11.2160&style=Standard&type=2d&overlays=os-ncn-layer
- Environmental Assessment of Traffic and Movement (2023), Institute of Environmental Management and Assessment (IEMA). Available online: IEMA-REPORT-Environmental-Assessment-of-Traffic-and-Movement-Rev07.pdf

6.8.14. Scoping questions

- Do you agree with the proposed list of consultees?
- Do you agree with the proposed study areas?
- Do you agree that the data sources listed to inform the EIA baseline characterisation are appropriate?
- Are any receptors/assets/resources not identified that you would like to see included in the EIA?
- Do you agree with the proposed additional (secondary and tertiary) mitigation measures and is this mitigation appropriate?

- Do you agree with the receptors/matters that are proposed to be scoped in and out of further assessment?
- Do you agree with the proposed factor-specific assessment approach?

6.9. Population

6.9.1 Consultation

No consultation regarding the population assessment has been undertaken to date.

It is envisaged that consultation will be undertaken with Buckinghamshire Council Public Rights of Way Officers to discuss and agree approaches to public rights of way (PRoW) diversions / closures and details of any new PRoW.

6.9.2 Study area

There is no statutory guidance when assessing potential impacts to population. However, Design Manual for Roads and Bridges (DMRB) LA 112 'Population and Human Health' (hereafter LA 112) provides direction when assessing the impacts of a project in relation to population and human health. Whilst it is recognised that DMRB is primarily for use when assessing transport-related developments, in the absence of other guidance, the LA 112 scoping methodology has been adopted as it is seen as a robust and recognised form of guidance when undertaking EIA.

As described in LA 112; the study area for an assessment of effects relating to population will include all land within the Site Boundary and then extends for 500m in all directions beyond the Site Boundary. If during the assessment it is identified there are other receptors close to or just beyond this study area, then they will also be considered in the EIA.

6.9.3. Data sources to inform the EIA baseline characterisation

OS mapping, Defra's Magic maps and site plans have been used to describe the baseline of the Site in relation to population (**Section 6.9.5** below). DMRB LA 112 will be used to guide the information presented in the subsequent PEIR and ES baseline descriptions.

6.9.4. Surveys to inform the EIA baseline characterisation

No surveys have been undertaken to date and none are expected to inform the assessment.

6.9.5. Baseline conditions

Private property and housing

There are no properties or houses at risk of demolition to construct / operate the Proposed Development.

None of the land to be used is allocated for residential development and no new planning applications have been submitted for housing development within the Site Boundary.

Community land and assets

The Proposed Development will cover a large area of agricultural land which is therefore land not used as community land. There are no community assets located within the Site Boundary.

Agricultural land holdings, development land and businesses

The Site comprises agricultural landholdings for a number of farm businesses and other diversified businesses.

There is no land allocated for employment use, nor are there any planning applications yet to be determined that will generate employment opportunities at the Site.

Walkers, cyclists and horse riders

As noted in **Paragraph 2.3.16** of **Chapter 2** and detailed in **Appendix C**, numerous PRoW cross the Site and continue beyond the Site Boundary in various directions connecting surrounding settlements. None of these PRoW are designated National Trails; however, the Bernwood Jubilee Way route runs through Botolph Claydon and adjacent to Runts Woods and Finemere Wood, which is a historic 61 mile walking and cycling route.

It is assumed that these PRoW are used regularly by walkers, cyclists or horse riders as a means of travelling, for leisure purposes or for farm machinery to move around farmland.

6.9.6. Additional (secondary and tertiary) mitigation

During construction, where it is not possible to avoid temporary diversions or closures of existing PRoW, any new permanent and alternative PRoW will be designed with the aim of replicating or improving the length of the route, the quality and safety feel of the route and the accessibility for all users. Any proposed changes to PRoW will be agreed in consultation with Buckinghamshire Council in order to ensure there are suitable diversions or replacements in place.

Any temporary diversions will be detailed in an Outline Public Rights of Way Management Plan, setting out the PRoW commitments, which will be submitted in support of the DCO application in accordance with the requirements of the Section 55 Acceptance of Applications Checklist (version October 2019). This will contain a section to specifically address what impacts, if any, will occur for any walkers, cyclists or horse riders using PRoW.

Once operational, the PRoWs will either be available to use in the same manner as pre-construction, or the new routes will be in place and open to use. No additional mitigation during operation is therefore needed.

6.9.7. Description of likely significant effects

All existing PRoW will be retained in their existing alignment wherever possible. However, it is possible that PRoW in and around the Site will need to be temporarily diverted or permanently stopped up as a result of construction activities. During operation, any PRoW that have been permanently stopped up may have to be replaced with new pathways. As a result of these changes, it is likely that users of

the PRoW will be inconvenienced in having to use other or potentially longer routes on their journeys. However, should any permanent diversions be required, efforts will be made to ensure that the diversions take the shortest feasible route and provide an enhancement from the existing route.

There is also potential that these inconveniences will present a barrier to people using these routes and as such may prevent people walking / cycling / riding horses along pathways they currently use. Barriers to people undertaking travel or exercise should be prevented as they may negatively affect people's physical and mental health and wellbeing.

As noted in LA 112, increases in the length of a PRoW by 250 m – 500 m would create a moderate level of effect on users, with increases over 500 m having a major effect. At this time, it is unknown if any potential changes to the PRoW will exceed these distances and so there is potential for significant effects relating to disturbance and inconvenience for users of PRoW to occur depending on the sensitivity of the receptor.

6.9.8. Receptors / matters to be scoped into the assessment

LA 112 sets out the following aspects to be covered for land use and accessibility:

- Private property and housing;
- Community land and assets;
- Development land;
- Agricultural land holdings and business; and
- Walkers, cyclists and horse-riders

Receptor / Matter	Phase	Justification
Walkers, cyclists and horse-riders / PRoW	Construction, operation and decommissioning	There is potential for significant effects to walkers, cyclists and horse riders as a result of temporary and / or permanent diversions of PRoW which relates to inconvenience and barriers to accessing the existing PRoW.
Agricultural land holdings and businesses	Construction, operation and decommissioning	The Site comprises agricultural landholdings for a number of farm businesses and other diversified businesses. The circumstances of the individual businesses involved will continue to be investigated via discussions with the landowner and direct discussions as appropriate.

6.9.9. Receptors / matters to be scoped out of the assessment		
Receptor / Matter	**Phase**	**Justification**
Private property and housing	Construction, operation and decommissioning	There are no properties or houses at risk of demolition as a result of the construction, operation and decommissioning of the Proposed Development. None of the land to be used is allocated for residential development and no new planning applications have been submitted for housing development within the Site Boundary. Therefore, there will be no effects to property or housing. As no significant effects are expected in relation to private property and housing, it is proposed that these matters be scoped out of further assessment.
Community land and assets	Construction, operation and decommissioning	LA 112 defines community land as *"common land, village greens, open green space, allotments, sports pitches etc".* The Proposed Development will cover a large area of privately owned agricultural land which is therefore land not used as community land. There are no community assets located within the Site Boundary; therefore, no impacts are expected to community land and assets. Impacts to PRoW are discussed above in **Section 6.9.8**. As no significant effects are expected in relation to community land and assets, it is proposed that these matters be scoped out of further assessment.
Development land	Construction, operation and decommissioning	There is no land allocated for employment use, nor are there any planning applications yet to be determined that will generate employment opportunities at the Site.

6.9.10. Opportunities for enhancing the environment

Potential enhancement opportunities exist with regards to creating new or enhancing the current condition of PRoW. This may include upgrading access, signage or improving the feel and perception of safety in and around the area.

6.9.11. Proposed assessment methodology

LA 112 includes tables to determine the potential sensitivity of a land use receptor and the magnitude of any impact resulting from changes to PRoW. The length of any likely changes to the PRoW network will be detailed or if unknown worst case distances will be assumed. The aforementioned sensitivity and magnitude criteria will be used as the basis of assessing the potential for significant effects after design and mitigation measures have been taken into account. Further detail on the significance criteria that will be applied is presented in **Appendix D**.

LA 112 will also be followed to determine the potential significant effects on agricultural land holdings and businesses. Further detail on the significance criteria that will be applied is presented in **Appendix D**.

A Socio-Economic Statement will be prepared and submitted in support of the DCO application outside of the EIA process will cover:

- The potential loss of agricultural land holdings and permanent jobs, which will be a long term negative change;
- The small number of new jobs likely to be created during the operational phase of the Proposed Development through the need to maintain the ongoing operation which will be a long term positive change;
- The potential for job opportunities through the construction period; and
- The potential increase in the number of people in the area during construction and how that is likely to lead to an increase in the level of spending in the local area though shops and local services and an increase in demand and use of local accommodation, which may be a short term and / or long term positive or negative change.

6.9.12. Difficulties and uncertainties

As the Proposed Development is still in the design phase and does not have a fixed layout, it is not possible to determine the exact length or number of any planned changes to PRoW at this stage. However, this information will be determined to inform the ES and the DCO application.

6.9.13. References

- Design Manual for Roads and Bridges (2020). LA 112 - Population and human health. Available at: https://www.standardsforhighways.co.uk/search/1e13d6ac-755e-4d60-9735-f976bf64580a (accessed October 2023).

6.9.14. Scoping questions

- Do you agree with the proposed study areas?
- Do you agree that the data sources listed to inform the EIA baseline characterisation are appropriate?
- Are any receptors/assets/resources not identified that you would like to see included in the EIA?
- Do you agree with the proposed additional (secondary and tertiary) mitigation measures and is this mitigation appropriate?
- Do you agree with the receptors/matters that are proposed to be scoped in and out of the EIA?
- Do you agree with the proposed factor-specific assessment approach?

7. Cumulative Effects

7.1. Proposed assessment methodology

7.1.1. Schedule 4 paragraph (5)(e) of the EIA Regulations states that the ES should include *"a description of the likely significant effects of the development on the environment resulting from… 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"*.

7.1.2. Regulation 5(2) states that the EIA must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed development on the following factors…..population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage and the landscape. Regulation 5(2)(e) refers to the need to assess *"the interaction between [those] factors"*.

7.1.3. Cumulative effects occur as a result of several actions on an environmental receptor which may overlap or act in combination. The following types of cumulative effects will be considered in accordance with the EIA Regulations and best practice guidance:

- **Intra-project combined effects** – the interaction and combination of different environmental residual (post-additional mitigation) effects from within the Proposed Development affecting a receptor; and
- **Inter-project cumulative effects** – the combined residual (post-additional mitigation) effects of the Proposed Development and another project or projects on a single receptor/resource.

7.1.4. There is no widely accepted methodology for assessing cumulative effects, although various best practice and guidance documents exist. However, relevant guidance has been considered, including from the Institute of Environmental Management and Assessment (IEMA) [**Ref. 7-1**] and the assessment guidance set out in the Planning Inspectorate's Advice Note Seventeen: Cumulative Effects Assessment [**Ref. 7-2**] on inter-project cumulative effects.

7.1.5. The following approach will be adopted for the assessment of cumulative effects, based on previous experience, the types of receptors being assessed, the nature of the Proposed Development, the other developments under consideration and the information available to inform the assessment.

Intra-project combined effects

7.1.6. The approach to the assessment of interactions of environmental effects (intra-project combined 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 by more than one environmental factor) due to the Proposed Development. The assessment will be based upon residual (post-additional mitigation) effects of 'slight/minor' or greater significance only ('negligible' residual effects will not be considered). The assessment will also include consideration of where multiple non-significant effects could combine to become significant. The study area for the assessment of intra-project combined effects will be informed by the study areas for the individual environmental factor assessments.

7.1.7. The assessment of the intra-project combined effects will be undertaken using a two-stage approach:

Stage 1 – Screening

7.1.8. Screening will be undertaken to determine whether a sensitive receptor is exposed to more than one type of residual (post-additional mitigation) effect during the construction, operation and decommissioning phases of the Proposed Development. Those common sensitive receptors exposed to two or more types of residual (post-additional mitigation) effects, with significance of 'slight/minor' or greater, will be taken forward to Stage 2 of the assessment.

7.1.9. 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 intra-project combined effects and the sensitive receptor will not be taken forward to Stage 2 of the assessment.

Stage 2 – Assessment of intra-project combine effects

7.1.10. A quantitative assessment of the overall significance of the cumulative effects on common sensitive receptors identified at Stage 1 will be undertaken, based on technical information provided in the environmental factor assessment chapters and supporting appendices, as well as professional judgement. Given that the types of effects may be very different in some cases, a quantitative assessment may not be possible, and it may be necessary to apply professional judgement in determining the significance of each individual effect.

7.1.11. 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.

Inter-project cumulative effects

7.1.12. The approach to the assessment of inter-project effects will consider the deviation from the baseline conditions at common sensitive receptors as a

result of changes brought about as a result of the Proposed Development in combination with one or more other existing development and / or approved development(s). The assessment of the inter-project effects will be based upon the residual (post-additional mitigation) effects that have been identified in the various environmental factor assessments for the Proposed Development, as well as available environmental information for the other existing development and / or approved developments.

7.1.13. In accordance with the Planning Inspectorate's Advice Note Seventeen, the identification of other existing development and / or approved developments will comprise two clear stages, as follows:

- **Stage 1**: establish a long list of other existing development and / or approved developments based on appropriate spatial and temporal limits.
- **Stage 2**: apply a clear rationale to establish a short list of other existing development and / or approved developments which, in combination with the Proposed Development, have the potential to result in a significant cumulative effect for inclusion within the assessment.

Stage 1: Long list methodology

7.1.14. In accordance with the Planning Inspectorate's Advice Note Seventeen, the first task in establishing the long list of relevant 'other existing development and / or approved development(s)' is to determine the 'search area'. The 'search area' will be determined by affording consideration to the Zone of Influence (ZoI) for each environmental factor assessed.

7.1.15. The ZoI for each environmental factor is defined as the spatial area over which an effect is likely to be experienced. The ZoI for each environmental factor will be identified based on the extent of the likely effects as identified as the study area in each of the individual environmental factor assessments, whilst also reflecting any additional area over which cumulative effects may occur for particular cumulative scenarios (e.g. sequential cumulative visual effects on users of linear routes).

7.1.16. The overall combined 'search area' for the long list of relevant 'other existing development and / or approved development(s)' will be based on the largest ZoI in terms of distance.

7.1.17. Following the adoption of the ZoI, a planning application search will be undertaken to identify other existing development and / or approved developments within the ZoI, using the planning portals of Buckinghamshire Council and the Planning Inspectorate. However, it is recognised that Buckinghamshire Council, as the local planning authority, may be aware of additional proposals not yet fully in the public domain and hence comment is sought on any further developments that should, in the authority's opinion, be included in the cumulative effects assessment process.

7.1.18. Only the following types of other existing developments and / or approved developments will be considered for inclusion on the long list, as the Applicant considers that any development that does not fall within these types would not likely give rise to a significant cumulative effect:

- Employment developments;
- Residential developments of 10+ dwellings;
- Minerals and waste applications;
- NSIP developments[2];
- Transport infrastructure developments (trunk roads or motorways only); and
- Energy infrastructure developments.

7.1.19. Furthermore, of the development types listed above, only those that meet one or more of the following criteria will be included on the long list (in accordance with the 'Tier 1' and 'Tier 2' descriptions in Table 2 of the Planning Inspectorate's Advice Note Seventeen):

- Projects that are under construction but that will not be completed prior to the Proposed Development commencing (N.B. in accordance with Table 2 of the Planning Inspectorate's Advice Note Seventeen, other projects that are expected to be completed before construction of the Proposed Development, and the effects of those projects have been fully determined within their respective applications, are considered as part of the baseline);
- Projects with planning permission within the last five years[3] (whether under the Planning Act 2008 or other regimes), but not yet implemented;
- Submitted applications (whether under the Planning Act 2008 or other regimes), but not yet determined;
- Projects on the Planning Inspectorate's Programme of Projects where an EIA Scoping Report has been submitted, but for which an application has not yet been submitted.

7.1.20. The Applicant's interpretation of last bullet point above is that this solely relates to NSIPs. However, the Applicant will widen this particular criteria to include projects screened as EIA development under other regimes where an EIA Scoping Report has been submitted, but for which an application has not yet been submitted.

7.1.21. It should be noted that with reference to 'Tier 3' descriptions in Table 2 of the Planning Inspectorate's Advice Note Seventeen, the following other

[2] As defined by the Planning Act 2008 (as amended)
[3] A five-year period is considered a reasonable time period to capture all other existing development and/or approved developments that still have the potential to be built. Developments with planning permission older than five years will likely have been built or will not likely be built at all.

existing development and / or approved development(s) will not be considered for inclusion in the long list, as none of the below will have sufficient environmental assessment information freely and publicly available to inform the inter-project cumulative effects assessment, nor is there sufficient certainty on their delivery, nor are any of the below considered by the Applicant to be 'existing development and / or approved development':

- Projects on the Planning Inspectorate's Programme of Projects where an EIA Scoping Report has not been submitted;
- Projects that have been identified in the relevant Development Plan(s) (and emerging Development Plans); and
- Projects 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.

7.1.22. Only if the other existing development and / or approved developments meet the Stage 1 criteria will they then been taken forward to Stage 2. The long list will be kept under review, with the intention of agreeing the long list with Buckinghamshire Council prior to the completion of the ES to allow for a robust assessment of cumulative effects.

Stage 2: Short list methodology

7.1.23. Following the formation of the long list, the eligible other existing development and / or approved developments identified require further assessment (Stage 2) to establish a short list of other existing development and / or approved developments which, in combination with the Proposed Development, have the potential to result in significant cumulative effects.

7.1.24. The criteria used to determine whether to include or exclude an existing development and / or approved development on the short list will reflect the process established by the Planning Inspectorate's Advice Note Seventeen and have regard to relevant policy and guidance documents and consultation with the appropriate statutory consultation bodies (particularly Buckinghamshire Council). The Planning Inspectorate's Advice Note Seventeen states that the criteria should address the following:

- "**Temporal scope**: The applicant may wish to consider the relative construction, operation and decommissioning programmes of the 'other existing development and / or approved development' identified in the ZoI together with the NSIP programme, to establish whether there is overlap and any potential for interaction.
- **Scale and nature of development**: The applicant may wish to consider whether the scale and nature of the 'other existing development and / or approved development' identified in the ZoI are likely to interact with the proposed NSIP. Statutory definitions of major development and EIA screening thresholds may be of assistance when considering issues of scale.

- **Other factors**: The applicant should consider whether there are any other factors, such as the nature and / or capacity of the receiving environment that would make a significant cumulative effect with 'other existing development and / or approved development' more or less likely and may consider utilising a source-pathway-receptor approach to inform the assessment.
- **Documentation**: The CEA shortlisting process may be documented using Matrix 1 (Appendix 1). The reasons for excluding any development from further consideration should be clearly recorded. This will provide decision makers, consultation bodies and members of the public with a clear record of 'other existing development and / or approved development' considered and the applicant's decision making process with respect to the need for further assessment."

7.1.25. The Planning Inspectorate's Advice Note Seventeen suggests that professional judgement may also be used to supplement the threshold criteria and in order to avoid excluding 'other existing development and / or approved development' that is:

- "Below the threshold criteria limits but has characteristics likely to give rise to a significant effect; or
- Below the threshold criteria limits but could give rise to a cumulative effect by virtue of its proximity to the proposed NSIP [i.e. the Proposed Development]."

7.1.26. The Planning Inspectorate's Advice Note Seventeen also notes *"Similarly, professional judgement could be applied to support excluding 'other existing development and / or approved development' that exceeds the thresholds but may not give rise to discernible effects. All of the 'other existing development and / or approved development' considered should be documented and the reasons for inclusion or exclusion should be clearly stated*."

7.1.27. Taking the above into consideration, the other existing development and / or approved developments on the long list will be reviewed against the following criteria to form the short list of other existing development and / or approved developments:

- **Criteria 1**: The other existing development and / or approved development has a construction, operational and / or decommissioning phase that is concurrent with any phase of the Proposed Development.
- **Criteria 2**: The other existing development and / or approved development and the Proposed Development share common sensitive receptors / resources which are assessed and described in the supporting environmental documentation and have the potential to be significantly affected by the combination of the other existing development and / or approved development and the Proposed Development.

- **Criteria 3**: The other existing development and / or approved development has sufficient environmental assessment information freely and publicly available to inform the inter-project cumulative effects assessment. The assessment of each existing development and / or approved development on the short list will be proportionate to the environmental assessment information available (N.B: An attempt will not be made to assess the potential environmental effects of any other development to inform the inter-project cumulative effects assessment. If there is an existing development and / or approved development that it is known will be progressed but has insufficient environmental assessment information, it still may be prudent to consider it in the inter-project cumulative effects assessment. This might take the form of listing the project and why it hasn't been considered in detail, or the potential cumulative effect could be discussed at a high level (qualitatively) using professional judgement).

7.1.28. Where an existing development and / or approved development meets all of the above criteria, it will be included on the 'short list' and will be taken forward for further consideration in the assessment. The short list will be kept under review, with the intention of agreeing the short list with Buckinghamshire Council prior to the completion of the ES to allow for a robust assessment of cumulative effects.

7.1.29. Where developments are discounted from the short list, they will continue to be monitored to ensure that any changes to those projects are identified and their omission from the short list is reassessed prior to undertaking the cumulative assessment for the ES.

Stage 3: Information gathering

7.1.30. The other existing development and / or approved developments that form part of the short list will be subject to a review of environmental information, where available, including details of:

- Location;
- Programme, including construction, operation and decommissioning;
- Baseline data;
- Effects arising from such other developments; and
- Proposed design.

Stage 4: Assessment

7.1.31. There is no formal guidance on the criteria for determining significance of cumulative effects. The following principles will be considered when assessing the significance of inter-project effects, in accordance with the Planning Inspectorate's Advice Note Seventeen and in consideration of any mitigation measures required to avoid, prevent, reduce or, if possible, offset any identified significant adverse cumulative effects:

- Is there an inter-project effect on any receptors/resources;
- The duration and frequency of the effects;
- The nature of the receptors/resources affected;
- How the impacts identified combine to affect the condition of the receptor/resource;
- The probabilities of the impacts occurring in relation to each other in such a way so as to produce a cumulative effect, considering the extent and duration of the impact change;
- The ability of the receptor/resource to absorb further impacts; and
- Is the level of effect different to that considered at the project level and is the cumulative effect significant or not.

7.2. Difficulties and uncertainties

7.2.1. The assessment of inter-project cumulative effects will be limited to publicly available information obtained from the relevant planning applications on the planning portals of Buckinghamshire Council and the Planning Inspectorate. For some of the identified other existing development and / or approved developments, relevant information for this assessment may not be available. Where this is the case, the inter-project cumulative effects assessment will be based upon assumptions and professional judgement, reliant on the review of mitigation measures proposed as part of the other existing development and / or approved developments rather than the Proposed Development.

7.3. References

Ref. 7-1: Institute of Environmental Management and Assessment (IEMA) (2011) 'The State of Environmental Impact Assessment in the UK'. Available at: https://s3.eu-west-2.amazonaws.com/iema.net/documents/knowledge/policy/impact-assessment/2011-State-of-EIA-IEMA.pdf

Ref. 7-2: Planning Inspectorate (August 2019) Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects' (Version 2). Available online https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-17/

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