

Rosefield Solar Farm

Environmental Statement

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Report (2022)
(Clean)

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Foreword

Survey information contained within this appendix **ES Volume 4 Appendix 7.1 - Preliminary Ecological Appraisal (2022) [EN010158/APP/6.4.3]** forms part of the Environmental Statement for information only. The Preliminary Ecological Appraisal detailed within this appendix was undertaken in September 2021 and February 2022 and was based on a superseded version of the Order Limits, which has since been revised. Therefore, the results detailed within this report were correct at the time of writing, however certain aspects of this report are now outdated.

An updated Preliminary Ecological Appraisal has been undertaken between July 2023 – April 2025 based on the current Order Limits, the results of these surveys are found in **ES Volume 4, Appendix 7.7: Preliminary Ecological Appraisal (2025) [EN010158/APP/6.4] [APP-093]**, however the information contained within this report has been used to inform the desk study element of the updated survey report.

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Executive Summary

██████ was instructed by Rosefield Energyfarm Ltd to undertake a Preliminary Ecological Appraisal (PEA) of the proposed Rosefield Solar Farm (the 'Proposed Development') located in Aylesbury Vale, Buckinghamshire (see **Figure 1 (Annex B)**).

This PEA was commissioned in late August 2021 to identify whether there are any known or potential ecological receptors (nature conservation designations, protected and notable habitats and species and scheduled invasive non-native species) that may constrain or influence the design and implementation of the Proposed Development.

In order to deliver the PEA, a desk study and an extended Phase 1 Habitat Survey were undertaken by appropriately experienced ecologists, to identify ecological features associated with the Proposed Development and the wider potential zone of influence. The potential zone of influence was defined with reference to the red line boundary (the 'Site') as shown on **Figure 1 (Annex B)** and outline details of the Proposed Development as detailed in **Section 1.3**.

The Proposed Development is located in three main sites (referred to hereafter as Parcel 1 (with a sub-parcel '1a'), Parcel 2 and Parcel 3), with dominating habitats being arable fields with a few improved grassland livestock fields in Parcel 3. Additionally, a proposed grid connection connects the Sites to the East Claydon Substation, adjacent to Parcel 3. There are mature trees and hedges, small wooded copses and ponds within the Site. The Site is surrounded mainly by arable and mature broadleaved woodland (plantation, semi-natural and ancient). There are individual and clusters of residential properties located within and adjacent to the Site.

Three national statutory sites and 20 non-statutory sites designated for their nature conservation value were identified within the 2km study area. No designated sites are located within the Site boundary, although four local wildlife sites are adjacent to the Site.

The desk study also identified records of protected or notable species of flora and fauna within the desk study area (comprising a 2km zone of influence from the Site).

The extended Phase 1 Habitat Survey identified the following notable habitats within the study area (Site and up to 50m from the Site boundary): Ancient and/or Species Rich Hedgerows, Ancient Woodland/Lowland Deciduous Mixed Woodland, Running Water, Standing Open Waters/Ponds and Arable Field Margins.

Subject to further survey and assessment, potential constraints have been identified relating to:

- Designated sites;
- Notable habitats (*i.e.* habitats of principal importance);
- Aquatic species including macroinvertebrates and invasive non-native species;
- Terrestrial Invertebrates;
- Badger (*Meles meles*);
- Bat species (including roosting, foraging and commuting habitat);

- Breeding and non-breeding (wintering) birds;
- Flora, including arable flora and invasive non-native plant species;
- Great crested newt (*Triturus cristatus*);
- Otter (*Lutra lutra*) and Water Vole (*Arvicola amphibius*); and
- Reptiles.

In addition to the above, surveys may be required following consultation and further design details of the Proposed Development. This may include detailed bat roost presence/absence surveys, bat trapping surveys, a hedgerow survey and a terrestrial invertebrate survey where habitat features cannot be avoided. A Biodiversity Net Gain assessment will be required to meet national and local planning policy.

With regards to bats, populations of Bechstein's bats are known to occur close to and within the Site and plantation woodland within and adjacent to Parcels 1 and 1a, which appear to be mitigation for the adjacent HS2. Therefore, woodland areas (including plantation woodland) are of high sensitivity to bats. Given the proximity of HS2 to the Proposed Development (to the immediate west of Parcel 1), effort should be made to gain access to the relevant datasets for bats to identify areas of key interest and potential constraint.

Any such discussions with HS2 should also investigate whether they have undertaken any work within the Proposed Development for other protected species, such as Great Crested Newt, to ascertain the locations of known populations of protected species.

The outlined constraints will need to be reassessed when the exact design and layout of the Proposed Development have been determined, when further surveys have been undertaken or if there are any significant changes in the use or management of the land that would affect the habitats and species.

If a DCO application is made two years or more after the PEA reported here, it is advisable to review and update the survey data (i.e. after April 2024).

1. Introduction

1.1. Background

- 1.1.1. This document has been updated at Deadline 4 to redact confidential information while providing the full report. The document references have not been updated from the original submission. Please refer to the **Guide to the Application [EN010158/APP/1.2.10]** for the list of current versions of documents.
- 1.1.2. This Preliminary Ecological Appraisal (PEA) report (PEAR) has been prepared by [REDACTED] on behalf of Rosefield Energyfarm Ltd, to identify whether there are known or potential ecological receptors (nature conservation designations, protected and notable habitats and species and scheduled invasive non-native species) that may constrain or influence the design and implementation of the Rosefield Solar Farm (hereafter referred to as the Proposed Development).
- 1.1.3. The assessment of ecological receptors has been undertaken with reference to current good practice and forms part of the technical information commissioned by Rosefield Energyfarm Ltd in connection with the Proposed Development. The approach applied when undertaking this PEAR accords with the Guidelines for Preliminary Ecological Appraisal published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2017) **[Ref. 1]**. The PEAR addresses relevant wildlife legislation and planning policy as summarised in **Section 2** and is consistent with the requirements of British Standard 42020:2013 Biodiversity. Code of Practice for Planning and Development **[Ref. 2]**.
- 1.1.4. This PEAR is intended to provide a high-level appraisal in respect of the Proposed Development design, site layout and/or site investigation. Preliminary high-level recommendations are made on potential options for the avoidance, mitigation or compensation of the potential impacts of the Proposed Development (where known) on the identified ecological receptors and of potential enhancements to the biodiversity to achieve an overall gain. Further ecological surveys and/or ecological impact assessment (including detailed mitigation measures) may be required in connection with a planning application or to contribute to an Environmental Impact Assessment once the scheme proposals have been finalised and any required surveys have been completed.

1.2. Purpose of the PEAR

- 1.2.1. In order to deliver the PEAR, a desk study and an extended Phase 1 Habitat Survey were undertaken by appropriately experienced ecologists, to identify ecological features within the Proposed Development and the wider potential zone of influence. The potential zone of influence was defined with reference to the red line boundary (the 'Site') as shown on

Figure 1 (Annex B) (see **Section 1.4**) and the type of development, as detailed in **Section 1.3**. Additional details on the methods used are provided in **Section 3**.

- 1.2.2. The purpose of the PEAR is to provide a high-level ecological appraisal of the Site, specifically to:
- establish baseline conditions and determine the presence of Important Ecological Features (IEFs) (or those that could be present), as far as is possible;
 - to identify potential ecological constraints to the Proposed Development and make initial recommendations to avoid impacts on IEFs, where possible;
 - to identify requirements for mitigation, where possible, including mitigation measures that will be required and those that may be required (depending on results of further surveys or final Proposed Development design);
 - to establish any requirements for more detailed surveys; and
 - to identify any opportunities offered by the Proposed Development to deliver biodiversity enhancements.

1.3. Proposed Development

- 1.3.1. Rosefield Energyfarm Ltd is a proposed new solar energy farm, co-located with battery storage. The proposals include grid infrastructure to connect Rosefield Energyfarm Ltd to the National Grid via underground cable. The proposed generation capacity of the Proposed Development is above 50MW, which means it is a Nationally Significant Infrastructure Project (NSIP) and as such would require a Development Consent Order (DCO).

1.4. Site Description

- 1.4.1. The Proposed Development is located in three main sites (referred to hereafter as Parcel 1 (with a sub-parcel '1a'), Parcel 2 and Parcel 3) located in a triangle of Winslow, Steeple Claydon and Quainton, in the county of Buckinghamshire and in the geographical region of Aylesbury Vale.
- 1.4.2. The Site is located at Ordnance Survey national grid reference SP7024 (Knowl Hill).
- 1.4.3. Parcel 1 makes up the largest area of the Proposed Development, to the east of Calvert, and consists predominately of arable fields with livestock pastures and woodland blocks. A smaller section, referred to as Parcel 1a, lies to the immediate south of Parcel 1. Parcel 2 contains predominantly arable fields surrounded by woodland blocks. Parcel 3 contains two livestock fields and is located adjacent to the National Grid East Claydon

Substation. The Parcels are surrounded by arable, grassland and woodland.

- 1.4.4. The location of the Proposed Development is shown in **Figure 1 (Annex B)**.

2. Legislation and Policy Context

2.1. Legislative Context

- 2.1.1. The following wildlife legislation was considered when undertaking this PEA:
- Wildlife and Countryside Act (WCA) 1981 (as amended) **[Ref. 3]**;
 - Countryside and Rights of Way (CROW) Act 2000 **[Ref. 4]**;
 - Natural Environment and Rural Communities (NERC) Act 2006 **[Ref. 5]**;
 - The Conservation of Habitats & Species Regulations 2017 (as amended) (the Habitats Regulations) **[Ref. 6]** and The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 **[Ref. 7]**;
 - The Protection of Badgers Act 1992 **[Ref. 8]**;
 - The Hedgerows Regulations 1997 **[Ref. 9]**;
 - The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 **[Ref. 10]**;
 - Invasive Alien Species (Enforcement and Permitting) Order 2019 (as amended) **[Ref. 11]**; and
 - The Environment Act 2021 **[Ref. 12]**.
- 2.1.2. Further information on the requirements of the above legislation is provided in **Annex A**.

2.2. National and Local Planning Policy

National Planning Policy Framework

- 2.2.1. The National Planning Policy Framework (NPPF) **[Ref. 13]** states the commitment of the UK Government to minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity.
- 2.2.2. It specifies the obligations that Local Authorities and the UK Government have regarding statutory designated sites and protected species under UK and international legislation and how this is to be delivered in the planning system. Protected or notable habitats and species can be a material consideration in planning decisions and may therefore make some sites unsuitable for certain types of development, or if development is permitted, mitigation measures may be required to avoid or minimise impacts on

certain habitats and species, or where impact is unavoidable, compensation may be required.

- 2.2.3. The NPPF is clear that pursuing sustainable development includes moving from no net loss of biodiversity to achieving net gains for nature, and that a core principle for planning is that it should contribute to conserving and enhancing the natural environment and reducing pollution.
- 2.2.4. The latest revision of the NPPF came into being in July 2021. Relevant sections of the NPPF are included in **Annex A**.

National Planning Policy Statements

- 2.2.5. The following National Policy Statements (NPSs) are relevant to solar developments and these NPSs were 'designated' in 2011 and as far as they are applicable, are considered to be matters that will be important and relevant to the Secretary of State's decision as to whether to grant planning permission for the Proposed Development. These NPSs are, as of September 2021, in the process of being updated and therefore, relevant sections of the draft NPSs are also included below.
- 2.2.6. Overarching National Policy Statement for Energy (EN-1) (2011) **[Ref. 14]**, with particular reference to paragraphs 4.2.2 and 4.2.3, which provide national policy on what an Environmental Statement (ES) for a Nationally Significant Infrastructure Project (NSIP) project should contain; paragraph 4.3.1 which states what the Secretary of State must, under the Conservation of Habitats and Species Regulations 2017 consider when granting a development consent order; and part 5 section 5.3 which sets out guidance on generic impacts relating to biodiversity for the applicant's assessment and decision-making on the application The Draft Overarching National Policy Statement for Energy (EN-1) **[Ref. 15]** (2021) includes guidance for biodiversity net gains in paragraphs 4.5.1 to 4.5.3 and generic impacts on biodiversity in Part 5.4 and that guidance has also been considered.
- 2.2.7. The Draft National Policy Statement for Renewable Energy EN-3 (2021) **[Ref. 16]** now includes sections 2.47 to 2.54 (inclusive) which set out policy requirements specific to solar generation and these have been considered.
- 2.2.8. Part 2.7 of the National Policy Statement for Electricity Networks Infrastructure (EN-5) (2011) **[Ref. 17]** sets out generic impacts concerning biodiversity, although these are more relevant to considerations for birds and overhead lines. However, the draft EN-5 (2021) **[Ref. 18]** details biodiversity considerations when choosing an underground electricity line. This includes the environmental consequences, as underground cables can disturb sensitive habitats.

Local and Regional Plans

2.2.9. Local Planning policies that are relevant to biodiversity for the Proposed Development are:

- Buckinghamshire Local Plan [Ref. 19]; and
- Vale of Aylesbury Local Plan (VALP) 2013-2033 [Ref. 20].

Buckinghamshire Local Plan

2.2.10. The Buckinghamshire Local Plan is currently being drafted with the intention of creating a new Buckinghamshire-wide local plan by April 2025.

2.2.11. *“This local plan will cover the whole of the Buckinghamshire Council area, for the period up to 2040, as part of the development plan. The Plan is likely to include:*

- a vision and ambitions/objectives for the development of the area;
- a spatial development strategy;
- plans setting out zones for growth areas, renewal areas and areas for protection; and
- detailed rules (policies) for the individual zones, including specific requirements for the development of growth areas and renewal areas.”

Vale of Aylesbury Local Plan

2.2.12. The Vale of Aylesbury Local Plan (VALP) seeks to conserve and enhance Aylesbury Vale’s biodiversity through the protection and improvement of the terrestrial and water environments and fauna and flora, relative to their importance. Policies relevant to biodiversity are included below.

2.2.13. Policy NE1 states:

2.2.14. *“Internationally or nationally important Protected Sites (SACs and SSSIs) and species will be protected. Avoidance of likely significant adverse effects should be the first option.*

2.2.15. *Development proposals that would lead to an individual or cumulative adverse impact on an internationally or nationally important Protected Site or species, such as SSSIs or irreplaceable habitats such as ancient woodland or ancient trees, will be refused unless exceptional circumstances can be demonstrated.*

2.2.16. *A net gain in biodiversity on minor and major developments will be sought by protecting, managing, enhancing and extending existing biodiversity resources, and by creating new biodiversity resources. These gains must be measurable using best practice in biodiversity and green infrastructure accounting and in accordance with any methodology (including a Biodiversity Impact Assessment) to be set out in the Buckinghamshire Biodiversity Accounting SPD.*

2.2.17. *If significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts),*

adequately mitigated, or as a last resort, compensated for, then development will not be permitted. If a net loss in biodiversity is calculated, using a suitable Biodiversity Impact Assessment then avoidance, mitigation and compensation, on site first, then offsite must be sought so the development results in a net gain in order for development to be permitted. Mitigation, compensation and enhancement measures must be secured and should be maintained in perpetuity. These assessments must be undertaken in accordance with nationally-accepted standards and guidance (BS 8683 Biodiversity net gain in project design and construction; and CIRIA Biodiversity Net Gain Good practice principles for development).

- 2.2.18. *Development which would result in damage to or loss of a site of biodiversity or geological value of regional or local importance (such as Local Wildlife Sites or Local Geological Sites) including habitats of principal importance (Priority Habitats) or the habitats of species of principal importance (Priority Species) or their habitats will not be permitted except in exceptional circumstances where the need for, and benefits of the development significantly and demonstrably outweigh the harm it would cause to the site, and the loss can be mitigated and compensation provided to achieve a net gain.*
- 2.2.19. *The Council will, where appropriate, expect ecological surveys for planning applications. These must be undertaken by a suitably qualified person and consistent with nationally accepted standards and guidance (BS 42020: Biodiversity – Code of Practice for planning and development; and CIEEM Ecological Report Writing guidance) as replaced.*
- 2.2.20. *Where development proposals affect a Priority Habitat then mitigation should not be off-site. Where no Priority Habitat is involved then mitigation is expected to follow the mitigation hierarchy, where options for avoidance, mitigation and compensation on- site, and then offsite compensation, should be followed in that order as outlined in d. When there is a reasonable likelihood of the presence of protected or priority species or their habitats, development will not be permitted until it has been demonstrated that the proposed development will not result in adverse impacts on these species or their habitats.*
- 2.2.21. *Development proposals will be expected to promote site permeability for wildlife and avoid the fragmentation of wildlife corridors, incorporating features to encourage biodiversity, and retain and where possible enhance existing features of nature conservation value on site. Existing ecological networks should be identified and maintained to avoid habitat fragmentation, and ecological corridors including water courses should form an essential component of green infrastructure provision in association with new development to ensure habitat connectivity.”*
- 2.2.22. *Policy NE2 states:*
“Development proposals must not have an adverse impact on the functions and setting of any watercourse and its associated corridor. They

should conserve and enhance the biodiversity, landscape and consider the recreational value of the watercourse and its corridor through good design. Development proposals adjacent to or containing a watercourse shall provide or retain a 10m ecological buffer (unless existing physical constraints prevent) from the top of the watercourse bank and the development, and include a long-term landscape and ecological management plan for this buffer.”

2.2.23. Policy NE5 states:

“Considering development involving potentially adverse lighting impacts to wildlife, the council will expect surveys to identify wildlife corridors and ensure that these corridors are protected, and enhanced where possible.”

2.2.24. Policy NE8 states:

“Development that would lead to an individual or cumulative significant adverse impact on ancient woodland or ancient trees will be refused unless exceptional circumstances can be demonstrated that the impacts to the site are clearly outweighed by the benefits of the development. Development that would result in the unacceptable loss of, or damage to, or threaten the continued well-being of any trees, hedgerows, community orchards, veteran trees or woodland which make an important contribution to the character and amenities of the area will be resisted. Where the loss of trees is considered acceptable, adequate replacement provision will be required that use species that are in sympathy with the character of the existing tree species in the locality and the site. Where species-rich native hedgerow (as commonly found on agricultural land) loss is unavoidable the developer must compensate for this by planting native species-rich hedgerow, which should result in a net gain of native hedgerow on the development site. Developers should aspire to retain a 10m (with a minimum of 5m) natural buffer around retained and planted native hedgerows (100m with a minimum 25m natural buffer around woodlands) for the benefit of wildlife, incorporating a dark corridor with no lighting.”

2.3. Other Guidance

2.3.1. Additional guidance has been reviewed for its relevance to the Proposed Development and is summarised below.

The 25 Year Environment Plan

2.3.2. In early 2018, the Government published its 25 Year environment plan **[Ref. 21]** to provide guidance on its new approach to managing the environment. The plan promotes a natural capital approach that recognises the wider value of the environment and its contribution, such as food, clean water and air, wildlife, energy, wood, recreation and protection from hazards. The plan seeks to embed a net environmental gain principle for development to deliver environmental improvements locally and nationally.

Natural England and Department for Environment, Food and Rural Affairs (Defra) Standing Advice (protected species)

- 2.3.3. Standing advice from Natural England and Defra **[Ref. 22]** provides guidance on protected and notable species and includes reference to the best practice approaches to survey, mitigation and compensation. Guidance is also provided on the procedure for obtaining protected species licences.
- 2.3.4. This advice has informed the planning of surveys and the approach to mitigating impacts upon protected species, including where necessary the requirement for Natural England mitigation licences.

UK Post-2010 Biodiversity Framework

- 2.3.5. The UK Biodiversity Action Plan (UKBAP) was launched in 1994 and established a framework and criteria for identifying species and habitat types of conservation concern. From this list, action plans for priority habitats and species of conservation concern were published and have subsequently been succeeded by the UK Post-2010 Biodiversity Framework (July 2012) **[Ref. 23]**. The UK list of 943 priority species and 56 habitats, however, remains an important reference source and has been used to help draw up statutory lists of priority habitats and species in England, Scotland, Wales and Northern Ireland. For the purpose of this assessment, the UKBAP is still used as one of the criteria to assist in assigning national value to an ecological receptor.
- 2.3.6. The UK Post-2010 Biodiversity Framework is relevant in the context of Section 40 of the NERC Act 2006 **[Ref. 5]**, meaning that Priority Species and Habitats are material considerations in planning. These habitats and species are identified as those of conservation concern due to their rarity or a declining population trend.

2.4. Local Biodiversity Action Plan

- 2.4.1. The Proposed Development is located within the county of Buckinghamshire. The Buckinghamshire and Milton Keynes Forward to 2030 Biodiversity Action Plan (BAP) **[Ref. 24]**, sets out measures that will help to reverse the decline of biodiversity within the area, although focus of the work is primarily on habitats.

3. Methods

3.1. Desk Study

- 3.1.1. A desk study was undertaken to identify nature conservation designations and protected or notable habitats and species potentially relevant to the Proposed Development.
- 3.1.2. A stratified approach was taken when defining the desk study area, based on the likely zone of influence of the Proposed Development on different ecological receptors; and an understanding of the maximum distances typically considered by statutory consultees. Accordingly, the desk study identified international nature conservation designations within 10km of the Proposed Development; other statutory nature conservations designations within 2km of the Proposed Development; and, local non-statutory nature conservation designations, and protected/notable habitats and species within 2km of the Proposed Development.
- 3.1.3. The desk study was undertaken using the data sources detailed in **Table 3.1**. Protected and notable habitats and species include those listed under Schedules 1, 5 and 8 of the WCA; Schedules 2 and 4 of the Habitats Regulations; species and habitats of principal importance for nature conservation in England listed under Section 41 (S41) of the NERC Act; and other species that are Nationally Rare, Nationally Scarce or listed in national or local Red Data Lists and Biodiversity Action Plans.
- 3.1.4. Only records up to ten years old were considered within the desk study, as any records older than ten years are unlikely to be still representative of species presence in the local area.

Table 3.1: Desk study data sources

Data Source	Data Obtained
Multi-Agency Geographic Information for the Countryside (MAGIC) website [Ref. 25]	International statutory designations within 10km of the Site Other statutory designations within 2km of the Site Ancient woodlands and notable habitats within 2km of the Site
Ordnance Survey 1:2500 Pathfinder maps and aerial photography	Information on habitats and habitat connections (based on aerial photography) relevant to the interpretation of planning policy and assessment of potential protected and notable species constraints.
Buckinghamshire and Milton Keynes	Sites designated for their nature conservation value, such as, Biological

Data Source	Data Obtained
Environmental Records Centre (BMKERC)	Notification Sites (BNS) and Local Wildlife Sites (LWS) within 2km of the Site. Protected and notable species within 2km of the Site (records for the last ten years only).

3.2. Field Survey

Phase 1 Habitat Survey

- 3.2.1. The Phase 1 Habitat survey was undertaken in accordance with the standard survey method, developed by the Joint Nature Conservation Committee (JNCC) [Ref. 26]. Phase 1 Habitat survey is a standard method of environmental audit. It involves categorising different habitat types and habitat features within a survey area. The information gained from the survey can be used to determine the likely ecological value of a site, and to direct any more specific survey work which may need to be undertaken prior to the submission of a planning application. The standard Phase 1 Habitat survey method can be 'extended' to record target notes on protected, notable and invasive species.

Appraisal of the Potential Suitability of Habitats for Protected and Notable Species

- 3.2.2. An appraisal was made of the potential suitability of the habitats present to support protected and notable species of plants or animals (as defined by legislation and planning policy in **Section 2**). Field signs, habitat features with potential to support protected species and any sightings or auditory evidence were recorded when encountered, but no detailed surveys were undertaken for any particular species.
- 3.2.3. In addition, specific attention was given to identifying instances of invasive non-native plant species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) [Ref. 3] and those "widespread species" listed in the Invasive Alien species (Enforcement and Permitting) Order 2019 [Ref. 11]. Locations of plants or stands of any such invasive non-native plant species, if found, were recorded.

3.3. Desk Study and Field Survey Limitations

- 3.3.1. The aim of a desk study is to help characterise the baseline context of the Proposed Development and provide valuable background information that would not be captured by a single site survey alone. Information obtained during the course of a desk study is dependent upon people and organisations having made and submitted records for the area of interest. As such, a lack of records for a particular habitat or species does not

necessarily mean that the habitats or species do not occur in the study area. Likewise, the presence of records for particular habitats and species does not automatically mean that these still occur within the area of interest or are relevant in the context of the Proposed Development.

- 3.3.2. Where habitat boundaries coincide with physical boundaries recorded on OS maps, the resolution is as determined by the scale of mapping. Elsewhere, habitat mapping is as estimated in the field and/or recorded by hand-held Samsung tablets using Collector software. Where areas of habitat are given they are approximate and should be verified by measurement on-site where required for design or construction. While indicative locations of trees are recorded, this does not replace requirements for a detailed specialist arboriculture survey to British Standard 5837:2012 Trees in Relation to Design, Demolition and Construction.
- 3.3.3. There were no other limitations to the desk study or habitat survey.

4. Results

4.1. Nature Conservation Designations

Statutory Designations

- 4.1.1. The desk study identified three statutory sites for nature conservation within the study areas set out in **Table 4.1**. These sites, designated for biodiversity reasons, are detailed in **Table 4.1** and are listed in descending order, with those closest to the Proposed Development listed first. Site designation details are summarised in **Table 4.1** and are taken from citation documents, published online by the Joint Nature Conservation Committee (JNCC) for the individual sites. The locations of statutory sites are shown in **Figure 2 (Annex B)**.

Table 4.1: Statutory designated sites within 10km (international) and 2km (national) of the Site

Statutory Site Name and Designation	Description	Distance (metres (m)) and direction from closest point of the Site
Sheephouse Wood Site of Special Scientific Interest (SSSI)	A large, well-structured block of ancient Pedunculate Oak woodland. The site has a characteristically diverse woodland flora, a typical range of breeding birds and is of particular interest for its invertebrate fauna which includes notable and local species.	Adjacent to the southern boundary of Parcel 1
Finemere Wood SSSI	A large ancient pedunculate woodland supporting rich communities of native plants, birds, insects and other animals. In particular the wood contains populations of some local butterflies, including the nationally rare Wood White <i>Leptidea sinapis</i> and Black Hairstreak <i>Satyrrium pruni</i> .	155m south of Parcel 2
Grendon and Doddershall Woods SSSI	Grendon and Doddershall Woods constitute an important tract of broadleaved woodland of a kind formerly far more extensive on the clays of north Buckinghamshire. An important feature of both woods	1,360m to the west of Parcel 2

Statutory Site Name and Designation	Description	Distance (metres (m)) and direction from closest point of the Site
	is the network of wide rides, some almost permanently wet, and others with ditches. The woods have long been known as a site of exceptional importance for butterflies of which no less than 35 species, some now very rare, have been recorded.	

Non-statutory Designations

- 4.1.2. The desk study identified twenty sites non-statutorily designated for nature conservation within 2km of the Site(s) (as per the method in **Section 3.1**). These non-statutory sites have been designated as Local Wildlife Sites (LWS), Berks, Bucks, Oxon Wildlife Trust (BBOWT) reserves, or biological notification sites (BNS) for their biodiversity value at a local level and are known to have supporting value to a wide variety of protected and ecologically important species and/or habitats.
- 4.1.3. These sites are presented in **Table 4.2** and are listed in descending order of distance from the Site. The locations of these sites are presented in **Figure 3 (Annex B)**.

Table 4.2: Non-statutory designated sites within 2km of the Site

Non-Statutory Site Name and Designation	Description	Approximate Distance ((m)/(km)) and direction from closest point of the Site
Decoypond Wood LWS	Small wood with Ancient Woodland indicators.	Adjacent to the western boundary of Parcel 1
Shrubs Wood LWS	Ancient woodland site, relatively intact, good structure and diversity	Adjacent to the central section of Parcel 1
Romer Wood LWS	Ancient woodland site, with good structure and rides.	Adjacent to the eastern boundary of Parcel 1a
Runts Wood LWS	Ancient woodland with high species diversity, including flower-rich damp rides	Adjacent to the western boundary of Parcel 2

Non-Statutory Site Name and Designation	Description	Approximate Distance ((m)/(km)) and direction from closest point of the Site
Baltimore Wood LWS	Ancient woodland site with high diversity and uncommon species.	c.7m south of the grid connection route
Home Wood, Middle Claydon LWS	Wet ancient woodland with good diversity.	60m east of Parcel 1
Finemere Wood BBOWT Reserve	Large site comprising of woodland, grasslands and lowland meadow and pasture.	155m south-west of Parcel 2
Calvert Railway Station LWS	Old railway station with wet grassland and scattered scrub supports good invertebrate and bird communities and some rare plants.	180m west of Parcel 1
Greatsea Wood LWS	Ancient woodland site, with good structure and rides.	200m east of Parcel 1a
Calvert Jubilee Nature Reserve LWS/BBOWT reserve	Large site, comprised of wetlands, grassland and woodland. Important site for overwintering wildfowl. Interesting variety of habitats host some rare plants.	370m west of Parcel 1
Area North-West of Calvert Brickworks BNS	Rough grassland with wet area towards the lake. Contains Adders <i>Vipera berus</i> , Tongue fern <i>Asplenium scolopendrium</i> , Bee Ophrys <i>apifera</i> and many common spotted orchids. Invertebrate records include Dingy <i>Erynnis tages</i> and Grizzled skippers <i>Pyrgus malvae</i> .	745m west of Parcel 1

Non-Statutory Site Name and Designation	Description	Approximate Distance ((m)/(km)) and direction from closest point of the Site
Track Leading to Railway BNS	Hedges on one side of the track and then on both sides. Suggestion of calcareous rubble beneath track in area of railway bridges. Records include the county uncommon plants Spiny Restharrow <i>Ononis spinosa</i> , Thicket Dog Rose <i>Rosa dumetorum</i> and Dropwort <i>Filipendula vulgaris</i> .	780m south of Parcel 1a
Calvert Brick Pits, Great Moor Sailing Club LWS	Large site with huge central lake, used for sailing. Very species-rich glades with lots of butterflies. Mosaic of habitats.	990m west of Parcel 1
Wood Between Lawn Hill and Dunsty Hill LWS	Small wood with Ancient Woodland indicators.	1.24km west of Parcel 1
Redland Bridge, Steeple Claydon BNS	Small river	1.37km north of Parcel 1
Grendon Underwood Meadows LWS	Set of consecutive fields support a superb diversity of typical unimproved meadow flowers.	1.46km south west of Parcel 1a
Grendon and Doddershall Meadows LWS	Large complex of unimproved meadows supporting a great variety of wildlife, including invertebrates and farm birds.	1.49km south of Parcel 2
Stonehill Lane LWS	Species-rich hedges line rich grassland areas.	1.82km east/south east of Parcel 2

Non-Statutory Site Name and Designation	Description	Approximate Distance ((m)/(km)) and direction from closest point of the Site
South Lake, Addington BNS	Small lake just north of the railway. Surrounded by mixed woodland. Small stream flows out of the western corner of the lake. The lake was dug in 1859.	1.94km north of Parcel 3
Grassland Near Addington BNS	Field between road and railway with dry and damp grassland habitats. Site includes hollows from clay extraction and tall hedgerows. Includes areas of scrub. Clay extraction has helped sculpt the field surface.	1.95km north of Parcel 3

4.2. Habitats

- 4.2.1. The area surveyed (the survey area) encompassed all safely accessible parts of the Site (and grid connection route), and adjacent habitats to a maximum distance of 50m, where access permission had been granted in advance of survey, or this land was visible from within the Site boundary or from public rights of way, or other publicly accessible areas.
- 4.2.2. Typical and notable plant species were recorded for different habitat types and reflect the conditions at the time of survey. This was not intended to be a detailed inventory of the plant species present in the survey area, as this is not required for the purposes of Phase 1 Habitat survey.
- 4.2.3. The Phase 1 Habitat survey was undertaken on the 13, 14, 15, 21 and 22 September 2021; and 24 and 25 February 2022 (to reflect changes in the red line boundary received in January 2022) by suitably qualified [REDACTED] ecologists who recorded and mapped all habitat types present within the survey area, along with any associated relevant ecological receptors observed. Where relevant ecological receptors were present, target notes were recorded and the positions of these, where recorded, are shown on **Figures 4.1 to 4.3 (Annex B)**. Target notes and associated reference photographs are provided in **Annex C**.
- 4.2.4. The broad habitat types present within the Site (Parcel 1, 1a, 2 and 3) are detailed below in **Table 4.3**. The approximate extent and distribution of these habitats recorded are shown on **Figures 4.1 to 4.3 (Annex B)**.
- 4.2.5. The habitats within the proposed grid connection, as presented in **Figures 4.1 to 4.3 (Annex B)**, are not included in **Table 4.3**, but predominantly

comprise open areas of arable farmland and improved grassland, with ditches/watercourses and hedgerows, also present.

Table 4.3: Broad habitat types within the Site

Broad Habitat Type	Area (ha)/Length (m)			
	Parcel 1	Parcel 1a	Parcel 2	Parcel 3
A1.1.1 Broad-leaved semi-natural woodland	0.16ha	0.01ha	0.02ha	-
A1.1.2 Broad-leaved plantation woodland	12.77ha	0.15ha	1.12ha	-
A2.1 Scrub – dense / continuous	0.29ha	-	0.07ha	-
B2.2 Neutral Grassland – semi-improved	2.68ha	-	-	-
B4 Improved grassland	29.47ha	1.89ha	7.85ha	19.86ha
B6 Poor semi-improved grassland	0.19ha	4.85ha	4.60ha	-
C3.1 Other tall herb and fen -ruderal	3.69ha	-	1.16ha	-
G1 -Standing water	0.03ha	-	0.07ha	0.01ha
Hard-standing	0.01ha	-	-	-
J1.1 Cultivated / disturbed land – arable	124.26ha	6.40ha	119.16ha	-
J3.6 Buildings	-	-	0.05ha	-
J4 Bare Ground	0.04ha	-	0.10ha	-
J5 – Other habitat	-	1.07ha	-	-
A3.1 Broadleaved parkland / scattered trees	47m	-	-	-
G2 - Running water	160m	78m	698m	131m

Broad Habitat Type	Area (ha)/Length (m)			
	Parcel 1	Parcel 1a	Parcel 2	Parcel 3
J2.1.1 - Intact hedge - native species-rich	1,195m		1,326m	-
J2.1.2 - Intact hedge - species-poor	4,349m	501m	3,442m	37m
J2.2.2 - Defunct hedge - species-poor	270m	-	1m	-
J2.3.1 - Hedge with trees - native species-rich	1,794m	-	1,622m	816m
J2.3.2 - Hedge with trees - species-poor	1,408m	-	966m	-
J2.4 - Fence	1,191m	-	760m	591m
J2.6 - Dry ditch	2,190m	-	705m	205m

Broad-leaved Semi Natural Woodland

- 4.2.6. There are small sections of this habitat within Parcel 1 as well as smaller sections within Parcel 2. This habitat borders Parcels 1, 1a and Parcel 2. Species within these areas identified within the Site included Pedunculate Oak *Quercus robur*, Ash *Fraxinus excelsior*, Hazel *Corylus avellana*, Blackthorn *Prunus spinosa*, Field Maple *Acer campestre*, Hawthorn *Crataegus monogyna* and Willow species *Salix* sp.
- 4.2.7. Ancient woodland areas (see also **Figure 3 (Annex B)**) are located adjacent to Parcels 1, 1a and 2, some of which are designated as LWS's and are presented in **Table 4.2**.

Broad-leaved Plantation Woodland

- 4.2.8. There are small areas of plantation woodland across the Sites along with the central section of Shrubs Wood within Parcel 1. Tree species within these woodlands included Pedunculate Oak, Grey Poplar *Populus x canescens*, Ash and Sycamore *Acer pseudoplatanus*.
- 4.2.9. Areas of broad-leaved plantation woodland on the western end of Parcel 1 and northern side of Parcel 1a (see **Figure 4.1 (Annex B)**), have recently been planted and appear to be part of mitigation works for the adjacent HS2 scheme.

Scrub

- 4.2.10. This habitat is scattered in small areas across Parcel 1 and Parcel 2 consisting of dense Bramble *Rubus fruticosus* agg along with Hawthorn, Blackthorn and Ash.

Semi-improved Neutral Grassland

- 4.2.11. Within Parcel 1, one field has a border of semi-improved neutral grassland with Common Knapweed *Centaurea nigra*, Birdsfoot Trefoil *Lotus corniculatus* and Lady's Bedstraw *Galium verum*. Along the southern boundary of a field in the east of Parcel 1 is a small strip, species here included Oxeye Daisy *Leucanthemum vulgare*, Soft Brome *Bromus hordeaceus*, White Clover *Trifolium repens*, Common Knapweed, Smooth Tare *Ervum tetraspermum* and Yarrow *Achillea millefolium*.

Improved Grassland

- 4.2.12. There are a number of fields of improved grassland containing livestock and Parcel 3 is dominated by this habitat. Plants present included Perennial Rye-grass *Lolium perenne*, Dandelion *Taraxacum officinale* agg., White Clover and Greater Plantain *Plantago major*.

Poor semi-improved Grassland

- 4.2.13. This habitat occurs as small areas across Parcel 1, species present included Timothy *Phleum pratense*, Cocksfoot, Soft Brome, Yorkshire Fog *Holcus lanatus*, Common Ragwort *Jacobaea vulgaris*, Creeping Thistle and Field Bindweed *Convolvulus arvensis*.

Tall Ruderal

- 4.2.14. There is one large field in the south west of Parcel 1 which is tall ruderal along with a few small areas of tall ruderal across Parcel 1 and Parcel 2. Species within this habitat included Common Nettle *Urtica dioica*, Broad-Leaved Dock *Rumex obtusifolius*, Creeping Thistle, Spear Thistle *Cirsium vulgare*, False Oat-grass *Arrhenatherum elatius*, a Burdock species *Arctium* sp, Bristly Oxtongue *Helminthotheca echioides*, Hogweed *Heracleum sphondylium*, Cocksfoot and Yellow Bristle-grass *Setaria pumila*.

Waterbodies

- 4.2.15. There are a large number of water bodies within 500m of the three Sites and some aquatic species recorded within these ponds include Floating Sweet-grass *Glyceria fluitans*, Common Reedmace *Typha latifolia*, Broad-leaved Pondweed *Potamogeton natans*, Common Spike-rush *Eleocharis palustris*, Branched Bur-reed *Sparganium erectum*, Hard Rush *Juncus inflexus*, Soft Rush *Juncus effusus*, Amphibious Bistort *Persicaria amphibia*, Common Duckweed *Lemna minor*, Brooklime *Veronica*

beccabunga, Water Plantain *Alisma plantago-aquatica*, Watercress *Nasturtium officinale*, Cyperus Sedge *Carex pseudocyperus*, a Water-Starwort species *Callitriche* sp. and a Stonewort species *Chara* sp..

- 4.2.16. Around a number of ponds were swamp habitat consisting of often dense stands of Common Reedmace.

Arable

- 4.2.17. The majority of the fields across Parcels 1, 1a and Parcel 2 are arable with cereal crops as well as Flax *Linum usitatissimum*.

Hedges

- 4.2.18. There are many hedges across the Sites from species poor to species rich, the woody species recorded in the hedges included Ash, Hawthorn, Blackthorn, Dog Rose *Rosa canina* agg., Field Maple, Buckthorn *Rhamnus cathartica*, Hazel, Crab Apple *Malus sylvestris*, Midland Hawthorn *Crataegus laevigata*, a Willow *Salix* sp., Pedunculate Oak, Elm sp. *Ulmus* sp. and Elder *Sambucus nigra*.

4.3. Notable Habitats

- 4.3.1. **Table 4.4** provides a summary of notable habitats associated with the Proposed Development based on the results of the Phase 1 Habitat survey and with reference to guidance for the recognition of NERC Act S41 [Ref. 5] and the relevant LBAPs, as detailed in **Section 2.4**. Further surveys may be required to investigate the value of habitats further, as detailed in **Section 5**.

Table 4.4: Notable habitat types within the Site

Habitat	NERC Act	LBAP	Supporting Comments
Ancient and/ or species rich hedgerows	✓	✓	Hedgerows are present across the Sites. Impacts to hedgerows are unlikely to occur and the Proposed Development can be designed to avoid potential impacts. However, further investigation will be required to determine the value of individual hedgerows where impacts are likely to occur.
Ancient woodland / Lowland deciduous mixed woodland	✓	✓	Whilst there is ancient woodland and replanted ancient woodland adjacent to the Sites (and small sections within the Sites), no woodland will be directly affected by the Proposed Development and suitable buffer zones (>25m) would be part of any embedded mitigation to reduce and remove indirect impacts.

Habitat	NERC Act	LBAP	Supporting Comments
Running water	✓	-	Further investigation will be required to determine the value of any running water habitats.
Standing Open Waters / Ponds	✓	✓	There are twelve water bodies within 500m of the Site and further investigation will be required to determine their value where impacts are likely to occur.
Arable Field Margins	✓	-	There is potential for scarce arable plants to be present within arable field margins on site and these margins may fulfil the criteria for this priority habitat type. Further investigation will be required to determine the importance of arable field margins.

4.4. Protected and Notable Species

- 4.4.1. **Table 4.5** provides a summary of potentially relevant species identified through a combination of desk study and field survey. The table summarises the conservation status of each species and provides comment on the likelihood of presence.
- 4.4.2. Where species are identified in **Table 4.5** as likely or possible, they are likely to represent legislative constraints or may be material to determination of the planning application. Further surveys will or may be required to determine presence or probable absence of species (see **Section 5**).
- 4.4.3. Only records up to ten years old were considered within the assessment, as any records older than ten years are unlikely to be still representative of species presence in the local area.

Table 4.5: Notable species within the Site

Species (or species group)	Supporting Comments
Flora / plants	The data search returned records of 14 notable species within 2km of the Site, including Field Gromwell <i>Lithospermum arvense</i> and Dwarf Spurge <i>Euphorbia exigua</i> .
Terrestrial Invertebrates	The data search returned records of 51 species of terrestrial invertebrates which are UKBAP list species and included records of Black Hairstreak <i>Satyrrium pruni</i> and Silver-washed Fritillary <i>Argynnis paphia</i> .

Species (or species group)	Supporting Comments
	During the survey, Brown Hairstreak <i>Thecla betulae</i> was observed within Parcel 2.
Aquatic Invertebrates	The data search returned no records of aquatic invertebrates. There are aquatic habitats present with the Site (e.g. field ponds) with potential to support notable aquatic invertebrate species and assemblages.
Amphibians	The desk study identified records of Great Crested Newt <i>Triturus cristatus</i>, Common Toad <i>Bufo bufo</i>, Smooth Newt <i>Lissotriton vulgaris</i> and Palmate Newt <i>Lissotriton helveticus</i> returned by the data search within 2km of the Site. Further investigation of the ponds, relevant to the Proposed Development, to determine their potential suitability for Great Crested Newt and other amphibians will be required. Based on publicly available information¹, populations of Great Crested Newt are known to occur within land occupied by HS2 and to the immediate west of the Proposed Development.
Reptiles	The data search returned Grass Snake <i>Natrix natrix</i> and Common Lizard <i>Zootoca vivipara</i> records within 2km of the Site. Reptile habitat is limited across the Site, but small pockets of habitat suitable for reptiles do exist comprising uncropped field margins, hedgerows, woodland edge habitats and grassland.
Breeding birds	The desk study identified a total of 120 species of bird occurring within 2km of the Site, including Schedule 1 species such as Red Kite <i>Milvus milvus</i>. Habitats on Site are likely to support nesting birds during the breeding season, including species of conservation concern.

¹https://webarchive.nationalarchives.gov.uk/ukgwa/20140806173545/http://assets.dft.gov.uk/hs2-environmental-statement/volume-5/ecology/MB46_VOL5_EC_CFA12_WATERMARKED.pdf

Species (or species group)	Supporting Comments
Non-breeding (wintering and passage) birds	Trees, scrub and arable fields occurring within the Site have the potential to support birds during the non-breeding season, including those of conservation concern, such as Linnet <i>Linaria cannabina</i> , Redwing <i>Turdus iliacus</i> and Fieldfare <i>Turdus pilaris</i> .
Bats	The data search returned bat records of fourteen species within 2km, including, Bechstein's bat <i>Myotis bechsteinii</i>, Daubenton's bat <i>Myotis daubentonii</i> and Nathusius' Pipistrelle <i>Pipistrellus nathusii</i>. The network of ancient woodlands within the wider local area that make up the former Bernwood Forest has been well studied and is known to support a diverse and important assemblage of woodland bat species including Bechstein's bat. The area has been subject to a high level of baseline survey work during recent years in support of HS2 Phase 1, including a range of trapping and radiotracking surveys to inform Natural England licensing and subsequent licence monitoring. Habitats on site and in the surrounding area includes trees and woodlands which are likely to support roosting bats. The habitat within the Proposed Development also provides moderate suitability for commuting and foraging bats with connecting hedgerows and woodland on site and connected to the wider landscape.
Badger <i>Meles meles</i>	The data search returned 22 records of Badger within 2km of the Site. Several active and non-active Badger setts as well as field signs of Badger activity were recorded within the Site during the field survey.
Otter <i>Lutra lutra</i>	The data search returned one record of Otter within 2km of the Site in 2020. The watercourses and water bodies occurring on the Site have the potential to support Otter.
Water Vole <i>Arvicola amphibius</i>	The data search returned no records of Water Vole within 2km of the Site. However, the watercourses and water bodies occurring on the Site have the potential to support Water Vole.

Species (or species group)	Supporting Comments
Invasive Non-native Species	The data search returned records of Variegated Yellow Archangel <i>Lamium galeobdolon subsp. argentatum</i> , American Mink <i>Neovison vison</i> , Mandarin Duck <i>Aix galericulata</i> , Bar-headed Goose <i>Anser indicus</i> , Black Swan <i>Cygnus atratus</i> , Common Carp <i>Cyprinus carpio</i> , Ring-necked Parakeet <i>Psittacula krameri</i> , Chinese Water Deer <i>Hydropotes inermis</i> , Wall <i>Cotoneaster Cotoneaster horizontalis</i> , Zander <i>Sander lucioperca</i> , Wels Catfish <i>Silurus glanis</i> , Canadian Waterweed <i>Elodea canadensis</i> , Signal Crayfish <i>Pacifastacus leniusculus</i> , Jenkins' Spire Snail <i>Potamopyrgus antipodarum</i> , Least Duckweed <i>Lemna minuta</i> within 2km.
Brown Hare <i>Lepus europaeus</i>	The data search returned nine records of Brown Hare, within 2km of the Site boundary. This species has the potential to occur across the Site within the arable fields.
West European Hedgehog <i>Erinaceus europaeus</i>	The data search returned fifteen records of hedgehog within 2km. This species has the potential to occur across the Site within the grassland and scrub habitats.

Species present on site are those for which recent direct observation or field signs confirmed presence. Species which are possibly present are those for which there is potentially suitable habitat based on the results of the Phase 1 Habitat survey, or this combined with desk study records.

Legally protected species are those listed under Schedules 1, 5 and 8 of the Wildlife and Countryside Act 1981 (as amended); and, Schedules 2 and 4 of The Conservation of Habitat & Species Regulations 2017 (as amended).

Species of Principal Importance as those listed under Section 41 of the NERC Act. Planning Authorities have a legal duty under Section 40 of the same Act to consider such species when determining planning applications.

*Other notable species include native species of conservation concern listed in the LBAP (except species that are also of Principal Importance), those that are Nationally Rare, Scarce or Red Data List, and non-native controlled **weed species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).***

5. Identification of Ecological Constraints and Recommendations

5.1. Approach to the Identification of Ecological Constraints

- 5.1.1. Relevant ecological receptors that may represent constraints to the Proposed Development, or that provide opportunities to deliver ecological enhancement in accordance with planning policy, are identified in **Section 0**.
- 5.1.2. The NPPF and local planning policy (summarised in **Section 2**) specify requirements for the protection of features of importance for biodiversity. Planning policy is a material consideration when determining planning applications.
- 5.1.3. Compliance with planning policy requires that the proposed development considers and engages the following mitigation hierarchy where there is potential for impacts on relevant ecological receptors:
 - 1. Avoidance - actions taken to avoid causing impacts to the environment prior to beginning development (for example, moving the development to a different location).
 - 2. Minimisation - measures taken to reduce the duration, intensity, extent and/or likelihood of the unavoidable environmental impacts caused by development (for example, adapting the development design to minimise impacts).
 - 3. Restoration or rehabilitation - actions taken to repair environmental degradation or damage following unavoidable impacts caused by development.
 - 4. Offsets - measures taken to compensate for any adverse environmental impacts caused by development which cannot be avoided, minimised and/or restored (e.g. including habitat creation to offset losses).
- 5.1.4. This hierarchy requires the highest level to be applied where possible. Only where this cannot reasonably be adopted should lower levels be considered. The rationale for the proposed mitigation and/or compensation should be provided with planning applications, including sufficient detail to show that these measures are feasible and would be provided.
- 5.1.5. In pursuance of the objective within the NPPF of providing net gains in biodiversity where possible, consideration should be given to the scope for enhancement as part of the proposed development. This should represent biodiversity gain over and above that achieved through mitigation and compensation. Enhancement could be achieved on and/or off the Site.
- 5.1.6. The likelihood of the relevant ecological receptors constraining the proposed development has been assessed with reference to the scale described in **Table 5.1**. The higher the importance of the ecological

receptor for the conservation of biodiversity at national and local scales, the more likely it is to be a material consideration during determination of the planning application for the proposed development.

- 5.1.7. There may be scope for ecological enhancement where existing habitat features could be improved or enhanced within the Proposed Development as designed, or with only minor amendment to the design of the Proposed Development. Ecological enhancement may not be possible where there is little scope to accommodate enhancement within the Proposed Development, e.g. due to a lack of utilisable space, or where land is required for essential mitigation. Consideration could be given to enhancing biodiversity in the vicinity of the Site.

Table 5.1: Scale of constraint to development

Likelihood	Definition
High	An actual or potential constraint that is subject to relevant legal protection and is likely to be a material consideration in determining the planning application (e.g. statutory nature conservation designations and European/nationally protected species). Further survey likely to be required (as detailed in this report) to support a planning application.
Medium	An actual or potential constraint that is covered by national or local planning policy and, depending on the level of the potential impact as a result of the proposed development, may be a material consideration in determining the planning application. Further survey may be required (as detailed in this report) to support a planning application.
Low	Unlikely to be a constraint to development or require further survey prior to submission of a planning application. Mitigation is likely to be covered under Construction Environmental Management Plan (CEMP) or precautionary working method statement (e.g. generic requirements for the management of nesting bird risks).

5.2. Constraints and Requirements for Further Survey: Designations

Statutory Designated Sites

- 5.2.1. The desk study identified three statutory sites for nature conservation within the study areas set out in **Section 3.1** and presented in **Table 3.1**.

- 5.2.2. All three statutory sites are SSSIs, designated for woodland habitats and the Proposed Development sits within the SSSI Impact Risk Zones² of these three statutory sites.
- 5.2.3. The Proposed Development will not result in any direct impacts (*i.e.* through habitat loss) to these SSSIs, but there is the potential for indirect impacts (e.g. from lighting, noise or air quality) during construction, operation and decommissioning. Indirect impacts will need to be assessed fully when details of the Proposed Development are developed and suitable management plans will need to be prepared (such as a Construction and Environmental Management Plan (CEMP)) to ensure best practice guidance is followed during all phases (e.g. construction, operation and decommissioning) of the Proposed Development and to ensure direct and indirect impacts do not occur.

Non-statutory Sites

- 5.2.4. The desk study identified twenty non-statutory sites designated for nature conservation within the study area set out in **Section 3.1** and presented in **Table 3.2**. Of these, four LWSs (Decoypond LWS, Shrubs Wood LWS, Romer Wood LWS and Runts Wood LWS) are adjacent to the Site boundary, one site (Baltimore Wood LWS) lies 7m to the south of the grid connection route and one site (Home Wood, Middle Claydon LWS) is within 60m of Parcel 1. These LWSs are designated for ancient woodland and no direct impacts to these sites will occur, however, a minimum no build buffer of at least 25m will need to be applied where these LWSs are adjacent to the Site boundary to protect the woodland and trees within these designated sites. To prevent accidental ingress of construction traffic and personnel into these LWSs, it is recommended that heras fencing is erected along the boundary of these LWSs.
- 5.2.5. There is potential for indirect impacts during construction, to these LWSs through disturbance to species or degradation of habitats associated with the LWSs. Therefore, avoidance and mitigation of any potential effects to off-site habitats will be formalised through implementation of a CEMP and/or precautionary working method statement and indirect impacts will need to be assessed fully when details of the Proposed Development are developed.
- 5.2.6. Direct impacts to any of the 14 non-statutory sites beyond 150m from the Site will not occur, owing to the distance between these LWSs and the Site. Furthermore, the implementation of a CEMP and/or precautionary working method statement will be required to ensure any indirect impacts do not occur.

² <https://naturalengland-defra.opendata.arcgis.com/datasets/Defra::sssi-impact-risk-zones-england/explore?location=51.911231%2C-0.919020%2C14.00>

5.3. Constraints and Requirements for Further Survey: Habitats

- 5.3.1. Notable habitats within the Site, potentially affected by the Proposed Development include arable field margins, ponds, hedgerows and woodland as identified in **Table 3.4**. Further investigation of these habitats is required to determine their quality and extent and whether they meet the relevant criteria to qualify as suitable priority habitats. As such, further surveys (e.g. of hedgerows and arable flora/arable field margins) will need to be undertaken across the Site to help determine this and within areas where impacts cannot be avoided.
- 5.3.2. The Proposed Development will avoid, protect and retain notable habitats where practicable and offsets of at least 25m from existing boundary features (woodlands, individual trees and trees occurring within hedgerows), will need to be included in the design (in line with local planning policy) and a minimum of 5m from hedgerows without trees. A minimum offset of 10m from the banks of the watercourses will be required (as per Environment Agency guidelines and to protect riparian habitats) and at least 20m from water bodies (such as ponds) to protect aquatic habitats.
- 5.3.3. Furthermore, tree Root Protection Zones will be erected around retained trees, in line with British Standard BS 5837: Trees in relation to design, demolition and construction – Recommendations (BSI, 2012).
- 5.3.4. A Landscape and Biodiversity Management Plan (or similar document) and Biodiversity Net Gain (BNG) Assessment will be required to integrate green infrastructure and biodiversity into the Proposed Development to meet requirements under the NPPF and Local Planning Policy.

5.4. Constraints and Requirements for Further Survey: Species

Flora

- 5.4.1. Some habitats within the Proposed Development have the potential to support notable flora species, such as those associated arable field margins. Further investigation of these habitats is required to determine the presence of notable plant species. As such, further Phase 2 botanical surveys will be required for the Proposed Development to identify species and any areas of notable flora communities.

Terrestrial Invertebrates

- 5.4.2. The Proposed Development comprise habitats that may support protected and notable terrestrial invertebrates or invertebrate communities, identified as being present within the wider Zone of Influence during the desk study. Based on the habitats and species recorded during the desk study, any potentially important habitats (i.e. woodland, woodland edge, hedgerows and arable margins) that are likely to support species such as Black Hairstreak or Silver-washed Fritillary are unlikely to be impacted by the

Proposed Development and would be suitably buffered to avoid impacts to invertebrates.

- 5.4.3. Whilst the majority of habitats will be retained and buffered, a survey to determine the potential for protected or notable terrestrial invertebrate species or communities to be present will be required. This will determine the requirement for any further targeted surveys to establish the presence of particular species or hotspots for terrestrial invertebrate assemblages.

Aquatic Invertebrates

- 5.4.4. There are some aquatic habitats present with the Sites (such as ponds and ditches) that have the potential to support notable aquatic invertebrate species and assemblages.
- 5.4.5. Further investigation of these watercourses and water bodies will be required to determine the presence of notable aquatic invertebrate species and assemblages.

Amphibians

- 5.4.6. The desk study identified approximately 84 water bodies within 500m of the Site (see **Figure 5 (Annex B)**). The data search returned records of Great Crested Newt and other amphibians (Common Frog, Common Toad and Smooth Newt) occurring within 2km of the Site.
- 5.4.7. Further investigation of the waterbodies that are within or close to the Site will be required where potential impacts are likely as a result of the Proposed Development in relation to Great Crested Newt. In the first instance, a Habitat Suitability Index (HSI) assessment will be undertaken to categorise the suitability of the waterbodies for Great Crested Newt. Following this, where water bodies are identified as being suitable to support Great Crested Newt, then further surveys (eDNA presence/absence surveys) of those water bodies will be required to determine presence or absence of Great Crested Newt. eDNA surveys can only be undertaken between mid-April and the end of June. If presence of Great Crested Newt is confirmed in water bodies through eDNA, then further surveys will be needed to determine the size of the population present and inform the assessment of the potential impacts of the Proposed Development on Great Crested Newt. Such surveys can only be undertaken between early April and June, however, two surveys must be undertaken on each water body between mid-April and mid-May (the peak season for Great Crested Newt).

Reptiles

- 5.4.8. The data search returned records of Grass Snake and Common Lizard within 2km of the Site. Habitat potentially suitable to support reptiles was recorded on Site including streams and ditches for Grass Snake as well as grassland areas suitable for Common Lizard. Therefore, further surveys,

following standard guidelines, will be required to determine the presence or absence of reptiles in areas of the most suitable habitat. Depending on the outcomes of these surveys, mitigation may be required to avoid injuring or harming reptiles.

Birds

- 5.4.9. Trees, scrub and arable fields occurring across the Site have the potential to support protected and notable nesting birds during the breeding season, including those of conservation concern. The Proposed Development will result in the direct loss of arable habitat used by notable bird species, particularly ground-nesting farmland birds such as Skylark *Alauda arvensis*. Further surveys of the general breeding bird assemblage, including targeted surveys for Schedule 1 species such as Red Kite and Barn Owl, will be required to determine the magnitude of impacts of the Proposed Development on the breeding bird assemblage and help define appropriate mitigation.
- 5.4.10. Surveys to determine the non-breeding (wintering) assemblages on Site commenced in October 2021 and were completed in March 2022. Any unsurveyed areas, as a result of changes to the red-line boundary, will need to be surveyed between October 2022 and March 2023.

Bats

- 5.4.11. The data search returned bat records of fourteen species within 2km of the Site and populations of Bechstein's bats are known to occur close to and within the Site. Therefore, woodland areas (including plantation woodland) are of high sensitivity to roosting bats. Given the proximity of HS2 to the Proposed Development (to the immediate west of Parcel 1), effort should be made to gain access to the relevant datasets for bats to identify areas of key interest and potential constraint.
- 5.4.12. The field survey identified numerous trees that have suitable features to support bat roosts as well as other woodlands close to the Site with suitable roosting habitats. It is recommended that a minimum buffer of 25m is created between the Proposed Development and these habitats (in line with local planning policy), concordant with the requirements for avoidance of woodland habitats. Further surveys (a preliminary roost assessment (PRA)) to determine the presence of potential roost features is required and if any trees or woodlands are impacted by the Proposed Development, then presence/absence surveys will also be required to determine whether such features support roosting bats. The findings of these surveys will inform any mitigation requirements for roosting bats. Buffer zones around roosts or potential roosts is also recommended (>25m from the roost feature as per recommendations for offsets from woodland and trees), in accordance with local planning policy for the avoidance of trees and woodland (see also **Section 2**).

- 5.4.13. Bat activity transect surveys for a low-moderate suitability site will be required to determine species and flight paths across the Site to assess potential impacts of the Proposed Development on foraging and commuting bats.

Badger

- 5.4.14. The field survey recorded Badger activity within the Site.
- 5.4.15. Owing to legislative provisions under the Protection of Badger Act 1992, further surveys (following standard guidelines) are required to determine the full extent of Badger presence across the Site and in the wider zone of influence (up to 30m from the Site). The findings of these surveys will determine the potential constraints and whether mitigation and/or relevant licences are required to avoid impacts to Badgers or their setts.

Otter and Water Vole

- 5.4.16. The data search returned one record of Otter within 2km of the Proposed Development, but no records of Water Vole.
- 5.4.17. The watercourses and water bodies on Site have the potential to support both Water Vole and Otter. The Proposed Development should seek to avoid drainage ditches and any other watercourse on Site, leaving a minimum working distance of 10m from the edges of watercourses (or water bodies) to avoid disturbance to Otter and Water Vole.
- 5.4.18. To ensure adequate baseline information on the presence, or otherwise, of Otter and Water Vole occurring on the Site, further surveys of all water bodies and watercourses within the Site for Water Vole and Otter, along with the potential for Mink *Neovison vison* will be required. The results of these surveys will identify whether mitigation is required should the Proposed Development result in direct loss of habitats used by Water Vole and, or, Otter or indirect impacts to these species (if present).

Non-native Invasive Species

- 5.4.19. The data search returned records of Variegated Yellow Archangel, American Mink, Mandarin Duck, Bar-headed Goose, Black Swan, Common Carp, Ring-necked Parakeet, Chinese Water Deer, Wall Cotoneaster, Zander, Wels Catfish, Canadian Waterweed, Signals Crayfish, Jenkins' Spire Snail, Least Duckweed which are within 2km from the Site. No invasive non-native species (INNS) were recorded on the Site during the Phase 1 survey. No formal surveys for invasive species are recommended, but any presence should be noted during other ecological surveys of the Site. If found to be present, biosecurity measures will need to be put in place during construction to prevent the spread of INNS into and away from the Proposed Development. An INNS management plan should also be produced to establish the approach to management and eradication of INNS found to be present.

Other Priority Species

- 5.4.20. Records of Brown Hare and Hedgehog were received during the data search and these species are likely to be present on site. Brown Hare and Hedgehog receive limited legal protection but are Species of Principal Importance on S41 of the NERC Act.
- 5.4.21. It is recommended that the Proposed Development is planned to take account of likely mitigation requirements for these species during all phases of the Proposed Development. This will include timing of any site clearance (e.g. during construction) to avoid Brown Hare during their breeding season. This is concordant with the requirements for nesting birds. As such, it is recommended that site clearance and preparatory works would be undertaken over the autumn/winter period between September and February.

6. Conclusions

- 6.1.1. Overall, the PEA identified notable habitats and species as detailed in **Sections 4.3** and **4.4**.
- 6.1.2. A summary appraisal of ecological constraints and recommended further requirements is presented in **Table 6.1** below.

Table 6.1: Summary appraisal of features of ecological constraints and recommended further requirements

Receptor	Scale of constraint	Further requirements	Number of survey visits required	Survey period	Driver	When is action likely to be required?		
						To inform design	Before DCO Application	Pre-construction onwards
Designated Sites	High	No direct impacts (habitat loss) would occur to designated Sites as all are outside of the Proposed Development. However, appropriate buffers will need to be included within the design to protect indirect impacts from occurring (see also Section 5.2)	N/A	N/A	Habitats Regulations 2017, WCA 1981	✓	✓	✓
Habitat – condition assessment, River Morph surveys to inform Biodiversity Net Gain Assessment	Medium / High	A survey to determine the condition of habitats and any other assessments required (such as River Morph surveys) to inform the BNG Assessment.	Initially one survey visit to each water body	May to August	Environment Act 2021	✓	✓	✓

Receptor	Scale of constraint	Further requirements	Number of survey visits required	Survey period	Driver	When is action likely to be required?		
						To inform design	Before DCO Application	Pre-construction onwards
Habitat / Plants / Phase 2 surveys / Hedgerows	Medium / High	A Phase 2 botanical survey and arable plant survey to identify the presence and extent of any potential notable habitats and protected/notable plant species. The surveys will focus on potential priority habitat within the Proposed Development. Arable plant surveys will involve walking field boundaries and comparable areas of marginal habitat only. Hedgerow Surveys required where impacts are likely to occur.	Two survey visits	May to August	WCA 1981, LBAP, UKBAP, NERC Act 2006	✓	✓	✓
Aquatic Habitats	Medium	A scoping assessment of any aquatic habitats	Initially one survey visit followed by	May to October	LBAP, UKBAP,	✓	✓	✓

Receptor	Scale of constraint	Further requirements	Number of survey visits required	Survey period	Driver	When is action likely to be required?		
						To inform design	Before DCO Application	Pre-construction onwards
		potentially directly or indirectly affected by the Proposed Development. This will include an assessment of the potential for aquatic habitats to support protected/notable species. Surveys of selected field ponds and potentially watercourses are likely to be required and will be determined following the scoping survey.	targeted species surveys, where required.		NERC Act 2006			
Terrestrial Invertebrates	Medium / High	A scoping survey to assess the potential of areas within the Site boundary to support protected or notable invertebrate	One survey visit	April to May	WCA 1981, NERC Act 2006	✓	✓	✓

Receptor	Scale of constraint	Further requirements	Number of survey visits required	Survey period	Driver	When is action likely to be required?		
						To inform design	Before DCO Application	Pre-construction onwards
		species and assemblages (Depending on the outcomes of these surveys further targeted survey may be required).						
Great Crested Newt	High	Undertake Habitat Suitability Index (HSI) assessment of all waterbodies within 500m (where accessible) for their suitability to support Great Crested Newt. Following this, surveys to determine presence or absence of Great Crested Newt within suitable waterbodies (either by eDNA or 4 survey visits at night). Depending on the outcomes of these surveys	One survey visit for HSI assessment, followed by presence/absence survey (eDNA or 4 survey visits) and then up to a total of 6 survey visits for population survey.	HSI anytime of year eDNA/ population surveys April to June	- of Regulations 2017, WCA 1981, NERC Act 2006, UKBAP, LBAP	✓	✓	✓

Receptor	Scale of constraint	Further requirements	Number of survey visits required	Survey period	Driver	When is action likely to be required?		
						To inform design	Before DCO Application	Pre-construction onwards
		further surveys are required to determine the population size and evidence of breeding may be required).						
Reptiles	Medium	Surveys to identify the presence or absence of reptile species across suitable habitats within the Site.	One survey visit to place the reptile refugia followed by seven survey visits to check for reptiles.	April to June and/or September to October.	WCA 1981, LBAP, UKBAP, NERC Act 2006	✓	✓	✓
Breeding birds	Medium / High	Surveys required to determine the breeding bird assemblage across the Proposed Development, including species listed on WCA Sch. 1.	Six survey visits for a territory mapping survey and to determine presence, or absence, of species listed on Schedule 1 of the WCA	March to June.	Birds Directive, WCA 1981, LBAP, UKBAP, NERC Act 2006	✓	✓	✓

Receptor	Scale of constraint	Further requirements	Number of survey visits required	Survey period	Driver	When is action likely to be required?		
						To inform design	Before DCO Application	Pre-construction onwards
Non-breeding birds	Medium / High	Surveys required to determine the non-breeding (wintering) bird assemblage across the Proposed Development.	Six survey visits.	October to March.	Birds Directive, WCA 1981, LBAP, UKBAP, NERC Act 2006	✓	✓	✓
Bats	High	Surveys to identify potential features on trees and buildings that may support bat roosts (Depending on the findings of this survey and risk to these features, further surveys may be required to determine whether bats are present). Transect surveys and deployment of static	One survey visit to undertake preliminary roost feature assessment across the Proposed Development. Activity surveys required between April and October, including the	Any time of year for PRA. May to September (if required) to characterise roost. April to October for	Habitats Regulations 2017, WCA 1981, LBAP, UKBAP, NERC Act 2006	✓	✓	✓

Receptor	Scale of constraint	Further requirements	Number of survey visits required	Survey period	Driver	When is action likely to be required?		
						To inform design	Before DCO Application	Pre-construction onwards
		detectors to identify important areas across the Proposed Development used by commuting and foraging bats.	deployment of static detectors.	activity surveys.				
Otter	Medium / High	Undertake a presence / absence survey for both species on watercourses that may be affected by the Proposed Development.	Two survey visits	April and July	WCA 1981	✓	✓	✓
Water vole	Medium / High	Undertake a presence / absence survey for both species on watercourses that may be affected by the Proposed Development.	Two survey visits	April and July	WCA 1981	✓	✓	✓
Badger	Medium / High	Survey to record all evidence of Badger activity across the Proposed	One survey visit.	Any time of year	Protection of Badger Act 1992	✓	✓	✓

Receptor	Scale of constraint	Further requirements	Number of survey visits required	Survey period	Driver	When is action likely to be required?		
						To inform design	Before DCO Application	Pre-construction onwards
		Development to identify setts to avoid or that require mitigation.						
Invasive Non-native Species	High	No further investigation is required. If located a management plan should be produced to manage and eradicate where required.	Ongoing.	April to September	WCA 1981	✓	✓	✓
Hedgehog, Brown Hare	Low	No further survey required, but mitigation and enhancement delivered as part of the Proposed Development should look to avoid disturbance to these species, retain habitats and ensure that connectivity is maintained throughout the Proposed	N/A	-	NERC Act 2006	✓	✓	✓

Receptor	Scale of constraint	Further requirements	Number of survey visits required	Survey period	Driver	When is action likely to be required?
						To inform design Before DCO Application Pre-construction onwards

Development and into the wider area. All species are likely to benefit from a reduction in intensively managed agricultural land.

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Annex A: Legislation and Policy



Annex A: Legislation and Policy

The Conservation of Habitats & Species Regulations 2017 (as amended)

The Habitats Regulations consolidate all the various amendments made to the Conservation (Natural Habitats, &c.) Regulations 1994 in respect of England and Wales. The 1994 Regulations transposed Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive) into national law. The Regulations came into force on 30th October 1994. In Scotland the Habitats Directive is transposed through a combination of the Habitats Regulations 2010 (in relation to reserved matters) and the 1994 Regulations. The Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) transpose the Habitats Directive in relation to Northern Ireland.

The Regulations provide for the designation and protection of 'European Sites', the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European Sites.

Under the Regulations, competent authorities *i.e.* any Minister, Government department, public body, or person holding public office, have a general duty, in the exercise of any of their functions, to have regard to the EC Habitats Directive.

The Regulations place a duty on the Secretary of State to propose a list of Sites which are important for either habitats or species (listed in Annexes I and II of the Habitats Directive respectively) to the European Commission. Once the Commission and EU Member States have agreed that the Sites submitted are worthy of designation, they are identified as Sites of Community Importance (SCIs). The EU Member States must then designate these Sites as Special Areas of Conservation (SACs) within six years. The Regulations also require the compilation and maintenance of a register of European Sites, to include SACs and Special Protection Areas (SPAs) classified under Council Directive 79/409/EEC on the Conservation of Wild Birds (the Birds Directive). These Sites form a network termed Natura 2000.

The Regulations enable the country agencies to enter into management agreements on land within or adjacent to a European Site, in order to secure its conservation. If the agency is unable to conclude such an agreement, or if an agreement is breached, it may acquire the interest in the land compulsorily. The agency may also use its powers to make byelaws to protect European Sites. The Regulations also provide for the control of potentially damaging operations, whereby consent from the country agency may only be granted once it has been shown through Appropriate Assessment that the proposed operation will not adversely affect the integrity of the Site. When considering potentially damaging operations, the country agencies apply the precautionary principle' *i.e.* consent cannot be given unless it is ascertained that there will be no adverse effect on the integrity of the Site.

In instances where damage could occur, the appropriate Minister may, if necessary, make special nature conservation orders, prohibiting any person from carrying out the operation. However, an operation may proceed where it is or forms part of a plan or

project with no alternative solutions, which must be carried out for reasons of overriding public interest. In such instances the Secretary of State must secure compensation to ensure the overall integrity of the Natura 2000 system. The country agencies are required to review consents previously granted under the Wildlife and Countryside Act 1981 for land within a European Site, and may modify or withdraw those that are incompatible with the conservation objectives of the Site.

The Regulations make it an offence (subject to exceptions) to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2, or pick, collect, cut, uproot, destroy, or trade in the plants listed in Schedule 4. However, these actions can be made lawful through the granting of licenses by the appropriate authorities. Licenses may be granted for a number of purposes (such as science and education, conservation, preserving public health and safety), but only after the appropriate authority is satisfied that there are no satisfactory alternatives and that such actions will have no detrimental effect on wild population of the species concerned.

The Regulations make special provisions for the protection of European marine Sites, requiring the country agencies to advise other authorities of the conservation objectives for a Site, and also of the operations which may affect its integrity. The Regulations also enable the establishment of management schemes and byelaws by the relevant authorities and country agencies respectively, for the management and protection of European marine Sites.

Wildlife and Countryside Act 1981 (as amended)

The Wildlife and Countryside Act 1981 is the major domestic legal instrument for wildlife protection in the UK, and is the primary means by which the following are implemented:

- The Convention on the Conservation of European Wildlife and Natural Habitats ('the Bern Convention'); and The Council Directive 79/409/EEC on the Conservation of Wild birds (the 'Bird Directive')

Wild Birds

The Act makes it an offence (with exception to species listed in Schedule 2) to intentionally:

- kill, injure, or take any wild bird,
- take, damage or destroy the nest of any wild bird while that nest is in use or being built (also [take, damage or destroy the nest of a wild bird included in Schedule ZA1] under the Natural Environment and Rural Communities Act 2006), or
- take or destroy an egg of any wild bird.

Special penalties are available for offences related to birds listed on Schedule 1, for which there are additional offences of disturbing these birds at their nests, or their dependent young. The Secretary of State may also designate Areas of Special Protection (subject to exceptions) to provide further protection to birds. The Act also prohibits certain methods of killing, injuring, or taking birds, restricts the sale and possession of captive bred birds, and sets standards for keeping birds in captivity.

Other Animals

The Act makes it an offence (subject to exceptions) to intentionally kill, injure or take any wild animal listed on Schedule 5, and prohibits interference with places used for shelter or protection, or intentionally disturbing animals occupying such places. The Act also prohibits certain methods of killing, injuring, or taking wild animals.

Flora, Fungi and Lichens

The Act makes it an offence (subject to exceptions) to intentionally pick, uproot or destroy:

- any wild plant listed in Schedule 8, or
- unless an authorised person, to intentionally uproot any wild plant not included in Schedule 8,
- to sell, offer or expose for sale, or possess (for the purposes of trade), any live or dead wild plant included in Schedule 8, or any part of, or anything derived from, such a plant.

Non-native Species

The Act contains measures for preventing the establishment of non-native species which may be detrimental to native wildlife, prohibiting the release of animals and planting of plants listed in Schedule 9 in England and Wales. It also provides a mechanism making any of the above offences legal through the granting of licences by the appropriate authorities.

Countryside and Rights of Way (CROW) Act 2000

The Countryside and Rights of Way Act 2000 applies to England and Wales only. Part III of the Act deals specifically with wildlife protection and nature conservation.

The Act places a duty on Government Departments and the National Assembly for Wales to have regard for the conservation of biodiversity and maintain lists of species and habitats for which conservation steps should be taken or promoted, in accordance with the Convention on Biological Diversity.

Schedule 9 of the Act amends the SSSI provisions of the Wildlife and Countryside Act 1981, including increased powers for their protection and management of SSSIs. The provisions extend powers for entering into management agreements; place a duty on public bodies to further the conservation and enhancement of SSSIs; increase penalties on conviction where the provisions are breached; and include an offence whereby third parties can be convicted for damaging SSSIs.

Schedule 12 of the Act amends the species provisions of the Wildlife and Countryside Act 1981, strengthening the legal protection for threatened species. The provisions make certain offences 'arrestable', include an offence of reckless disturbance, confer greater powers to police and wildlife inspectors for entering premises and obtaining wildlife tissue samples for DNA analysis, and enable heavier penalties on conviction of wildlife offences.

Natural Environment and Rural Communities (NERC) Act 2006

The Natural Environment and Rural Communities (NERC) Act came into force on 1st October 2006. Section 41 (S41) of the Act required the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The list was drawn up in consultation with Natural England, as required by the Act.

The S41 list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the Natural Environment and Rural Communities Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal functions.

Fifty-six habitats of principal importance are included on the S41 list. These are all the habitats in England that were identified as requiring action in the (now withdrawn) UK Biodiversity Action Plan (UK BAP) and continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework. They include terrestrial habitats such as upland hay meadows to lowland mixed deciduous woodland, and freshwater and marine habitats such as ponds and subtidal sands and gravels.

There are 943 species of principal importance included on the S41 list. These are the species found in England which were identified as requiring action under the (now withdrawn) UK BAP and which continue to be regarded as conservation priorities under the UK Post-2010 Biodiversity Framework. In addition, the hen harrier has also been included on the list because without continued conservation action it is unlikely that the hen harrier population will increase from its current very low levels in England.

Protection of Badgers Act 1992

Badgers and their setts (burrows) are protected under the Act. This makes it an offence to kill or take a badger, to cruelly ill-treat a badger, or to interfere with a badger sett, including disturbing a badger while it is occupying a sett.

Licences to permit otherwise prohibited actions can be granted under section 10 of the Act for various purposes. This includes licences to interfere with a badger sett for the purpose of development as defined by section 55(1) of the Town and Country Planning Act 1990.

Licences may be granted in order to close down setts, or parts of setts, prior to development or to permit activities close to a badger sett that might result in disturbance. A licence will be required if a sett is likely to be damaged or destroyed in the course of development or if the badger(s) occupying the sett will be disturbed.

Licences can be applied for at any time, but a licence for development will not normally be issued unless full planning permission has been granted. The closure of setts under licence is normally only permitted during July to November, inclusive.

The Hedgerows Regulations 1997

The intention of the Act is to protect important countryside hedges from destruction or damage. The Act does not apply where planning permission has been granted. There are various other exemptions under the Act, including:

- To make a new opening in substitution for an existing one that gives access to land. For example, a gate. However, the old opening must be filled in within 8 months;
- To obtain access to land where other means are not available or are only available at disproportionate cost;
- For the proper management of the hedgerow. This means real management, such as coppicing. But if the hedgerow is deliberately 'over-managed' this might qualify as removal.

If the proposed works are not exempt or subject to a current planning permission, then the landowner must serve a Hedgerow Removal Notice in writing on their local planning authority. The authority then has 42 days (which period can be extended if the applicant agrees) to determine whether or not the hedge is considered 'important' under the regulations, and if so, whether or not to issue a Hedgerow Retention Notice. The local authority does not have to issue a Retention Notice, even if the hedgerow counts as important. If they do not issue a notice for an important hedge this is often on condition that certain things are done, e.g. reinstatement or replanting to a certain standard, or creation of an equivalent boundary elsewhere.

Water Framework Directive (WFD) 2017

The Water Framework Directive (WFD) (2000/60/EC) introduced a comprehensive river basin management planning system to help protect and improve the ecological health of our rivers, lakes, estuaries and coastal and groundwaters. This is underpinned by the use of environmental standards to help assess risks to the ecological quality of the water environment and to identify the scale of improvements that would be needed to bring waters under pressure back into a good condition.

The Environment Act 2021

The Environment Act was originally published by the UK Government in October 2019 and was granted Royal Assent in November 2021.

The Environment Act 2021 sets out the UK Government's objectives to restore natural habitats and increase biodiversity. In addition, the Environment Act includes provisions to make biodiversity net gain a mandatory requirement within the planning system in England. Amendments to the Town and Country Planning Act, anticipated to occur in 2023, will require all relevant developments to achieve a minimum 10% net gain in biodiversity units relative to the site's baseline biodiversity value.

National Planning Policy Framework

Section 15 of the NPPF relates specifically to 'Conserving and Enhancing the Natural Environment'. Relevant paragraphs from Section 15 are as follows:

Paragraph 174 states that *'Planning policies and decision should contribute to and enhance the natural and local environment by:*

- *protecting and enhancing valued, landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);*
- *recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;*
- *maintaining the character of the undeveloped coast, while improving public access to it where appropriate;*
- *minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;*
- *preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, where possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and*
- *remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate'.*

Paragraph 175 states that *'Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries'.*

Paragraph 179 states that *'To protect and enhance biodiversity and geodiversity, plans should:*

- *identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and*
- *promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity'.*

Paragraph 180 states that *‘When determining planning application, local planning authorities should apply the following principles:*

- *if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
- *development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly;*
- *outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;*
- *development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and*
- *development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate’.*

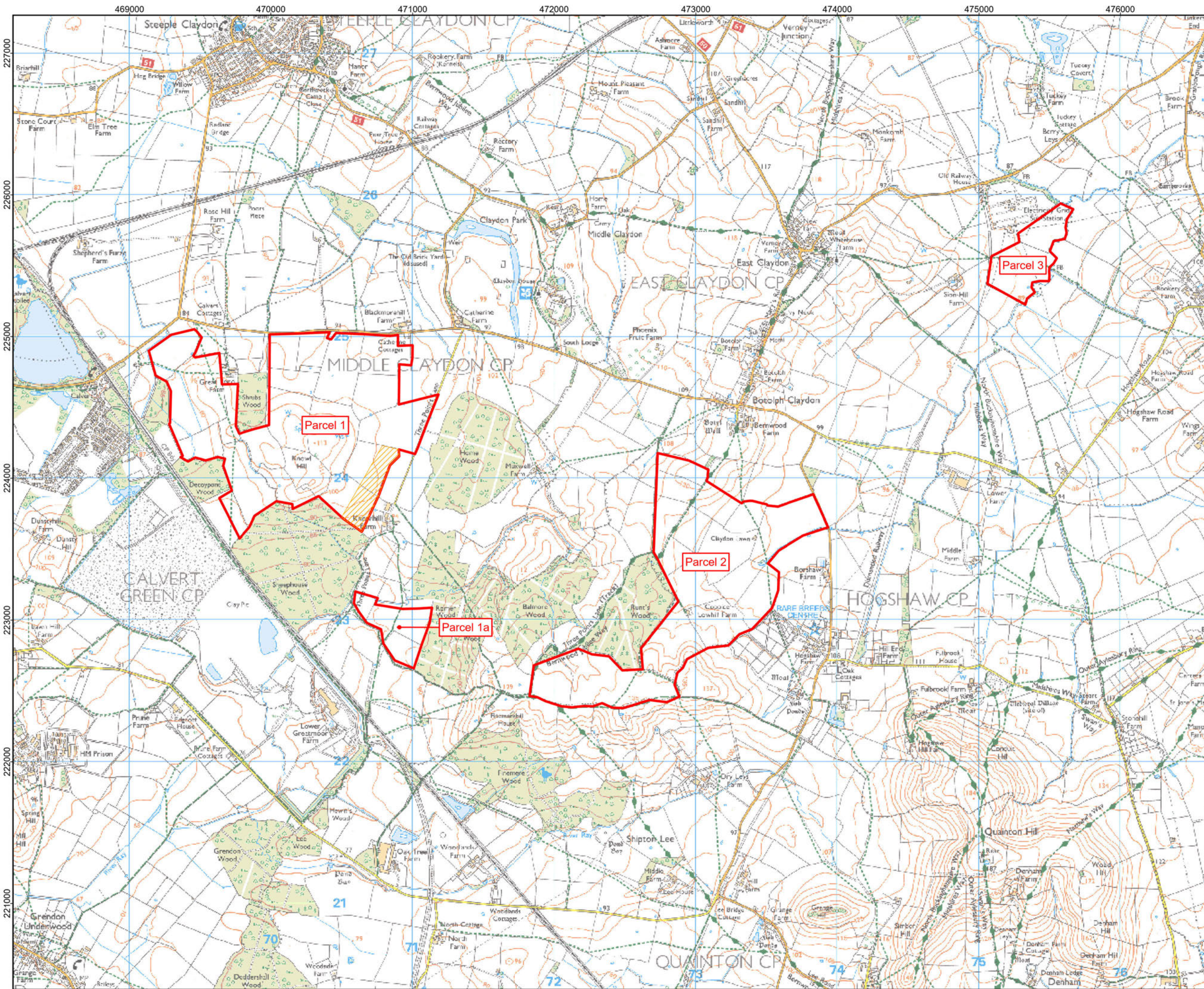
Paragraph 181 states that: *‘The following should be given the same protection as habitats sites:*

- *potential Special Protection Areas and possible Special Areas of Conservation;*
- *listed or proposed Ramsar sites; and*
- *sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites’.*

Paragraph 182 states that *‘The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site’.*

Annex B: Figures



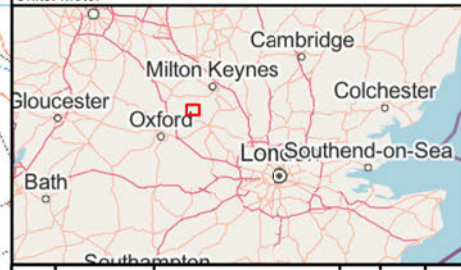


LEGEND:

- Site boundary
- BNG - NO SOLAR

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Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter



Rev	Date	Description	Drm	Chk	App
00	23/04/2024	Final	HW	BF	NS

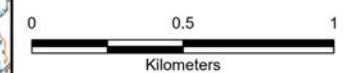
Rosefield Solar Farm



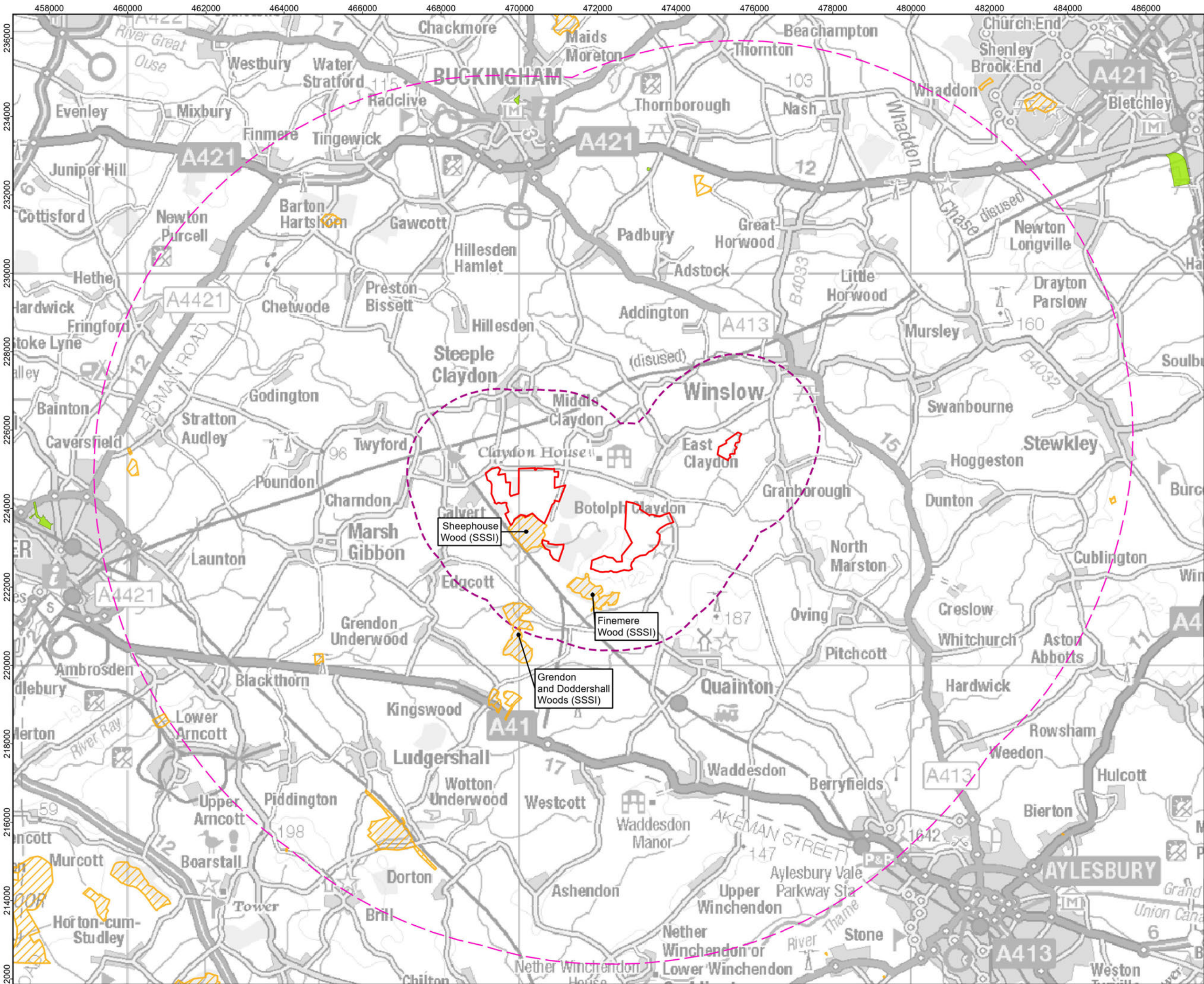
DOCUMENT:
ROSEFIELD SOLAR FARM

TITLE:
Site Location

FIGURE NUMBER:
Figure 1



REV 00



LEGEND:

- Site boundary
- 2km Scheme Buffer
- 10km Scheme Buffer
- Other Statutory Sites, within 2km of proposed site
- Site of Special Scientific Interest (SSSI)
- Local Nature reserve (LNR)

NOTES:
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Datum: OSGB 1936
Units: Meter



Rev	Date	Description	Drn	Chk	App
00	23/04/2024	Final	HW	BF	NS

Rosefield Solar Farm



DOCUMENT:
ROSEFIELD SOLAR FARM

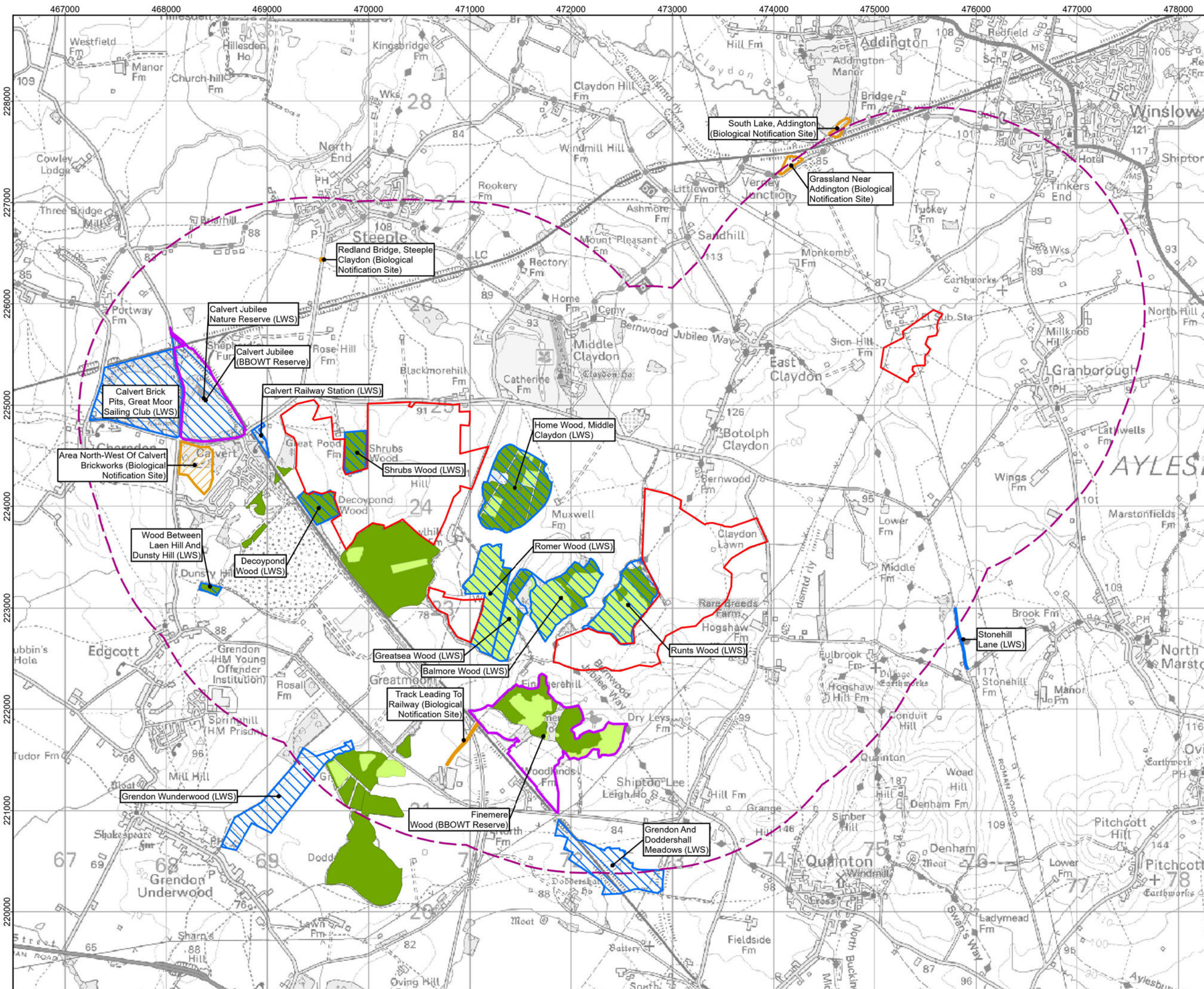
TITLE:
Sites Statutorily Designated for Nature Conservation Value

FIGURE NUMBER:
Figure 2

0 1 2
Kilometers

Scale: 1:90,000 @ A3

REV 00



LEGEND:

- Site boundary
- 2km Scheme Buffer
- Local Wildlife Site (LWS)
- BBOWT Reserve
- Biological Notification Site
- Ancient & Semi-Natural Woodland
- Ancient Replanted Woodland

NOTES:

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Rev	Date	Description	Drm	Chk	App
00	23/04/2024	Final	HW	BF	NS

Rosefield Solar Farm



DOCUMENT:

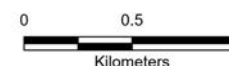
ROSEFIELD SOLAR FARM

TITLE:

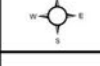
Non Statutory Sites Designated for Nature Conservation Value

FIGURE NUMBER:

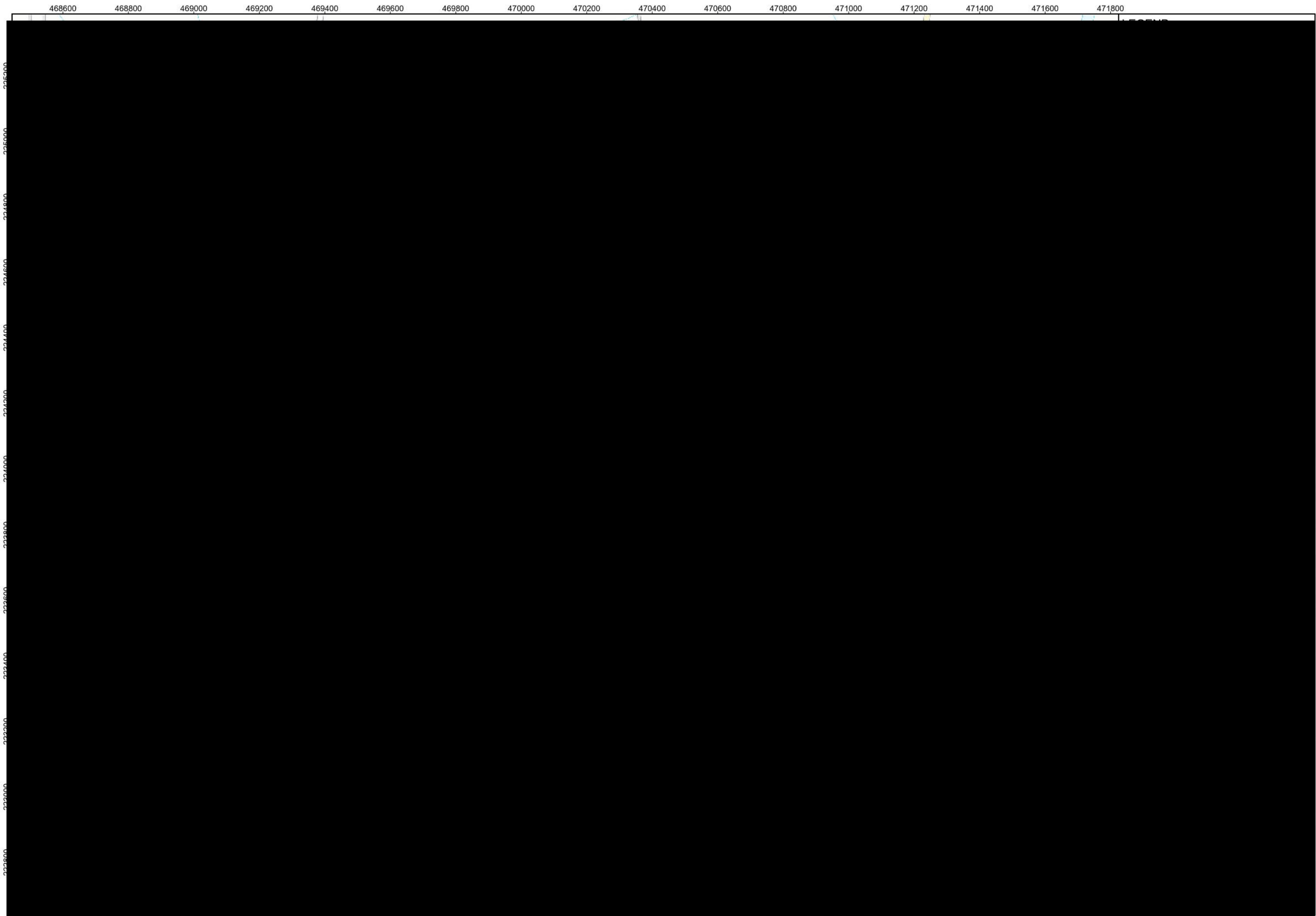
Figure 3

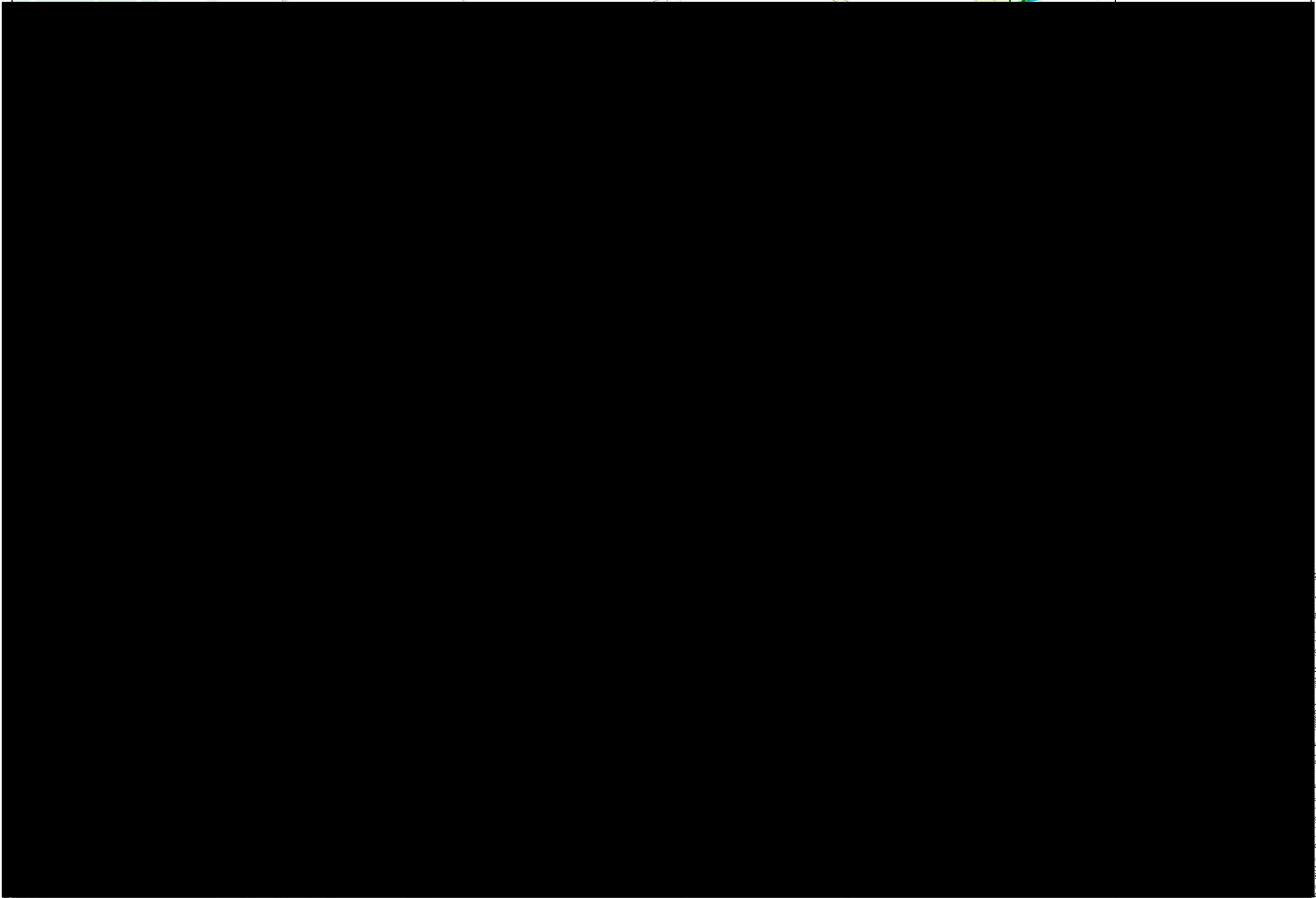


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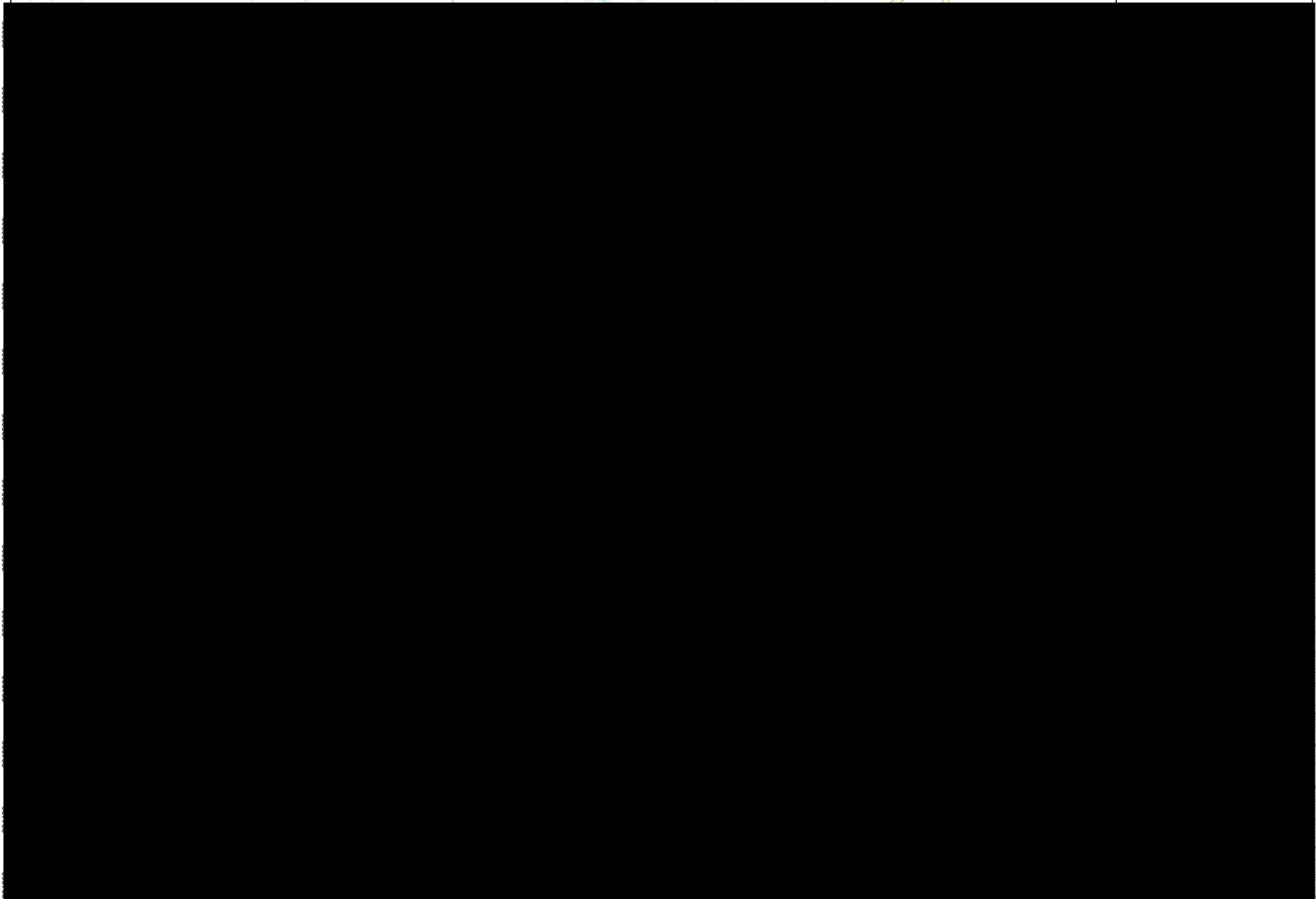


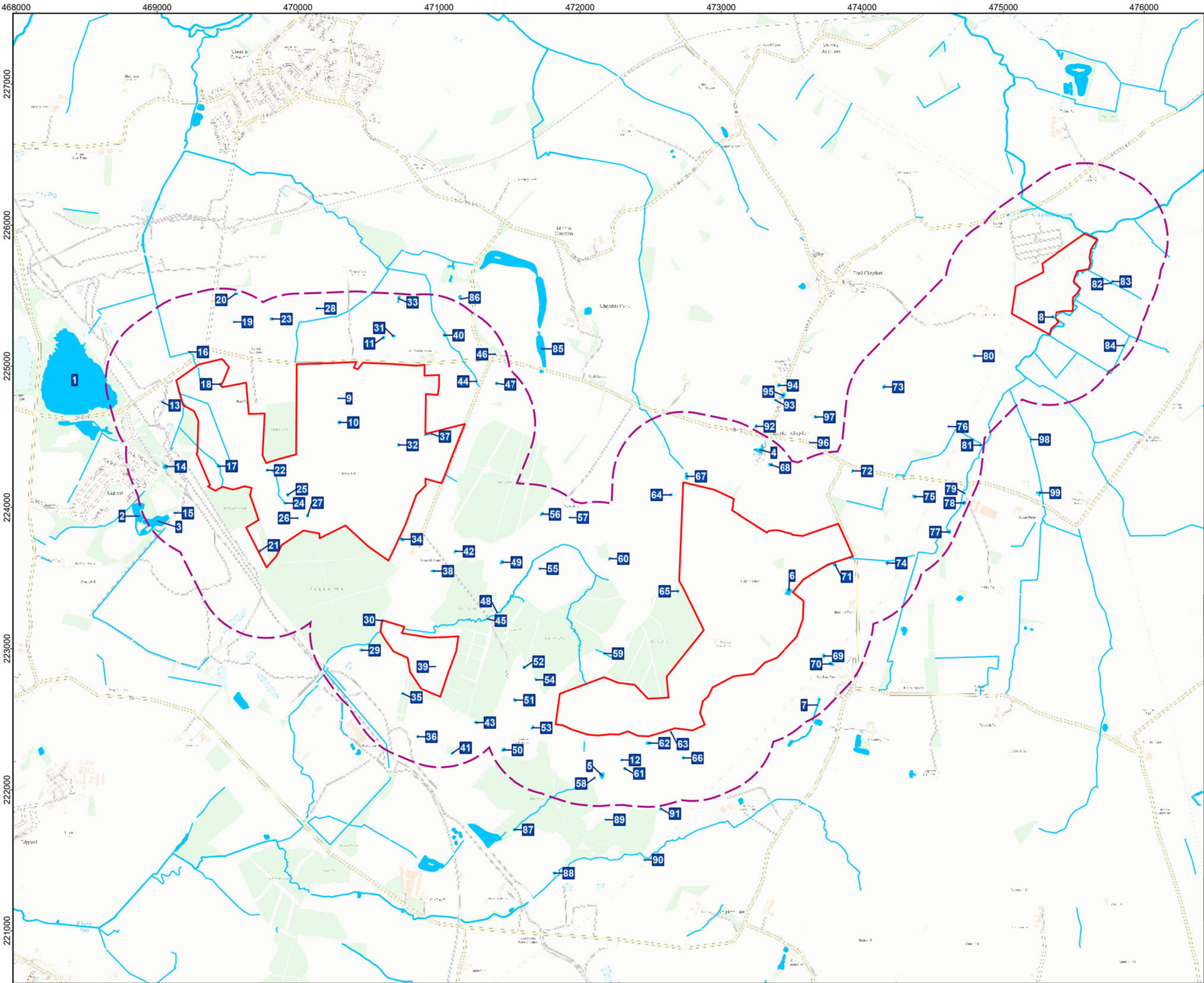
REV 00





473800 474000 474200 474400 474600 474800 475000 475200 475400 475600 475800 476000 476200 476400 476600 476800 477000





LEGEND:

- Site boundary
- 500m site buffer
- Waterbody/Watercourse

NOTES:

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00	24/04/2024	Final	HW	BF	NS
Rev	Date	Description	Drn	Chk	App

Rosefield Solar Farm

DOCUMENT:
ROSEFIELD SOLAR FARM

TITLE:
Waterbodies Within 500m of the Proposed Scheme

FIGURE NUMBER:
Figure 5

Scale: 1:25,000 @ A3

REV 00

Annex C: Target Notes and Photographs



Annex C: Target Notes and Photographs

Target note	Target note information	Photograph
02	Small pond with potential for Great Crested Newt, plants in the pond were Soft Rush, Bur-reed sp, Common Duckweed and Watercress	
03	Habitat with potential for reptiles	

Target note	Target note information	Photograph

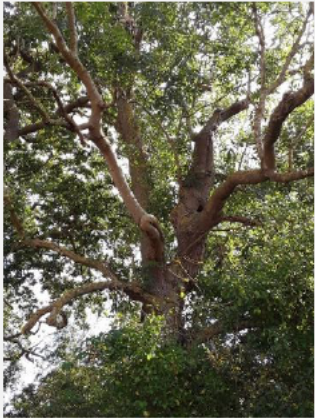
Target note	Target note information	Photograph
07	Pond with Great Crested Newt potential, shaded for half of area, a lot of sediment in water	

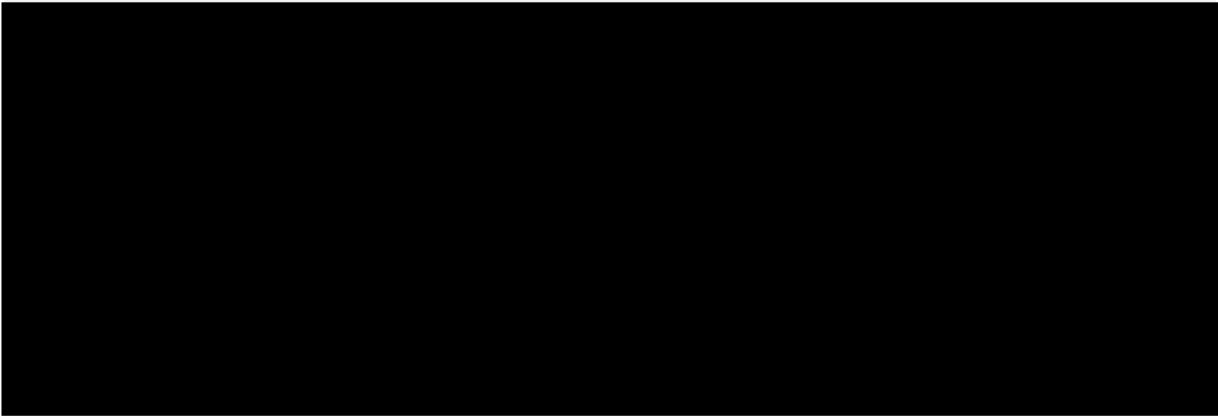
Target note	Target note information	Photograph
10	Small Pedunculate Oak with hole in trunk with Hornet's nest	
12	Small pond surrounded by thick Bramble, potential for Great Crested Newt. Plants present included Common Duckweed, Bur-reed sp and Soft Rush	

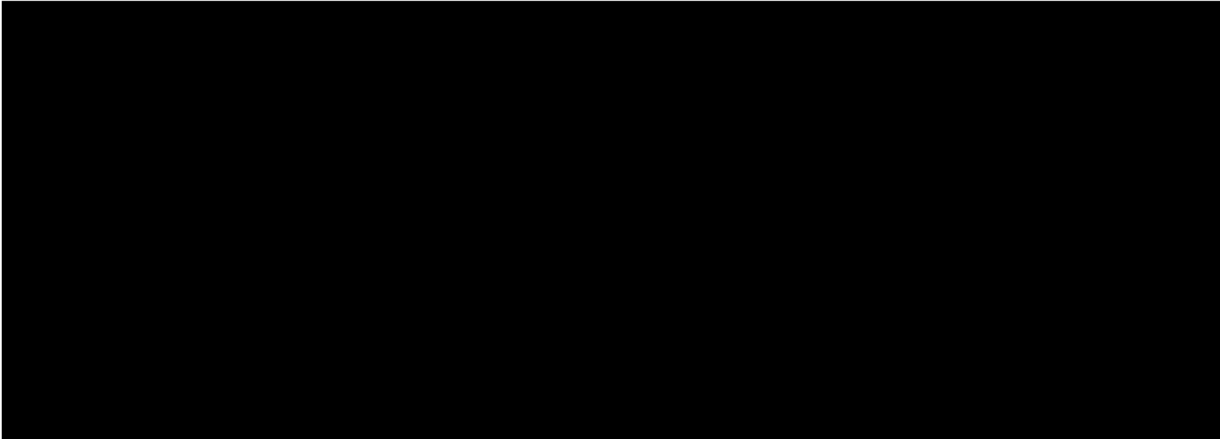
Target note	Target note information	Photograph
13	Pond with potential for Great Crested Newt with a heavily poached edge. Plants present were Bur-reed sp, Floating Sweet-grass, Broad-leaved Pondweed, Soft Rush and Hard Rush	
16	Ash with multiple Woodpecker holes, broken branch suitable for roosting Bats	

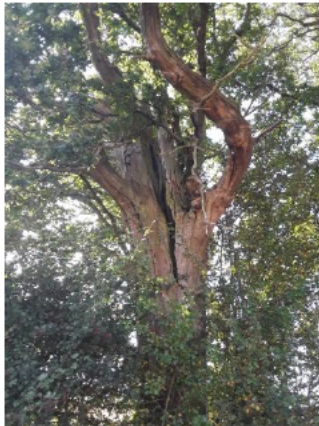
Target note	Target note information	Photograph
18	Shaded pond surrounded by Ash and bramble scrub, potential for Great Crested Newt, small area of pond outside scrub	
19	Pond with potential for Great Crested Newt, surrounded by scrub, Floating Sweet-grass, Soft Rush, Common Reedmace, Cyperus Sedge, Broad-leaved Pondweed, Water Plantain, Yellow Iris and <i>Chara sp.</i>	

Target note	Target note information	Photograph
20	Ash with knot holes and hole in branch potential for roosting Bats	
21	Ash with broken branches and hole in trunk potential for roosting Bats	
22	No water currently but could hold water in spring, Floating Sweet-grass and Hard Rush present	

Target note	Target note information	Photograph
23	Ash with Woodpecker holes, holes in branches and broken branches suitable for roosting Bats	
24	Tree with a couple of holes in trunk suitable for roosting Bats	
25	Pond potential for Great Crested Newt, plants present included Common Spike-rush, Amphibious Bistort, Branched Bur-reed and Hard Rush	
26	Ash with holes in branch suitable for roosting Bats	

Target note	Target note information	Photograph
27	Ash with holes in trunk suitable for roosting Bats	
		
29	Pond with potential for Great Crested Newt, a Water Starwort species, Common Spike-rush, Common Reedmace and Soft Rush	
30	Ash with holes in trunk potential for roosting Bats	

Target note	Target note information	Photograph
31	Dry pond, only small damp area present, though could hold water in spring, very shaded	
		
33	Trees with holes in trunk and gaps below bark suitable for roosting Bats	

Target note	Target note information	Photograph
34	Small pond virtually dry, well shaded but potential for Great Crested Newt, plants present were floating Sweet-grass and Common Reedmace	
35	Trees with many cracks in trunk and branches with potential for roosting Bats	
36	Tree with holes in trunk and gaps under bark potential for roosting Bats	
37	Pond with very little water at present but would contain water in spring, plants included Common Reedmace, Bur-reed species, Common Duckweed and Hard Rush	

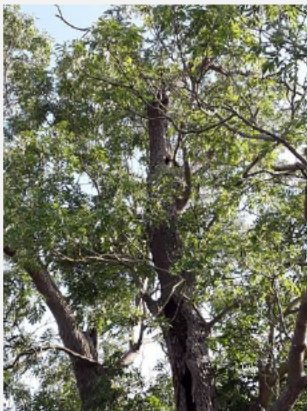
Target note	Target note information	Photograph
38	Pedunculate Oak with large cracked branch and holes in trunk suitable for roosting Bats	
41	Small-leaved Lime in woodland block	

Target note	Target note information	Photograph
43	Ash with holes, cracks and peeling bark on trunk potential for roosting Bats	
44	Pedunculate Oak with gaps below bark, potential for roosting Bats	
45	Spring inside of field, very small amount of water present currently, more in springtime possible though may lack standing water, plants present included Hairy Sedge and Hard Rush	

Target note	Target note information	Photograph
46	Semi-improved neutral grassland on outside of field also has potential for reptiles. Plants present included Birds Foot Trefoil, Common Knapweed, Lady's Bedstraw, Oxeye Daisy, Cocksfoot, Creeping Bent, Red Fescue, Creeping Thistle, Spear Thistle and Bristly Oxtongue	
48	Ash with numerous knot holes with potential for roosting Bats	

Target note	Target note information	Photograph
50	Pond currently just damp mud but could hold water in spring potential for Great Crested Newt. Plants here were Common Reedmace, Common Duckweed and Floating Sweet-grass	
51	Shallow pond with potential for Great Crested Newt, plants present were Branched Bur-Reed, Brooklime, Common Duckweed and Water Plantain	
52	Shallow pond, nutrient rich, lots of algae, but potential for Great Crested Newt	

Target note	Target note information	Photograph
54	Pond currently dry	
55	Two Ash trees with broken branches and many holes potential for roosting Bats	
56	Pedunculate Oak with broken trunk and knot holes potential for roosting Bats	

Target note	Target note information	Photograph
57	Pond, water not visible, full of Greater Pond Sedge, lots of shading from Willows, if water present in spring potential for Great Crested Newt	No photo
58	Ash with holes in trunk potential for roosting Bats	
59	Dry pond but could hold water in spring, Floating Sweetgrass, Soft Rush and Watercress were present	



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