

Preliminary Ecological Appraisal Report

Flaxlands Solar Farm

Ampyr Solar Europe

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Prepared for:

Ampyr Solar Europe

Prepared by:

AECOM Limited

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1. Executive Summary

Site Details	AECOM have been commissioned by Ampyr Solar Europe to provide a Preliminary Ecological Appraisal (PEA) at the site of the proposed Flaxlands Solar Farm located in Royal Wootton Bassett, Swindon, SN4 8DY. The Survey Area for which the PEA was undertaken is approximately 89.24 ha and is separated into the 'western' (60.44 ha) and 'eastern' (28.8 ha) land parcels which are divided by Flaxlands Lane. The Survey Area differs slightly from the Site Area for which a planning application will be submitted. The red line boundary for the planning application has an area of 87.5 hectares, hereafter referred to as 'the Site'.
Proposed Development Details	AECOM have been commissioned by Ampyr Solar Europe to provide a PEA to inform the development of a photovoltaic array (hereafter referred to as 'the Proposed Development') within a parcel of land at Flaxlands Farm, north of Royal Wootton Bassett in Wiltshire. It is understood that the Proposed Development will require the clearance of vegetation, tracking for plant to access working areas and widening of gaps within hedgerows for access purposes. At this stage, it is anticipated that plant substation will be constructed in the north of the Site. At the time of writing, the Proposed Development is at the concept design stage and therefore details including the layout, of the Proposed Development is subject to change. Similarly, the anticipated location for cable routes associated with the Proposed Development is not yet confirmed and is therefore not considered within this PEA.
Ecological Features that may be affected by the Proposed Development	Flaxlands Manor Local Wildlife Site (LWS) lies within the Site boundary and may be impacted by vegetation clearance. A further four LWSs, all designated as Ancient Semi-Natural Woodland (ASNW), lie directly adjacent to the Site boundary at the north and western Site boundaries. Priority Habitats including lowland meadows were identified during a desk-based study and are presumed present within the Site boundary at this stage. Broadleaved woodland, modified and other neutral grassland and dense scrub are present within the Site as well as running and standing water, buildings and trees. Habitats within and directly adjacent to the Site are suitable for supporting protected or notable species including badger (<i>Meles meles</i>), bats, great crested newt (<i>Triturus cristatus</i>), water vole (<i>Arvicola amphibius</i>), otter (<i>Lutra lutra</i>), dormouse (<i>Muscardinus avellanarius</i>), common reptiles, breeding birds and terrestrial invertebrates.
Recommendations for further survey and assessment	Ecological surveys have commenced for the following ecological features: • foraging and commuting bats (night time bat walkovers); and, • breeding birds. Depending on the final design of the Proposed Development, further ecological input should include the following: 1. liaison with the Local Planning Authority (LPA) regarding potential impacts on LWSs; 2. National Vegetation Classification (NVC) surveys for Priority Habitats, to include a search for scabious species (<i>Knautia</i> sp.) indicative of habitat suitable for marsh fritillary butterfly (<i>Euphydryas aurinia</i>); 3. a pre-commencement check for badger no more than 48 hours prior to the commencement of works; 4. presence/absence surveys for hazel dormouse on suitable hedgerows (in the north of the Survey Area); 5. assessment to identify structures, trees and buildings within and adjacent to the Site with suitability for roosting bats; 6. targeted surveys for water vole and otter; 7. eDNA assessment for great crested newt of the ponds on Site and within 250 m; 8. targeted reptile surveys within grassland at the north of the Site; and, 9. a walkover for invasive and non-native plant species (INNPS) prior to works commencing on Site.
Recommendations for Mitigation	Specific mitigation measures will be recommended following completion of the recommended further ecological surveys. It is recommended that a 30 m 'no works' buffer is implemented adjacent to areas of ancient woodland within or adjacent to the Site, including Flaxlands Copse and Frith Copse in the west and north east of the Site respectively. This will in turn limit the impacts on protected species potentially present within these habitats adjacent to the Site boundary. General mitigation measures, which should also be incorporated to the Proposed Development, should include: • Avoid the loss of ecologically valuable habitats within the Site, including broadleaved woodland, grassland, running water, trees, and scrub. Maintain and enhance connectivity between habitats on the Site and the wider landscape. If habitats are lost these should be replaced by habitats of similar value or better to ensure a 10% biodiversity net gain across the Site. • Implement a sensitive lighting strategy within the Scheme design to limit disturbance to nocturnal wildlife such as bats and badger during both construction and operation and maintain dark

	wildlife corridors. At this stage, no permanent lighting is anticipated as a requirement for the Proposed Development. • Prepare and implement a Construction Environmental Management Plan (CEMP), or similar, during construction to prevent adverse impacts to areas of retained habitat on the Site, and the adjacent habitats. • An Ecological Mitigation and Enhancement Strategy (EMES) would be beneficial to consider the potential habitat loss and appropriate mitigation, as well as outlining how the surrounding areas can be enhanced to account for unavoidable losses.
Opportunities for Biodiversity Enhancements	Following confirmation of a detailed Proposed Development design and the results of further ecological survey work, an EMES, or similar, should be prepared to include details of measures to enhance ecological features within the Site. Such measures may include, but are not limited to: • habitat management to protect and enhance biodiversity, with a particular focus on retaining a buffer along the Site boundary and maintaining species diversity within species-rich neutral grassland in the south of the Site; • a grazing scheme to prioritise diversity in grasslands; • provision of additional bat, bird, and hedgehog boxes, notably barn owl (<i>Tyto alba</i>) boxes adjacent to the neutral grasslands in the Site; • creation of habitat for invertebrates through insect walls, boxes and bee banks as well as hibernacula and log piles; and, • use of native species in landscaping design and creation of new habitat, such as ponds, integrated into the design.

2. Introduction

AECOM Limited (hereafter referred to as 'AECOM') have been instructed by Ampyr Solar Europe to carry out a Preliminary Ecological Appraisal (PEA) to support the proposed installation of a solar photovoltaic array (hereafter referred to as 'the Proposed Development') within land north of Royal Wootton Bassett, Wiltshire (hereafter referred to as the 'Site'). The location and extent of the Site is illustrated on Plate 1 below. The Survey Area, illustrated on Plate 1 and Figure 1 ([Appendix A](#)), and which informs this PEA, includes an additional area of 1.74 hectares that no longer forms part of the Site. This PEA mainly refers to the Site but in places refers specifically to the Survey Area where these differ. This PEA will inform the Proposed Development within the Site (see Section 2.3).

The assessment of ecological constraints has been undertaken with reference to current good practice¹ and forms part of the technical information commissioned by Ampyr Solar Europe in connection with the Proposed Development. The PEA addresses relevant wildlife legislation and planning policy as summarised in [Appendix B](#) and is consistent with the requirements of *British Standard 42020:2013 Biodiversity. Code of Practice for Planning and Development*.

This PEA is intended for advice in respect of the Proposed Development design, site layout and further investigation. Further ecological surveys and impact assessment (including detailed mitigation measures) are recommended, based on the Proposed Development concept design available at the time of writing.

This PEA report outlines the results of an extended UK Habitat Classification (UKHab) survey which was undertaken on 17-19 May 2024 at the Site along with an appraisal for the presence of protected species. Full methodology for the assessment is provided in [Appendix C](#).

At the time of writing, surveys for breeding birds and bat activity have already been instructed by the client and have commenced.

2.1 The Survey Area

The Survey Area is located approximately 1.7 km north of the town of Royal Wootton Bassett and approximately 300 m north of the M4 within Wiltshire County Council centred at Ordnance Survey national grid reference SU 06584 85463. The Survey Area is comprised of two land parcels, a western and an eastern land parcel either side of Flaxlands Lane. Both parcels consist of multiple fields bounded by hedgerows and including those with mature broadleaved trees and existing farm tracks. Wet ditches, assumed to be associated with the drainage of fields, are present in several locations throughout the Survey Area, as are standing bodies of water.

The Survey Area is surrounded by agricultural grassland fields which are common throughout the immediate landscape. The urban developed area of Royal Wootton Bassett lies to the south which is separated from the Site by the M4 which runs east to west, approximately 450 m south of the Site.

¹ CIEEM (2017). *Guidelines for Preliminary Ecological Appraisal, 2nd edition*. Chartered Institute of Ecology and Environmental Management, Winchester.

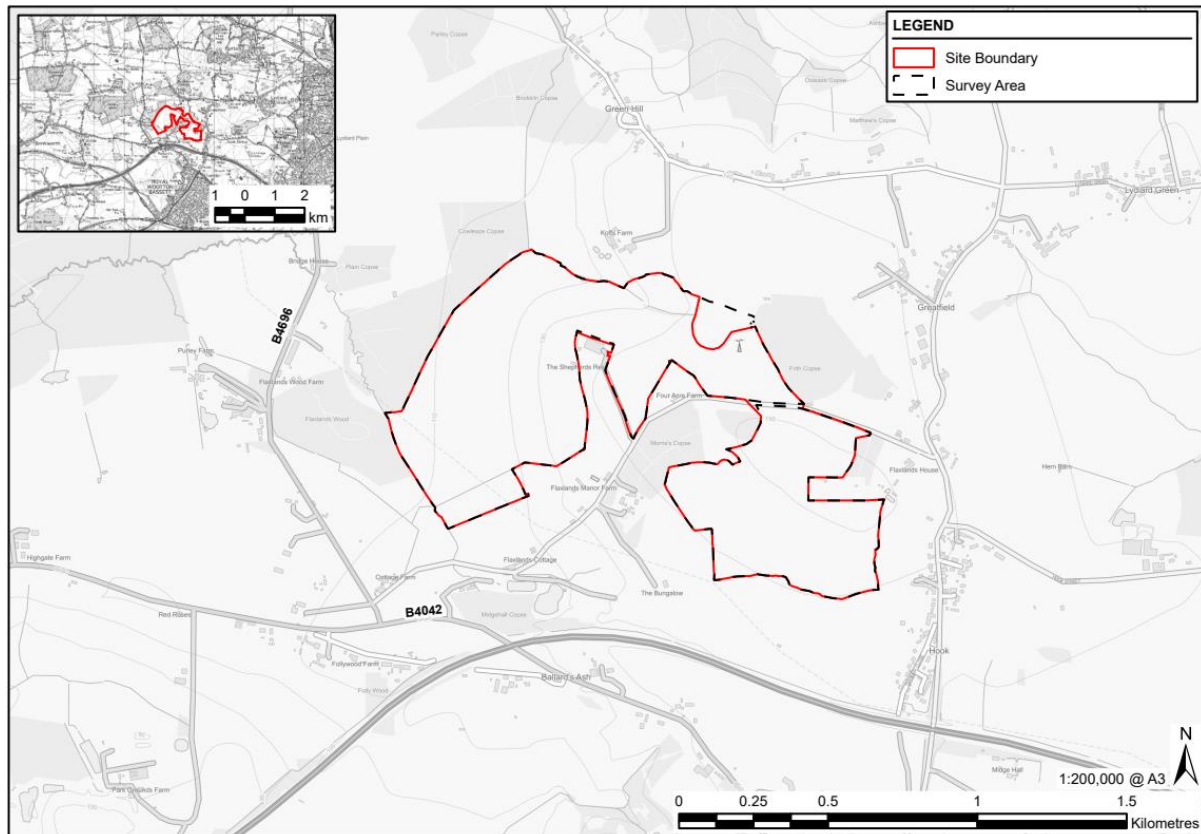


Plate 1: The Site and the Survey Area

2.2 The Proposed Development

- The Proposed Development includes the installation of a 49.9MW solar farm and 49.9MW Battery Energy Storage System (BESS) within the Site. Solar photovoltaic arrays will be situated in both western and eastern land parcels with the location of the BESS likely to be in the north of the Site.
- It is understood that the Proposed Development will require clearance of vegetation, tracking for plant to access working areas and, widening of gaps within hedgerows for access purposes.
- Given the legislative requirement to achieve a 10% biodiversity net gain (BNG) for all developments, areas have been identified as possible locations for habitat creation and enhancement within the Site (see [Appendix F](#)).

2.3 Purpose of the Preliminary Ecological Appraisal

This PEA takes into consideration the nature of the Proposed Development to provide an overall summary of the potential ecological impacts of the works.

This PEA presents ecological information obtained during:

- a desk-study undertaken in May 2024 to obtain records of designated sites within 2 km, extended to 10 km for sites designated for bats. The desk study also included a search for records of notable habitats² and protected and notable species³ within 2 km of the Survey Area (the area covered by the desk study is hereafter referred to as 'the Study Area'); and
- a walkover survey of land within the Survey Area on 15-17 May 2024.

² Notable habitats are taken as principal habitats for the conservation of biodiversity listed under Section 41 of the *Natural Environment and Rural Communities Act 2006*; habitats listed under the South Gloucestershire Biodiversity Action Plan 2016-2026 [[Biodiversity-Action-Plan-2016-26.pdf \(southglos.gov.uk\)](#)]; hedgerows identified as being 'important' under the wildlife criteria of the *Hedgerow Regulations 1997*, ancient woodlands and veteran trees.

³ Notable species are taken as principal species for the conservation of biodiversity listed under Section 41 of the *Natural Environment and Rural Communities Act 2006*; any species listed in an IUCN Red Data Book; and any other species listed under the South Gloucestershire Biodiversity Action Plan 2016-2026].

The purpose of the PEA is to provide a high-level ecological appraisal of the Survey Area, specifically to:

- establish baseline conditions and determine the presence of important ecological features⁴ (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 important ecological features, where possible;
- to identify requirements for mitigation, including mitigation measures that will be required (depending on results of further surveys or final Proposed Development design);
- to establish any requirements for more detailed ecological surveys; and,
- to identify any opportunities offered by the Proposed Development to deliver biodiversity enhancements.

The methodology followed for undertaking the desk study and field surveys is detailed in [Appendix C](#), including any limitations to the assessment. Target Notes recorded and photographs taken during the field surveys are detailed in [Appendix D](#) and [E](#), respectively.

⁴ habitats, species, ecosystems and their functions and processes that are of conservation importance and could potentially be affected by the Scheme.

3. Ecological Baseline, Constraints and Recommendations

The following sections detail the results of the desk- and field-based studies undertaken to inform this PEA. Where necessary, recommendations for mitigation measures to protect known ecological features, or further surveys to determine the presence or likely absence of likely ecological features, are provided.

With regard to background data, 'recent' records are considered to be those no older than ten years from the date of the desk study. Records outside of this period are historical and have only been reported where more recent records for a feature do not exist. Exceptions to this are detailed in the appropriate sections below.

3.1 Designated Sites

3.1.1 Desk Study

Table 1 summarises the designated sites within 2 km of the Survey Area, including Sites of Special Scientific Interest (SSSI), Local Wildlife Sites (LWSs) and Local Nature Reserves (LNRs) situated within the Study Area (see Figure 1 and Figure 2, [Appendix A](#)).

There is one SSSI approximately 550 m north of the closest Survey Area boundary with connectivity to the Site, Restrop Farm and Brockhurst Wood SSSI. There is one LWS within the Site boundary (Flaxlands Manor LWS) and four that lie directly adjacent to it. There are a further 20 local non-statutory designated sites within 2 km of the Survey Area including two Wiltshire Wildlife Trust (WWT) Nature Reserves situated approximately 870 m south of the Site at the southernmost boundary, separated from the Site by the M4.

There are no internationally designated sites of ecological interest within 10 km of the Site and no designated sites for bats within 10 km of the Survey Area.

Trees with Tree Preservation Orders (TPOs) are present within the western portion of the Site within hedgerows and as lines of trees in the western land parcel. There are also TPOs adjacent to the west of the Site within Flaxlands Wood. There are five areas designated as ancient woodland directly adjacent to the Site boundary which are also summarised in Table 1 and shown on Figure 3, [Appendix A](#).

Table 1. Designated Sites within the Study Area

Designated Site	Reason for Designation	Relationship to the Site/ Survey Area ⁵
National Statutory Designations within 2 km		
Restrop Farm and Brockhurst Wood SSSI	This site exhibits a diversity of habitat types from unimproved hay meadows and permanent pasture, through to mature hedgerows and scrub to ancient broadleaved, mixed and yew woodland.	Approximately 550 m north, connected by agricultural land and associated hedgerows, intersected by one minor road.
Jubilee Lake LNR	Jubilee Lake is an area of ancient woodlands and flower-rich meadows located north east of the town of Royal Wootton Bassett	Approximately 798 m south of the Site's southern boundary, separated from the Site by the M4.
Local Non-statutory Designations within the Study Area		
Flaxlands Manor LWS	A series of neutral pastures and hay meadows with differing geology and hydrology.	Within the eastern land parcel in the Site boundary, the LWS overlaps with the southern section of this land parcel. A second designated field is located within the northern section of the western land parcel. Site occupies the most northerly field within the Site boundary.
Flaxlands Wood LWS	A small ancient semi-natural broadleaved woodland.	Directly adjacent to the western Site boundary.
Cowleaze LWS	A small stand of ancient semi-natural broadleaved woodland.	Directly adjacent to the Site boundary at the north west corner within the western land parcel.

⁵ Where designated sites are situated outside of the Site boundary, the distance and direction is given at the closest point of the designated site from the Site, and any connectivity or barriers between the designated site and the Site are given.

Designated Site		Reason for Designation	Relationship to the Site/ Survey Area ⁵
Frith Copse LWS		A small stand of ancient semi-natural broadleaved woodland of oak (<i>Quercus</i> sp.) over hazel (<i>Corylus avellana</i>) and bluebell (<i>Hyacinthoides non-scripta</i>).	Directly adjacent to the Site at the eastern boundary within the western land parcel.
Morris's Copse LWS		Ancient semi-natural broadleaved woodland of oak and ash (<i>Fraxinus excelsior</i>) over hazel and bluebell.	Directly adjacent to the west of the eastern land parcel of the Site.
Midgehall LWS	Copse	Semi-natural ancient woodland.	Approximately 211 m south of the Site boundary at its closest point. Separated from the Site by a minor road.
Bridge Copse LWS	House	A small area of ancient semi-natural woodland immediately South of Plain Copse.	Approximately 226 m west of the western Site boundary at its closest point, with connectivity via woodland and hedgerows.
Plain Copse LWS		A small stand of ancient semi-natural woodland managed as a Woodland Trust reserve.	Approximately 256 m west of the Site boundary at its closest point. with connectivity via woodland and hedgerows.
Brickkiln LWS	Copse	An area of ancient semi-natural broadleaved woodland very rich in plant species for its small size.	Approximately 389 m north of the Site boundary at its closest point, connected by grassland habitat with no hydrological connectivity to the Site.
Folly Wootton LWS	Wood, Bassett	Ancient semi-natural broadleaved woodland bisected by the M5.	Approximately 500 m south of the Survey Area boundary at its closest point. Part of the site is separated by the M4, the other half is separated by minor roads.
Parley Copse LWS		Semi-natural broadleaved woodland on an ancient site.	Approximately 651 m north of the Site boundary at its closest point, connected by grassland and woodland habitat with no hydrological connectivity to the Site.
Webbs Wood LWS		A large block of ancient broadleaved woodland with small-leaved lime (<i>Tilia cordata</i>), mostly semi-natural, with some replanting	Approximately 736 m west of the Site boundary at its closest point, separated by a minor road.
Jubilee Lake Fields LWS		Wetland, grassland, scrub and woodland in an unmanaged valley on the outskirts of Royal Wootton Bassett	Approximately 774 m south of the Site boundary at its closest point. Separated from the Site by the M4.
Jubilee Lake and Wood LWS		Ancient woodland with a small lake and associated amenity grassland on the outskirts of Royal Wootton Bassett.	Approximately 798 m south of the Site boundary at its closest point. Separated from the Site by the M4.
Park Lydiard LWS	Copse - Tregoze	A small stand of ancient semi-natural broadleaved woodland.	Approximately 987 m east of the Site boundary at its closest point, separated by minor roads.
Drill Farm LWS	Copse	A small ancient semi-natural broadleaved woodland	Approximately 1 km west of the Site boundary at its closest point, separated by a minor road.
Withybed, Wootton LWS	Royal Bassett	A small block of ash and oak woodland on low-lying ground, historically managed as a withybed.	Approximately 1.46 km south west of the Site boundary at its closest point, separated by minor roads
The Firs Reserve	WWT	A small woodland WWT reserve on a North-Facing slope with oak and ash standards over Hazel.	Approximately 1.45 km west of the Site boundary at its closest point, separated by minor roads.
Echo Lodge Meadows Wood Reserve	Farm and WWT	A WWT reserve including a number of neutral meadows with areas of damp grassland and also a small stand of ancient woodland.	Approximately 1.55 km west of the Site boundary at its closest point, separated by minor roads.
Alder LWS	Plantation	A small wet woodland on the banks of a brook within Lydiard Country Park.	Approximately 1.55 km east of the Site boundary at its closest point, separated by minor roads.
Letterage LWS	Copse	A small, isolated ancient semi-natural broadleaved woodland site with mainly ash standards over hazel.	Approximately 1.6 km east of the Site boundary at its closest point, separated by minor roads.
South Farm Purton LWS	Pavenhill Meadow,	A fragment of species-rich, unimproved neutral grassland in the corner of an otherwise semi-improved field.	Approximately 1.65 km north of the Site boundary at its closest point, separated by minor roads.

Designated Site	Reason for Designation	Relationship to the Site/ Survey Area ⁵
Hooker's Gate Farm Meadow LWS	Gently sloping, south-facing pasture with species-rich grassland on the steepest areas adjacent to the M4 motorway.	Approximately 1.85 km south west of the Site boundary at its closest point, separated by the M4.
Bagbury Green Farm Meadow LWS	A small damp meadow surrounded by high hedges and a woodland strip.	Approximately 1.9 km north east of the Site boundary at its closest point, separated by minor roads.
Callow Hill Farm Meadow LWS	Two damp meadows separated by a small stream with areas of species-rich grassland.	Approximately 1.92 km south west of the Site boundary at its closest point, separated by minor roads.
Ancient Woodland Designations		
Morris's Copse, Ancient Semi-Natural Woodland (ASNW)		Approximately 5.23 ha located directly adjacent to the west boundary of the eastern part of the Site.
Frith Copse, ASNW		Approximately 5.57 ha located directly adjacent to the north west boundary of the eastern part of the Site.
Cowleaze Copse, ASNW		Approximately 5.18 ha located directly adjacent to the north boundary of the western part of the Site.
Flaxlands Wood, ASNW		Approximately 12.09 ha located directly adjacent to the west of the western part of the Site.
Flaxlands Wood, Ancient Replanted Woodland		Approximately 2.47 ha located directly adjacent to the west of the western part of the Site.

3.1.2 Constraints and Recommendations

Restrop Farm and Brockhurst Wood SSSI and Jubilee Lake LNR are situated within 2 km of the Site and are the only nationally ecological designated sites within 2 km of the Site boundary. There are no watercourses that flow from the Site towards the SSSI and LNR and, due to the spatial separation, no impacts from the Proposed Development are anticipated on them.

There is one local non-statutory designated site within the Site boundary: Flaxlands Manor LWS. The Flaxlands Manor LWS is designated for its grassland habitats including neutral pastures and hay meadows. The Proposed Development is anticipated to impact Flaxlands Manor LWS due to the nature of the solar array and associated construction having potential to cause loss of habitat within the LWS. A National Vegetation Classification (NVC) survey for land within the LWS is recommended, in which features described in the LWS citation will be assessed for their presence within the Site. The survey will assess the ecological value of the LWS, and provide recommendations on the avoidance, mitigation and enhancement of particular features within the LWS (see the Habitats Section 3.2.2 for further details). This survey should focus on the habitats within the eastern land parcel and the northern field of the western land parcel that appears to be highlighted within the LWS (see Figure 2, [Appendix A](#)).

The Proposed Development should aim to minimise impacts on the LWS within the Site as far as possible and help ensure its ecological functions are maintained. Where possible, habitats should be retained, particularly those which are species-rich and/or a notable habitat.

Permission should be sought from the Local Planning Authority (LPA) prior to any impacts to the LWS habitat. The LPA is likely to request that any loss of LWS habitat should be replaced, and in line with current planning policy, a net gain in biodiversity value achieved for the Site overall.

There are four LWSs lying directly adjacent to its boundary: Flaxlands Wood, Cowleaze Copse, Frith's Cope and Morris's Copse LWSs. Direct impacts (i.e. habitat modification or removal) are not anticipated on these LWSs and further ecological surveys are therefore not required. Standard Pollution Prevention Measures (PPMs)⁶ must also be in place, with particular focus on the prevention of environmental run-off into the designated sites, ancient woodlands and TPOs.

⁶ Law, C. and D'Aleo, S. (eds.) (2016) PUB C762 Environmental good practice on site pocketbook. 4th edition CIRIA.

The other 20 non-statutory designations are not considered to present an ecological constraint to the Proposed Development and therefore do not require further survey. This is due to the low impact nature of the Proposed Development and element of separation from each of these non-statutory sites.

There are a number of trees with TPOs present within the western portion the Site and within the woodland directly adjacent to the Site at the western Site boundary. Impacts to these trees must be avoided and a safe working buffer should be applied to protect the trees Root Protection Zones (RPZ). Permission should be sought from the LPA prior to any impacts to trees with TPOs.

3.2 Habitats

3.2.1 Desk Study

The desk study identified areas of lowland meadows within the Site boundary; a UK Biodiversity Action Plan (BAP) Priority Habitat. These meadow communities are present in the Site, within the western portion at the north, the eastern portion to the south and the most south western field.

Lowland mixed deciduous woodland, a UK BAP Priority Habitat type was also identified directly adjacent to the east of the Site within Frith Copse as well as the ancient woodland designations as stated in Section 3.1 above.

Areas of 'good quality semi-improved grassland (non-priority)' were identified within the north of the eastern land parcel.

Lowland calcareous grassland, a UK Biodiversity Action Plan (BAP) Priority Habitat was identified as present directly adjacent to the Site within the south western corner of the eastern land parcel.

3.2.2 Field Survey

Summary descriptions of the habitats within the Survey Area are provided below and shown on [Appendix A](#), Figure 1 with specific features highlighted by Target Notes (TNs) (see [Appendix D](#)) and photographs (see [Appendix E](#)).

Table 2. UK Habitat Classifications, Habitat Descriptions, Areas and Conditions within the Survey Area

UKHab Classification	Description	Habitat Area (ha)	Habitat Condition
Area-based Habitats			
g3c – Other neutral grassland	The entirety of the eastern land parcel consists of neutral grassland fields with generally a higher species abundance in the south (see Photograph 1, Appendix E). This area does not appear to have been recently grazed by cattle or sheep. Grass species present include sweet vernal-grass (<i>Anthoxanthum odoratum</i>), Yorkshire fog (<i>Holcus lanatus</i>), annual meadow-grass (<i>Poa annua</i>), meadow foxtail (<i>Alopecurus pratensis</i>), field wood-rush (<i>Luzula campestris</i>), yellow oat-grass (<i>Trisetum flavescens</i>), soft-brome (<i>Bromus hordeaceus</i>) quaking-grass (<i>Briza media</i>) crested dog's-tail (<i>Cynosurus cristatus</i>) and fescue species (<i>Festuca</i>, sp.). There is some occasional reed sweet-grass (<i>Glyceria maxima</i>). It was noted that areas of this habitat further south were richer in species diversity. Locally abundant species include meadowsweet (<i>Filipendula ulmaria</i>) and yellow-rattle (<i>Rhinanthus minor</i>) (see Target Note TN5, Appendix D and Photograph 2, Appendix E) as well as locally abundant common sedge (<i>Carex nigra</i>) and field scabious (<i>Knautia arvensis</i>) (see Target Note TN6, Appendix D). In the western land parcel, neutral grassland is present where sheep grazing has been restricted and the sward height is approximately 30-60 cm (see Photograph 3, Appendix E). An overall lower species diversity was recorded here in comparison to the eastern land parcel. Species include meadow buttercup (<i>Ranunculus acris</i>), creeping buttercup (<i>Ranunculus repens</i>), cuckooflower (<i>Cardamine pratensis</i>), common chickweed (<i>Stellaria media</i>), bugle (<i>Ajuga reptans</i>) and field forget-me-not (<i>Myosotis arvensis</i>) in the western corner.	35.00	Poor-Moderate
g3c [14] – Other neutral grassland scattered rushes	Within the eastern section of the western land parcel, the grassland habitat here is a neutral grass type with grass species as described above. Hard rush (<i>Juncus inflexus</i>) and soft rush (<i>Juncus effusus</i>) are locally abundant and are scattered throughout this grassland paddock indicating areas of damper soil (Photograph 4, Appendix E). In the eastern land parcel, there are areas identified with both scattered and abundant rushes, indicating the presence of locally/seasonally damp areas.	5.26	Poor

UKHab Classification	Description	Habitat Area (ha)	Habitat Condition
	Other species include dock species (<i>Rumex</i> sp.), creeping and meadow buttercup, cuckooflower, common chickweed, white clover (<i>Trifolium repens</i>) and common sorrel (<i>Rumex acetosa</i>).		
g3c [15] – Other neutral grassland – rush dominant	Within the northern section of the eastern land parcel rush species are locally dominant. Soft rush is the dominant rush species present here, this becomes more scattered throughout the southern section of the same field.	9.1	Moderate
g4 – Modified grassland	Modified grassland is the dominant habitat type in the western land parcel and is particularly present in areas grazed by sheep and horses; perennial rye (<i>Lolium perenne</i>), is the dominant grass species here. Yorkshire fog, soft-brome (<i>Bromus hordeaceus</i>), annual meadow-grass and cock's-foot (<i>Dactylis glomerata</i>) are also present in these fields. Other species include common chickweed, red clover (<i>Trifolium pratense</i>) and spear thistle (<i>Cirsium vulgare</i>) (see Photograph 5, Appendix E). The species assemblage is similar across the modified grassland habitat, with localised hard rush within the south western field. Where sheep grazing is limited the sward height varies, with a fallow field in the central portion of the western land parcel being approximately 60 cm in height on average. This is also dominated by perennial rye-grass and red clover (see Photograph 6, Appendix E).	43.70	Poor-Good
g4 [14] Modified grassland scattered rushes	– Within the modified grassland at the western land parcel areas of hard rush are present, indicating areas of damp or wet ground (see Target Note TN2, Appendix D). The species assemblage in these areas is consistent with that of g4 – modified grassland (see row above).	5.26	Moderate
g4 [102] Modified grassland sheep grazed	– Within the western land parcel, the fields are separated into sheep grazing paddocks where the grassland sward is short and the species diversity is markedly lower. Grasses such as Yorkshire fog and perennial rye dominate with occasional sweet vernal-grass, meadow foxtail and clover species (<i>Trifolium</i> sp.). Other species present include meadow buttercup, common chickweed, dandelion species (<i>Taraxacum</i> sp.) and spear thistle (see Appendix D and (Photograph 7, Appendix E).	3.37	Moderate
g4 [103] Modified grassland horse grazed	– Within the fenced grazing area at the central portion of the western land parcel, one field contains horses which graze the field. Species assemblage is consistent with that of other areas identified as g4 [102] – modified grassland – sheep grazed (see row above).	0.19	Moderate
w1g – other woodland, broadleaved	There are two pockets of broadleaved woodland located within the Site, both at the northern edge. There is an unmanaged mature hedgerow that has reverted into a small woodland at the northern Site boundary that is connected to a hedgerow that extends east and westwards (see Photograph 8, Appendix E). Tree species include hawthorn (<i>Crataegus monogyna</i>), field maple (<i>Acer campestre</i>), blackthorn (<i>Prunus spinosa</i>) and hazel (<i>Corylus avellana</i>), with other species including common ivy (<i>Hedra helix</i>) present. There is a larger woodland pocket centrally in the north of the Site which follows the path of running water. Species include field maple, pedunculate oak (<i>Quercus robur</i>), ash, hawthorn, blackthorn and elder (<i>Sambucus nigra</i>). Traveller's joy (<i>Clematis vitalba</i>) is present in the canopy and sub-canopy and understorey species include dog's mercury (<i>Mercurialis perennis</i>), ransoms (<i>Allium ursinum</i>) and teasel (<i>Dipsacus fullonum</i>). Broadleaved trees within this woodland average an approximate diameter at breast height (dbh) of 30-70 cm with an average height of approximately 10 m (see Photograph 9, Appendix E).	0.23	Moderate
u1d – suburban mosaic of developed and natural surface	A gravel driveway is present leading to a residential property within the central portion of the Site.	0.15	N/A
h3d – Bramble scrub	Within the western land parcel there is a section of bramble (<i>Rubus fruticosus</i>) scrub directly adjacent to a small pocket of woodland. Bramble is the dominant species with the occasional presence of common nettle (<i>Urtica dioica</i>) around the habitat edges. Within the eastern land parcel there is a section of bramble scrub approximately 1.5 m in height surrounding a small waterbody (P8).	0.08	N/A

UKHab Classification	Description	Habitat Area (ha)	Habitat Condition
h3h [32] Mixed scrub scattered trees	– An area of mixed scrub habitat is present surrounding a waterbody (P9) within grassland habitat in the east of the Site. Species present include bramble, blackthorn and hawthorn, with three scattered dead ash trees present (see Photograph 10, Appendix E).	0.03	Moderate
u1b5 Buildings	– There are two buildings within the Site boundary: • BN 1: A newly developed single storey residential property within the Site. This appears to be well-sealed and in regular use. Security lighting was noted on the outside of this property, and is assumed to be active and functional. • BN2: A small metal structure that is utilised as an electrical substation (see Photograph 11, Appendix E). See Figure 4, Appendix A for exact locations.	0.02	N/A
u1b Hardstanding	– A relatively small area of hardstanding exists in the north east of the Site, associated with an electrical substation (see Figure 1 (BN2), Appendix A and Photograph 11, Appendix E).	0.01	N/A
r1g	Nine ponds were identified within the Site boundary: • Pond P1: Visible evidence of sheep poaching of waterbody. Bulrush, hard rush, soft rush and one other rush species was identified within the marginal vegetation as well as floating and submerged macrophytes present (see Photograph 12, Appendix E). • Pond P2: Wet area with plastic pipe feeding the pond, assumed drainage for neighbouring agricultural and pasture fields. Seems to be fed by spring/stream to the south (see Photograph 13, Appendix E). • Pond P3: Stagnant area of standing water associated with adjacent flowing stream. It is considered likely that this waterbody will dry up in the summer. • Pond P4: Completely surrounded and shaded by vegetation. Next to a metal container and sheep fields. This pond is surrounded by mature willow (<i>Salix</i> sp.), hawthorn and pedunculate oak with some debris present within and at the pond edge. Minimal macrophyte cover was recorded. • Pond P5: This is surrounded by grassland fields and connected to other waterbodies via a drainage ditch with line of trees/hedge line running parallel. • Pond P6: This pond is heavily shaded and stagnant. It is surrounded by mature trees including willow, hawthorn, and pedunculate oak. Lots of bramble and yellow flag iris (<i>Iris pseudacorus</i>) were recorded around this pond. • Pond P7: Adjacent to road with some connectivity to woodland. This waterbody is surrounded by encroaching scrub habitat on the eastern side, with open grassland to the west. Macrophyte cover exceeds 50% of pond total area. • Pond P8: This pond is completely surrounded by scrub, the boundary is visible however water may not fill to this extent. • Pond P9: This pond is within a grassland field and surrounded by mixed scrub (see Photograph 10, Appendix E).	0.26	Poor - Good
g4 [104] Modified grassland other grazed	– Area of bare ground within wider modified grassland field. Area utilised for pig grazing within three individuals present.	0.2	N/A
UKHab Classification	Description	Habitat Length (m)	Habitat Condition
Linear Features			
h2a5 [32] Species-rich native hedgerow scattered trees	– The hedgerows are native species dominated (>80% native cover). Species include hawthorn, elder, blackthorn, field maple, pedunculate oak, willow, hazel, dogwood (<i>Cornus sanguinea</i>) and rose species (<i>Rosa</i> sp.). Understorey plant species include common nettle, thistle, cleavers (<i>Galium aparine</i>), dock species, herb Robert (<i>Geranium robertianum</i>), with infrequent dog's mercury and red campion (<i>Silene dioica</i>) (see Photograph 14 and 15, Appendix E).	3760	Moderate - Good
h2a6 hedgerow	– Native Hedgerows are present throughout the Site as boundaries separating fields from each other. The hedgerows are native species dominated (>80% native cover). The hedgerows are generally heavily managed within agricultural	3290	Moderate

UKHab Classification	Description	Habitat Area (ha)	Habitat Condition
	farmland. Species include a mixture of hawthorn, blackthorn and rose. Understorey plant species include common nettle, thistle, cleavers and dock species (see Photograph 16, Appendix E).		
h2a5 – Species-rich native hedgerow	The hedgerows are native species dominated (>80% native cover). In some areas, hedgerows are subject to less management and are overgrown and dense in form. Species include a mixture of hawthorn, elder, blackthorn, field maple, pedunculate oak, willow, dogwood (<i>Cornus sanguinea</i>) and rose species. Honeysuckle (<i>Lonicera periclymenum</i>) and black bryony (<i>Tamus communis</i>) were also present on occasion. Understorey plant species include white campion (<i>Silene latifolia</i>), germander speedwell (<i>Veronica chamaedrys</i>) and traveller's joy.	1630	Moderate
h2a6 [32] – Native hedgerow – scattered trees	A heavily managed blackthorn and hawthorn hedge, is present within the Site and is sparse in nature with gaps present. Several mature pedunculate oak trees are present along the hedgerow.	160	Poor
r2b – Other rivers and streams	Non-priority running watercourses that flow through the Site as streams adjacent to field boundaries.	990	Not assessed
r1g – Other standing water	Present as running water or dry ditches at time of survey, often associated with hedgerows and field margins/drainage channels. Species present within channels include: sedge (<i>Carex</i> sp.) and rush (<i>Juncus</i> sp.) species, willowherb species (<i>Epilobium</i> sp.), dock sp. and water mint (<i>Mentha aquatica</i>).	980	Poor-Good
w1g – Other woodland; broadleaved	Lines of scattered trees form small linear woodland pockets that run along in between hedgerows and along field margins. Pedunculate oak, ash and hawthorn trees comprise one linear woodland feature within the Site. Another linear woodland consists of mature pedunculate oak, trees in this area were noted to have an approximate dbh of 40-60 cm and a height of approximately 10 m. Woodland contains one dead ash. In another woodland, field maple dominates at approximately 6 m tall, hawthorn and blackthorn are present within the sub-canopy. The linear tree feature is managed very narrowly with crowns of field maple allowed to grow out.	640	Moderate
Point Features			
Individual tree	There are nine large individual trees within the Site boundary, including: - T1: Multi-limbed pedunculate oak covered with ivy adjacent to the Site at the western Site boundary. Approximately 8 m tall, with a dbh of 50cm. - T2: Pedunculate oak at the northern Site boundary. Lots of apparent damage with dead limbs and peeling bark present. - T3: Multi-limbed pedunculate oak covered with ivy adjacent to P5. Approximately 9 m tall with a dbh of 50 cm. - T4: Multi-limbed pedunculate oak within the south eastern field. Approximately 10-12 m in height with a dbh of 50 cm, multi limbed. - T5: Pedunculate oak present within the south eastern field.	N/A	Good
Individual tree [204] veteran tree	There are five mature pedunculate oak trees within the Site boundary with features indicative of veteran status including dead wood, fungus and cracked limbs. These are labelled T6-10 on Figure 1 (Appendix A), photographs 14-16 (Appendix E).	N/A	Good

3.2.3 Constraints and Recommendations

There is a risk of habitat loss, degradation and fragmentation across the Site as a result of the Proposed Development. The desk study returned information regarding areas of notable habitat within the Site including a UK BAP, Section 41 Priority Habitat: lowland meadows. During the field survey, areas of higher species abundance were observed within the southern fields of the eastern land parcel which is consistent with the Priority Habitat type 'lowland meadows' highlighted in the desk study. As the Proposed Development has potential to impact the areas highlighted as containing Priority Habitats, it is recommended that a NVC survey of the grassland habitats on Site is carried out. This survey should focus on the habitats within the eastern land parcel and the northern field of the western land parcel that appears to be highlighted within the LWS (see Figure 2, [Appendix A](#)). These surveys will cover the areas within the LWS as stated in Section 3.1.2. above. The aim of the NVC survey would be to confirm

the presence, or likely absence, of Priority Habitats within the Site boundary. A subsequent report should include the details of the survey, and recommendations for the avoidance and mitigation of impacts to any Priority Habitats identified.

Hedgerows throughout the Site are to be considered Priority Habitats and Section 41 on Natural Environment and Rural Communities Act (NERC) Act habitats of Principal Importance due to the presence of >80% native tree species. If the Proposed Development requires the removal of any section of hedgerow greater than 5 m, then further assessments are required on the impacted hedgerows as per the Hedgerow Regulations 1997 methodology to determine their ecological value. The Hedgerow Regulations 1997 are in place to prevent the removal of most countryside hedgerows without the prior submission of a hedgerow removal notice to the local planning authority.

At the time of writing, it has been confirmed that no works will be required within 10 m of the watercourses. To avoid adverse impacts to the watercourses on Site all works should be carried out following the CIRIA C715 Environmental Good Practice on Site handbook⁷. Works should avoid riparian areas to prevent adverse effects on the watercourses as a result of run off or habitat fragmentation. If this cannot be avoided, pollution prevention measures must be put in place as part of a Precautionary Working Method to prevent run off into the watercourse. The watercourses within the Site are not to be considered Priority Habitats as rivers due to their ephemeral nature as drainage channels and the fact that they do not meet the criteria outlined in the accepted definition⁸.

The watercourses within the Site have not been assessed for their condition in line with BNG guidelines at this stage. If the Proposed Development is to impact directly upon these watercourses or within the riparian zone a Modular River Physical (MoRPh) survey should be undertaken. Given that works are not currently anticipated within 10 m of the watercourses, no direct impact to them is anticipated as a result of the Proposed Development.

Waterbodies P1-3 and 5-9 have potential to support protected and notable species and may therefore meet the criteria to be classified as Priority Habitat⁹. P4 does not fit the status of Priority Habitats due to the lack of habitat of international importance, opportunities for protected/notable species and assemblage of key biotic groups¹⁰. In the first instance, impacts to all waterbodies within the Site boundary should be avoided. Where this is not possible, ponds with potential Priority Habitat status should be further assessed to determine the potential impacts of the Proposed Development and provide recommendations for specific mitigation measures.

Advice regarding mitigation and enhancements will be provided following completion of the above survey works; however, if vegetation clearance is required it is recommended that the area is kept to the smallest required for the works and maintains habitat connectivity throughout the wider Site and to adjacent habitats. Works should be carried out following best practice CIRIA C715 Environmental Good Practice On Site handbook¹¹ to prevent environmental run-off and degradation of the surrounding habitat.

A BNG assessment will be required and the Proposed Development should provide a net gain in biodiversity of at least 10% to satisfy the requirements of the Environment Act 2021. This requires all developments to achieve a minimum 10% net gain in biodiversity units relative to the Site's baseline (pre-development) biodiversity value. Any impacts on semi-natural habitats including broadleaved semi-natural woodland, scrub, species-rich hedgerows and semi-improved grasslands as recorded above should be avoided where possible or followed by off-site mitigation to offset their loss should be considered.

An Ecological Mitigation and Enhancement Strategy (EMES), or similar, would be beneficial once planning permission has been obtained and should outline the proposed habitat loss and mitigation for this, it should also outline how surrounding areas can be enhanced to account for losses that can't be avoided. In addition, it is recommended that a Construction Environmental Management Plan (CEMP), or similar, be prepared and implemented during construction to prevent adverse impact to the notable habitats.

⁷ Law and D'Aleo. (2016) PUB C762 Environmental good practice on site pocketbook. 4th edition. Ciria, London

⁸ JNCC (2011) *UK Biodiversity Action Plan Descriptions – Rivers* [Accessed online at: data.jncc.gov.uk/data/01d6ab5b-6805-4c4c-8d84-16bfebe95d31/UKBAP-BAPHabitats-45-Rivers-2011.pdf]

⁹ JNCC (2016) *UK Biodiversity Action Plan Descriptions – Ponds* [[Ponds \(UK BAP Priority Habitat description\) \(jncc.gov.uk\)](https://data.jncc.gov.uk/data/01d6ab5b-6805-4c4c-8d84-16bfebe95d31/UKBAP-BAPHabitats-45-Ponds-2016.pdf)]

¹⁰ JNCC (2016) *UK Biodiversity Action Plan Descriptions – Ponds* [[Ponds \(UK BAP Priority Habitat description\) \(jncc.gov.uk\)](https://data.jncc.gov.uk/data/01d6ab5b-6805-4c4c-8d84-16bfebe95d31/UKBAP-BAPHabitats-45-Ponds-2016.pdf)]

3.3 Badger

3.3.1 Desk Study

There are 32 recent records of badger (*Meles meles*) within the Study Area. Of these records, 21 are south of the Site and separated by the M4. The remaining 11 records are connected to the Site by grassland and woodland habitat, the closest of which is located approximately 0.3 km south west of the Site.

3.3.2 Field Survey

During the field survey no badger field signs were observed within the Site boundary.

The Site offers suitable badger foraging and commuting habitat, with woodland directly adjacent to the Site boundary that provides optimal sett creation habitat.

The neutral and modified grassland habitats provide suitable foraging habitat for badger, and the Site as a whole provides good commuting habitat which links up areas of woodland that are present in the west, north east and central portions that provide sett building habitat. The areas of scrub, woodland and mature hedgerows on Site may provide areas of habitat suitable for sett creation although these are limited within the Site boundary. Given the surrounding habitats, it is likely badger are using the area despite the absence of field signs were observed during the Site survey.

3.3.3 Constraints and Recommendations

Evidence of badger was not observed within the Site, however the habitats within the Site provide suitable opportunity for badger. Badger are also a mobile species which may move into an area at a later date. As a result, direct impacts to badger and their setts cannot be entirely ruled out. It is recommended that a pre-works check for badger, no less than 48 hours prior to commencement of works, be undertaken by a suitably experienced Ecological Clerk of Works (ECOW).

Badgers are dynamic in their use of the landscape and can readily excavate new setts. The scrub habitat, broadleaved woodland and mature hedgerows within and directly adjacent to the Site boundary may provide suitable sett creation habitat. These areas should therefore be checked prior to the commencement of works on Site. Should works be required within 30 m of any setts identified during the pre-works check, a licence to cover the permanent closure of the sett will be required. If a main sett is found that may be impacted by the Proposed Development, further surveys for badger will be required.

It has been confirmed that a 30 m buffer around ancient woodland areas on the boundary of the Site will be implemented in which no works are anticipated. Where possible, ground-breaking works should be avoided within 30 m of all woodlands to avoid impacts on badger setts potentially present within the woodlands.

Temporary works lighting should be directed to avoid light spill onto vegetated habitat within the Site and light spill on any sett entrances must be avoided. Excavations should not be left open overnight. If they are, a means for badger and other mammals to escape, such as a plank, should be provided.

3.4 Bats

3.4.1 Desk Study

The desk study identified no internationally designated Site that cite bats within 10 km of the Site. The desk study returned field records of at least 14 bat species within 10 km of the Site. For full details of species recorded and approximate locations see Table 3 below.

A former European Protected Species Mitigation Licence (EPSML) (2019-42647-EPS-MIT) was granted for damage of a resting place in use by brown long-eared bat (*Plecotus auritus*), common pipistrelle (*Pipistrellus pipistrellus*) and soprano pipistrelle (*Pipistrellus pygmaeus*) in 2019 located approximately 1.88 km east of the Site boundary at its closest point, as shown on Magic.gov.uk.

Table 3. Bat Foraging and Roosting Records within the Study Area

Species		Foraging/Communing and Location ¹²	Records	Roosting Records and Location ¹²	Species Core Sustenance Zone (CSZ) ¹³ radius
Brandt's brandtii)	bat (Myotis)	Three records, closest 1.5 km west of the Site and connected via woodland and grassland		A single record, located approximately 2.7 km north of the Site and connected via woodland and grassland	1 km
Natterer's nattereri)	bat (Myotis)	56 records, closest is 1.5 km west of the Site and connected to it via woodland and grassland		13 records, closest 2.2 km north of the Site and connected to it via woodland and grassland	4 km
Noctule (Nyctalus noctula)		205 records, closest is 1.5 km west of the Site and connected to it via woodland and grassland		Four records, closest 3 km north of the Site and connected to it via woodland and grassland	4 km
Whiskered mystacinus)	bat (Myotis)	Seven records, closest is 1.6 km south west of the Site and connected to it via woodland and grassland		4 records, closest is 3 km north east of the Site and connected to it via woodland and grassland	1 km
Brown long-eared bat		76 records, closest 1.7 km north west and connected via woodland and grassland		23 records; closest 2.5 km north west and connected via grassland and woodland	3 km
Common pipistrelle		323 records, closest 1.7 km north west and connected via woodland and grassland		37 records; closest 1.3 km west and connected via woodland and grassland	2 km
Soprano pipistrelle		286 records, closest 1.7 km north west and connected via woodland and grassland		28 records, closest 2.2 km north of the Site and connected to it via woodland and grassland	3 km
Serotine serotinus)	(Eptesicus)	85 records, closest 1.7 km north west and connected via woodland and grassland		Eight records, closest is 3 km north east of the Site and connected to it via woodland and grassland	4 km
Daubenton's daubentonii)	bat (Myotis)	43 records, closest 1.7 km north west and connected via woodland and grassland		One record 9 km north at Cleveland Lakes Nature reserve	2 km
Bechsteins's bat (Myotis bechsteinii)		Four records, closest 3 km west of the Site and connected via woodland and grassland		14 records; closest is 4.7 km north west of the Site and connected via woodland and grassland	3 km
Barbastelle barbastellus)	(Barbastella)	25 records, closest is 4.7 km north west of the Site and connected via grassland and woodland		No roost records	3 km
Lesser horseshoe (Rhinolophus hipposideros)	bat	21 records, closest is 4.9 km north west and connected via woodland and grassland		11 records, closest 6.4 km south west – some separation via the M4 and the great western main line	2 km
Greater horseshoe (Rhinolophus ferrumequinum)	bat	Five records, closest 5.8 km south east along the Great Western Main Line, to the south of the M4		One record 8.5 km south west – some separation via the M4 and the great western main line	3 km
Leisler's leisleri)	bat (Nyctalus)	Ten records, closest 8.1 km north of the Site associated with Cleveland Lakes Nature reserve		No roost records	3 km
Nathusius' pipistrelle (Pipistrellus nathusii)		42 records, closest 8.1 km north of the Site associated with Cleveland Lakes Nature reserve		No roost records	3 km

¹² Where records are situated outside of the Site boundary, the distance and direction is given at the closest point of the feature from the Site

¹³ Bat Conservation Trust (2016). Core Sustenance Zones. Available at: <https://www.bats.org.uk/our-work/landscapes-for-bats/core-sustenance-zones> (Accessed: 30/09/21)

3.4.2 Field Survey

3.4.2.1 Roosting Bats

A daytime bat walkover (DBW) and/or preliminary roost assessment (PRA) of structures within the Site was not carried out during the PEA walkover. The woodland within the Site is made up of trees that are of a size and age class that are likely to support potential roosting features for bats. There are also trees throughout the Site that have potential to provide features with suitability for roosting bats. Five potential veteran trees were recorded within or directly adjacent to the Site (see Target Notes 12, 14-16, [Appendix E](#)) which have the potential to support roosting bats. The two buildings on Site (see Figure 1, BN1 and BN2, [Appendix A](#)) include a modern residential property and an electrical substation built from metal.

Adjacent to the Site boundaries, the woodlands offer bat roosting suitability with mature trees overhanging the Site. Breeding great spotted woodpecker (*Dendrocopos major*) were incidentally sighted during the PEA walkover and woodpecker holes were observed within trees in this woodland, these may have potential to support roosting bats.

3.4.2.2 Foraging and Commuting Bats

Overall, the habitats on the Site have been assessed as having Moderate¹⁴ suitability for commuting and foraging bats. This is due to the presence of several habitats with suitability for foraging, including grasslands, waterbodies and scrub. There are also several hedgerows and watercourses which are likely to provide suitable commuting and foraging corridors for bats, including connectivity to the neighbouring broadleaved woodlands. The Site is well-connected to the surrounding landscape, with minimal anthropogenic impact and minimal artificial light spill to the north of the Site. Given the lack of broadleaved woodland within the Site itself, and proximity to the M4 which is likely to sever connectivity to the south, the Site is unlikely to provide High suitability habitat for commuting and foraging bats.

3.4.3 Constraints and Recommendations

The Site is within the CSZ of roosts for several bat species recorded in proximity to the Site: brown long-eared bat, Natterer's bat, noctule, serotine and soprano pipistrelle. The CSZ refers to the area around bat roosts in which the availability of habitat of suitable quality is likely to have a significant influence on the status of the roost. Developments within the CSZ may impact bats using said roost sites.

3.4.3.1 Roosting Bats

There are several structures and trees within and adjacent to the Site with potential to support roosting bats that have not been comprehensively assessed. The areas of woodland directly adjacent to the Site are ancient in designation with trees of an age class to have the potential to support populations of roosting bats.

Without further investigation, and a mitigation plan during construction and operation the following indicative potential impacts are anticipated:

- habitat loss, severance and fragmentation;
- loss and/or disturbance of breeding and resting sites of bats;
- disturbance, injury or killing of bats during site clearance and construction works;
- disturbance, injury or killing of bats during operation where bats are retained within the Site;
- disturbance from noise and vibration (if piling is required); and,
- external lighting disturbance.

Further surveys should be undertaken to confirm the presence or likely absence of bats.

3.4.3.1.1 Tree Assessment

It is recommended that a full Ground Level Tree Assessment (GLTA) of all trees with potential to be impacted by the Proposed Development, both within and adjacent to the Site boundary, be undertaken. This survey will inform the requirement for additional surveys (tree climbing inspection, emergence and re-entry surveys) if trees with bat roost suitability area identified on the Site.

¹⁴ Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). The Bat Conservation Trust, London.

3.4.3.1.2 Buildings and Structures

It is understood that no buildings will be demolished to facilitate the Proposed Development, however there is potential for the construction phase to cause disturbance to bats potentially roosting within these buildings. As such, it is recommended that a full ground level Preliminary Roost Appraisal (PRA) of buildings within the Site should be undertaken. This survey will inform the requirement for additional surveys (emergence and re-entry surveys) if structures with bat roost suitability area identified on the Site.

3.4.3.2 Foraging and Commuting bats

The Site has been assessed as having Moderate suitability for foraging bats due to the range of habitats across the Site with some species-rich grasslands to the south and some sheep grazed grassland to the west and hedgerows with suitability for commuting bats throughout. Habitats within the Site also include running and standing water, with large areas of broadleaved woodland directly adjacent to the Site boundary in several locations.

3.4.3.2.1 Bat Activity Surveys

As impacts are anticipated on Moderate suitability foraging/commuting habitats for bats, it is recommended that bat activity surveys are undertaken to ascertain the presence and/ or level of bat activity within the Site in line with the current guidelines¹⁵. This should include night-time bat walkovers (NBWs) and the deployment of automated/static bat detectors.

Activity surveys include manual NBW surveys in which an ecologist should attend the Site at dusk for an initial period of observation (at least 30 minutes) at high priority areas (next to potential roost sources such as woodlands or suitable buildings) to target bats commuting from potential roosting sites. The NBW will then require surveyors to walk the Site, recording the presence of bats, their activity and direction of flight.

The NBW surveys will be supported by the deployment of at least six remote bat detectors to be utilised on five consecutive nights per month from April-October, inclusive, in appropriate weather conditions for bats.

These surveys have been commissioned and have commenced during the 2024 bat survey season. Additional mitigation measures may be provided following the completion of these surveys.

3.5 Hazel Dormouse

3.5.1 Desk Study

There are no recent records of hazel dormouse (*Muscardinus avellanarius*) within the Study Area.

3.5.2 Field Survey

The Site is predominantly comprised of grassland habitats intersected by hedgerows which provide suitable habitat for dormice. Although the hedgerows are comprised of native species of flowering shrubs that provide a food source for the species, these are mostly suboptimal for dormouse given their regular management and domination by hawthorn.

The native species-rich hedgerow within the north of the Survey Area, however, provides suitable dormouse habitat with direct connectivity to the Frith Copse woodland that provides optimal dormouse habitat. This hedgerow includes known hazel dormouse food plants, including hazel, as well as a structurally diverse habitat to satisfy the arboreal needs of hazel dormouse.

The small area of broadleaved woodland within the north of the Survey Area lies within close proximity to the hedgerow identified as having dormouse suitability and has ecological connectivity to the wider landscape. The woodland offers some habitat for the species; however the woodland lacks a year-round food source due to limited suitable understorey vegetation and is therefore considered suboptimal habitat for hazel dormice.

3.5.3 Constraints and Recommendations

The hedgerows within Site mostly offer suboptimal habitat for hazel dormouse. However, the native species-rich hedgerow present within the north of the Survey Area with connectivity to Frith Copse woodland provides optimal dormouse habitat due to its structural and botanical diversity.

¹⁵ Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologist: Good Practice Guidelines (4th edition). The Bat Conservation Trust, London.

Following the hierarchy of mitigation, in the first instance, it is recommended that impacts to all hedgerows on Site are to be avoided in order to avoid potential impacts to hazel dormouse. From the concept designs it appears that access tracks through hedgerows will be required throughout the Site. Where the removal of vegetation within a hedgerow is required, there is potential for this to lead to the disturbance, injury or death of individual hazel dormouse.

To assess the potential impact of the Proposed Development, and identify required mitigation, it is therefore recommended that surveys for hazel dormouse are undertaken. This requires the deployment of nest tubes within suitable habitat, which would be checked by a licensed ecologist at regular intervals during the summer. Ideally these would be checked once per month April-November to give the greatest confidence in the results with a deployment no later than end-June. However, given the timeframes for the Proposed Development, it is recommended that 75 nest tubes are deployed in July 2024, with a check to be undertaken by a licensed ecologist once per month August-November, inclusive. This would produce an index of confidence of 24, therefore providing a survey effort of sufficient confidence to confirm absence of hazel dormouse should no field signs be recorded during the survey¹⁶. Should hazel dormouse be confirmed present within the habitats on Site, a European Protected Species Mitigation Licence (EPSML) may be required to facilitate the Proposed Development. Should this be the case, an additional survey will be required in May to identify a population size estimate within the footprint of the works to inform a licence application.

3.6 Riparian Mammals - Otter and Water Vole

3.6.1 Desk Study

3.6.1.1 Otter

There are three recent desk study records of otter (*Lutra lutra*) within the Study Area. There are two records within 0.6 km south of the Site, however these are separated by the M4. The final record is connected to the Site by grassland and woodland; located approximately 0.7 km north west of the Site. None of these records are associated with watercourses that have hydrological connectivity to the Site.

3.6.1.2 Water Vole

There are two recent records of water vole (*Arvicola amphibius*) within the Study Area associated with waterbodies associated with the Flaxlands Fisheries. The closest record is located approximately 130 m south of the Site and the other approximately 390 m south. The Ordnance Survey Grid Reference (OSGR) for the closest record appears to be associated with Flaxlands Manor Farm, directly adjacent to the Site.

3.6.2 Field Survey

3.6.2.1 Otter

There are nine ponds within the Site as well as drainage ditches throughout the field systems and running water present in the western land parcel. The waterbodies throughout the Site offer suboptimal foraging and commuting opportunities for otter due to the lack of foraging resources within the ponds on Site. A watercourse flows adjacent to the Site at the western Site boundary that may offer a foraging resource for the species within close proximity to the Site.

3.6.2.2 Water Vole

Nine ponds were identified within the Site along with running water and ditches present beneath hedgerows.

Pond P1 offers suboptimal water vole habitat due to lack of shelter from predation, although foraging resources are available for the species. No field signs were observed within the waterbody, however this waterbody is within close proximity to a running watercourse that offers suitable habitat for water vole.

The running water present within the south of the western land parcel offers suitable water vole habitat, as sheltered beneath a hedgerow, with opportunities for burrowing within the banks and bankside vegetation for foraging.

Feeding remains and droppings were identified near waterbody (P2) within the west of the Site (see Photograph 17, [Appendix E](#)). Disused mammal burrows were also identified within close proximity to the same waterbody, however these were considered too small for water vole (Photograph 18, [Appendix E](#)). The field signs observed are not conclusive of water vole presence however the watercourse flowing north to south from the nearby waterbody is associated with suitable banks for water vole burrow creation and vegetation for foraging with some

¹⁶ Chanin, P. & Woods, M. (2003) Surveying dormice using nest tubes. Results and experiences from the South West Dormouse Project. *English Nature Research Report* No. 524.

emergent vegetation and well-vegetated banks. The Proposed Development has the potential to impact suitable water vole habitat if works, including vegetation clearance, are required in close proximity to waterbodies within the Site.

The remaining seven waterbodies (Waterbodies P3-9, see Figure 4, [Appendix A](#)) offer limited opportunities for water vole due to being completely surrounded by scrub habitat (P4,7 and 8), lacking suitable foraging opportunity (P3 and 5) and minimal burrowing opportunities due to insufficient bank structure (P5 and 9).

The drainage ditches present throughout the agricultural fields on Site predominantly associated with hedgerows and field margins offered some suitability for water vole due to their steep banks providing opportunities for burrowing and marginal vegetation for foraging as well as protection from predation offered by the hedgerows above. Many of these ditches were dry at the time of the survey and the seasonal nature of these ditches reduces the suitability for water vole as they lack the year round body of water they require.

3.6.3 Constraints and Recommendations – Otter

The Site does not offer suitability for foraging otter due to the lack of suitable watercourse/waterbodies to sustain a food supply for otter. There is a flowing watercourse directly adjacent to the western edge of the Site which otter may utilise for commuting and foraging.

The watercourses acting as drainage ditches throughout the Site may be utilised by opportunistic otter on an ad-hoc basis. There is a watercourse that flows adjacent to the western boundary of the Site that may offer suitable foraging habitat for otter. As such otter may utilise the P1 and P2 within the west of the western land parcel on an exploratory ad-hoc basis.

All ponds and watercourses should therefore be subject to an otter survey which includes a search for field signs and nearby holts to determine presence/likely absence.

3.6.4 Constraints and Recommendations – Water Vole

Suitable habitat for water vole is present within the Site due to the availability of foraging resources, shelter from predation and suitable bank structure for burrowing. Ponds, including P1 and P2, offer the most suitable habitat for the water vole within the Site, with small mammal field signs observed at P2.

Some ponds lacked sufficient marginal vegetation to provide suitable for water vole however ditches associated with hedgerows throughout the Site provide some connectivity for opportunistic individuals. The ponds within the west of the Site provides habitat for water vole with suitable banks for burrows and aquatic vegetation for foraging. It is recommended that all ponds within the Site boundary are subject to further surveys for water vole.

A minimum of two surveys to determine water vole presence/ likely absence are recommended at each waterbody and watercourse throughout the Site. These should be undertaken with the first between mid-April to the end of the June, and the second between July to the end of September. Surveys should not be undertaken following periods of heavy rain (taken to be >0.3 inches of rain falling in one hour) and/or high-water levels. These factors can obscure/ remove signs of water vole presence and result in false negative survey results.

To prevent environmental run off into habitat in use by otter and water vole, pollution prevention measures¹⁷ as described above should be followed. Work near watercourses should be avoided at dawn, night-time and dusk, to minimise disturbance to otter as they are a nocturnal species.

A sensitive lighting scheme should be implemented to limit any light spill upon all watercourses, hedgerows and woodland within or adjacent to the Site. This would reduce disturbance to nocturnal wildlife such as badger, bats, otter and hedgehogs during both construction and operation. This should follow guidance within the Bat Conservation Trust & Institution of Lighting Professionals Guidance Note 08/18¹⁸.

¹⁷ Law and D'Aleo. (2016) PUB C762 Environmental good practice on site pocketbook. 4th edition. Ciria, London

¹⁸ Bat Conservation Trust (2018) Bats and artificial lighting in the UK: Bats and the Built Environment Series. Available online: <https://www.bats.org.uk/our-work/buildings-planning-and-development/lighting>

3.7 Great Crested Newt

3.7.1 Desk Study

There are nine recent records of great crested newt (*Triturus cristatus*) within the Study Area. The records are located across two separate sites, the first of which has seven records located approximately 1.9 km south of the Site associated with a nearby quarry and separated from the Site by a network of minor roads. The second site has two records located approximately 1.4 km south of the Site and separated from the Site by the M4.

The desk study identified 9 ponds within the Site boundary using OS mapping. A further 22 waterbodies with ecological connectivity to the Site within 250 m of the Site were also located.

- Aerial imagery identifies agricultural grassland surrounding the majority of the Site however there are small areas of residential properties with private gardens. It is possible that some gardens may contain ponds that are not visible on OS mapping and may provide suitable habitat for great crested newts.
- A former EPSML (EPSM2009-1556) was granted for great crested newt in 2010 located approximately 1.7 km east of the Site as shown on Magic.gov.uk. The Site is located within a Green/Amber Risk Zone for District Level Licensing (DLL).

3.7.2 Field Survey

All nine waterbodies on Site were appraised for their suitability for great crested newt, many contained water at the time of the survey and provide suitable habitat for breeding great crested newts. Macrophytes and marginal vegetation was observed in many of the ponds, providing suitable egg-laying material. Suitable terrestrial habitat is present within and adjacent to the Site in the form of grassland, scrub, woodland and hedgerows. Two brash piles were identified on Site (see Target Notes TN1 and TN3, [Appendix D](#) and Photograph 19, [Appendix E](#)), however these offer limited hibernating potential for amphibian species due to their open structure and apparent temporary nature.

Most ponds within the 250 m buffer were also assessed for great crested newt suitability and as a result ten of these ponds were ruled out due to distance, lack of water or presence of fish. Two ponds within Flaxlands Fisheries were ruled out due to the presence of a large, stocked fish populations and disturbance. One pond east of the Site was in fact a flowing waterbody and therefore unsuitable for the species.

Given that there are ponds present throughout the Site, and they are likely to be connected via a network of drainage ditches, there is potential for great crested newt to be present within the Site. Suitable terrestrial habitat is also present to provide great crested newt with habitat throughout the year.

3.7.3 Constraints and Recommendations

There are local records of great crested newt within the Study Area, nine ponds within the Site and a further twelve identified within 250 m of the Site with suitable habitat for great crested newts and connectivity to the Site provided via grassland, hedgerows and ditches. Great crested newts spend most of their lives on land and the terrestrial habitat surrounding a pond is as important to them as the pond is. Habitats surrounding the waterbodies on Site may constitute important terrestrial habitat for great crested newt if they are present within these ponds. A 10 m buffer around all waterbodies has been agreed in which no works to facilitate the Proposed Development are required. Direct impact to the ponds, including a change in bank nature and vegetation, are therefore not anticipated.

Without mitigation, during construction and operation the following indicative potential impacts are anticipated:

1. habitat loss, severance and fragmentation; and,
2. disturbance, injury or killing of great crested newts within their terrestrial habitat during site clearance and construction works.

A 10 m buffer around all waterbodies has been agreed, however pond P4 has been identified as having the potential to be removed. As a result all ponds will require further surveys to identify their suitability for great crested newt and specific mitigation requirements.

Further surveys for great crested newts are recommended which will include detailed Habitat Suitability Index (HSI)¹⁹ assessments of all ponds and presence/absence surveys in the form of environmental DNA (eDNA) surveys. If great crested newt are detected present from eDNA sampling a licence may be required to undertake the Proposed Development lawfully. The DLL is an option in Wiltshire under the Natural England DLL scheme²⁰, which would not require further survey and would involve licence application and a compensation payment. Instead of relying solely on site-specific mitigation and compensation, developers choosing DLL make a 'Conservation Payment' which is used to fund a net increase in great crested newt habitat elsewhere.

3.8 Common Species of Reptile

Common species of reptile refers to common lizard (*Zootoca vivipara*), slow worm (*Anguis fragilis*), adder (*Vipera berus*) and grass snake (*Natrix helvetica*).

3.8.1 Desk Study

The desk study returned 14 records of slow-worm recorded within 2 km of the Site; all of which are located approximately 1.9 km north of the Site at Purton, with some connectivity to the Site via grassland and woodland. Minor roads are present between the records and the Site and may cause some ecological separation. There is one record of grass snake south of the Site at Royal Wootton Bassett, separated from the Site by the M4.

3.8.2 Field Survey

The habitats within the north of the Survey Area are considered to have suboptimal suitability for common reptile species due to the grass sward height of the grassland with small areas of scattered scrub for active reptiles. The nearby woodland and dense scrub offer shelter and may be suitable for hibernating individuals.

The habitats throughout the rest of the Survey Area offer minimal suitable habitat for both sheltering and basking reptiles due to the long average sward height of the ungrazed grassland habitats. The grazed modified grassland areas are equally as unsuitable for sheltering and basking reptiles due to the homogenous short sward height and disturbed nature associated with sheep grazing farmland. The Site offers hibernating potential within broadleaved woodland, hedgerows and scrub habitat. Two brush piles were identified on Site (see Target Notes TN1 and TN3, [Appendix D](#) and Photograph 19, [Appendix E](#)), however these offer limited hibernating potential for reptile species due to their open structure and apparent temporary nature.

3.8.3 Constraints and Recommendations

The neutral grassland habitat within the north of the Survey Area offers suitable habitat for reptiles with opportunities for basking and hibernating with nearby shelter offered by scrub and broadleaved woodland habitat. It is therefore recommended that surveys are undertaken in this area of the Site to confirm the presence or likely absence of common reptiles should vegetation removal be required in this area to facilitate the Proposed Development. Artificial Cover Objects (ACOs) should be placed within areas of suitable habitat at an appropriate density in mid-August and checked for presence of reptiles in September. At least seven survey visits during suitable weather conditions would be required to meet current survey guidelines^{21,22}.

The majority of the grassland on Site offers sub-optimal reptile basking and sheltering habitat. Hibernation potential is also limited to relatively small areas of woodland, scrub and hedgerows habitats within the Site. It is therefore considered unlikely that reptiles are present in the majority of the Site. Where vegetation clearance is required within these areas of the Site, it is recommended that this is undertaken following a precautionary methodology, including a directional approach whereby clearance should be undertaken towards retained habitats during the active reptile season (May-September, inclusive). An ecological watching brief should be included during the reptile active season, so any reptiles present can be actively displaced into adjacent, retained habitats. The removal of features suitable for hibernating reptiles, including the described habitats and hibernaculum, should be avoided during the reptile hibernating season (October-April, inclusive).

¹⁹ Habitat Suitability Index score is an assessment of the potential for a waterbody to support great crested newts. See [Appendix C](#) for more details.

²⁰ <https://www.gov.uk/government/publications/great-crested-newts-district-level-licensing-schemes-for-developers/developers-how-to-join-the-great-crested-newt-district-level-licensing-scheme>

²¹ Froglife (1999) Froglife Advice Sheet 10: reptile survey – an introduction to planning, conducting and interpreting surveys for snakes and lizard conservation. Froglife, Halesworth

²² Gent, T. & Gibson, S. (1998) Herpetofauna Worker's Manual. JNCC, Peterborough
English Nature (2004) Reptiles: guidelines for developers. Natural England, Peterborough

3.9 Birds

3.9.1 Desk Study

The desk study returned 679 records of 36 species of protected and priority bird within 2 km of the Site.

Records of 11 species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) were identified within 2 km of the Site boundary; species include barn owl (*Tyto alba*), brambling (*Fringilla montifringilla*), crossbill (*Loxia curvirostra*), fieldfare (*Turdus pilaris*), hobby (*Falco subbuteo*), kingfisher (*Alcedo atthis*), marsh harrier (*Circus aeruginosus*), osprey (*Pandion haliaetus*), peregrine (*Falco peregrinus*), red kite (*Milvus milvus*) and redwing (*Turdus iliacus*).

Records of 17 Section 41 NERC Act species were recorded within 2 km of the Site boundary; species include cuckoo (*Cuculus canorus*), curlew (*Numenius arquata*), grasshopper warbler (*Locustella naevia*), herring gull (*Larus argentatus*), house sparrow (*Passer domesticus*), lapwing (*Vanellus vanellus*), lesser redpoll (*Acanthis cabaret*), lesser spotted woodpecker (*Dryobates minor*), linnet (*Linaria cannabina*), marsh tit (*Poecile palustris*), reed bunting (*Emberiza schoeniclus*), skylark (*Alauda arvensis*), spotted flycatcher (*Muscicapa striata*), starling (*Sturnus vulgaris*), tree pipit (*Anthus trivialis*), yellow wagtail (*Motacilla flava*) and yellowhammer (*Emberiza citrinella*).

Of the records of birds identified during the desk study, a total of 22 species are listed on the Birds of Conservation Concern 4 (BoCC 5) red list and six species feature on the BoCC 5 amber list.

3.9.2 Field Survey

The undisturbed grassland habitats within the eastern land parcel offer suitability for ground nesting birds such as skylark within the Site. The grassland habitats also provide suitable foraging habitat for barn owl and other birds of prey. Barn owl is a Schedule 1 species and it is an offence to intentionally or recklessly disturb at, on or near an active nest. The broadleaved woodland within the Site offers suitability for nesting birds within the canopy of trees or within the understorey below as well as the mature hedgerows and those containing trees.

The running water and waterbodies present on Site do not offer suitable foraging habitat for kingfisher, however the watercourse running adjacent to the Site along the western boundary does, and therefore the Site may be used by the species for commuting or exploratory foraging.

During the Site visit, breeding great spotted woodpecker were recorded within Frith Copse to the east of the Site, red kite were recorded foraging adjacent to the north of the Site as well as the following species which were incidentally sighted on Site: greenfinch (*Carduelis chloris*) (BoCC 5 red list), common buzzard (*Buteo buteo*), common chaffinch (*Phylloscopus collybita*) and goldcrest (*Regulus regulus*).

3.9.3 Constraints and Recommendations

All birds and their nests are protected by the Wildlife and Countryside Act 1981 (as amended) during the breeding season. Breeding birds are likely to be present within and directly adjacent to the Site. Therefore, without mitigation the following potential impacts are anticipated as a result of the Proposed Development:

- habitat degradation, severance and fragmentation;
- disturbance of breeding birds during site clearance and construction works (if undertaken during the breeding bird season (March-September inclusive)); and,
- disturbance from noise and vibration (if piling is required).
- AECOM have been commissioned to undertake a series of breeding bird surveys within the Site in order to establish a general breeding bird assemblage and map territories of breeding birds across the Site based on a territory mapping method following Bibby et al. (2000)²³ and Gilbert et al. (1998)²⁴.
- Five surveys are to be undertaken between March and June where all areas of the Site will be walked, and a further survey between July and August for late breeding species such as hobby. Further recommendation including mitigation for breeding birds will be outlined within a separate breeding bird report.

²³ Bibby, C.J., Burgess, N.D., Hill, D.A. and Mustoe, S.H. (2000). Bird Census Techniques: 2nd edition. Academic Press, London

²⁴ Gilbert, G., Gibbons, D.W. and Evans, J. (1998). Bird Monitoring Methods: A manual of techniques for key species. RSPB/BTO/JNCC/WWT/ITE/The Seabird Group. RSPB/BTO, Sandy, Beds

3.10 Terrestrial Invertebrates

3.10.1 Desk Study

The desk study returned 481 records of 12 protected and priority terrestrial invertebrate species within 2 km of the Site. This includes:

- five butterflies including:
 - marsh fritillary (*Euphydryas aurinia*) a UK BAP priority species and listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended); and,
 - brown hairstreak (*Thecla betulae*), small heath (*Coenonympha pamphilus*), white admiral (*Limenitis camilla*) (all Section 41 NERC Act species) and purple emperor (*Apatura iris*) (ICUN Red Data list species).
- four moths: cinnabar (*Tyria jacobaeae*), forester (*Adscita statices*), green-brindled crescent (*Allophyas oxyacanthae*), shaded broad bar (*Scotopteryx chenopodiata*) all Section 41 NERC Act species and UK BAP priority species; and,
- one true fly, hornet robberfly (*Asilus crabroniformis*) a Section 41 NERC Act species.

The desk study highlighted the presence of lowland calcareous grassland directly adjacent to the eastern land parcel of the Site. Calcareous grassland provides a habitat of unique species composition and one of the most species rich grassland types in Britain²⁵. If the species assemblage adjacent to the Site is in fact indicative of this habitat type, then the invertebrate populations could reflect the high value habitat and may be present within the Site.

3.10.2 Field Survey

The improved sheep grazed grassland present throughout the western land parcel is uniform in structure and is heavily grazed meaning it is unlikely to support a rich and diverse invertebrate population. Within the neutral grassland habitats, especially within the south of the Site, an abundance of flowering plant species were recorded indicating a variety of opportunities for terrestrial invertebrates. The habitats within the Site generally offer opportunity for invertebrates that favour open spaces and meadows. Field scabious, a suitable though suboptimal foodplant of the marsh fritillary butterfly, was recorded within the eastern land parcel.

The woodland and scrub habitat within the Site also provide suitable opportunity for a variety of invertebrate species, most notably those that favour dead wood, shade, and enclosed spaces. The watercourses and standing waterbodies provide suitable habitat for terrestrial invertebrates, such as hunting habitat for dragonfly and damselfly species.

A significant presence of terrestrial invertebrates within the Site was incidentally noted during the field surveys to inform this PEA, with frequent observations of butterfly and moth species, as well as bumblebees (*Bombus* spp.) within the grasslands.

3.10.3 Constraints and Recommendations

With local records of priority invertebrate species and the presence of suitable species rich grassland habitat on the Site there is potential for loss, degradation and fragmentation of habitat in use by terrestrial invertebrates as a result of the Proposed Development.

Local records of marsh fritillary were returned within the Desk Study. The marsh fritillary's main habitats are damp grasslands, chalk grasslands, and shorter coastal grasslands. The primary food source for marsh fritillary larvae is devil's-bit scabious (*Succisa pratensis*), though other scabious species, including field scabious and small scabious (*Scabiosa columbaria*) are used occasionally on calcareous grasslands.

If the neutral grassland habitats within the southern portion of the eastern land parcel is to be permanently impacted by the Proposed Development, it is recommended that a targeted search for scabious species, particular devil's bit scabious, is undertaken. This will be included in the NVC survey as described in Section 3.2. Should a high number of scabious plants be identified within the Site boundary, it is recommended that a survey for the presence of marsh

²⁵ English Nature (2003) *A review of the invertebrates associated with lowland calcareous grassland*. Accessed online at: naturalengland.org.uk

fritillary butterfly is undertaken. This would include a search of larval webs, located at the base of scabious plants, in August. Following this, specific mitigation measures can be recommended for the avoidance, mitigation and compensation of impacts to individuals and habitats in use by marsh fritillary.

The areas of calcareous grassland suitable for terrestrial invertebrates such as marsh fritillary directly adjacent to the Site are not likely to be impacted by the Proposed Development as it is assumed that pollution prevention controls, as detailed in Section 3.1, will be implemented for the duration of works. As such, invertebrates potentially present within calcareous grassland adjacent to the Site are unlikely to be impacted by the Proposed Development and will not require further survey.

Much of the suitable habitat for terrestrial invertebrates lies within the southern portion of the eastern land parcel. It is therefore anticipated that habitat loss in this area will be avoided, however the Proposed Development may have a degrading effect on the suitability of grassland habitats for terrestrial invertebrates. In this case mitigation would be required, including the creation, or enhancement, of additional habitat suitable for impacted terrestrial invertebrates.

The improved and sheep grazed grassland habitats on Site are unlikely to support a rich invertebrate assemblage and therefore require no further survey for terrestrial invertebrates.

3.11 Aquatic Species

3.11.1 Desk Study

The desk study returned no records of protected and priority fish or aquatic invertebrate (including white-clawed crayfish; *Austropotamobius pallipes*) species within 2 km of the Site.

3.11.2 Field Survey

The aquatic habitats on Site including ponds, ditches and running water may provide suitable habitats for fish species and aquatic invertebrate species. The nine ponds within the Site boundary provide suitable habitat for aquatic macroinvertebrate and invertebrate species excluding white-clawed crayfish which favour alkaline, calcium rich, clean and well-oxygenated waterbodies.

3.11.3 Constraints and Recommendations

There is suitable habitat within the Site boundary for aquatic species. If all waterbodies and watercourses on Site are to be retained, no impacts from the Proposed Development are anticipated. It is anticipated that a buffer of at least 10 m will be applied to aquatic habitats which will be incorporated to the design of the Proposed Development and no works will take place within this area. All works must follow pollution prevention measures as previously outlined in Section 3.1 to prevent environmental run-off into habitat suitable for aquatic species.

Should the permanent loss of any watercourse/waterbody be required to facilitate the construction of the Proposed Development, further mitigation will be required and should be developed following input from an appropriately experienced ecologist.

3.12 Invasive and Non-native Plant Species

3.12.1 Desk Study

No recent records of Invasive Non-Native Plant Species (INNPS) as listed on Schedule 9 of the Wildlife and Countryside Act (as amended) were returned within 2 km of the Site.

3.12.2 Field Survey

No Schedule 9 INNPS were observed during the field survey.

3.12.3 Constraints and Recommendations

As INNS can spread quickly, a Site walkover should be undertaken prior to any vegetation clearance to confirm no change in status of INNPS.

If INNPS are subsequently confirmed, the plant must not be disturbed or allowed to spread beyond the Site boundary.

If areas with INNPS cannot be avoided by the Proposed Development, a precautionary working method must be put in place to prevent the spread of invasive species. Any cleared vegetation must be disposed of under a registered waste exemption or environmental permit or sent to authorised landfill sites via a registered waste carrier and biosecurity measures must be employed to prevent the incidental spread of any INNPS.

3.13 Other Protected Species

The habitats within the Site have also been appraised for the following protected/ notable species:

- Common toad (*Bufo bufo*) – Listed as priority species in the NERC Act (2006). The desk study returned no records of common toad, however during the site walkover an incidental sighting of a common toad was recorded sheltering beneath an artificial refugia in the north of the eastern land parcel, directly adjacent to the Site boundary along the Flaxlands Lane (see Target Note TN7, [Appendix D](#)). There are nine waterbodies on the Site that offer suitable habitat for breeding common toad and therefore this species may be present on the Site. Methods for undertaking vegetation clearance should be outlined in a Precautionary Working Method Statement (PWMS) which should be followed during all works to facilitate the Proposed Development outlined in this report. During construction, excavations should remain covered overnight.
- Hedgehog (*Erinaceus europaeus*) – Listed as priority species in the NERC Act (2006). The desk study returned 101 records of hedgehog within 2 km of the Site, 97 of these are located south of the M4 associated within the town of Royal Wootton Bassett. The closest record with connectivity is associated with the village of Hook approximately 0.25 km east of the Site. There is suitable foraging habitat for this species at the Site particularly within grasslands not subject to sheep grazing and woodlands. Two brash piles were identified on Site (see Target Notes TN1 and TN3, [Appendix D](#) and Photograph 19, [Appendix E](#)) which provide suitable habitat for hibernating hedgehogs. Methods for undertaking vegetation clearance should be outlined in a PWMS and should be followed during all works required to facilitate the Proposed Development. During construction, excavations should remain covered overnight, and a sensitive lighting Proposed Development should be implemented.
- Brown hare (*Lepus europaeus*) – Listed as priority species in the NERC Act (2006). The desk study returned 17 records of brown hare within the Study Area, the closest of which is located approximately 0.5 km north west of the Site. During the field surveys an incidental sighting of brown hare was recorded within the south of the eastern land parcel. The grasslands throughout the Site offer suitable habitat for brown hare, especially where the sward height is greater, and the field is not grazed. Further details regarding vegetation clearance in relation to notable species will be included in a PWMS.
- Fox (*Vulpes vulpes*) – Although fox is not a protected or priority species, they are protected under the Wild Mammals (Protection) Act 1996, against unnecessary suffering. An incidental sighting of a fox was recorded during the PEA walkover within the north of the Site entering the broadleaved woodland within the western land parcel (see Target Note TN4, [Appendix D](#)). It is recommended that if a den attributed to this species is to be impacted, it should not be backfilled while the den is active and an ecologist is to be contacted before any further works are to be conducted.

4. Opportunities for Enhancements

This section highlights opportunities for providing ecological enhancements, based on details of the Proposed Development available at the time of writing. These are high level opportunities and would need to be developed in greater detail once further surveys have been completed and the nature of the Proposed Development, such as detailed areas of habitat loss and the height of the perimeter fencing, is confirmed.

4.1 Biodiversity Net Gain

Given the legislative need to satisfy the requirements of the Environment Act 2021, a BNG assessment is recommended to provide input to the design of the Proposed Development and ensure a 10% gain in biodiversity value within the Site. This would include BNG calculations to compare the current biodiversity value of the Site

(pre-development) with that anticipated following completion of the Proposed Development (post-development). In the first instance, impacts to semi-natural habitats should be avoided to reduce any loss in biodiversity value. Where this is not possible, compensation must be provided in the form of similar habitats elsewhere within the Site as a priority. The process of calculating BNG will identify opportunities for habitat enhancement and creation, and it is recommended that the design team work closely with the BNG team to ensure targets can be met.

4.2 Other Enhancements

4.2.1 Retaining and enhancing a buffer along the Site boundary

The retention and enhancement of a buffer along the Site boundaries could be included to provide a continuous corridor for species to commute alongside the Site. Enhancement could include the planting of native trees and shrubs or including native wildflower-rich field margins. Retaining and enhancing these areas could improve the overall biodiversity value of the Site. Native planting can include species such as berry-producing plants, that provide sustenance for birds and terrestrial invertebrates and flowers that provide pollen and nectar for invertebrates such as bees and butterflies. The encouragement of invertebrates onto the Site in turn benefits the bat populations that utilise the Site for foraging²⁶. All plants should be of local provenance to reduce the risk of bringing diseases or invasive species onto the Site. Any planting on the Site should aid in restoring connectivity to other green spaces in the wider area.

4.2.2 Creation of pond habitat

Additional pond creation may be considered in the landscaping design of the Proposed Development. If ponds are to be directly impacted as a result of the Proposed Development then these should be replaced within the Site. Pond creation should be undertaken within the autumn or winter months to allow rainwater to fill naturally within newly created pond habitats. For full details please refer to Froglife's 'Just Add Water' guide to pond creation²⁷.

4.2.3 Insect Habitats

An insect wall, insect boxes or bee bank could be included in the landscape design to provide shelter and hibernating habitat for a range of insects. These should be installed in areas adjacent to species-rich habitats, like any woodland throughout the wider Site.

Should any insect walls be included, they must be carefully designed and maintained, since poorly designed and maintained insect houses or walls can kill off the insects designed to inhabit them through parasites and mould. It is recommended that properly designed insect houses are used, such as those available from Nurturing Nature (<http://nurturing-nature.co.uk/wild-bee-nest-boxes/>) rather than those available from garden centres which often are not suitable for insect species found in the UK.

Alternatively, a bee bank could be built using excess spoil created during the works. A bee bank provides warm, sheltered patches of bare ground where solitary bees can nest. This should be in a sunny location sheltered from the weather and be orientated to face south or south east in a crescent shape to allow bees to make use of varying microclimates. The surrounding areas of habitat should provide a rich nectar and pollen source so should be planted with wildflowers or native shrub planting. Advice on creating and maintaining a bee bank is provided here: <https://www.buglife.org.uk/creating-a-bee-bank>

Dead wood piles are of benefit to beetles, spiders, woodlice, centipedes, ants and earthworms. Burying some logs will create a range of suitable habitats. Advice on creating a dead wood pile is provided here: https://www.buglife.org.uk/sites/default/files/Deadwood%20for%20beetles_0.pdf

Full instructions for the management of the insect walls or boxes will be provided by the manufacturer.

4.2.4 Bird Boxes

It is recommended that bird boxes should be incorporated into any future design proposals at the Site. Boxes suitable for woodland species including tit species and pied flycatchers would be suitable along the edge of the Site, in proximity to the adjacent woodlands. Similarly, it would be beneficial to install boxes with suitability for barn owl or tawny owl.

²⁶ Gunnell, K., Grant, G. and Williams, C. 2012. *Landscape and urban design for bats and biodiversity*. Bat Conservation Trust.

²⁷ Froglife (2013) *Just Add Water* – How to build a wildlife pond (6th Edition) Access online at: [JAW2014-for-printing-HLF1.pdf](http://www.froglife.org.uk/JAW2014-for-printing-HLF1.pdf) ([froglife.org.uk](http://www.froglife.org.uk))

Make It Wild provide advice on design and location of nest boxes, including those suitable for pied flycatcher for example, available at <https://www.makeitwild.co.uk/general-news/nest-boxes-our-experience>. The RSPB provides advice on tit species box design and fitting available from <https://www.rspb.org.uk/birds-and-wildlife/advice/how-you-can-help-birds/nestboxes/nestboxes-for-small-birds/making-and-placing-a-bird-box/>.

A range of boxes for passerine species should be suitable to use on trees, including small boxes, large boxes, boxes with holes entrances or open fronted boxes. Trees within hedgerows could be utilised for nest box deployment if retained as part of the Proposed Development plans. Advice on box design and locating boxes is provided by the British Trust of Ornithology <https://www.bto.org/about-birds/nnbw/make-a-nest-box/>.

Bird boxes should be appropriately located at least four metres above ground level, and out of reach of predators. Bird boxes should not be positioned to face south in order to avoid hot sun.

4.2.5 Bat Boxes

It is recommended that bat boxes are included in the design of the Proposed Development. The addition of bat boxes would increase roosting opportunities within the Site and have a positive impact on biodiversity at local level. The choice of bat box should be suitable for crevice dwelling species which tend to utilise such boxes.

All new roost provision should be situated away from light spill, with clear flight paths towards corridors and foraging opportunities suitable to be used by bats. Advice from a suitably qualified ecologist should be sought when drawing up the specifications for bat roosts and locations. Bat boxes should be positioned at least 4 m above ground level to protect any resident bats from disturbance or predation by domestic pets. Trees within the woodlands adjacent to the site would provide suitable locations for such boxes, as well as retained trees within hedgerows and veteran trees identified throughout the Site. Each box can be positioned with a different orientation between south east and south west to provide a range of microclimate options.

4.2.6 Artificial Hibernacula

Habitats could be enhanced and new provisions provided for reptile and amphibian species as well as hedgehogs to hibernate and shelter on Site. This would include provision of at least one log pile, leaf pile and/or purpose-built or ready-made purchased hedgehog house. The Wiltshire Wildlife Trust provide some advice of building hibernacula for reptiles and amphibians available at: <https://www.wiltshirewildlife.org/hibernaculum>. Guidance on building hedgehog houses is provided by the Wildlife Trust, which could be incorporated into a design technology project <https://www.wildlifetrusts.org/sites/default/files/2018-05/Hedgehogsm1.jpg>.

Log piles, leaf piles and hedgehog houses should be placed adjacent to suitable habitats for these species, including areas of retained scrub and woodland margins, which can be advised by an ecologist.

5. Conclusion

This PEA is based on a desk study and ecological surveys undertaken in May 2024, to assess the ecological constraints to the Proposed Development and provide advice regarding further ecological input required in advance of commencement of works.

A Construction Environmental Management Plan (CEMP) or similar is to be prepared and implemented during construction to prevent adverse impacts to Priority Habitats and protected and notable species and adjacent designated sites. This should also include current best practice measures including safeguarding retained trees and root protection zones, implementation of practices to avoid pollution and protection of retained habitats. Liaison with the LPA is recommended to agree the scope of the CEMP.

No final development plans have been provided to AECOM at the time of writing this report. Some surveys including breeding bird and bat NBWs have been commissioned and have commenced at the time of writing this report. The further surveys summarised in Table 4 are recommended to support the detailed design and planning application of the Proposed Development.

Table 4. Summary of Recommended Further Ecological Input

Feature	Recommendation	Timing
BNG	A BNG assessment of the Proposed Development is required. MoRPH assessments will be required on watercourses if impacts are required to facilitate the Proposed Development.	Prior to works commencing on Site
Designated Sites	Consultation with the LPA in relation to the LWS on Site as well as the designated sites and ASNW directly adjacent to the Site. Further detailed botanical survey (NVC survey) is required within the LWS land within the Site.	Prior to works commencing on Site June-July, inclusive
Habitats	An NVC survey of the grassland habitats consistent with those listed as Priority Habitats within the Site as identified by the desk study.	June-July, inclusive
Badger	A pre-commencement check for continued absence of badger setts should be undertaken by a suitably experienced ecologist. If a main sett is found that may be impacted by the Proposed Development, further surveys for badger will be required. A 30 m 'no works' buffer adjacent to all woodland with the potential for badger and their setts.	No more than 48 hours prior to commencement of works To be confirmed by an ecologist During Site works
Bats	A GLTA should be undertaken of all trees within the site and a ground-level Preliminary Roost Assessment (PRA) will be undertaken of all buildings within 30 m of the site where appropriate. NBW surveys and static detector deployment have been commissioned to assess the use of the Site by foraging and commuting bats.	Prior to works commencing on Site May - October
Hazel dormouse	Hazel dormouse surveys are recommended within the hedgerows in the north of the Survey Area. If dormouse are confirmed present, mitigation measures will be outlined within an EPSML.	April-November, inclusive Prior to works commencing on Site
Great crested newt	It is recommended that eDNA surveys are undertaken to assess presence/likely absence of great crested newt within 250 m of the Site. If great crested newt are confirmed present and will be impacted by the Proposed Development, further mitigation will be required. An EPSML may be required to facilitate the Proposed Development, though it is likely that DLL would be a more appropriate option given the geographical location of the Site.	Mid-April to end of June, inclusive
Reptiles	It is recommended that targeted reptile surveys be conducted within the northern grassland fields with suitability in the western land parcel.	September or April-June, inclusive

Feature	Recommendation	Timing
Birds	Breeding birds surveys have been commissioned to be undertaken at the Site. Further mitigation will be included within a separate breeding bird survey report.	March–July, inclusive
Terrestrial Invertebrates	Targeted surveys for marsh fritillary butterfly are recommended on Site. This will involve the search for their foodplants in-coordination with the NVC surveys. This may be followed by a search for the species larval webs to estimate species populations within the Site if appropriate.	May-July, inclusive August
Aquatic Habitats and Species	Pond PSYM surveys should be undertaken on all ponds to be directly impacted by the Proposed Development within the Site to provide an assessment of the ponds including macroinvertebrate and macrophyte communities.	June-August
Otter	Otter surveys should be undertaken at the Site in order to confirm presence/ likely absence. Two survey visits should be conducted, in co-ordination with the water vole surveys below.	May-September, inclusive
Water Vole	Water vole surveys should be undertaken at the Site to confirm presence/ likely absence. Two survey visits are required, one early summer and a second late summer.	One between mid-April – end June and one between July – end September
INNPS	An INNPS walkover is recommended in advance of the commencement of works.	Prior to works commencing on Site.
Notable species	A PMW should be prepared for the Site with mitigation measures for notable species. During construction, excavations should remain covered overnight, and a sensitive lighting Proposed Development should be implemented.	Prior to works commencing on Site.

Habitats of neutral species-rich grassland particularly in the southern section of the Site offer good quality habitat for a variety of protected species, efforts should be made to preserve these habitats and their connectivity to the wider landscape, whilst also meeting other requirements and regulations for example BNG.

Consideration will need to be given to retention of the most valuable habitat features and to avoid areas where protected species are identified. Connectivity across the Site will need to be retained post development and the provision of unlit corridors will be essential. Detailed mitigation measures can only be provided following completion of baseline surveys as recommended.

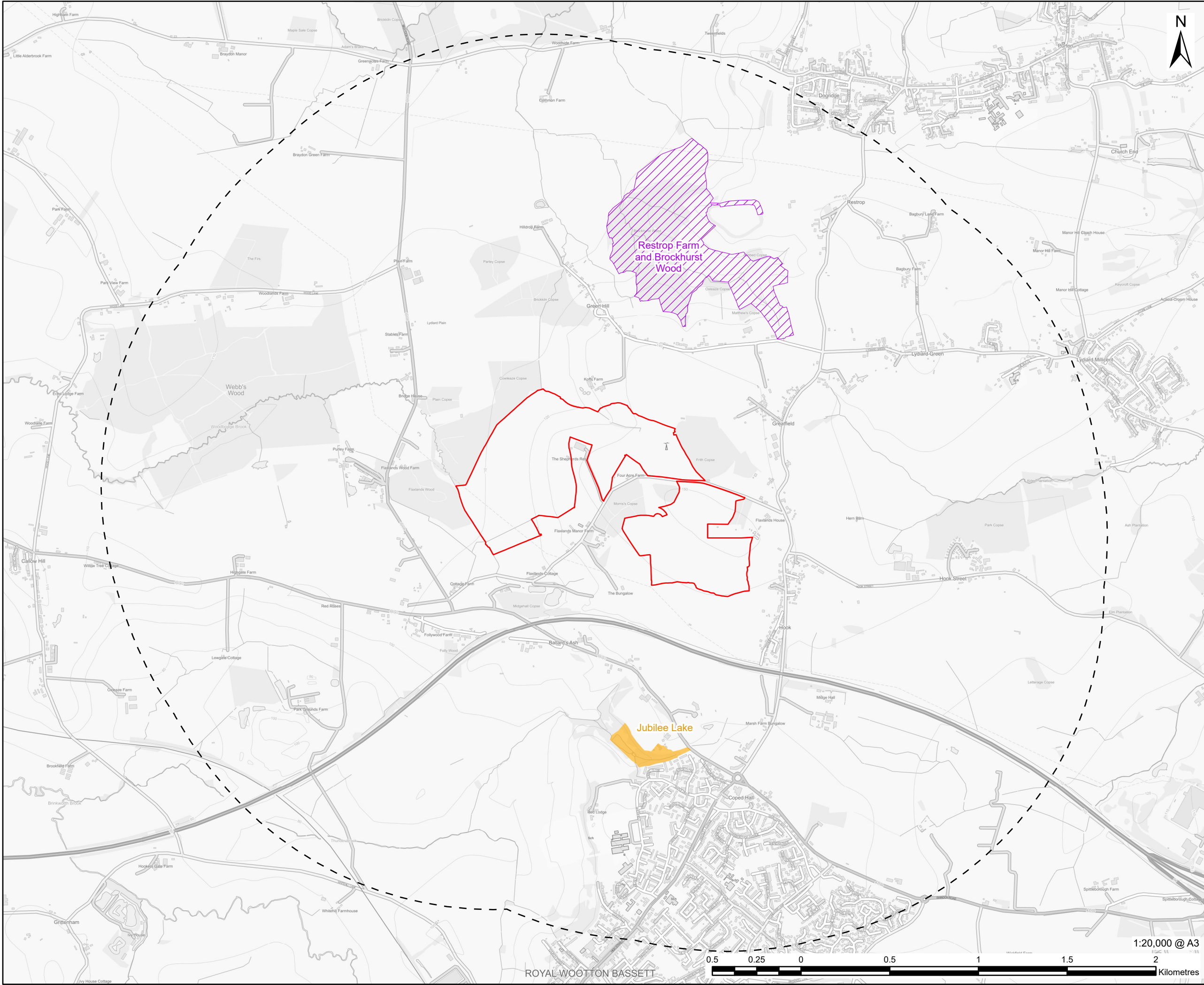
5.1 Re-Survey of Site

Due to the mobility of animals and the potential for colonisation of the Site, it is recommended that an updated ecological survey be undertaken prior to the redevelopment of this Site should this not occur within 18 months²⁸ of the date of the field survey.

²⁸ CIEEM (2019) Advice Note: on the Lifespan of Ecological Report & Surveys. Accessed online at: <https://cieem.net/wp-content/uploads/2019/04/Advice-Note.pdf>

Appendix A Figures

Figure 1: Internationally and Nationally Designated Sites within 2 km



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CONSULTANT

AECOM Limited
3rd Floor, Portwall Place
Portwall Ln
Bristol BS1 6NA
www.aecom.com

LEGEND

- Survey Area
- 2km Study Area
- Site of Special Scientific Interest (SSSI)
- Local Nature Reserve (LNR)

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ISSUE PURPOSE

Preliminary Ecological Appraisal

PROJECT NUMBER

60727989

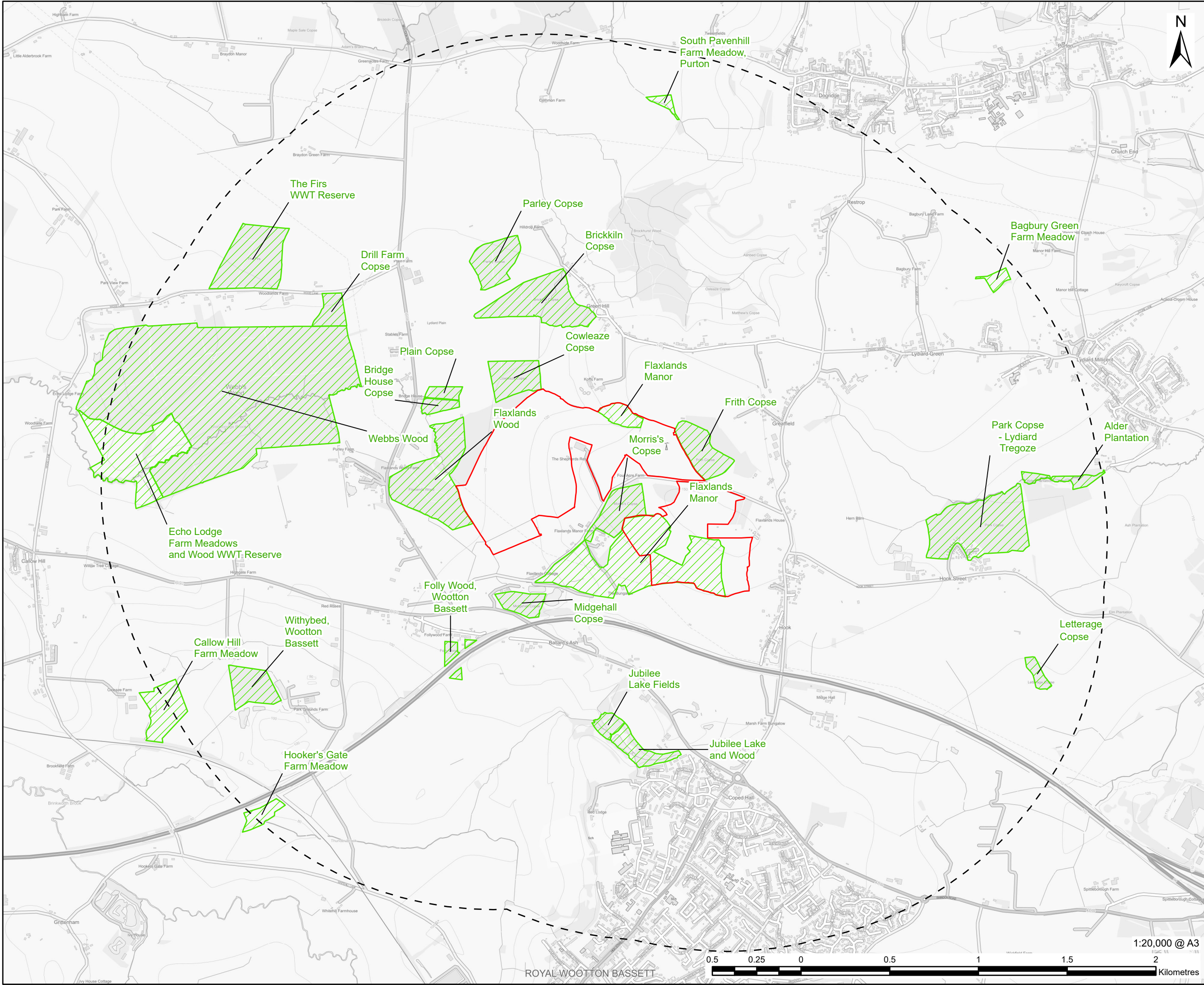
FIGURE TITLE

International and National Designations within 2km

FIGURE NUMBER

Figure 1

Figure 2: Non-Statutory Designated Sites within 2 km



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LEGEND
 Survey Area
 2 km Study Area
 Local Wildlife Site

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3: Local Wildlife Site data was provided by the Wiltshire and Swindon Biological Records Centre (WSBRC, www.wsbrc.org.uk) for inclusion in this project in May 2024.

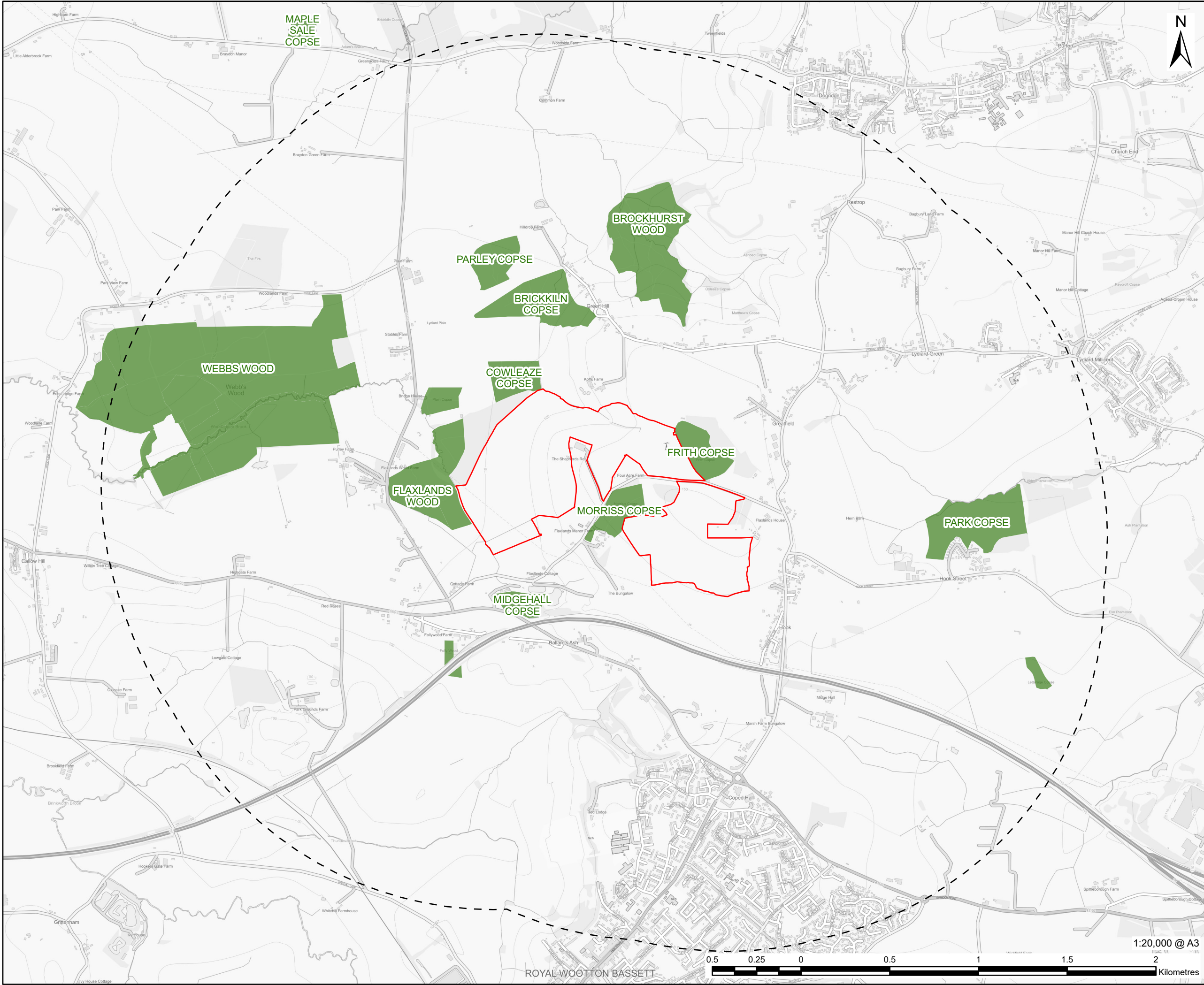
ISSUE PURPOSE
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FIGURE TITLE
Non-statutory Designations within 2km

FIGURE NUMBER
Figure 2

Figure 3: Ancient Woodland Designations



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Midpoint, Alençon Link,
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RG21 7PP
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LEGEND
[Red Outline] Survey Area
[Dashed Line] 2km Study Area
[Green Fill] Ancient Woodland

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PROJECT NUMBER
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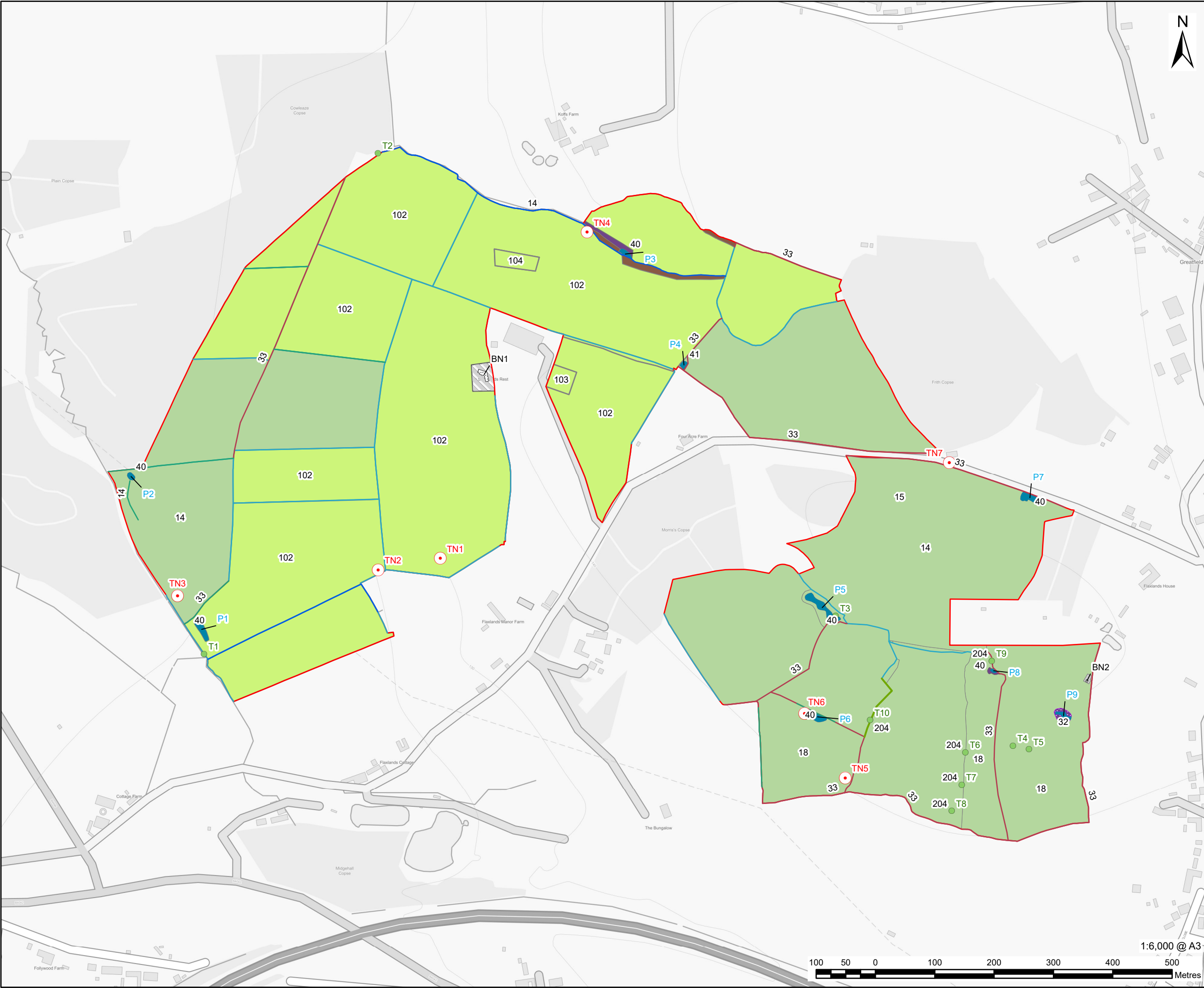
FIGURE TITLE
Ancient Woodland

FIGURE NUMBER
Figure 3

1:20,000 @ A3

0.5 0.25 0 0.5 1 1.5 2 Kilometres

Figure 4: UK Habitat Classification Plan



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LEGEND

- Survey Area
- Target Note
- Rural tree
- h2a - native hedgerow
- h2a5 - species-rich native hedgerow
- r1g - other standing water
- r2b - other rivers and streams
- w1 - line of trees
- g3c - other neutral grassland
- g4 - modified grassland
- h3d - bramble scrub
- h3h - mixed scrub
- r1g - other standing water
- u1b - developed land, sealed surface
- u1b5 - buildings
- u1d - suburban mosaic of developed/natural surfaces
- w1g - other woodland, broadleaved

Secondary Codes:

- 14 - Scattered rushes
- 18 - Species-rich grassland
- 32 - Scattered trees
- 33 - Line of trees
- 40 - Ponds (priority habitat)
- 41 - Pond (non-priority)
- 102 - Sheep grazed
- 103 - Horse grazed
- 104 - Other grazed
- 204 - Veteran tree

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ISSUE PURPOSE

Preliminary Ecological Appraisal

PROJECT NUMBER

60727989

FIGURE TITLE

UK Habitat Classification Map

FIGURE NUMBER

Figure 4

Appendix B Relevant Legislation and Planning Policy

B.1 Legislation

The UK is no longer a member of the European Union (EU). EU legislation as it applied to the UK on 31 December 2020 is now a part of UK domestic legislation. EU legislation which applied directly or indirectly to the UK before 23:00 on 31 December 2020 has been retained in UK law as a form of domestic legislation known as 'retained EU legislation'.

Designated Sites

Sites of Special Scientific Interest

Under the Wildlife and Countryside Act 1981 (as amended), it is an offence to carry out or permit to be carried out any operations likely to damage the Site of Special Scientific Interest (SSSI). These operations are listed in the SSSI notification.

Owners, occupiers, public bodies and statutory undertakers must give notice and obtain the appropriate consent under S.28 of the Wildlife and Countryside Act 1981 (as amended), before undertaking operations likely to damage a SSSI.

Local Nature Reserve

A Local Nature Reserve (LNR) is a statutory designation made under National Parks and Access to the Countryside Act 1949, by principal local authorities (district, borough or unitary councils).

The local authority must control the LNR land - either through ownership, a lease or an agreement with the owner.

LNRs are given protection through policies in a local development plan.

Locally Designated Sites

Local Wildlife Sites are sites with 'substantive nature conservation value'. They are defined areas, identified and selected for their nature conservation value, based on important, distinctive and threatened habitats and species within a region.

They are usually selected by the relevant Wildlife Trust, along with representatives of the local authority and other local wildlife conservation groups.

The LWS selection panel, select all sites that meet the assigned criteria, unlike SSSIs, which for some habitats are a representative sample of sites that meet the national standard. Consequently, many sites of SSSI quality are not designated and instead are selected as LWSs. Consequently, LWSs can be amongst the best sites for biodiversity.

Protected Species

Bats / Hazel Dormouse / Otter / Great Crested Newt

These species, known as European Protected Species, are protected under Regulation 43 of the 2017 Regulations as amended by the 2019 Regulations. This makes it an offence to deliberately capture, injure or kill an animal; deliberately disturb an animal; or damage or destroy a breeding site or resting place used by an animal.

Deliberate capture or killing is taken to include "accepting the possibility" of such capture or killing. Deliberate disturbance of animals includes in particular any disturbance which is likely a) to impair their ability (i) to survive, to breed or reproduce, or to rear or nurture their young, or (ii) in the case of animals of hibernating or migratory species, to hibernate or migrate; or b) to affect significantly the local distribution or abundance of the species to which they belong.

Where development works are at risk of causing one or more of the offences listed above, a mitigation licence from Natural England can be obtained to facilitate the works that would otherwise be illegal.

These species are also protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to intentionally or recklessly obstruct access to any structure or place used for shelter or protection or disturb an animal in such a place.

Lower levels of disturbance not covered by the Conservation of Habitats and Species Regulations 2017 remain an offence under the Wildlife and Countryside Act 1981 (as amended) although a defence is available where such actions are the incidental result of a lawful activity that could not reasonably be avoided.

Water Vole

Water voles are protected under the Wildlife and Countryside Act 1981 (as amended).

When development work is proposed in or near an area which is either known to or likely to contain water voles, then the developer will need to implement suitable mitigation to prevent impacts to water voles. The preferred mitigation option is to leave water voles *in situ*, with the development works adopting avoidance measures through redesign of the proposals.

Where impacts cannot be avoided, operations aimed at displacing water voles from a development site are now no longer covered by the “*incidental result of an otherwise lawful action*” defence in the Wildlife and Countryside Act 1981 (as amended). Displacement of water voles now needs to be undertaken under a licence.

In England, small scale (limited to continuous lengths of bank not exceeding 50 m) displacement of water voles can be carried out at certain times of the year (February to April) for the purposes of conservation under a Class Licence by a registered person. For larger scale displacements or displacements outside of this period, displacement can be undertaken under a site-specific conservation licence.

Where it is considered that the best outcome for water voles is capture and translocation to a different location then this action is considered by Natural England to be outside the scope of the defence as the intentional capture of water voles is unlikely to be considered ‘incidental’. In these circumstances there may be genuine grounds for issuing a conservation licence for the purpose of translocating the water vole population to suitable alternative habitat.

Nesting Birds

All wild birds are protected under the Wildlife and Countryside Act 1981 (as amended), with some species afforded greater protection under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). In addition to the protection from killing or taking that all birds receive, Schedule 1 birds and their young must not be disturbed at the nest.

There are no licensing purposes that explicitly cover development activities affecting wild birds.

Common Species of Reptile (common lizard, slow worm, grass snake and adder)

Common species of reptile are protected against intentional killing and injury under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). There is no requirement for a licence where development works affect common species of reptiles. Instead, Natural England advise²⁹ that where reptiles are present, they should be protected from any harm that might arise during the development works through appropriate mitigation.

Badger

Badgers and their setts are protected under the Protection of Badgers Act 1992 (as amended). This makes it an offence to wilfully kill, injure or take a badger; or intentionally or recklessly damage, destroy or obstruct access to a badger sett or disturb a badger in its sett.

It is not illegal to carry out disturbance activities near setts that are not occupied, i.e. those that do not show signs of current use.

Where required, licences for development activities involving disturbance or sett interference or closure are issued by Natural England. Licences for activities involving watercourse maintenance, drainage works or flood defences are issued under a separate process.

When assessing the requirement for a licence in respect of development, Natural England³⁰ state that badgers are relatively tolerant of moderate levels of noise and activity around their setts, and that a low or moderate level of apparent disturbing activity at or near to badger setts does not necessarily disturb the badgers occupying those setts.

²⁹ Reptiles: guidelines for developers, English Nature 2004

³⁰ Interpretation of ‘Disturbance’ in relation to badgers occupying a sett, Natural England (2009)

Licences are normally not granted from December to June inclusive (the badger breeding season) because dependent cubs may be present within setts.

Species and Habitats of Principal Importance for the Conservation of Biodiversity

Section 40 of the NERC 2006 sets out the duty for public authorities to conserve biodiversity in England.

Habitats and species of principal importance for the conservation of biodiversity are identified by the Secretary of State for England, in consultation with Natural England, are referred to in Section 41 of the NERC Act for England. The list, known as the 'England Biodiversity List', of habitats and species can be found on the Natural England web site.

The 'England Biodiversity List' is used as a guide for decision makers such as public bodies, including local and regional authorities, in implementing their duty under Section 40 of the NERC Act 2006 to have regard to the conservation of biodiversity in England when carrying out their normal functions.

Hedgerows

Under the Hedgerows Regulations 1997, it is against the law to remove or destroy certain hedgerows without permission from the local planning authority. In general, permission will be required before removing hedges that are at least 20 metres in length, over 30 years old and contain certain species of plant. The local planning authority will assess the importance of the hedgerow using criteria set out in the regulations.

Non-native Invasive Plant Species

Under the Wildlife and Countryside Act 1981 (as amended), it is an offence to plant or otherwise cause these species to grow in the wild.

Any contaminated soil or plant material is classified as controlled waste and should be disposed of in a suitably licensed landfill site, accompanied by appropriate Waste Transfer documentation, and must comply with section 34 of the Environmental Protection Act 1990.

B.2 Planning Policy

National Planning Policy Framework, 2024

The NPPF is an important policy document in respect of ecology and has been considered when preparing this PEAR. The NPPF was first published in March 2012 and has been updated several times over the years and most recently in December 2023³¹.

The NPPF 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. It specifies the obligations that the 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 particular 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.

Chapter 15 of the NPPF 'Conserving and enhancing the natural environment' sets out the requirements to consider biodiversity in planning decisions.

Local Planning Policy

- Table B1 provides a summary of relevant local planning policies. For the precise wording of each specific policy please refer back to the source document. These planning policies have been considered when assessing potential ecological constraints and opportunities identified by the desk study and field surveys; and, when assessing requirements for further survey, design options and ecological mitigation.

³¹ Department for Levelling Up, Housing and Communities (2023) National Planning Policy Framework. Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

Table B1: Summary of Local Planning Policy

Document	Planning Policy	Summary of Policy Text
Wiltshire Core Strategy	Core Policy 50: Biodiversity and Geodiversity	Development proposals must demonstrate how they protect features of nature conservation and geological value as part of the design rationale. There is an expectation that such features shall be retained, buffered, and managed favourably in order to maintain their ecological value, connectivity and functionality in the long-term. All development proposals shall incorporate appropriate measures to avoid and reduce disturbance of sensitive wildlife species and habitats throughout the lifetime of the development. Any development potentially affecting a Natura 2000 site must provide avoidance measures in accordance with the strategic plans or guidance. All development should seek opportunities to enhance biodiversity. Sustainable development will avoid direct and indirect impacts upon local sites through sensitive site location and layout, and by maintaining sufficient buffers and ecological connectivity with the wider environment. Damage or disturbance to local sites will generally be unacceptable. Development proposals affecting local sites must make a reasonable contribution to their favourable management in the long-term.
	Core Policy 52: Green Infrastructure	Development shall make provision for the retention and enhancement of Wiltshire's green infrastructure network, and shall ensure that suitable links to the network are provided and maintained. If damage or loss of existing green infrastructure is unavoidable, the creation of new or replacement green infrastructure equal to or above its current value and quality, that maintains the integrity and functionality of the green infrastructure network, will be required. Green infrastructure projects and initiatives that contribute to the delivery of a high quality and highly valued multi-functional green infrastructure network in accordance with the Wiltshire Green Infrastructure Strategy will be supported. Contributions (financial or other) to support such projects and initiatives will be required where appropriate from developers.
	Core Policy 57: Ensuring High Quality Design and Place Shaping	A high standard of design is required in all new developments, including extensions, alterations, and changes of use of existing buildings. Development is expected to create a strong sense of place through drawing on the local context and being complementary to the locality. Applications for new development must be accompanied by appropriate information to demonstrate how the proposal will make a positive contribution to the character of Wiltshire through the retention and enhancement of existing important landscaping and natural features, (e.g. trees, hedges, banks and watercourses), in order to take opportunities to enhance biodiversity, create wildlife and recreational corridors, effectively integrate the development into its setting and to justify and mitigate against any losses that may occur through the development.

Local Biodiversity Action Plans

The Wiltshire Biodiversity Action Plan (BAP) is a material consideration in this application for planning permission. It provides the framework for habitat and species conservation in Wiltshire aimed at conservation, public, private and local community sectors.

Appendix C Methodology

C.1 Desk Study

The preliminary ecological assessment includes a desk study to obtain background records relevant to a Site and the Proposed Development. The data obtained provides contextual information for the scope of field surveys, to aid the evaluation of field survey results, and to provide supplementary information where complete field survey coverage is not possible.

The Study Area is dependent upon the nature, timing and scale of the Proposed Development, as well as the location of the Site and the surrounding landscape.

In May 2024 Wiltshire & Swindon Biological Records Centre (WSBRC) was contacted to obtain the following ecological data:

- records of non-statutory designated sites within 2 km of the Site boundary; and
- records of legally protected and notable species (fauna and flora) within 2 km of the Site boundary, including Species of Principal Importance for the Conservation of Biodiversity listed under Section 41 of the Natural Environment & Rural Communities Act 2006 in the England Biodiversity List³². This was extended to 10 km for bat roost and field records.

The Multi-Agency Geographic Information for the Countryside (MAGIC) website (www.magic.gov.uk) was reviewed for the following information:

- designated sites of nature conservation importance (statutory sites only) within 2 km of the Site, extended to 10 km for international sites. This was also extended to 10 km for internationally designated sites and for nationally designated sites that cite bats as the main reason for their designation: Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Site of Special Scientific Interest (SSSI); and,
- notable habitats within 2 km of the Site, these being areas of ancient woodland and 'Habitats of Principal Importance for the Conservation of Biodiversity' included in the England Biodiversity List³².

C.2 Great Crested Newt Pond Search

Ordnance Survey maps and the *Where's the Path* website (<https://wtp2.appspot.com/wheresthepath.htm>) have been used to identify the presence of water bodies within 500 m of the Site boundary, in order to help establish if the land within and immediately surrounding the Site could be used by great crested newts. This species can use suitable terrestrial habitat up to 500 m from a breeding pond³³, though there is a notable decrease in great crested newt abundance beyond 250 m from a breeding pond³⁴.

C.3 Field Survey

The preliminary ecological assessment includes a walkover survey of all land within the Site boundary, following the standard UK Habitat Classification survey methodology³⁵. The survey was undertaken on 15-17 May 2024 by suitably qualified AECOM ecologists who recorded and mapped all habitat types present within the Site, along with any associated relevant ecological receptors observed. Each habitat was assigned a primary habitat code and, where relevant, one or more secondary habitat code(s) were given to describe habitat mosaic. One of the UK Habitat Classification key strengths is the combination of a primary habitat hierarchy and secondary codes. The primary hierarchy of the UK Habitat Classification comprises five nested levels:

1. major ecosystems (Terrestrial, Freshwater and Marine);
2. ecosystem types;

³² Section 40 of the Natural Environment & Rural Communities Act 2006 requires that The Secretary of State has drawn up, in accordance with Section 41 of the Act and in consultation with Natural England, a list of habitats and species of principal importance for the conservation of biodiversity in England that is known as the England Biodiversity List

³³ Great Crested Newt Mitigation Guidelines (English Nature, 2001).

³⁴ Natural England. An assessment of the efficiency of capture techniques and the value of different habitats for the great crested newt (ENRR576) <http://publications.naturalengland.org.uk/publication/134002>.

³⁵ Butcher, B., Carey, P., Edmonds, R., Norton, L. and Treweek, J. (2020). The UK Habitat Classification User Manual Version 1.1.

3. broad habitats;
4. UK Biodiversity Action Plan Priority Habitats; and,
5. Habitats Directive Annex 1 habitats that occur in the UK.

A list of secondary codes can be linked to primary habitats, allowing the recording of habitat mosaics and habitat complexes in a systematic way. Secondary codes also give surveyors the option of systematically recording habitat management, origins and other environmental and species features and linking these directly to the primary habitat.

The field survey was mainly completed to level four, with some habitats recorded to level five where sufficient information could be obtained at the time.

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 a UK Habitat Classification survey. Plant names recorded during the survey follow Stace (2010)³⁶. The standard UK Habitat Classification Survey method was “extended” to record target notes on protected and notable species, and INNPS.

A note was made of visible instances of INNPS listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) and species of EU concern listed in the Invasive Alien Species (Enforcement and Permitting) Order 2019. Locations of plants or stands of any such INNPS found were recorded.

During the walkover survey, the following protected or notable species are considered:

- **Badger:** the survey involves searching for signs of badger activity including setts, tracks, snuffle holes and latrines, following the methodology detailed in Scottish Badgers (2018)³⁷ and Harris et al (1989)³⁸;
- **Bats:** the survey involves searching for potential roosting sites for bats within trees and structures (such as buildings, bridges or underground features such as mines) features were not categorised in accordance with Bat Conservation Trust (BCT) guidance (2023)³⁹ given the large extent of the Site;
- **Hazel dormouse:** the survey involves assessing the potential of habitats within the Site to support hazel dormouse, following English Nature guidance (2006)⁴⁰;
- **Otter:** the survey involves assessing the potential of watercourses and water bodies, and adjacent terrestrial habitat within the Site to support otter, following RSPB (1994)⁴¹ and Chanin, P. (2003)⁴² guidance;
- **Water vole:** the survey involves assessing the potential of watercourses and water bodies within the Site to support water vole, following The Mammal Society (2016)⁴³ guidance;
- **Birds:** the survey involves assessing the potential of habitats within the Site to support breeding, wintering or migrating birds, either individually notable species or assemblages of both common and rarer species;
- **Great crested newt:** the survey involves assessing the potential of habitats within the Site to support great crested newt, following English Nature (2001)⁴⁴ and Froglife (2001)⁴⁵ guidance;
- **Reptiles:** the survey involves assessing the potential of habitats within the Site to support reptiles (typically adder, grass snake, common lizard and slow worm only, though in some locations and habitat types (most notably heathland) may also include smooth snake and sand lizard), following Froglife (1999)⁴⁶ and JNCC (2003)⁴⁷ guidance;

³⁶ Stace, C E (2010) *New Flora of the British Isles*, 3rd edition. Cambridge University Press.

³⁷ Scottish Badgers (2018). *Surveying for Badgers: Good Practice Guidelines*. Version 1.

³⁸ Harris, S. Cresswell, P. and Jefferies, D. (1989). *Surveying Badgers*.

³⁹ Collins, J.(ed) (2023). *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (4th edition). The Bat Conversation Trust. London.

⁴⁰ English Nature (2006). *The Dormouse Conservation Handbook*, 2nd edition.

⁴¹ Ward, D. Holmes, N. Jose, P. (1994). *The New Rivers and Wildlife Handbook*. Royal Society for the Protection of Birds. Bedfordshire.

⁴² Chanin, P (2003b). *Monitoring the Otter Lutra lutra*. Conserving Natura 2000 Rivers Monitoring Series No 10. English Nature, Peterborough.

⁴³ Dean, M. Strachan, R. Gow, D. Andrews, R. (2016). *The Water Vole Mitigation Handbook (The Mammal Society Guidance Series)*. Eds Fiona Mathews and Paul Chanin. The Mammal Society. London.

⁴⁴ English Nature (2001). *The Great Crested Newt Mitigation Guidelines*.

⁴⁵ Froglife (2001). *The Great Crested Newt Conservation Handbook*.

⁴⁶ Froglife (1999). *Reptile Survey: An introduction to planning, conducting and interpreting surveys for snake and lizard conservation*. Froglife Advice Sheet 10. Froglife, Halesworth.

⁴⁷ Joint Nature Conservation Committee (2003). *Herpetofauna Workers Manual*.

- **Notable species of invertebrate:** the survey involves assessing the potential of habitats within the Site to support notable species of invertebrates, both terrestrial and aquatic (including white-clawed crayfish);
- **Protected or Notable species of plants:** the survey involves recording protected or notable plant species;
- **Other notable species:** the survey involves assessing the potential of habitat within the Site to support other Notable Species, such as hedgehog, brown hare, polecat or common toad;
- **Non-native invasive plant species:** the survey involves recording evidence of the presence of invasive plants listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) and subject to strict legal control.

C.4 Limitations

Biological records can be received from a wide variety of sources and may or may not be comprehensive and accurate. However, if assessed in conjunction with a Phase 1 Habitat survey, they can contribute to a robust ecological assessment of a site.

Where any conclusions and recommendations contained in this report are based upon information provided by others, it has been assumed that all relevant information provided by those parties is accurate. Any such information obtained by AECOM has not been independently verified by AECOM, unless otherwise stated in the Report. AECOM accepts no liability for any inaccurate conclusions, assumptions or actions taken resulting from any inaccurate information supplied to AECOM from others.

The methodology adopted and the sources of information used by AECOM in providing its services are outlined in this report. The work described in this report was conducted in May 2024 and is based on the conditions encountered and the information available during the said period of time. The scope of this report and the services are accordingly factually limited by these circumstances. AECOM disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to AECOM's attention after the date of the report.

A full Preliminary Roost Appraisal was also outside the scope of the survey due to the number of trees present. This has been reflected in the recommendations of the report.

A habitat condition assessment for the running water (MoRPh survey) present on Site was not undertaken. This has been reflected in the recommendations of the report.

As the Proposed Development is still in concept design stage, the potential impacts, mitigation and enhancement recommendations may be subject to change upon review of the final design.

Appendix D Target Notes

Target Note	Description
TN1	Brash pile suitable for resting hedgehog.
TN2	Locally damp area of grassland at corner of field. Drainage ditch running along eastern side of hedge.
TN3	Brash pile suitable for resting hedgehog.
TN4	Fox observed within the Site boundary. Entered into woodland/scrub at northern edge of the Site.
TN5	Locally abundant yellow rattle.
TN6	Locally abundant common sedge.
TN7	Toad observed underneath artificial refugia.

Appendix E Site Photographs

	
Photograph 1: View facing south west showing g3c - neutral grassland within the eastern land parcel.	Photograph 2: View showing species diversity within southern section of the eastern land parcel. Image showing an abundance of yellow rattle (see TN5).
	
Photograph 3: View facing north within the western land parcel and 40-60 cm approx. sward height of g3c – neutral grassland.	Photograph 4: View facing north west within western land parcel showing g3c – neutral grassland with scattered rush species [14].
	
Photograph 5: Typical view facing west overlooking g4 – modified grassland fields grazed by sheep within the western land parcel.	Photograph 6: View facing west showing long sward height (~60 cm) of a g4 - modified grassland fallow field within the western land parcel.



Photograph 7: View facing south east overlooking g4 [102] – modified grassland – sheep grazed pasture, with the horse grazed paddock to the left of the photograph.



Photograph 8: View facing north west showing w1g – other broadleaved woodland that is connected to a hedgerow that extends east and westwards.



Photograph 9: View facing west showing w1g – other broadleaved woodland that follows the path of running water across the central portion of the Site.



Photograph 10: View of P9 showing h3h [32] – Mixed scrub – scattered trees boarder with some encroachment into the waterbody.



Photograph 11: View facing south showing ub1 – Harstanding and ub15 – Buldings (BN2) within the eastern land parcel.



Photograph 12: View facing north showing waterbody P1 within the western land parcel.

	
Photograph 13: View facing north showing waterbody P2 within the western land parcel.	Photograph 14: View showing h2a5 [33] – Species-rich native hedgerow – scattered trees.
	
Photograph 15: View facing south east showing h2a5 [33] – Species-rich native hedgerow – scattered trees within the western land parcel. TPO trees visible in photo.	Photograph 16: View showing typical h2a6 – Native hedgerow within western land parcel.
	
Photograph 17: View of feeding remains and droppings within watercourse connected to and in close proximity to P2.	Photograph 18: View showing small mammal burrow within watercourse connected to P2.

	
Photograph 19: View facing north east showing brash pile (TN1) within grassland field.	

Appendix F Concept Designs Provided by Ampyr June 2024



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LEGEND

	SITE BOUNDARY
	FENCING
	Solar Area
	PV TABLE
	MV STATION
	BESS + SUBSTATION
	ENTRANCE
	ACCESS ROAD
	PERIMETER TRACK
	PROW 15m BUFFER
	11kV AND 132kV OH line
	BNG AREA

PLANT DETAILS

NO. OF MODULES - SITE 2	(86450 of 600Wp)
DC CAPACITY - SITE 2	51.9MWp
INTERROW SPACING	3.0 m
TILT ANGLE	13°
BESS Capacity (2 hrs)	49.9MW

NOTE:
DRAWING UNIT IS IN METER UNLESS SPECIFIED.

R11	26.06.2024	PRELIMINARY LAYOUT	KSS	MM
R10	14.06.2024	PRELIMINARY LAYOUT	KSS	MM
R9	08.05.2024	PRELIMINARY LAYOUT	KSS	MM
R8	26.04.2024	PRELIMINARY LAYOUT	KSS	MM
R7	24.04.2024	PRELIMINARY LAYOUT	KSS	MM
R6	29.02.2024	PRELIMINARY LAYOUT	KSS	MM
R5	14.11.2023	PRELIMINARY LAYOUT	KSS	MM
R4	16.10.2023	PRELIMINARY LAYOUT	KSS	MM
R3	02.10.2023	PRELIMINARY LAYOUT	KSS	MM
R2	21.09.2023	PRELIMINARY LAYOUT	SA	MM
R1	11.09.2023	PRELIMINARY LAYOUT	SA	MM
R0	07.06.2023	PRELIMINARY LAYOUT	EMV	MM

REV.	DATE	DESCRIPTION	PRPD	CKD
REVISIONS HISTORY				
AS-BUILT	CONSTRUCTION	FOR APPROVAL	PRELIMINARY	
☐	☐	☐	☒	

PROJECT TITLE:
FLAXLAND SOLAR FARM

DRAWING TITLE:
**CONCEPT DESIGN
WITHOUT CONSTRAINTS**

DEVELOPER:

DRAWING CODE:		-----	
GPS CO-ORDINATES		51°33'59.74"N, 1°54'36.96"W	
SHEET NO.	1 OF 1	PAPER SIZE	A1
PREPARED BY	KSS	DATE	26.06.2024
SCALE	1:2500	REV NO.	R11

0 100 200 METERS

