



Barkham Square,
Arborfield

Preliminary Ecological Appraisal

Prepared by
CSA Environmental

on behalf of
Crest Nicholson
Strategic Projects

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This report may contain sensitive ecological information. It is the responsibility of the Local Authority to determine if this should be made publicly available.

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EXECUTIVE SUMMARY

Residential-led development is proposed at Barkham Square, Arborfield, which is to be promoted for allocation within the emerging Wokingham Borough Local Plan Update, and for which outline planning permission will be sought.

CSA Environmental was instructed by Crest Nicholson Strategic Projects to undertake a Preliminary Ecological Appraisal (PEA) of the Site to identify any ecological constraints to development, inform scheme design, highlight opportunities for ecological enhancement/Biodiversity Net Gain and determine the need for any additional investigation/survey. As part of this PEA, a desk study and field survey of the Site were undertaken in February 2023, including a UK Habitat Classification survey.

The Site lies c. 3.45km from the Thames Basin Heaths SPA, therefore mitigation for the likely increase in visitor pressure to this protected site will be required in accordance with the Thames Basin Heaths Delivery Framework. An Appropriate Assessment will be required to establish whether development at the Site will result in likely significant effects to the qualifying features of the SPA alone and in-combination with other developments in the vicinity.

The majority of the Site comprises homogenous, species-poor grassland of limited ecological interest, however habitats of greater ecological value are present within the Site including parcels of woodland, areas of which are mapped as ancient woodland; ponds; the Barkham Brook watercourse; and native hedgerows and treelines comprising mature trees. These habitats should be retained, protected and buffered from development, wherever possible.

Protected species which may be present include roosting bats, foraging and dispersing bats, dormice, water vole, otter, great crested newt and white-clawed crayfish. Further surveys to confirm the presence or likely absence of these species, and the nature of their use of the Site, are recommended to inform an evidence based Ecological Impact Assessment to be prepared in support of planning. In addition, breeding bird surveys and invertebrate scoping surveys are recommended to establish whether the Site supports notable assemblages of these groups of species. Mammal holes were also identified throughout the Site and further investigation is recommended to determine whether these are in use by badgers. Habitat Condition Assessments and a River Condition Assessment are recommended to inform a Biodiversity Net Gain calculation in the prevailing Metric. The findings of such surveys are unlikely to identify overriding constraints to the principle of development, however they will aid the formulation of targeted and effective mitigation and enhancement strategies.

1.0 INTRODUCTION

- 1.1 This report has been prepared by CSA Environmental on behalf of Crest Strategic Projects. It sets out the findings of a Preliminary Ecological Appraisal (PEA) of land at Barkham Square, Arborfield (hereafter referred to as 'the Site'). The Site is being promoted for allocation under the emerging Wokingham Borough Local Plan for residential-led development.
- 1.2 The scope of this appraisal has been determined with due consideration for best-practice guidance provided by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2017), and to the *Biodiversity: Code of practice for planning and development* (BS 42020:2013) published by the British Standards Institution (2013).
- 1.3 The Site occupies an area of c. 58ha and is located around central grid reference SU 776 663, to the south-east of Reading, Berkshire. It consists of open grassland bounded by native boundary vegetation, parcels of ancient woodland and ponds. The Barkham Brook watercourse runs through the centre of the Site adjacent to a parcel of ancient woodland (see Habitats Plan in Appendix A).
- 1.4 This PEA aims to:
 - Characterise baseline ecological conditions of the Site and its wider context
 - Identify any ecological constraints to the principle of development at the Site
 - Inform scheme design
 - Identify further ecological surveys and investigation necessary to inform a full Ecological Impact Assessment (EclA) at the future planning stage
 - Highlight opportunities for ecological enhancement and Biodiversity Net Gain (BNG) which may be secured through development
- 1.5 To achieve these aims, an ecological desk study and field survey were undertaken of the Site, the findings of which are presented herein.
- 1.6 As set out in best practice guidelines (CIEEM, 2017) a PEA is typically only suitable for planning submission where there are no ecological constraints relating to the project. Where ecological constraints are identified, such as the presence of important ecological features, the effects of development on these features should be assessed within a separate EclA report, which would supersede the PEA.

2.0 LEGISLATION, PLANNING POLICY & STANDING ADVICE

Legislation

- 2.1 Legislation relating to wildlife and biodiversity of particular relevance to this PEA includes:
- The Conservation of Habitats and Species Regulations 2017 (as amended)
 - The Wildlife and Countryside Act 1981 (as amended)
 - The Natural Environment and Rural Communities (NERC) Act 2006
 - The Protection of Badgers Act 1992
 - The Environment Act 2021
- 2.2 This above legislation has been addressed, as appropriate, in the production of this report. Further information on the above legislation is provided in Appendix B.

National Planning Policy

- 2.3 The National Planning Policy Framework (NPPF) (Ministry of Housing, Communities and Local Government, 2021) sets out the government planning policies for England and how they should be applied. Chapter 15: Conserving and Enhancing the Natural Environment, is of particular relevance to this report as it relates to ecology and biodiversity. Further details are provided in Appendix B.
- 2.4 The Government Circular 06/2005, which is referred to by the NPPF, provides further guidance in respect of statutory obligations for biodiversity and geological conservation and their effects within the planning system.

Local Planning Policy

- 2.5 A number of local planning policies relate to ecology, biodiversity and/or nature conservation. These are summarised in Table 1 of Appendix B. These policies have been addressed, as appropriate, in the production of this report.

Standing Advice

- 2.6 Natural England and Defra's Standing Advice (Natural England & Defra, 2014) regarding habitats and protected species aims to support local authorities and forms a material consideration in determining applications in the same way as any individual response received from Natural England following consultation. Standing advice has therefore been given due consideration, alongside other detailed guidance documents, in the production of this report.

3.0 METHODS

Desk Study

- 3.1 An ecological desk study was undertaken in January 2023 comprising a review of online resources and biological records centre data as detailed below.
- 3.2 The Multi-Agency Geographic Information for the Countryside (MAGIC) online database was reviewed to identify nature conservation designations within the following search radii:
 - Special Protection Areas (SPA), Special Areas of Conservation (SAC) and Ramsar sites within 10km of the Site (including possible/proposed sites)
 - Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Local Nature Reserves (LNR) within 3km of the Site
 - Other relevant data e.g. Ancient Woodland Inventory within 1km of the Site
- 3.3 A review was undertaken of the location of any such designations, their distance from and connectivity with the Site, and the reasons for their designation. This information was used to determine whether they may be within the proposed development's Zone of Influence (Zol).
- 3.4 Thames Valley Environmental Records Centre (TVERC) was contacted for details of any non-statutory nature conservation designations and records of protected/notable habitats and species. This information was requested for an area encompassing the Site and adjacent land within c. 2km of its central grid reference. This search area was selected to include the likely zone of influence upon non-statutory designations and protected or notable habitats and species.
- 3.5 Further online resources were reviewed for information which may aid the identification of important ecological features. The Woodland Trust's online Ancient Tree Inventory was reviewed for known ancient or veteran trees within the Site and adjacent land. Interactive online mapping provided by the charity 'Buglife' was used to determine whether the Site falls within an Important Invertebrate Area.
- 3.6 In accordance with Natural England's Great Crested Newt Mitigation Guidelines (2001), a desktop search was undertaken to identify ponds within 500m of the Site which may have potential to support breeding great crested newts *Triturus cristatus*, using Ordnance Survey (OS) mapping, the MAGIC database and aerial photography.
- 3.7 Where possible under the terms of the data provider, relevant desk study data are presented in Appendix C.

Field Survey

- 3.8 A UK Habitat Classification ('UKHab') survey was carried out in fine and dry weather conditions on 10 February 2023 by Alex Perry ACIEEM, FISC Level 3 and Sophie Vines FISC Level 3, encompassing the Site and immediately adjacent habitats that could be viewed.
- 3.9 UKHab is a unified and comprehensive system for mapping and classifying habitats, designed to provide a simple and robust approach to surveying and monitoring, and replaces Phase 1 Habitat survey methods. The method allows for identification of important habitat types, including habitats of Principal Importance under Section 41 (S41) of the NERC Act (2006) and Habitats Directive Annex I habitats. This method also allows for direct translation of habitats into the current and upcoming Biodiversity Metrics (Natural England, version 3.1 and 4.0, respectively).
- 3.10 The following parameters were adopted for the UKHab survey undertaken for this PEA:
- UKHab Professional edition (Butcher *et al.*, 2020, commercial End User Licence Agreement (EULA))
 - Minimum Mappable Unit (MMU):
 - 25m²/0.0025ha (polygons)
 - 5m (linear)
 - Primary Habitats recorded to a minimum of Level 2 (see below) with UKHab codes provided
 - Mandatory secondary codes used
 - Base-mapping comprising a combination of aerial imagery and topographic information
- 3.11 Primary Habitats are recorded to a minimum of Level 2. Where the survey is conducted at an appropriate time of year (e.g. May to July for grassland) habitats may be recorded to Level 3, 4 or 5, only if conditions and the experience of the surveyor allow.
- 3.12 Alongside the UKHab survey, additional field survey information was collected, comprising:
- Detailed floral species lists recorded for each identified habitat/parcel
 - Evidence of, or potential for, European Protected Species (EPS) (including bats, great crested newt, dormouse and otter)
 - Evidence of, or potential for, other protected species (including birds, reptiles, water vole, badger and certain invertebrates)
 - Evidence of, or potential for, other notable species (including S41 Species of Principal Importance as well as notable, rare, protected or controlled plants and invertebrates)
 - Any other survey information relevant to ecological matters

- 3.13 Results of the UKHab survey are presented on the Habitats Plan in Appendix A. Appendix D provides photographs of the habitats at the Site and Appendix E provides a list of floral species recorded in each habitat parcel. Nomenclature for higher plants within this report is consistent with the fourth edition of The New Flora of the British Isles (Stace, 2019).

Limitations

- 3.14 There were no specific limitations to the desk study. The field survey was undertaken outside of the optimum season for both grassland and woodland habitats, therefore species identification was limited and these habitats have been classified to Level 2. The aquatic vegetation within the on-site ponds could not be fully classified due to health and safety concerns.

Evaluation and Assessment

- 3.15 The evaluation and assessment of ecological features is beyond the scope of a PEA and has therefore not been undertaken here. Formal evaluation and assessment of any identified important ecological features should be undertaken as part of either a full EclA, or receptor-specific survey and assessment in accordance with the published CIEEM method (CIEEM, 2018).

4.0 BASELINE ECOLOGICAL CONDITIONS

Nature Conservation Designations

Statutory

- 4.1 There are no statutory designations covering any part of the Site.
- 4.2 A single international statutory designation was identified within 10km of the Site. This was the Thames Basin Heaths SPA, the closest parcel of which is c. 3.45km south-west of the Site.
- 4.3 A single national statutory designation was identified within 3km of the Site, as well as a single local statutory designation. These were the Longmoor Bog SSSI and Longmoor Bog LNR, both of which are located c. 230m south of the Site.
- 4.4 These statutory designations are described in Table 1 below.

Non-Statutory

- 4.5 A total of 12 non-statutory designations were identified within 2km of the Site. These were the Longmoor Bog & Woodland California Country Park Local Wildlife Site (LWS; c. 320m south of the Site), The Coombes LWS (c. 480m north), Brook Farm Meadow LWS (c. 690m east), Longmoor Lake LWS (c. 760m south-east), Hazeltons Copse LWS (c. 870m north-west), Bearwood Estate – Woods & Lakes LWS (c. 1.14km north), Hogwood Shaw LWS (c. 1.18km south-west), Spring Copse & Long Copse (North) LWS (c. 1.2km west), Long Copse (South) & Robin Hood Copse LWS (c. 1.24km west), Spring Copse & Long Copse (North) Extension Proposed LWS (c. 1.27km west), Shepperlands Copse LWS (c. 1.27km south) and The Moors (including Sand Martins Golf Club Edge) LWS (c. 1.37km east). These non-statutory designations are described in Table 1 below.

Table 1. Statutory and Non-Statutory Designations within search radii

Site Name & Designation	Distance & Direction from Survey Area	Special Interests or Qualifying Features
International Designations within 10km		
Thames Basin Heaths SPA	c. 3.45km south-west	Supports nationally important breeding populations of Dartford warbler <i>Sylvia undata</i> , nightjar <i>Caprimulgus europaeus</i> and woodlark <i>Lullula arborea</i> .
National Designations within 3km		
Longmoor Bog SSSI	c. 230m south	Valley mire, wet heathland and mixed woodland supporting uncommon and rare plants and invertebrates, as well as a diverse assemblage of breeding birds.
Local Designations within 3km		
Longmoor Bog LNR	c. 230m south	Forming part of the California Country Park and the Longmoor Bog SSSI, the LNR designation supports the same

		ecological features of interest as the above SSSI.
Non-Statutory Designations within 2km		
Longmoor Bog & Woodland California Country Park LWS	c. 320m south	This is the part of California Country Park that lies outside the Longmoor Bog SSSI. There is a lack of specific habitat details provided within the citation.
The Coombes LWS	c. 480m north	A parcel of Lowland Mixed Deciduous Woodland with features indicative of a long-established woodland, with a stream running through it. Two small areas of grassland indicative of Lowland Meadow and acid grassland present.
Brook Farm Meadow LWS	c. 690m east	Two wet grasslands, with aspects of neutral and acid marshy grassland as well as remnant rush pasture and a pond. The site forms part of a SANG and is publicly accessible.
Longmoor Lake LWS	c. 760m south-east	A large lake and some mixed woodland with wetland and heathland species.
Hazeltons Copse LWS	c. 870m north-west	An area of ancient woodland and Lowland Mixed Deciduous Woodland.
Bearwood Estate – Woods & Lakes LWS	c. 1.14km north	An extensive area of broadleaved woodland with a large lake. Ancient woodland indicator species present, with remnant heathland flora. The lake attracts a good assemblage of birds and silver-washed fritillary butterfly <i>Argynnis paphia</i> has been recorded.
Hogwood Shaw LWS	c. 1.18km south-west	A small woodland containing species associated with long established woodland, with a small pond.
Long Copse (south) & Robin Hood Copse (LWS)	c. 1.24km west	Two parcels of ancient woodland.
Spring Copse & Long Copse (north) LWS	c. 1.2km west	Two almost continuous areas of semi-natural ancient woodland.
Spring Copse & Long Copse (north) Extension Proposed LWS	c. 1.27km west	A proposed extension to Spring Copse & Long Copse (north) LWS, containing areas of Lowland Mixed Deciduous Woodland.
Shepperlands Copse LWS	c. 1.27km south	A Berkshire Buckinghamshire and Oxford Wildlife Trust Nature Reserve containing mixed woodland, heathland restoration and unimproved wet meadows.
The Moors (including Sand Martins Golf Club Edge) LWS	c. 1.37km east	An area of wet woodland, marsh and marshy meadows, including part of the adjacent golf course where there is a long-established sand martin <i>Riparia riparia</i> colony.

Ancient Woodland

- 4.6 Several small parcels of semi-natural ancient woodland listed on the Ancient Woodland Inventory are located within the Site, the largest of which extends northward from a portion of the southern boundary

(Woodland W3, see Habitats Plan; Appendix A). Discreet parcels connected to the Barkham Brook, which bisects the Site from the northern to the southern boundary, were shown on MAGIC mapping, however, this woodland was found to be one contiguous parcel during the habitat survey. A further two areas are mapped as disconnected parcels of woodland within the wider Site (Woodlands W1 and W4, see Habitats Plan).

- 4.7 Several veteran and notable trees identified within the Ancient Tree Inventory are present within or in close proximity of the Site's boundary vegetation, including a cluster containing pedunculate oak *Quercus robur*, silver birch *Betula pendula* and wild cherry *Prunus avium* within a small parcel of woodland along the Boundary B9; a line of oak *Quercus* sp. trees running along Boundary B17 parallel to Commonfield Lane; and some scattered oak trees along Boundaries B1 and B7 adjoining the neighbouring Arborfield Green development.

Habitats and Flora

- 4.8 Habitats recorded on-site are illustrated in Appendix A with detailed species lists provided in Appendix E. Relevant UKHab codes are provided within parentheses for each habitat type recorded [e.g. Other Neutral Grassland (g3c)].

Notable Flora Records

- 4.9 The TVERC provided 67 records of 23 notable plant species from within the search area. Those of potential relevance to the Site include bluebell *Hyacinthoides non-scripta*, butcher's-broom *Ruscus aculeatus*, tormentil *Potentilla erecta*, wild strawberry *Fragaria vesca* and wood-sorrel *Oxalis acetosella*.
- 4.10 The parcels of woodland and boundary vegetation are suitable for supporting these species, which are mainly associated with long-established woodland. While none were observed during the field survey, this was undertaken outside of the flowering season of woodland ground flora, so their presence cannot be ruled out. The remaining species with records in the area are predominantly associated with heathland and wetland habitats which are not present within the Site. The majority of the records of notable plants are located within LWS and LNR designations in the local area which generally have a higher survey effort to monitor populations of key species.

Grassland (g)

- 4.11 The majority of the Site is dominated by species-poor grassland with a uniform short sward. The fields are rotationally used for cattle grazing, silage, and horse grazing, with narrow field margins where they are present. Field F1 has previously been used as a polo green. Coarse grasses including cock's-foot *Dactylus glomerata*, Yorkshire fog *Holcus*

lanatus, perennial rye grass *Lolium perenne*, and bent grass *Agrostis* sp. are present in all fields. While the dominating species varies between fields, the species composition remains consistent throughout. Herbs are infrequently present and include creeping buttercup *Ranunculus repens*, ragwort *Senecio jacobaea*, meadow buttercup *Ranunculus acris*, chickweed *Stellaria media*, creeping thistle *Cirsium arvense*, cow parsley *Anthriscus sylvestris*, cleavers *Galium aparine*, ribwort plantain *Plantago lanceolata* and vetch *Vicia* sp.

- 4.12 Scattered bracken *Pteridium aquilinum* is encroaching along the southern boundary of Field F2 (see Target Note 7; Appendix A), alongside dock *Rumex* sp. and spear thistle *Cirsium vulgare*. Tufted hair grass *Deschampsia cespitosa* and timothy are additionally present to the south of Field F4.

Woodland (w)

- 4.13 Several parcels of woodland are present within the Site, four of which are mapped as ancient woodland and Priority Lowland Mixed Deciduous Woodland within the MAGIC database (see Appendix C; Priority Habitats Map). Log piles, standing deadwood and laying deadwood are frequently present throughout the woodland parcels (see Target Note 2; Appendix A). Ground flora identification for all woodland parcels was limited due to the time of year that the survey was undertaken.
- 4.14 Woodland W1 is a belt of woodland which forms the boundary between Fields F3 and F7. Species present include oak *Quercus* sp., cherry *Prunus* sp. hawthorn *Crataegus monogyna*, willow *Salix* sp., alder *Alnus glutinosa* and poplar *Populus* sp. A wet ditch runs through the centre of the woodland, connecting to the Barkham Brook to the east, and a small pond was found to be present centrally within the woodland during the field survey.
- 4.15 Woodland W2 is a belt of woodland which runs adjacent to the Barkham Brook along its length. It contains blackthorn *Prunus spinosa*, hazel *Corylus avellana*, alder, silver birch and willow species of various age classes, including several mature specimens. A footbridge passing over the watercourse through the woodland is present between Fields F4 and F3 (see Target Note 6; Appendix A).
- 4.16 Woodland W3 is a parcel of woodland containing several mature oak trees as well as hazel, poplar, hawthorn and holly *Ilex aquifolium*. Large areas of open space are present within the woodland, as well as frequent log and brash piles.
- 4.17 Woodland W4 is a small parcel of woodland which forms the south-western boundary of Field F7 with a sparse structure, containing silver birch, field maple *Acer campestre*, hazel, holly, poplar, bramble and willow.

- 4.18 A small area of woodland (W5) is present around Pond P3 within the north-east corner of Field F9 containing holly, silver birch and willow.

Dense scrub (h3)

- 4.19 Dense scrub is scattered across the Site, primarily along field boundaries. The majority of this scrub is dominated by bramble *Rubus fruticosus* agg., with occasional hawthorn and blackthorn present. A larger area of bramble scrub is present at the north-eastern corner of Field F9, south of Woodland W5.

Rivers and Streams (r2)

- 4.20 Barkham Brook runs through the Site from the northern boundary of Fields F6 and F8 to the southern extent of Woodland W2. It is c. 1-2m wide along its length and has a slow flow leading north to the River Loddon. Negligible aquatic and marginal vegetation was identified, although this is likely to be due to seasonality. Fallen deadwood is present within the channel and on the bank tops from the surrounding parcel of woodland.
- 4.21 Ditches are present throughout the Site, the majority of which are associated with linear boundary vegetation. A ditch runs along the northern fence line of Field F1, which contained vegetation consistent with the adjacent grassland, suggesting that it is dry most of the year. The ditch which runs through Woodland W1 was wet at the time of the survey and directly connects to the Barkham Brook to the east. The vegetation present within this ditch was consistent with the surrounding woodland, suggesting that it is seasonally wet.

Standing Water (r1) – Ponds

- 4.22 Three ponds were found to be present within the Site. Pond P1 is a large man-made pond located within the south-east corner of Field F4, between west of Woodland W2. Soft rush *Juncus effusus*, reedmace *Typha* sp. and alder are present around the pond margins, while submerged aquatic vegetation was sparse at the time of the field survey. The northern banks of the pond were highly eroded, which may be a result of cattle poaching. Wildfowl were incidentally observed within the pond and around the periphery during the field survey, and it is likely that this pond retains a permanently wet centre.
- 4.23 Pond P2 is a small natural pond located centrally within Woodland W1. It is adjacent to the ditch which runs through the woodland and is likely to dry out following periods of dry weather, which is evidenced by the lack of aquatic and marginal vegetation.
- 4.24 Pond P3 is a small natural pond located within Woodland W5. The waterbody could not be viewed properly during the field survey due to over growing surrounding vegetation, therefore species identification was limited, however it was confirmed to be wet at the time of the field

survey and is mapped on MAGIC as a pond, suggesting that it is a consistent feature.

Hedgerows (h2) and Tree Lines (w1g6)

- 4.25 The Site is bounded on many aspects by native hedgerows and treelines, the majority of which are associated with ditches. Hawthorn, hazel, ash *Fraxinus excelsior* and blackthorn are frequently present, accompanied by areas of dense bramble. Mature standard trees are present in many of the boundaries, most frequently oak trees.

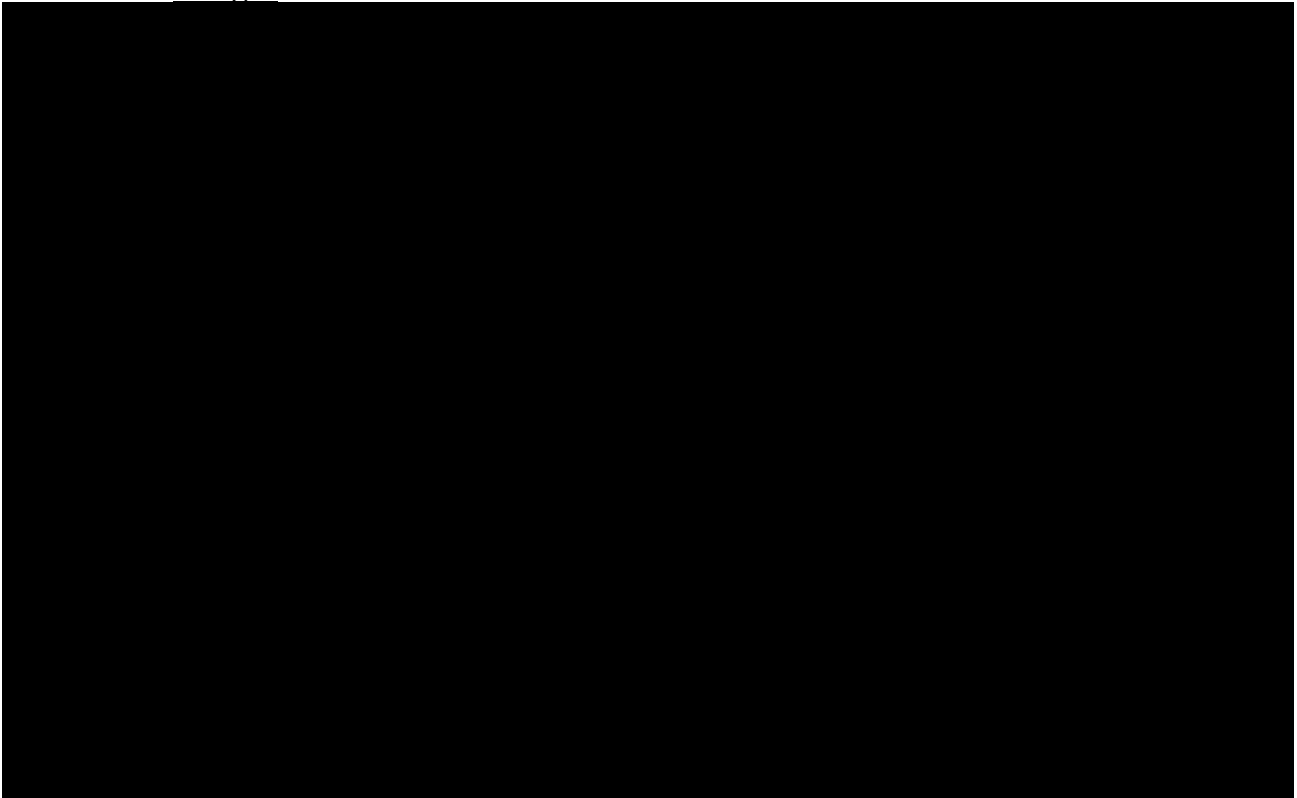
Fauna

Bats

- 4.26 A total of 463 bat records were identified within the search area, dating from 1994 to 2020. These include common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *P. pygmaeus*, noctule *Nyctalus noctula*, brown long-eared bat *Plecotus auritus*, Daubenton's bat *Myotis daubentonii*, Leisler's bat *Nyctalus leisleri*, unspecified long-eared bat *Plecotus* sp., unspecified *Myotis* sp., Natterer's bat *Myotis nattereri* and serotine *Eptesicus serotinus*. The closest records are of a cluster of unspecified *Pipistrellus* sp. and common pipistrelle records from within the same 1km grid-square as the Site, which includes roost records, the most recent of which is from 2014. No details regarding the size or type of these roosts has been provided.
- 4.27 A large number of the records are located from within the neighbouring Arborfield Green development south of the Site. These records range from 2006 to 2020 and include roost and activity records for brown long-eared bats, common pipistrelle, Natterer's bat, soprano pipistrelle and serotine. A large number of these records relate to a 1km grid-square south of the Site, however several others with more precisely recorded locations are scattered throughout the neighbouring Arborfield Green development, the closest of which is less than 100m south of Field F2 and relates to a small soprano pipistrelle day roost. Where stated, the size of the roosts recorded south of the Site generally reflect a presence of small day roosts for the aforementioned species, however, the largest roost record relates to a roost size of 19 common pipistrelle from a 1km grid-square c. 500m south of the Site. Tree roosts have also been recorded from c. 1.2km south of the Site within trees located along Nine Mile Ride Extension.
- 4.28 Several mature trees are present within the Site which may contain potential roost features suitable for bats (see Target Note 5, Appendix A). In addition, a wooden storage structure is present within Field F8 which may contain suitable bat roost features.
- 4.29 While the majority of field boundaries are marked by fence-lines with no vegetation, the parcels of ancient woodland, ponds and the

watercourses adjacent to open grassland, as well as the vegetated field boundaries, all provide suitable habitat for foraging and dispersing bats.

Badger



Dormouse

- 4.32 No records of dormouse *Muscardinus avellanarius* were identified within the search area, however, this lack of records may reflect a low survey effort rather than genuine absence in the area. Previous dormouse surveys undertaken at the adjacent Arborfield Green development in 2008 by AECOM found no evidence of dormice, however, the land was stated to comprise sub-optimal dormouse habitat.
- 4.33 Despite much of the Site lacking suitable linear connective features due to the presence of being unvegetated post-and rail fencing along internal field boundaries, the woodland parcels and boundary vegetation are suitable in species composition and structure to provide habitat for foraging and nesting dormice.

Water Vole

- 4.34 A total of four records of water vole *Arvicola amphibius* were identified within the search area, dating from 1996 to 1998, all of which relate to an unspecified stretch of the Barkham Brook. Previous surveys undertaken for the adjacent Arborfield Green development identified a single water vole feeding station in 2011 within a stream leading from Longmoor Lake to the east of the Arborfield Green site. however, updated surveys carried out in 2014 found no evidence of water vole in this watercourse.

- 4.35 The stretch of Barkham Brook which runs through the Site is heavily shaded by the surrounding woodland and was lacking suitably vegetated riparian bank habitat at the time of the field survey, and the on-site ditches are likely to be dry for the majority of the year. However, due to the presence of records for the species, a previous positive survey result from a nearby watercourse and its connectivity to the River Loddon, which is known to support water vole, their presence cannot be ruled out.

Otter

- 4.36 A single record of otter *Lutra lutra* was identified within the search area, dating from 2016, located from a length of the Barkham Brook north of the Site, where the watercourse passes beneath Barkham Street. A previous otter survey undertaken in 2008 for the neighbouring Arborfield Green development identified no signs of otter within a stream flowing into the Arborfield Green site from Longmoor Lake.
- 4.37 The Barkham Brook which runs centrally through the Site is directly connected to the watercourse which has a confirmed otter record. While the tributary which runs through the Site is narrow and shallow for much of its length with limited foraging opportunities, it provides a potential connective corridor for dispersing otter, while the surrounding woodland may offer suitable resting areas for this species.

Other Mammals

Hedgehog

- 4.38 A total of 15 records of hedgehog *Erinaceus europaeus* were identified within the search area, dating from 2010 to 2021. The majority of these records are located within developed areas, with the closest c. 400m south within the Arborfield Green residential development.
- 4.39 The open grassland and hedgerow bases will provide suitable foraging and dispersal opportunities, while the frequently present log-piles are suitable habitat for hibernating and sheltering hedgehog. Hedgehog are not a legally protected species and as such are not considered to represent a constraint to development, however, they are listed as a Species of Principal Importance under Section 41 of the NERC Act and as a Priority Species within the Berkshire Biodiversity Strategy (Berkshire Local Nature Partnership, 2014). Measures should be taken to provide permeability for the species during the design stage through enhancement measures, recommendations for which are briefly discussed in Section 5 of this report.

Brown Hare

- 4.40 No records of brown hare *Lepus europaeus* were returned from the data search, however there are large areas of suitable habitat in the local landscape, including the open grassland fields present within the Site.

Brown hare may, therefore, be present within the Site, however, it is unlikely to represent a significant resource for the species due to the abundance of suitable habitat in the wider landscape. Brown hare are, therefore, scoped out as a constraint to development.

Birds

- 4.41 A total of 390 records of 54 bird species were identified within the search area, dating from 1995 to 2020. Those of potential relevance to the Site include barn owl *Tyto alba*, kestrel *Falco tinnunculus*, kingfisher *Alcedo atthis*, lapwing *Vanellus vanellus*, mistle thrush *Turdus viscivorus*, stock dove *Columba oenas*, greenfinch *Chloris chloris*, nightingale *Luscinia megarhynchos* and red kite *Milvus milvus*. The open grassland and woodland are suitable foraging and sheltering habitat for the majority of these species, while the Barkham Brook which runs through the Site may provide suitable foraging and nesting habitat for kingfisher where its banks become steeper towards the south of the Site.
- 4.42 The Thames Basin Heaths SPA, which is designated for the presence of breeding Dartford warbler, nightjar and woodlark, is located c. 3.45km south-west of the Site. These species have specific habitat requirements, including heathland habitat, which is not present within the Site. The qualifying species are, therefore, considered to be likely absent from the Site.
- 4.43 The woodland parcels, ponds and boundary vegetation present within the Site may support an assemblage of breeding birds which are using these habitats as nesting and foraging resources.
- 4.44 The open grassland habitat and ponds within the Site, particularly Pond P1 which is a large man-made waterbody, may provide suitable habitat for wintering birds. Water fowl were additionally incidentally sighted using the pond during the field survey.

Reptiles

- 4.45 A total of 831 records of four reptile species were identified within the search area including slow worm *Anguis fragilis*, grass snake *Natrix helvetica*, adder *Vipera berus* and smooth snake *Coronella austriaca*. The closest records are of grass snake within the field immediately north of the north-west corner of the Site. The majority of the records are located within the Longmoor Bog LNR and SSSI, and Shepperlands Farm LWS, including all of the records of adder. The single smooth snake record dates from 2020 and is located c. 1.28km south-east of the Site, south of the Longmoor Bog LNR. The remaining records are widespread and infrequent around the search area.
- 4.46 Surveys undertaken in 2008 for the adjacent Arborfield Green development confirmed that low populations of slow worm, common lizard and grass snake were present, with slow worm identified

immediately south of Field F4 of the Site, while updated surveys undertaken in 2014 only identified two juvenile grass snakes across 15 visits. These were identified to the south of the Arborfield Green survey area, c. 1.16km south of the Site. The majority of reptile activity recorded during these surveys was in favourable habitat to towards the south and east of the Arborfield Green land, with limited suitable habitat identified towards the north where it adjoins the Site.

- 4.47 The habitats within the Site are poorly suited to common reptile species due to the homogeneous short sward of the grassland, a lack of habitat interfaces and the regular presence of grazing livestock within the grassland. Despite there being a record for smooth snake returned, the habitats within the Site are wholly unsuitable for the species. It is likely that the Site is occasionally used by dispersing and foraging grass snake, but it is unlikely to support large numbers due to the lack of suitable habitat and aforementioned management of the land.

Amphibians

- 4.48 A total of 41 records of five amphibian species were identified within the search area, including common frog *Rana temporaria*, common toad *Bufo bufo*, smooth newt *Lissotriton vulgaris*, palmate newt *Lissotriton helveticus* and great crested newt *Triturus cristatus*. The closest records relate to common frog located within Pond P3 and to a common toad located c. 270m south of the Site. The four great crested newt records returned by the TVERC are located c. 1.28km south and c. 1.18km east of the Site from ponds at the Hogwood Industrial Estate and The Moors LWS, respectively.
- 4.49 Three ponds are present within the Site, while ditches are frequently present. Suitable terrestrial habitat for amphibians is present in the form of scrub, hedgerow bases and woodland parcels, the latter of which contain ample log piles and deadwood, which have the potential to be used as hibernacula. A more detailed appraisal of the Site in respect of great crested newt is provided below.

Great Crested Newt

- 4.50 The aforementioned habitats discussed in relation to amphibians in general are capable of supporting great crested newts, and the species is confirmed to be present within the area through records. In addition, positive class licence returns for great crested newt are present within the Sand Martins Golf Club c. 1.26km east of Field F9, dating from 2014. While this pond is an extended distance from the Site, there are a network of ponds in the surrounding area. Some of these were surveyed for great crested newt presence in 2014 for the neighbouring Arborfield Green development. None of the surveyed ponds returned a positive result.

- 4.51 Despite spending much of their annual lifecycle within the terrestrial environment, great crested newts are dependent upon the presence of suitable aquatic breeding habitat in order for a population to persist. Three potential breeding ponds are present on-site, while a further 22 appear to be present within a dispersible range of the Site, based on OS mapping.
- 4.52 The on-site ponds are all within or in close proximity to suitable terrestrial habitat, including woodland with large amounts of deadwood and log piles.

Invertebrates

- 4.53 A total of 190 records of 18 invertebrate species were identified within the search area. Those of potential relevance to the Site include white-clawed crayfish *Austropotamobius pallipes*, stag beetle *Lucanus cervus*, cinnabar moth *Tyria jacobaeae* and common darter dragonfly *Sympetrum striolatum*.
- 4.54 The record of white-clawed crayfish is located along a stretch of the Barkham Brook c. 1km north of the Site, which directly connects to the length which runs through the Site, dating from 2020. This recent confirmed presence of white-clawed crayfish within the same river network as the on-site Brook means that their presence on-site cannot be ruled out.
- 4.55 Several stag beetle records have been returned from the search area, and there is a large amount of standing and laying deadwood present within the Site which provides suitable habitat for stag beetle. These features, as well as the presence of ancient woodland all provide suitable habitat for a range of saprophytic invertebrates, as well as stag beetle.
- 4.56 Common ragwort, which is the obligate foraging resource for the larval stage of cinnabar moths was recorded on-site, and the on-site ponds and ditches may provide suitable breeding habitat for damselflies and dragonflies, including the common darter.
- 4.57 While the majority of the Site is occupied by open grassland with a homogenous species-poor sward which is likely to support a common and widespread invertebrate assemblage, the woodland parcels, deadwood, ponds and the Barkham Brook which are present on-site may support more notable species.

5.0 DISCUSSION AND RECOMMENDATIONS

Nature Conservation Designations

Statutory

Thames Basin Heaths SPA

- 5.1 The Site is located c. 3.45km north-east of the closest parcel of the Thames Basin Heaths SPA. This falls within the 5km zone within which developments are required to implement specific mitigation measures to prevent and offset increases in recreational pressure upon the designation, which the qualifying features are known to be vulnerable to. These measures include provision of Suitable Alternative Natural Greenspace (SANG) for new residents to use as an alternative recreational space to the SPA, as well as contributions to Strategic Access Management and Monitoring (SAMM). The scale of these required measures is determined based on number of new units and, therefore, residents within the development.
- 5.2 The supporting habitats within the Thames Basin Heaths SPA are known to be vulnerable to atmospheric pollution resulting from increases in vehicular emissions on roads within 200m of the designation. The chemical pollutants emitted by vehicles degrade the heathland habitats which support the breeding birds for which it is designated. Taken in combination with wider residential growth in Wokingham, increases in vehicular traffic as a result of development could have an effect upon the designation.
- 5.3 In order to determine whether the proposed development will have likely significant effects upon the Thames Basin Heaths SPA and so contravene the Conservation of Habitats and Species Regulations 2017 (as amended), an Appropriate Assessment of the Site should be undertaken. This is in line with Policy NE2 of the Wokingham Borough Draft Local Plan (Wokingham Borough Council, 2020), and Policy CP8 of the current Wokingham Borough Core Strategy (Wokingham Borough Council, 2010).

Longmoor Bog SSSI and LNR

- 5.4 Longmoor Bog SSSI and LNR fall within the California Country Park c. 220m south of the Site. The Country Park and the Site share good footpath connectivity, with recreational activities such as fishing, dog walking and use of the equipped play areas actively encouraged. Increases in visitors to the Country Park, and therefore the overlapping areas of Longmoor Bog SSSI and LNR, may lead to the degradation of the special interest features of the SSSI and reasons for designation of the LNR. However, Local Nature Reserves are managed in such a way as to facilitate public enjoyment of natural greenspaces and to provide mitigation for many recreational impacts upon the designations.

- 5.5 Moreover, while SANG is a mitigation measure specifically required for the Thames Basin Heaths SPA, the greenspace provided for this will provide additional mitigation for increased recreational pressure to the Longmoor Bog SSSI and LNR as it will provide new residents with an alternative natural area to undertake recreational activities. Financial contributions to the management of the LNR could be explored if, following the EclA, negative effects upon the designations are anticipated.

Non-Statutory

Local Wildlife Sites

- 5.6 The Site is located within close proximity of several LWSs, some of which are publicly accessible, including Coombes LWS, Brooke Farm Meadow LWS, Longmoor Lake LWS, The Moors LWS and Longmoor Bog & Woodland LWS. As with the aforementioned statutory designations, through an increase in visitor numbers, development at the Site may have the potential to lead to degradation of features for which the LWSs are designated. However, as discussed above in relation to the Longmoor Bog SSSI and LNR, the new greenspace created as part of the proposal, including the required SANG, will provide a doorstep alternative for new residents to undertake routine recreational activities.

Habitats and Flora

- 5.7 Emerging legislation and existing policy supports the provision of Biodiversity Net Gain (BNG) through development. The NPPF states that planning decisions should provide net gains for biodiversity, and central government have legislated a requirement for at least 10% net gain in relation to all planning permissions, expected to take effect in late 2023. Additionally, Policy NE1 of the Wokingham Borough Draft Local Plan states that *“Development proposals across sites of all sizes should achieve a minimum 10% net gain for biodiversity...”*. Applying the Biodiversity Metric to quantify BNG in association with development is already supported in current Planning Practice Guidance.
- 5.8 The Site is dominated by grassland which is a habitat of higher distinction than the urban habitats which it will be replaced by post-development. Achieving a net gain in Habitat Units on-site is therefore likely to be difficult, however, incorporating habitats of greater ecological value into the open greenspace within the development will contribute quantitatively and qualitatively to the Site's biodiversity. This may include retention of the on-site woodland, mature trees, scrub and hedgerow habitats, as well as enhancement of existing grassland and the stream corridor to a more favourable habitat or condition, as appropriate.
- 5.9 It is recommended that the scheme design be informed by the application of the Biodiversity Metric (3.1 at the time of writing) published by Natural England, to provide a quantitative assessment of losses or

gains in biodiversity. In the event that it is confirmed that the Site is unable to accommodate an on-site net gain following these calculations, offsetting measures will need to be implemented, either through enhancement of a specified area of off-site land, or through the purchase of Biodiversity Credits.

- 5.10 The BNG calculation will need to be informed by in-season Habitat Condition Assessments, including grassland, woodland and hedgerow surveys, in order to finalise the baseline values of the on-site habitats. In addition, as the Barkham Brook runs through the Site, a River Condition Assessment will be required in order to establish the baseline value of the watercourse within the Biodiversity Metric, and to inform potential enhancement measures which may be required to achieve the required 10% net gain in River Units.

Woodland and Trees

- 5.11 All parcels of on-site woodland should be retained, protected and buffered from development edges. Areas indicated as ancient woodland within the Ancient Woodland Inventory should be separated from development with a buffer of at least 15m to avoid root damage. Urbanisation and recreational impacts upon these parcels of woodland resulting from the proposed development are likely to present a constraint to development and will require mitigation such as the preparation of a suitable management regime, access restriction, and buffer planting, where possible. However, opportunities to enhance the woodland habitats are available, including strengthening the existing linear tract of woodland with locally appropriate supplementary planting within strategic green infrastructure and re-establishing connectivity to the isolated remnant parcels of ancient woodland.
- 5.12 Mature trees provide opportunities for a variety of wildlife, as well as being of high intrinsic ecological value in their own right. They should be retained and protected as part of the proposed development. A Tree Survey and Arboricultural Impact Assessment (AIA) is recommended to identify root protection areas, identify any notable, veteran or ancient trees and any trees which may require removal, as well as to understand the impact the proposed development would have upon these features.

Hedgerows and Treelines

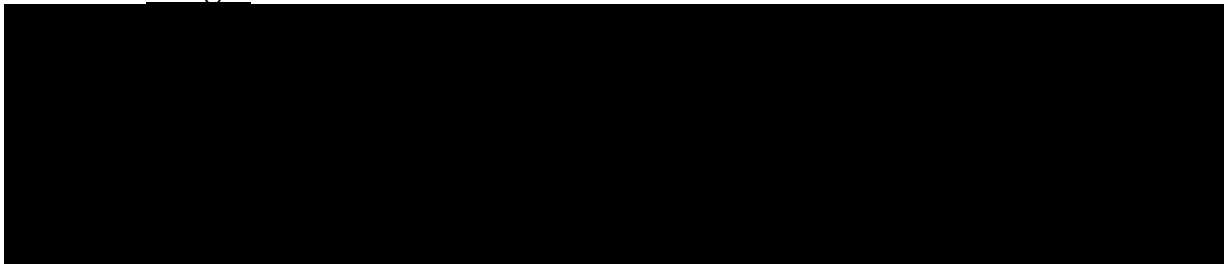
- 5.13 The Site is bounded on all aspects by native species hedgerows, treelines and linear belts of scrub. These stretches of boundary vegetation represent important foraging, refuge and dispersal habitat for a range of fauna, so should be retained and protected wherever possible. Hedgerows are listed as a Habitat of Principal Importance within S41 of the NERC Act 2006, and efforts should therefore be made to ensure their protection from development effects.

Fauna

Bats

- 5.14 A number of mature trees and a wooden structure are present within the Site and have been incidentally sighted to support potential roosting features for bats. It is recommended that preliminary roost assessments of these habitats be undertaken to establish their suitability to support roosting bats.
- 5.15 The Site is dominated by large areas of open grassland bounded by unvegetated fence lines, which offer fewer cross-site dispersal corridors for bats. Some features of interest for bats are present, including parcels of ancient woodland, the Barkham Brook, ponds and boundary vegetation, which all provide foraging and dispersal opportunities, both within the Site and the wider landscape. Resultingly, in line with the Bat Survey Guidelines (Bat Conservation Trust, 2016), the Site has been assessed to have 'low-moderate' suitability for bats. Due to this and the scale and nature of the proposed development, bat activity transects are recommended, alongside static automated monitoring to establish which species are utilising the Site and in what capacity.

Badger



Dormouse

- 5.17 Suitable dormouse habitat is present within the Site, including woodland, scrub and hedgerows, which should be retained and protected, where possible. Increased levels of disturbance to dormouse habitat may take place as a result of the proposed development due to urbanisation and recreational impacts, as well as potential removal of suitable habitat to facilitate the development. In line with the Dormouse Conservation Handbook (English Nature, 2006), monthly dormouse nest tube surveys are recommended to establish presence / likely absence of the species within the Site.

Riparian mammals

- 5.18 Records of both otter and water vole from connecting stretches of the on-site watercourse suggest that both species are present in the local area. While the stretch of the Barkham Brook on-site is sub-optimal for both water vole and otter, their presence cannot be ruled out. As water vole are a fully protected species under the Wildlife and Countryside Act 1981 and otter are a European Protected Species, any activities which

may have adverse effects upon individuals or their habitats require appropriate mitigation measures. Water vole and otter surveys are therefore recommended to establish presence / likely absence of these species.

Birds

- 5.19 While the habitats on-site are generally common and widespread in the local landscape, the woodland parcels, ponds, watercourses and boundary vegetation are likely to be used as breeding resources for birds. Breeding bird surveys are recommended to confirm which species are using the Site and in what capacity.
- 5.20 The Site also contains habitats which may be suitable for supporting wintering birds, including the open grassland and ponds. An early-season breeding bird survey is recommended as a scoping exercise to establish whether further wintering bird surveys are required.
- 5.21 Development at the Site presents opportunities to deliver a net gain in foraging and nesting resources for wild birds through green infrastructure.

Reptiles

- 5.22 Surveys conducted at the neighbouring Arborfield Green development confirmed low populations of slow worm and grass snake, which is likely to reflect the situation on-site. During the baseline habitats survey, it was considered that there was insufficient suitable reptile habitat present at the Site, with that present occurring in small isolated patches, to warrant targeted reptiles surveys. However, as the habitat survey took place out of season, this conclusion will be revisited in the spring/summer once the structural diversity of vegetation has developed. All British reptile species are listed within Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and are afforded protection against killing and injury under parts of sub-section 9(1) of the Act.
- 5.23 The development will seek to increase the overall amount of suitable reptile habitat within the Site through the incorporation of appropriate planting and management within green infrastructure.

Great Crested Newt

- 5.24 Terrestrial habitats within the Site, including the woodland, scrub, hedgerows and laying deadwood, are suitable to support dispersal, refuge and foraging by great crested newts, and local records indicate the presence of this species in the local landscape. As an EPS, great crested newts and their habitats receive strict legal protection.
- 5.25 Three ponds are present within the Site and the pond search identified a further 22 ponds within a potential dispersal range. It is recommended that a Pond Scoping exercise and Habitat Suitability Index (HSI)

assessment of ponds on-site and sharing good connectivity with the Site be undertaken to determine their suitability to support great crested newt breeding. If suitable, further surveys may be required to determine presence or likely absence.

Invertebrates

- 5.26 While the habitats on-site are generally common and widespread, which is likely to be reflected by the overall invertebrate assemblage, the ancient woodland parcels containing a large amount of laying and standing deadwood, ponds and the Barkham Brook watercourse may support notable species, including stag beetle which are listed in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). An invertebrate scoping survey is therefore recommended to determine the suitability of the on-site habitats for supporting notable invertebrate species, as well as to establish the requirement for any further targeted invertebrate surveys.
- 5.27 Additionally, the on-site Barkham Brook tributary directly connects to a stretch of the watercourse with a recent confirmed record of white-clawed crayfish. As the development is likely to result in disturbance to the watercourse in some capacity, white-clawed crayfish surveys are recommended to establish presence / likely absence.

Summary of Recommendations

- 5.28 Based on the ecological constraints identified above, Table 2 summarises recommendations for further work necessary to determine the need for, and scope of, any avoidance, mitigation and/or compensation measures to address potential adverse effects of development. The outcome of this further work will inform an EclA of the final scheme.

Table 2. Recommendations for further investigation/survey

Ecological Feature	Further Work	Applicable Timescales
Thames Basin Heaths SPA	HRA - Appropriate Assessment	n/a
Biodiversity Net Gain	Habitat Condition Assessments to inform Biodiversity Metric	April - July
	River Condition Assessment to inform River section of Biodiversity Metric	Any time (late spring / early autumn optimum)
Bats	Preliminary ground-based roost assessment of on-site trees to be removed and wooden storage structure	Anytime
	Further roost surveys (TBC)	May-September
	Monthly walked transects and periods of automated static monitoring	May-September
Dormice	Presence/likely absence survey using nest tubes and nest boxes	Up to monthly, April - November

Water vole	Two seasonal watercourse surveys to look for field signs	May-September (optimum early June and late August)
Otter	Two seasonal watercourse surveys to look for field signs	Anytime
Breeding birds	Up to six walkover surveys, including early season for wintering bird scoping	March-September
Great crested newt	Pond scoping and HSI assessment of ponds	Anytime (ideally March-April to allow time for presence/likely absence surveys, if required)
	Presence / likely absence surveys (eDNA, bottle-trapping)	Mid-April – mid June
Invertebrates	Invertebrate scoping survey	April-May
	White-clawed crayfish watercourse surveys	Mid-June to mid-September

Opportunities for Ecological Enhancement

5.29 To promote adherence to the NPPF, Policy NE1 of the Wokingham Borough Draft Local Plan, as well as Policy CP7 of the current Wokingham Borough Core Strategy, the following opportunities for ecological enhancement have been identified:

- Aquatic enhancement of existing ponds and watercourses, including the Barkham Brook river corridor and associated ditch network, to improve aquatic opportunities and increase biodiversity.
- Drainage attenuation features, if appropriately designed, could serve a dual function as wildlife ponds, and/or dedicated wildlife ponds could be created within public open space.
- It has been recommended that boundary woodland, trees and hedgerows be retained and buffered from development edge-effects using public open space. The establishment of new habitats, such as species-rich grassland or additional tree planting, would enhance the biodiversity value of these habitat corridors.
- Improved connectivity of green infrastructure with new hedgerow planting and infill planting within boundary vegetation
- Bat boxes may be installed within new buildings and retained mature trees to provide an increase in on-site roosting opportunities. These should be a purpose-built, durable and long-lasting variety such as available from Schwegler or Habitat, and should be incorporated into the fabric of new builds.
- Bird nesting boxes may similarly be provided to benefit generalist bird species. Many groups promote the integration of swift bricks within new builds; a cost-effective measure which will benefit further species including declining house sparrows.
- Retention of existing and provision of new log piles within woodland parcel and in the periphery of open space for use as hibernacula for wildlife

- Although not strictly an 'enhancement' measure, provision of hedgehog-friendly gravel boards or equivalent, providing a minimum 5 x 5 inch gap, should be used to maintain permeability for hedgehogs across the Site.
- Conclusions

6.0 CONCLUSIONS

- 6.1 Confirmed ecological constraints to development at the Site have been identified as the presence of:
- Thames Basin Heaths SPA
 - Ancient Woodland
 - Mature trees
 - Barkham Brook watercourse
- 6.2 The following additional investigation/survey work is recommended to inform an evidence-based EclA of the proposed development, such that suitable ecological impact avoidance, mitigation and/or compensation measures may be adopted:
- Habitat/River Condition Assessments to inform BNG Metric
 - Bat activity survey
 - Bat roost survey
 - Badger survey
 - Dormouse survey
 - Water vole survey
 - Otter survey
 - Breeding bird survey
 - Great crested newt survey
 - Invertebrate scoping survey
 - White-clawed crayfish survey
- 6.3 Recommendations for ecological enhancement measures that could be delivered as part of development at the Site have been provided here-in, which will aid accordance with Policy NE1 of the Wokingham Borough Draft Local Plan, as well as Policy CP7 of the current Wokingham Borough Core Strategy.
- 6.4 No overriding constraints to development have been identified subject to the implementation of appropriate mitigation measures in respect of confirmed ecological constraints, and further recommended survey work.

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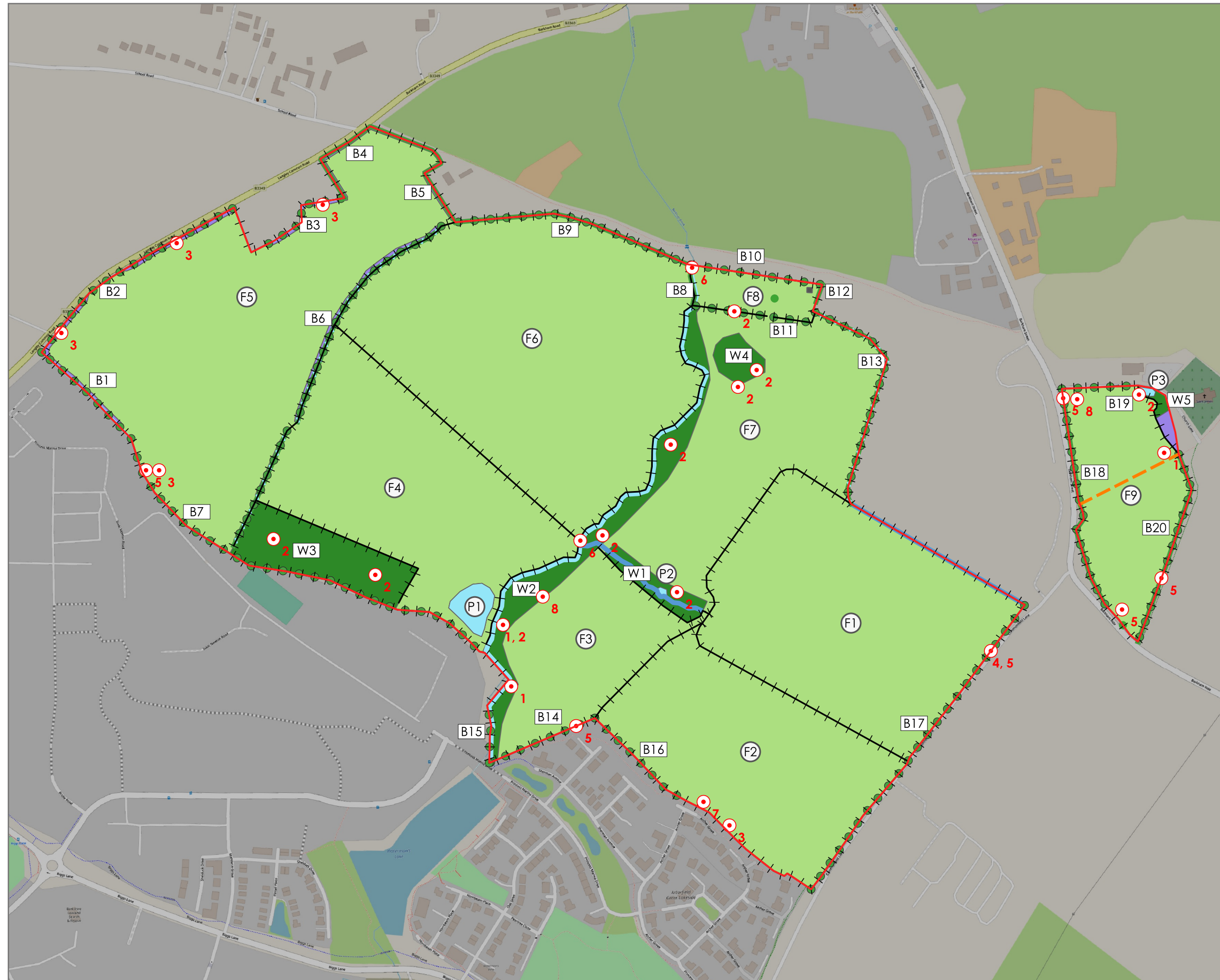
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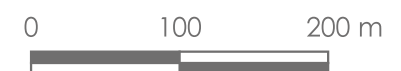
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Appendix A

Habitats Plan & Habitat Summary Table



- Survey area
- Grassland (g)
- Woodland (w)
- Dense scrub (h3)
- Pond (r)
- Buildings (u1 b5)
- Hedgerows (h2a)
- Hedgerows with trees
- Hedgerows with trees - associated with bank or ditch
- Line of trees (w1 g6)
- Line of trees - associated with bank or ditch
- Barkham Brook
- Ditch
- Tree
- Field / pond reference
- Hedgerow / woodland reference
- Fence
- Public Right of Way
- Target note
 - 1 - Mammal holes
 - 2 - Log piles / standing deadwood / laying deadwood
 - 3 - Mammal run
 - 4 - Ancient tree
 - 5 - Tree with potential bat roost features
 - 6 - Bridge over Barkham Brook
 - 7 - Scattered bracken
 - 8 - Rubble / debris pile



Project	Barkham Square, Arborfield	Date	February 2023	Drawing No.	CSA/6389/103
Drawing Title	Habitats Plan	Scale	Refer to scale	Rev	-
Client	Crest Nicholson Strategic Projects	Drawn	SV	Checked	AP

Table 1. UK Habitat Classification Summary Table

Habitat Parcel Number	Habitat Type	Habitat Code(s)	Description
F1	Grassland <i>Other recreational</i>	g, 580	Short, homogenous grassland dominated by coarse grasses with little herbaceous content. Formerly used as a polo green.
F2	Grassland <i>Other recreational</i>	g, 580	Short, homogenous grassland dominated by coarse grasses with little herbaceous content. Formerly used as a polo green.
F3	Grassland <i>Cattle-grazed</i>	g, 59	Short, homogenous grassland dominated by coarse grasses with little herbaceous content. Rotationally cattle grazed and used for silage.
F4	Grassland <i>Cattle-grazed</i>	g, 59	Short, homogenous grassland dominated by coarse grasses with little herbaceous content. Rotationally cattle grazed and used for silage.
F5	Grassland <i>Cattle-grazed</i>	g, 59	Short, homogenous grassland dominated by coarse grasses with little herbaceous content. Rotationally cattle grazed and used for silage.
F6	Grassland <i>Cattle-grazed</i>	g, 59	Short, homogenous grassland dominated by coarse grasses with little herbaceous content. Rotationally cattle grazed and used for silage.
F7	Grassland <i>Horse-grazed</i>	g, 61	Short, homogenous grassland dominated by coarse grasses with little herbaceous content. Horse grazed.
F8	Grassland <i>Horse-grazed</i>	g, 61	Short, homogenous grassland dominated by coarse grasses with little herbaceous content. Horse grazed.
F9	Grassland	g	Short, homogenous grassland with a public footpath running centrally through it.
P1	Pond <i>Artificial</i>	r, 366	Large man-made pond to the south-east of Field F4 with sparse aquatic vegetation and scattered wetland vegetation around periphery.
P2	Pond <i>Natural</i>	r, 364	Natural woodland pond located centrally within Woodland W1. Connected to ditch and wet at the time of the field survey but lacking aquatic or wetland vegetation suggesting seasonally wet.
P3	Pond <i>Natural</i>	r, 364	Natural woodland pond located within Woodland W5. Could not be viewed properly during field survey. Mapped on OS mapping as a pond, suggesting presence for the majority of the year.
W1	Woodland <i>Ancient woodland site</i>	w, 33, 147, 159, 191	A parcel of woodland dividing Fields F3 and F7 mapped as ancient woodland and Priority deciduous woodland on MAGIC database.

Habitat Parcel Number	Habitat Type	Habitat Code(s)	Description
	<i>Falling deadwood abundant</i> <i>Standing deadwood abundant</i> <i>Ditch</i>		Contains several mature trees. Falling and standing deadwood frequently present, with a ditch connected to the Barkham Brook running centrally through it.
W2	Woodland <i>Ancient woodland site</i> <i>Falling deadwood abundant</i> <i>Standing deadwood abundant</i>	w, 33, 147, 159	A parcel of woodland running parallel to the Barkham Brook watercourse mapped as ancient woodland and Priority deciduous woodland on MAGIC database. Contains several mature trees. Falling and standing deadwood frequently present.
W3	Woodland <i>Ancient woodland site</i> <i>Falling deadwood abundant</i> <i>Standing deadwood abundant</i>	w, 33, 147, 159	A parcel of woodland south of Field F4 mapped as ancient woodland and Priority deciduous woodland on MAGIC database. Contains several mature trees. Falling and standing deadwood frequently present.
W4	Woodland <i>Ancient woodland site</i> <i>Falling deadwood abundant</i> <i>Standing deadwood abundant</i>	w, 33, 147, 159	A small parcel of woodland within the north-west corner of Field F7 mapped as ancient woodland and Priority deciduous woodland on MAGIC database. Contains several mature trees. Falling and standing deadwood frequently present.
W5	Woodland	w	Small parcel of woodland within the north-west corner of Field F9.
Barkham Brook	Rivers and streams <i>Natural watercourse</i>	r2, 411	Barkham Brook watercourse which bisects the Site from the north-south.
B1	Dense scrub <i>Trees</i> <i>Ditch</i>	h3, 190, 191	A linear belt of dense scrub with a line of standard trees running parallel behind it alongside a ditch.
B2	Dense scrub <i>Trees</i>	h3	A linear belt of dense scrub with a line of standard trees running parallel behind it.
B3	Dense scrub <i>Trees</i>	h3, 190	A linear belt of dense scrub with a line of standard trees running parallel behind it.
B4	Dense scrub	h3	A linear belt of dense scrub.
B5	Dense scrub	h3	A linear belt of dense scrub.

Habitat Parcel Number	Habitat Type	Habitat Code(s)	Description
B6	Hedgerow <i>Native Ditch</i>	h2, 47, 190, 191	A native hedgerow consisting of recently planted trees running parallel to a ditch and dense linear belt of scrub.
B7	Line of trees	w1g6	A line of mature trees.
B8	Hedgerow <i>Native</i>	h2, 47	A short stretch of native hedgerow which runs parallel to the northern-most extent of the on-site Barkham Brook.
B9	Hedgerow <i>Native Trees Veteran trees</i>	h2, 47, 49, 190	A native hedgerow with standard trees. Trees mapped as 'veteran' on the Ancient Tree Inventory present towards the west.
B10	Hedgerow <i>Native</i>	h2, 47	A native hedgerow.
B11	Line of trees	w2g6	Two lines of mature trees running parallel to one another in close proximity.
B12	Hedgerow <i>Native</i>	h2, 47	A short stretch of native hedgerow.
B13	Hedgerow <i>Native Trees Ditch</i>	h2, 47, 190, 191	A native hedgerow with standard mature trees running parallel to a ditch.
B14	Line of trees	w1g6	A line of mature trees.
B15	Line of trees	w1g6	A line of mature trees.
B16	Line of trees	w1g6	A line of mature trees.
B17	Line of trees <i>Veteran trees</i>	w1g6, 49	A line of mature trees. Trees mapped as 'veteran' on the Ancient Tree Inventory present.

Habitat Parcel Number	Habitat Type	Habitat Code(s)	Description
B18	Hedgerow <i>Native Trees</i>	h2, 47, 190	A native hedgerow with mature standard trees and areas dominated by scrub.
B19	Line of trees	w1g6	A line of mature trees.
B20	Hedgerow <i>Native</i>	h2, 47	A native hedgerow with occasional mature trees and areas dominated by scrub.

Appendix B

Legislation and Planning Policy

- 1.1. The **Conservation of Habitats and Species Regulations 2017** (as amended) make prescriptions for the designation and protection of Sites of Community Importance ('European sites', i.e. Special Areas of Conservation and Special Protection Areas) and European Protected Species (EPS). The latter include all native bats, great crested newts, dormice, otters and certain reptiles, listed under Annex II of the Regulations. Following the UK's departure from the European Union, the provisions of the Regulations have been retained through enactment of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, which came into force on 31 December 2020.
- 1.2. The **Wildlife and Countryside Act 1981** (as amended, principally by the Countryside and Rights of Way Act 2000) forms the basis for protection of statutory designated sites of national importance (e.g. Sites of Special Scientific Interest; SSSIs) and native species that are rare and vulnerable in a national context. Additionally, badgers are protected under the **Protection of Badgers Act 1992**.
- 1.3. The **Environment Act 2021** received Royal Assent in November 2021. Through an amendment to the Town and Country Planning Act 1990 the Environment Act will introduce a mandatory requirement for all planning permissions to be conditional upon the submission of a Biodiversity Gain Plan for approval by the Local Planning Authority. The Plan will need to demonstrate a net gain of at least 10% in the biodiversity value of the development site. These provisions are not yet in force, pending their enactment through secondary legislation (expected November 2023).
- 1.4. Section 40(1) of the **Natural Environment and Rural Communities (NERC) Act 2006** states that each public authority, "must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity." This legislation makes it clear that planning authorities should consider impacts to biodiversity when determining planning applications, with particular regard to the Section 41 (S41) lists of 56 habitats and 943 species of principal importance. The UK Biodiversity Action Plan (BAP) has been superseded by the Biodiversity 2020 Strategy, however Local BAPs continue to influence biodiversity management and conservation effort, including through the spatial planning system, at the local scale.
- 1.5. The **National Planning Policy Framework (2021)** (NPPF) sets out government planning policies for England and how they should be applied. With regards to ecology and biodiversity, Chapter 15: Conserving and Enhancing the Natural Environment, paragraph 174, states that the planning system and planning policies should minimise impacts on and provide net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.

- 1.6. Paragraph 180 sets out the principles that local planning authorities should apply when determining planning applications:
- If significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused.
 - Development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest.
 - Development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists.
 - Development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.
- 1.7. Accompanying the NPPF, central government guidance on the implementation of planning policies is set out within online Planning Policy Guidance (PPG). The Natural Environment PPG addresses principles across a broad spectrum of topics targeting biodiversity conservation, from individual site and species protection through to the supporting of ecosystem services, and the use of local ecological networks to support the national Nature Recovery Network. In particular, the PPG promotes the delivery of measurable Biodiversity Net Gain through the creation and enhancement of habitats alongside development.
- 1.8. The **Government Circular 06/2005**, which is referred to within the NPPF, defines statutory nature conservation sites and protected species as a material consideration in the planning process.
- 1.9. Local planning policies of relevance to ecology, biodiversity and/or nature conservation have been set out in Table 1 below.

Table 1. Summary of regional and local planning policy relating to ecology

Policy	Summary
Wokingham Borough Local Development Framework (adopted 2010)	
Policy CP7: Biodiversity	Sites designated as of importance for nature conservation at an international or national level will be conserved and enhanced

Policy	Summary
	and inappropriate development will be resisted. The degree of protection given will be appropriate to the status of the site in terms of its international or national importance. Development: a) Which may harm county designated sites (Local Wildlife Sites in Berkshire), whether directly or indirectly, or b) Which may harm habitats or species of principle importance in England for nature conservation, veteran trees or features of the landscape which are of major importance for wild flora and fauna (including wildlife and river corridors), whether directly or indirectly, or c) That compromises the implementation of the national, regional, county and local biodiversity action plans will only be permitted if it has been clearly demonstrated that the need for the proposal outweighs the need to safeguard the nature conservation importance, that no alternative site that would result in less or no harm is available which will meet the need, and: i) Mitigation measures can be put in place to prevent damaging impacts; or ii) Appropriate compensation measures to offset the scale and kind of losses are provided.
Policy CP8: Thames Basin Heaths Special Protection Area	Development which alone or in combination is likely to have a significant effect up on the Thames Basin Heaths Special Protection Area will be required to demonstrate that adequate measures to avoid and mitigate any potential adverse effects are delivered.
Wokingham Borough Draft Local Plan 2020	
Policy NE1: Biodiversity and Nature Conservation	Sites designated as importance for nature conservation at an international or national level, as identified on the Policies Map, in addition to Local Wildlife Sites and Local Geological Sites, will be maintained, conserved and enhanced and inappropriate development will be resisted. The degree of protection given will be proportionate to the status of the site in terms of its international or national importance. Development proposals which may harm habitats, or species of principle importance for nature conservation in England, ancient or veteran trees or features of the landscape that are of major importance for wild flora and fauna, will only be permitted if it has been clearly demonstrated that the wholly exceptional need for the proposal outweighs the need to safeguard the nature conservation or geological importance of the site, and no alternative site is available that would result in less or no harm. Where this test is met, every effort must be made to reduce the harm to the site through avoidance and mitigation measures. Development proposals across sites of all sizes should achieve a minimum of 10% net gain for biodiversity, either within the site boundary or as part of on-site compensation, or where necessary, off-site compensation towards a larger strategic habitat restoration network.

Policy	Summary
	Development will only be permitted where it can be demonstrated that proposals: a) Incorporate new biodiversity features and enhance existing features of value through design, layout and landscaping; b) Provide or retain appropriate buffer zones between development proposals and designated sites, as well as habitats and species of principal importance for nature conservation; c) Provide coherent ecological permeability that is integrated and linked to the wider green infrastructure and any nature recovery network identified as relevant to the location; d) Are compatible with any Biodiversity Action Plan or strategic conservation management plans for a species or habitats that has been formally adopted by the local authority. Development location within, or neighbouring, a Biodiversity Opportunity Area (BOA), Living Landscape, Nature Recovery Network or similar opportunity should support the objectives of each initiative.
Policy NE2: Thames Basin Heaths Special Protection Area	Development, which following a Habitats Regulations Assessment, either along or in combination with other plans or projects, is considered to have likely significant effects on the ecological integrity of the Thames Basin Heaths Special Protection Area will be required to demonstrate that adequate measures to avoid and mitigate any potential adverse effects are delivered. <u>Residential development</u> Proposals for a net increase in residential development: a) Within the 400 metre exclusion zone of the Thames Basin Heaths SPA will be resisted because the impacts of such development on the SPA cannot be fully mitigated. b) Between the 400 metre threshold but within five kilometres linear distance of the SPA boundary (the SPA zone of influence) will be required to deliver avoidance and mitigation measures prior to occupation of new dwellings and in perpetuity. Measures must be in accordance with the Thames Basin Heaths Special Protection Area Avoidance and Mitigation Strategy or any successor document. c) Between five and seven kilometres from the SPA boundary (the SPA zone of influence) proposals for a net increase of more than 50 dwellings may be required to provide mitigation measures based on a combination of SAMP and the provision of SANG to a lower standard than within the 400m to five kilometre zone. This will be assessed on a case-by-case basis in consultation with Natural England and, where appropriate, a Habitats Regulations Assessment may be required to ascertain whether the proposal could have an adverse effect on the SPA. <u>SANG Provision</u> Within the five kilometre zone, a minimum of eight hectares of SANG land (after discounting to account for current access and capacity) should be provided per 1,000 new occupants. SANG must be secured or provided, in addition to being maintained in perpetuity, in accordance with the quality and quantity

Policy	Summary
	standards advocated by Natural England. SANG capacity should be based on an average occupancy of 2.4 persons per dwelling. The quantity and capacity of SANG to be provided for development proposals outside the five kilometre zone will be assessed individually on a case-by-case basis in consultation with Natural England. The council has identified sufficient SANG provision as part of the avoidance and mitigation measures required for the Development Plan. There is a presumption against the development of SANG sites for uses other than SANG, unless the applicant can demonstrate that sufficient alternative avoidance measures for all relevant submitted and/or approved plans and projects within the borough taking account of Natural England's advice on SANGs. Development proposals must fall within the catchment of a specified SANG, except developments of less than a net increase of 10 residential dwellings. Applications for non-residential development will be assessed on a case-by-case basis. Proposals will be required to make financial contributions towards avoidance and mitigation measures, including SANG and SAMM.
Policy NE3: Trees, woodland and hedgerows	1. Trees, woodland and hedgerows are important visual and ecological assets in towns, villages and the countryside. To retain and provide local character and distinctiveness in the landscape, trees (including ancient or veteran trees), woodland, ancient woodland and hedgerows are of particular significance. Development proposals should: a) Ensure existing trees, hedgerows and other landscape features are protected, and where possible enhanced, as an integral part of the development, b) Retain the existing pattern of fields, hedgerows, woodlands, trees, watercourses, water bodies, underlying topography and other landscape features, c) Provide appropriate buffer zones around woodlands, including semi-natural ancient woodlands, planted ancient woodland sites, orchards, hedgerows and individual trees. 2. The loss, threat or damage to any tree, woodland or hedgerow of visual, heritage or nature conservation value will only be acceptable where: a) Development proposals have sought to avoid, reduce or minimise impact, b) Mitigation measures, such as structural tree planting are incorporated as part of the development proposals providing equivalent scale, canopy cover, habitat connectivity and character. 3. Development proposals that would result in the loss or deterioration of woodland, ancient woodland and ancient or veteran trees will only be permitted if there are wholly

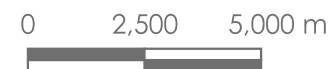
Policy	Summary
	exceptional reasons and a suitable compensation strategy exists.
Policy NE4: Development and existing trees, woodland and hedgerows	1. Development proposals that may affect a tree, woodland or hedgerow should: a) Assess the health of all trees, woodland and hedgerows affected, including describing and assessing their value and the potential impact of the development on them as part of an Arboricultural Impact Assessment b) Incorporate existing woodland, trees and hedgerows and ensure integration into the public realm within a suitable landscape setting, c) Ensure the layout of new developments provide sufficient space to enable trees to grow and thrive, including maintaining adequate root protection areas and limiting excessive shading to residential properties. d) Ensure appropriate tree protection measures are in place prior to development commencing on site as part of an Arboricultural Method Statement, including a Tree Constraints Plan and Tree Protection Plan and actively monitor tree protection throughout the construction process.

Appendix C

Desk Study Information



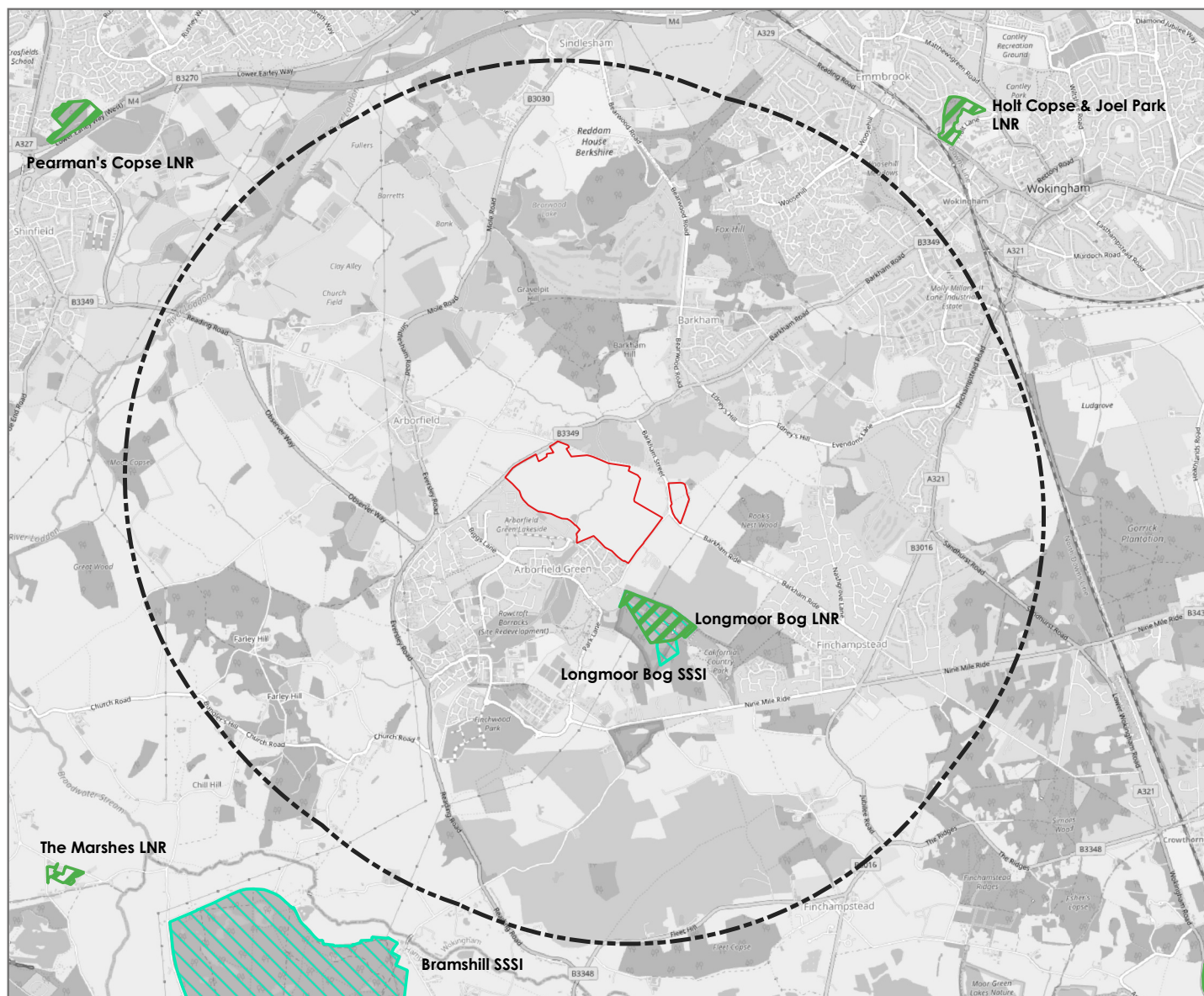
- 10km search radius
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)



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e pershore@csaenvironmental.co.uk
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Project	Barkham Square, Arbofield	Date	February 2023	Drawing No.	CSA/6389/100
Drawing Title	International Designations with 10km	Scale	Refer to scale	Rev	-
Client	Crest Strategic Projects	Drawn	SV	Checked	AP

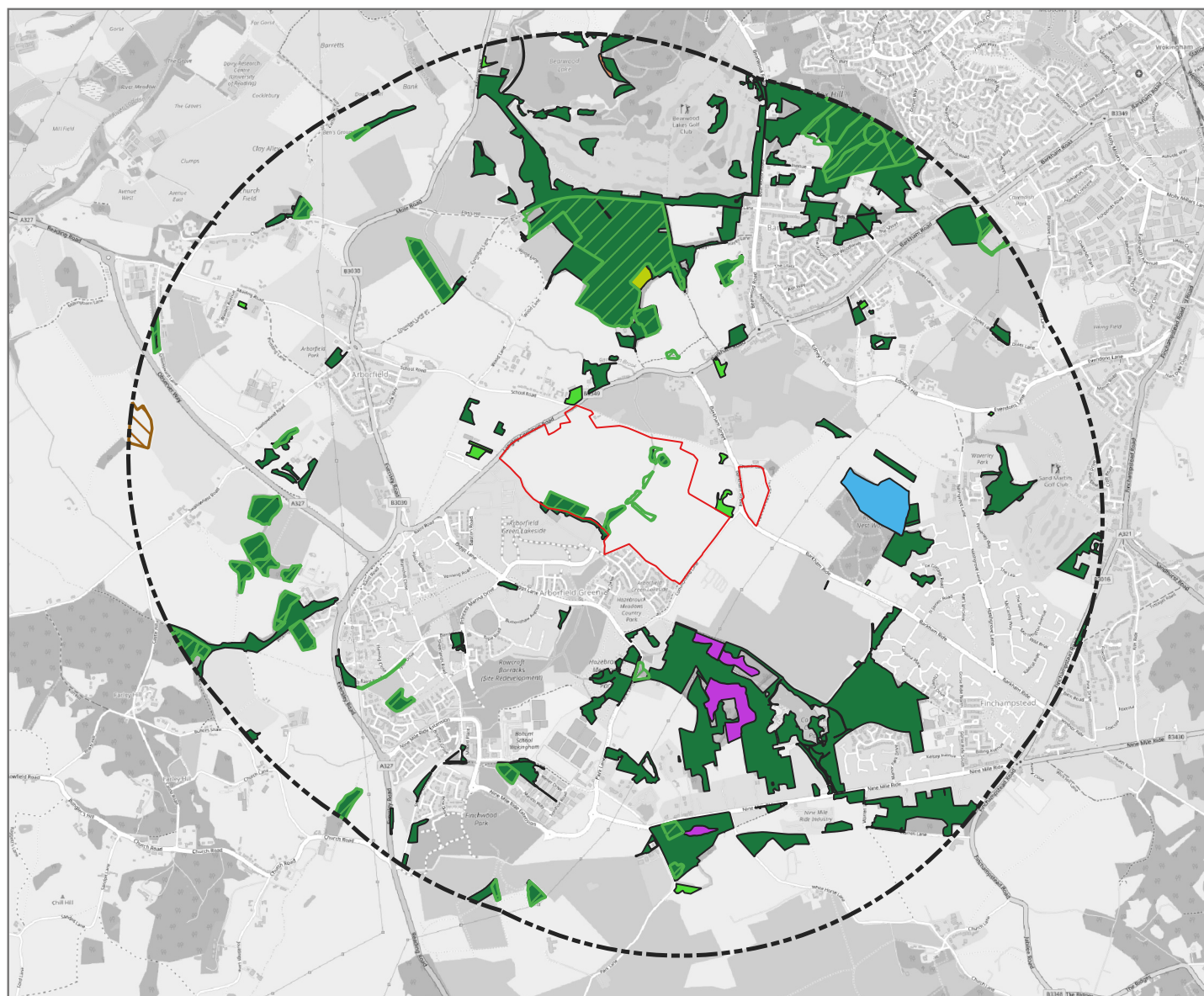


- 3km Search Radius OS
- Site of Special Scientific Interest (SSSI)
- Local Nature Reserve (LNR)



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Project	Barkham Square, Arborfield	Date	February 2023	Drawing No.	CSA/6389/101
Drawing Title	National and Local Designations with 10km	Scale	Refer to scale	Rev	-
Client	Crest Strategic Projects	Drawn	SV	Checked	AP



2km Search Radius

Ancient Woodland Inventory



Ancient & Semi-Natural Woodland



Ancient Replanted Woodland

Priority Habitats



Deciduous woodland



Good quality semi improved grassland



Lowland heathland



Purple moor grass and rush pastures



Reedbeds



Traditional orchard

0

1,000

2,000 m



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Project

Barkham Square, Arbofield

Drawing Title

Priority Habitats within 2km

Client

Crest Strategic Projects

Date

February 2023

Drawing No.

CSA/6389/102

Scale

Refer to scale

Rev

-

Drawn SV

Checked

AP

Appendix D

Photographs



Photograph 1. View of Field F1 looking north-west.



Photograph 2. Pond P1.



Photograph 3. View of Field F5 looking north.



Photograph 4. Boundary B6 from within Field F5 looking north.



Photograph 5. The Barkham Brook and adjacent Woodland W2.



Photograph 6. Field F8 looking south at Boundary B11.



Photograph 7. Boundary B13.



Photograph 8. Boundary B16.



Photograph 9. Field F2 and Boundary B17, looking north.



Photograph 10. Mature tree within Boundary B18.



Photograph 11. Field F9, looking south.



Photograph 12. Wooden storage shed within Field F8.

Appendix E

Habitats and Flora Species List

Table 2. Linear Habitats

Site Name	Barkham Square, Arborfield						
Survey Date and Surveyor(s)	10/02/2023 Alex Perry & Sophie Vines						
Scientific Name	Common Name	Habitat Parcel Number/Habitat Type					
		B1 Scrub with trees and ditch	B2 Dense scrub	B3 Scrub with trees	B4 Dense scrub	B5 Dense scrub	B6 Native hedgerow with ditch
Woody Species							
Broadleaved							
<i>Acer campestre</i>	Field maple						
<i>Alnus glutinosa</i>	Common alder						
<i>Betula pendula</i>	Silver birch						
<i>Cornus</i> sp.	Dogwood						
<i>Corylus avellana</i>	Hazel	x					
<i>Crataegus monogyna</i>	Hawthorn	x					
<i>Fraxinus excelsior</i>	Ash	x	x		x		
<i>Hedera helix</i>	Ivy	x	x				
<i>Ilex aquifolium</i>	Holly						
<i>Populus</i> sp.	Poplar	x					
<i>Prunus avium</i>	Cherry			x			
<i>Prunus laurocerasus</i>	Cherry laurel						
<i>Prunus spinosa</i>	Blackthorn	x	x		x	x	x
<i>Quercus</i> sp.	Oak	x	x	x	x		x
<i>Rubus fruticosus</i> agg.	Bramble	x	x	x		x	x
<i>Salix</i> sp.	Willow						x

Table 2. Linear Habitats

Site Name	Barkham Square, Arborfield						
Survey Date and Surveyor(s)	10/02/2023 Alex Perry & Sophie Vines						
Scientific Name	Common Name	Habitat Parcel Number/Habitat Type					
		B7 Line of trees	B8 Native hedgerow	B9 Native hedgerow with trees	B10 Native hedgerow	B11 Line of trees	B12 Native hedgerow
Woody Species							
Broadleaved							
<i>Acer campestre</i>	Field maple	x					
<i>Alnus glutinosa</i>	Common alder		x				
<i>Betula pendula</i>	Silver birch		x				
<i>Cornus</i> sp.	Dogwood				x		
<i>Corylus avellana</i>	Hazel	x					
<i>Crataegus monogyna</i>	Hawthorn		x	x	x	x	x
<i>Fraxinus excelsior</i>	Ash	x					
<i>Hedera helix</i>	Ivy						
<i>Ilex aquifolium</i>	Holly	x					
<i>Populus</i> sp.	Poplar	x					
<i>Prunus avium</i>	Cherry					x	
<i>Prunus laurocerasus</i>	Cherry laurel						
<i>Prunus spinosa</i>	Blackthorn	x		x			
<i>Quercus</i> sp.	Oak	x		x		x	x
<i>Rubus fruticosus</i> agg.	Bramble	x		x			x
<i>Salix</i> sp.	Willow		x				

Table 2. Linear Habitats

Site Name	Barkham Square, Arborfield						
Survey Date and Surveyor(s)	10/02/2023 Alex Perry & Sophie Vines						
Scientific Name	Common Name	Habitat Parcel Number/Habitat Type					
		B13 Native hedgerow with trees and ditch	B14 Line of trees	B15 Line of trees	B16 Line of trees	B17 Line of trees	B18 Native hedgerow with trees
Woody Species							
Broadleaved							
<i>Acer campestre</i>	Field maple						
<i>Alnus glutinosa</i>	Common alder						
<i>Betula pendula</i>	Silver birch						
<i>Cornus</i> sp.	Dogwood						
<i>Corylus avellana</i>	Hazel						
<i>Crataegus monogyna</i>	Hawthorn	x		x	x		
<i>Fraxinus excelsior</i>	Ash				x	x	
<i>Hedera helix</i>	Ivy		x	x		x	x
<i>Ilex aquifolium</i>	Holly				x		
<i>Populus</i> sp.	Poplar	x					
<i>Prunus avium</i>	Cherry						
<i>Prunus laurocerasus</i>	Cherry laurel					x	
<i>Prunus spinosa</i>	Blackthorn				x		x
<i>Quercus</i> sp.	Oak	x	x	x	x	x	x
<i>Rubus fruticosus</i> agg.	Bramble	x	x				x
<i>Salix</i> sp.	Willow			x			

Table 2. Linear Habitats

Site Name	Barkham Square, Arborfield		
Survey Date and Surveyor(s)	10/02/2023 Alex Perry & Sophie Vines		
Scientific Name	Common Name	Habitat Parcel Number/Habitat Type	
		B19 Line of trees	B20 Native hedgerow
Woody Species			
Broadleaved			
<i>Acer campestre</i>	Field maple	x	
<i>Alnus glutinosa</i>	Common alder		
<i>Betula pendula</i>	Silver birch		
<i>Cornus</i> sp.	Dogwood		
<i>Corylus avellana</i>	Hazel		
<i>Crataegus monogyna</i>	Hawthorn	x	
<i>Fraxinus excelsior</i>	Ash		
<i>Hedera helix</i>	Ivy	x	x
<i>Ilex aquifolium</i>	Holly		
<i>Populus</i> sp.	Poplar		
<i>Prunus avium</i>	Cherry		
<i>Prunus laurocerasus</i>	Cherry laurel		
<i>Prunus spinosa</i>	Blackthorn		
<i>Quercus</i> sp.	Oak	x	x
<i>Rubus fruticosus</i> agg.	Bramble		x
<i>Salix</i> sp.	Willow		

Table 1. Habitat Polygons

Site Name	Barkham Square, Arborfield							
Survey Date and Surveyor(s)	10/02/2023 Alex Perry & Sophie Vines							
Scientific Name	Common Name	Habitat Parcel Number/Habitat Type						
		F1 Grassland	F2 Grassland	F3 Grassland	F4 Grassland	F5 Grassland	F6 Grassland	F7 Grassland
Ferns								
<i>Pteridium aquilinum</i>	Bracken		x					
Herb Species								
<i>Anthriscus sylvestris</i>	Cow parsley					x		
<i>Cirsium arvense</i>	Creeping thistle	x	x	x	x	x	x	x
<i>Cirsium vulgare</i>	Spear thistle		x					
<i>Dipsacus fullonum</i>	Wild Teasel							
<i>Galium aparine</i>	Cleavers					x		
<i>Geranium molle</i>	Dove's-foot crane's-bill			x				
<i>Heracleum sphondylium</i>	Hogweed							
<i>Iris</i> sp.	Iris					x		
<i>Plantago lanceolata</i>	Ribwort plantain	x	x	x	x	x	x	x
<i>Ranunculus acris</i>	Meadow buttercup							
<i>Ranunculus repens</i>	Creeping buttercup	x	x	x	x	x	x	x
<i>Rumex acetosa</i>	Common sorrel	x	x	x	x	x	x	x
<i>Rumex</i> sp.	Dock		x					
<i>Senecio jacobaea</i>	Common ragwort							
<i>Stellaria media</i>	Common chickweed	x	x	x	x	x	x	x
<i>Taraxacum</i> agg.	Dandelion							
<i>Vicia</i> sp.	Vetch					x		
Sedges and Rushes								
<i>Juncus effusus</i>	Soft-rush							
<i>Typha latifolia</i>	Common reed/mace							
Grasses								
<i>Agrostis</i> sp.	Bent grass	x	x	x	x	x	x	x
<i>Arrhenatherum elatius</i>	False oat-grass		x					
<i>Dactylis glomerata</i>	Cock's-foot	x	x	x	x	x	x	x
<i>Deschampsia cespitosa</i>	Tufted hair-grass				x			
<i>Holcus lanatus</i>	Yorkshire-fog	x	x	x	x	x	x	x
<i>Lolium perenne</i>	Perennial rye-grass	x	x	x	x	x	x	x
<i>Phleum pratense</i>	Timothy	x	x	x	x	x	x	x
Woody Species								
Broadleaved								
<i>Acer campestre</i>	Field maple							
<i>Alnus glutinosa</i>	Common alder							
<i>Betula pendula</i>	Silver birch							
<i>Corylus avellana</i>	Hazel							
<i>Crataegus monogyna</i>	Hawthorn							
<i>Fraxinus excelsior</i>	Ash							
<i>Hedera helix</i>	Ivy							
<i>Ilex aquifolium</i>	Holly							
<i>Populus</i> sp.	Poplar sp.							
<i>Prunus avium</i>	Cherry							
<i>Prunus spinosa</i>	Blackthorn							
<i>Quercus</i> sp.	Oak							
<i>Rubus fruticosus</i> agg.	Bramble							
<i>Salix</i> sp.	Willow							
<i>Sambucus nigra</i>	Elder							

Table 1. Habitat Polygons

Site Name	Barkham Square, Arborfield						
Survey Date and Surveyor(s)	10/02/2023 Alex Perry & Sophie Vines						
Scientific Name	Common Name	Habitat Parcel Number/Habitat Type					
		F8 Grassland	F9 Grassland	P1 Pond	W1 Woodland	W2 Woodland	W3 Woodland
Ferns							
<i>Pteridium aquilinum</i>	Bracken						
Herb Species							
<i>Anthriscus sylvestris</i>	Cow parsley						
<i>Cirsium arvense</i>	Creeping thistle	x	x				
<i>Cirsium vulgare</i>	Spear thistle						
<i>Dipsacus fullonum</i>	Wild Teasel					x	
<i>Galium aparine</i>	Cleavers						
<i>Geranium molle</i>	Dove's-foot crane's-bill		x				
<i>Heracleum sphondylium</i>	Hogweed		x				
<i>Iris</i> sp.	Iris						
<i>Plantago lanceolata</i>	Ribwort plantain	x	x				
<i>Ranunculus acris</i>	Meadow buttercup		x				
<i>Ranunculus repens</i>	Creeping buttercup	x	x				
<i>Rumex acetosa</i>	Common sorrel	x	x		x		
<i>Rumex</i> sp.	Dock						
<i>Senecio jacobaea</i>	Common ragwort		x				
<i>Stellaria media</i>	Common chickweed	x	x				
<i>Taraxacum</i> agg.	Dandelion		x				
<i>Vicia</i> sp.	Vetch						
Sedges and Rushes							
<i>Juncus effusus</i>	Soft-rush			x			
<i>Typha latifolia</i>	Common reedmace			x			
Grasses							
<i>Agrostis</i> sp.	Bent grass	x	x				
<i>Arrhenatherum elatius</i>	False oat-grass						
<i>Dactylis glomerata</i>	Cock's-foot	x	x				
<i>Deschampsia cespitosa</i>	Tufted hair-grass						
<i>Holcus lanatus</i>	Yorkshire-fog	x	x				
<i>Lolium perenne</i>	Perennial rye-grass	x	x				
<i>Phleum pratense</i>	Timothy	x	x				
Woody Species							
Broadleaved							
<i>Acer campestre</i>	Field maple						
<i>Alnus glutinosa</i>	Common alder			x	x	x	
<i>Betula pendula</i>	Silver birch					x	
<i>Corylus avellana</i>	Hazel					x	x
<i>Crataegus monogyna</i>	Hawthorn				x	x	x
<i>Fraxinus excelsior</i>	Ash						x
<i>Hedera helix</i>	Ivy						x
<i>Ilex aquifolium</i>	Holly						x
<i>Populus</i> sp.	Poplar sp.				x		x
<i>Prunus avium</i>	Cherry				x		
<i>Prunus spinosa</i>	Blackthorn					x	
<i>Quercus</i> sp.	Oak				x		x
<i>Rubus fruticosus</i> agg.	Bramble					x	
<i>Salix</i> sp.	Willow				x	x	
<i>Sambucus nigra</i>	Elder						

Table 1. Habitat Polygons

Site Name	Barkham Square, Arborfield		
Survey Date and Surveyor(s)	10/02/2023 Alex Perry & Sophie Vines		
Scientific Name	Common Name	Habitat Parcel Number/Habitat Type	
		W4 Woodland	W5 Woodland
Ferns			
<i>Pteridium aquilinum</i>	Bracken		
Herb Species			
<i>Anthriscus sylvestris</i>	Cow parsley		
<i>Cirsium arvense</i>	Creeping thistle		
<i>Cirsium vulgare</i>	Spear thistle		
<i>Dipsacus fullonum</i>	Wild Teasel		
<i>Galium aparine</i>	Cleavers		
<i>Geranium molle</i>	Dove's-foot crane's-bill		
<i>Heracleum sphondylium</i>	Hogweed		
<i>Iris</i> sp.	Iris		
<i>Plantago lanceolata</i>	Ribwort plantain		
<i>Ranunculus acris</i>	Meadow buttercup		
<i>Ranunculus repens</i>	Creeping buttercup		
<i>Rumex acetosa</i>	Common sorrel		
<i>Rumex</i> sp.	Dock		
<i>Senecio jacobaea</i>	Common ragwort		
<i>Stellaria media</i>	Common chickweed		
<i>Taraxacum</i> agg.	Dandelion		
<i>Vicia</i> sp.	Vetch		
Sedges and Rushes			
<i>Juncus effusus</i>	Soft-rush		
<i>Typha latifolia</i>	Common reedmace		
Grasses			
<i>Agrostis</i> sp.	Bent grass		
<i>Arrhenatherum elatius</i>	False oat-grass		
<i>Dactylis glomerata</i>	Cock's-foot		
<i>Deschampsia cespitosa</i>	Tufted hair-grass		
<i>Holcus lanatus</i>	Yorkshire-fog		
<i>Lolium perenne</i>	Perennial rye-grass		
<i>Phleum pratense</i>	Timothy		
Woody Species			
Broadleaved			
<i>Acer campestre</i>	Field maple	x	
<i>Alnus glutinosa</i>	Common alder		
<i>Betula pendula</i>	Silver birch	x	
<i>Corylus avellana</i>	Hazel	x	x
<i>Crataegus monogyna</i>	Hawthorn		x
<i>Fraxinus excelsior</i>	Ash		
<i>Hedera helix</i>	Ivy		
<i>Ilex aquifolium</i>	Holly	x	
<i>Populus</i> sp.	Poplar sp.	x	
<i>Prunus avium</i>	Cherry		
<i>Prunus spinosa</i>	Blackthorn		
<i>Quercus</i> sp.	Oak		x
<i>Rubus fruticosus</i> agg.	Bramble	x	
<i>Salix</i> sp.	Willow		
<i>Sambucus nigra</i>	Elder	x	



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