the ecology partnership

Preliminary Ecological Appraisal

Land at Hooklands Farm, Pulborough

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LIABILITIES:

Whilst every effort has been made to guarantee the accuracy of this report, it should be noted that living animals and plants are capable of migration/establishing. Whilst such species may not have been located during the survey duration, their presence may be found on a site at a later date. This report provides a snap shot of the species that were present at the time of the survey only and does not consider seasonal variation. Furthermore, where access is limited or the site supports habitats which are densely vegetated, only dominant species may be recorded.

The recommendations contained within this document are based on a reasonable timeframe between the completion of the survey and the commencement of any works. If there is any delay between the commencement of works that may conflict with timeframes laid out within this document, or have the potential to allow the ingress of protected species, a suitably qualified ecologist should be consulted.

It is the duty of care of the landowner/developer to act responsibly and comply with current environmental legislation if protected species are suspected or found prior to or during works.

1.0 Introduction

1.1 The Ecology Partnership were commissioned by Ashdown Planning to undertake a preliminary ecological appraisal (PEA) of land Hooklands Farm, RH20 3BA.

1.2 The key objectives of a PEA (CIEEM 2017) are to:

- Identify the likely ecological constraints associated with a project;
- Identify any mitigation measures likely to be required, following the 'Mitigation Hierarchy' (CIEEM 2016; BSI 2013, Clause 5.2);
- Identify any additional surveys that may be required to inform an Ecological Impact Assessment (EcIA); and
- Identify the opportunities offered by a project to deliver ecological enhancement.

1.3 This report comprises:

- The legislative and planning context (Section 1);
- Assessment methodologies (Section 2);
- Results (Section 3);
- Implications for development, including an impact assessment (Sections 4 and 5);
- Conclusions (Section 6).

Site Context

1.4 The site is located north east of the town of Ashington, immediately north of the A24 and lies within the Horsham district of West Sussex (TQ1407 1727). The proposed development site covers approximately 5.9ha and consists predominantly of grassland, with treelines, a hardstanding access track, and deciduous woodland. The site is bordered by priority habitat deciduous woodland to the south, north and west, with a treeline to the east. The wider landscape is comprised of agricultural land and woodland parcels with hedgerows and treelines. It should be noted that the entire survey area is covered by an Environmental Stewardship Agreement.

1.5 The approximate red line boundary of the site is shown in Figure 1 below and in Figure 2 in wider context.

Figure 1: Approximate location of the survey area (red line), taken using Google Earth Pro (16th May 2022).

Figure 2: Approximate location of the survey area (red) within the wider landscape, taken using Google Earth Pro (16th May 2022).

1.6 Site proposals are for a new haul road to connect the eastern extent of London Road to Hooklands farm, avoiding the A24. The fields will also be re-graded (Figure 3). The proposals will involve the temporary removal of a large area of grassland, albeit this will be re seeded post re garding. In addition to low numbers of trees within the treeline will be lost, including ash trees due to ash die back. A small section of deciduous woodland are to be lost to allow for the road to be re routed.

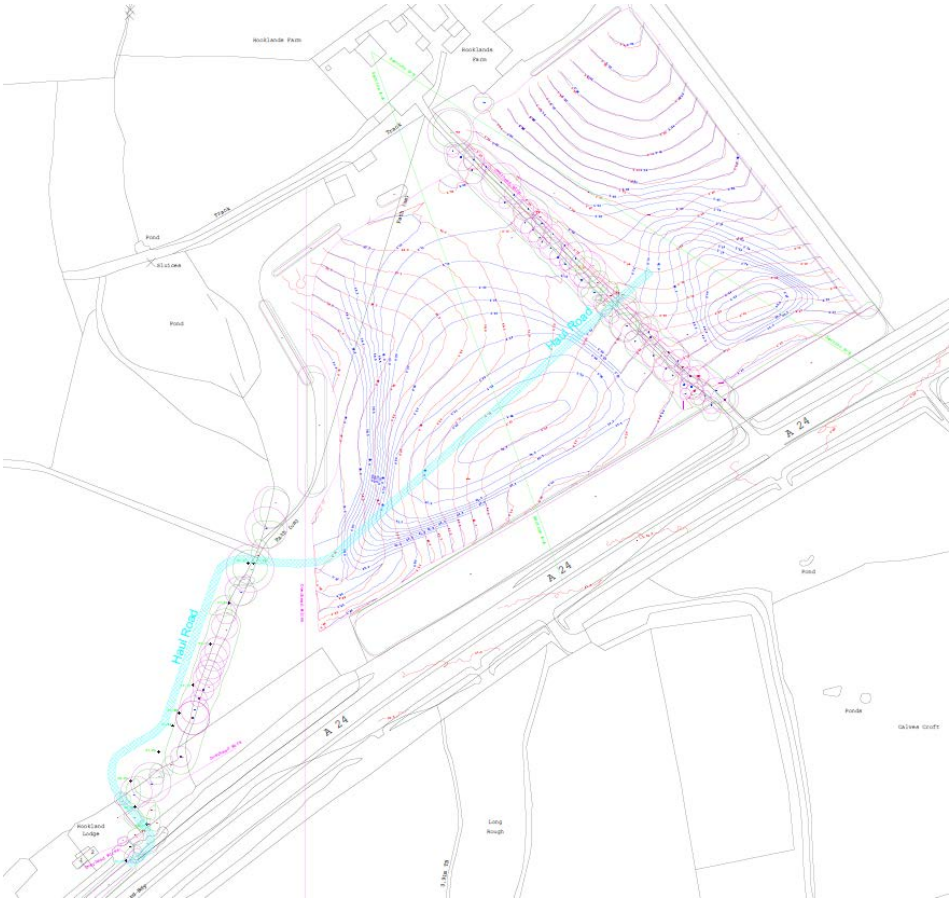

Figure 3: Site development proposals, provided by Penfold Verral 2022.

Planning Policies

1.7 The site was surveyed to assess its ecological value and to ensure the proposals were compliant with relevant planning policy and legislation. Policy guidance is provided by the National Planning Policy Framework (NPPF 2021) as well as relevant planning polices from Horsham District Council. The Horsham District Planning Framework (November 2015) provides a framework for planning decisions in the district and policies relevant to biodiversity and environmental protection have been included below:

- **Policy 24:** Environmental Protection
- **Policy 25:** District Character and the Natural Enviroment
- **Policy 26:** Countryside Protection
- **Policy 30:** Protected Landscapes
- **Policy 31:** Green Infrastructiure and Biodiversity

1.8 The Horsham District Council Draft Local Plan (2019-2036), whilst not yet formally published, provides the following policies:

- **Policy 25:** Environmental Protection
- **Policy 27:** The Natural Environment and Landscape Character
- **Policy 28**: Countryside Protection
- **Policy 30:** Protected Landscapes
- **Policy 31:** Green Infrastructiure and Biodiversity

1.9 Furthermore, the site falls within the Sussex North Water Supply Zone. This zone '*includes supplies from a groundwater abstraction which cannot, with certainty, concude no adverse effect on the integrerity of; Arun Valley SAC, SPA and Ramsar site*' (Natural England, 2021). Development sites with this extraction area must be able to demonstrate water neutrality as to not further negatively impact the Arun Valley site in the wider area.

1.10 The Environment Bill (Environment Act 2021) received Royal Assent on 9th November 2021 and is now an Act of Parliament (Law). The Environment Act 2021 outlines the requirement for granted developments to provide a biodiversity value post-development which exceeds the pre-development biodiversity value of the onsite. Proposals also need to provide a net gain in biodiversity in accordance with the NPPF.

1.11 The assessment also takes into consideration nature conservation and wildlife legislation including, but not limited to, the Wildlife and Countryside Act 1981 (as amended), the Natural Environment and Rural Communities (NERC) Act 2006 and the Conservation of Habitats and Species Regulations 2017.

1.12 The report has been produced with reference to current guidelines for preliminary ecological appraisal (CIEEM 2017) and in accordance with BS 42020:2013 Biodiversity – Code of Practise for Planning and Development.

2.0 Methodology

Desktop Study

2.1 A desktop study search was completed using an internet-based mapping service (www.magic.gov.uk) for statutory designated sites and an internet-based aerial mapping service (maps.google.co.uk) was used to understand the habitats present in and around the survey area, including identifying habitat linkages and features (ponds, woodlands etc.) within the wider landscape.

2.2 Records of protected and notable species within 1m of the site were requested from the local biological records centre, Sussex Biodiversity Records Centre (SxBRC). Information on the on the presence of non-statutory designated sites within 1km of the site was also obtained by SxBRC. Records were screened for relevance and age with only those from the last decade and of species that could occur on site considered further.

Preliminary Ecological Appraisal

2.3 A preliminary ecological appraisal (PEA) was undertaken on 6th May by The Ecology Partnerships Aimee Littlechild BSc (Hons). This included an assessment of both the habitats and protected species potential of the site.

Phase 1 Habitat Survey

2.4 The surveyor identified the habitats present, following the standard 'Phase 1 habitat survey' auditing method developed by the Joint Nature Conservancy Council (JNCC). The site was surveyed on foot and the existing habitats and land uses were recorded on an appropriately scaled map (JNCC 2010). The dominant plant species in each habitat were recorded, where appropriate.

2.5 Plant species abundance was recorded using the DAFOR scale and species abundance was assigned to one the following categories in Table 1.

Table 1: DAFOR Scale Lettering

DAFOR Category	Letter
Dominant	D
Abundant	A
Frequent	F
Occasional	O
Rare	R

Protected Species Assessments

2.6 Any evidence of protected species was recorded. Standard survey methods for finding evidence and assessing presence or likely absence based on habitat suitability were used for bats in trees and buildings (Collins 2016), breeding birds (BTO 2020), hazel dormice (Bright *et al*. 2006), great crested newts (ARG 2010), reptiles (Froglife 2015), badgers (Creswell *et al*. 1990) and water voles (Strachan *et al*. 2011).

Limitations

2.7 It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no single investigation could ensure the complete characterisation and prediction of the natural environment. The site was visited over the period of one site visit. As such, seasonal variations cannot be observed and potentially only a selection of all species that potentially occur within the site have been recorded. Therefore, the survey provides a general assessment of potential nature conservation value of the site and does not include a definitive plant species list.

2.8 The protected species assessment provides a preliminary view of the likelihood of protected species occurring on site, based on the suitability of the habitat and any direct evidence on site. It should not be taken as providing a full and definitive survey of any protected species group. The assessment is only valid for the time when the survey was carried out. Additional surveys may be recommended if, on the basis of this assessment, it is considered reasonably likely that protected species may be present.

3.0 Results

Desktop Study

3.1 There is one international designation within 10km of the sites red line boundary:

- Arun Valley, Special Area of Conservation (SAC) Site of Special Scientific Interest (SSSI), Special Protection Area (SPA) and Ramsar Site, approximately 7.75km west; designated for its wetlands and Ramshorn snail (*Anisus vorticulus*).

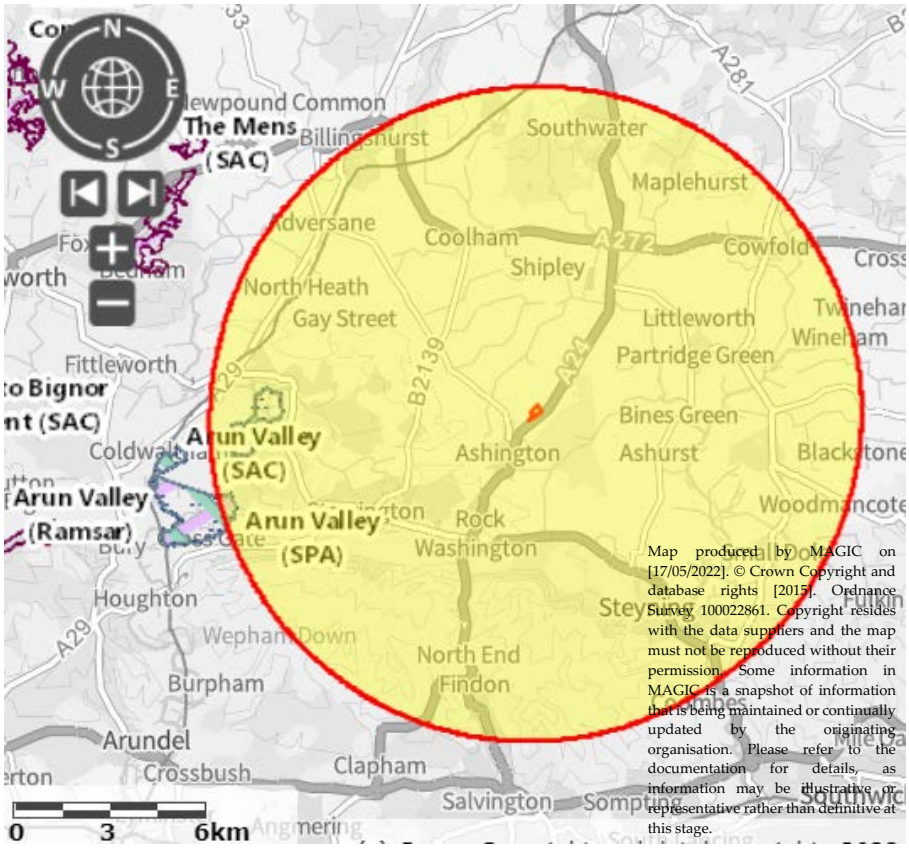

Figure 4: Location of the site in relation to international designations

3.2 There are no statutory designated sites within 2km of the sites red line boundary, the closest being Sullington Warren Site of Special Scientific Interest (SSSI) *c.* 4.6km south west of site and Chanctonbury Hill SSSI *c.* 5.6km south of site (Figure 4).

3.3 The site does fall however, within Impact Risk Zones (IRZ's) for the above mentioned SSSI sites (Figure 4). Developments listed against those that may have an impact on protected

sites include: any aviation proposals, oil or gas exploration; plus industrial/agricultural developments that could causer air pollution including manure stores and slurry lagoons.

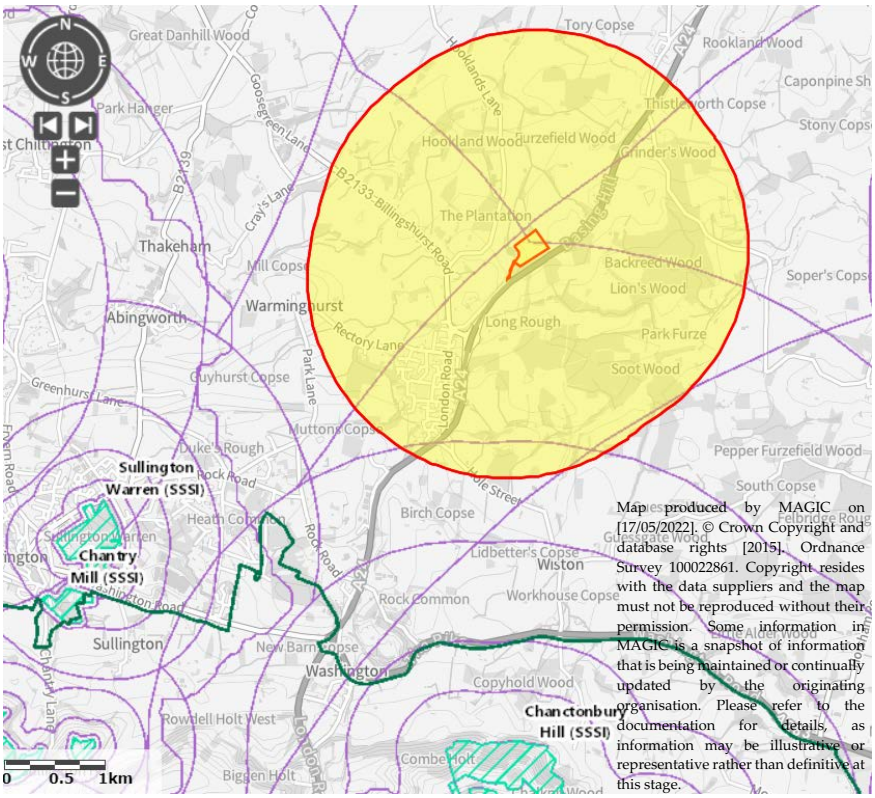

Figure 5: SSSI sites (aqua hatchings) and impact risk zones (purple lines) for designated sites within the wider area, over 2km from site

3.4 It should also be noted that the site lies just outside of the Sussex 12km Bat SAC wider foraging area, with the proposed development site *c.* 12.65km from these protected areas.

3.5 The site has two Local Wildlife Sites (LWS) within 2km of the red line boundary:

- H58- Hooklands Farm Meadow, *c.* 380m north; and
- H68- Captite Wood, *c.* 630m east.

3.6 The site contains a section of priority habitat deciduous woodland, and is also surrounded by other priority habitats (Figure 6), the closest of each type are:

- Ancient and semi natural woodland (Calves Croft), *c.* 70m south; and
- Ancient, replanted woodland, *c.* 315m east.
- Traditional orchards, *c.* 760m west.

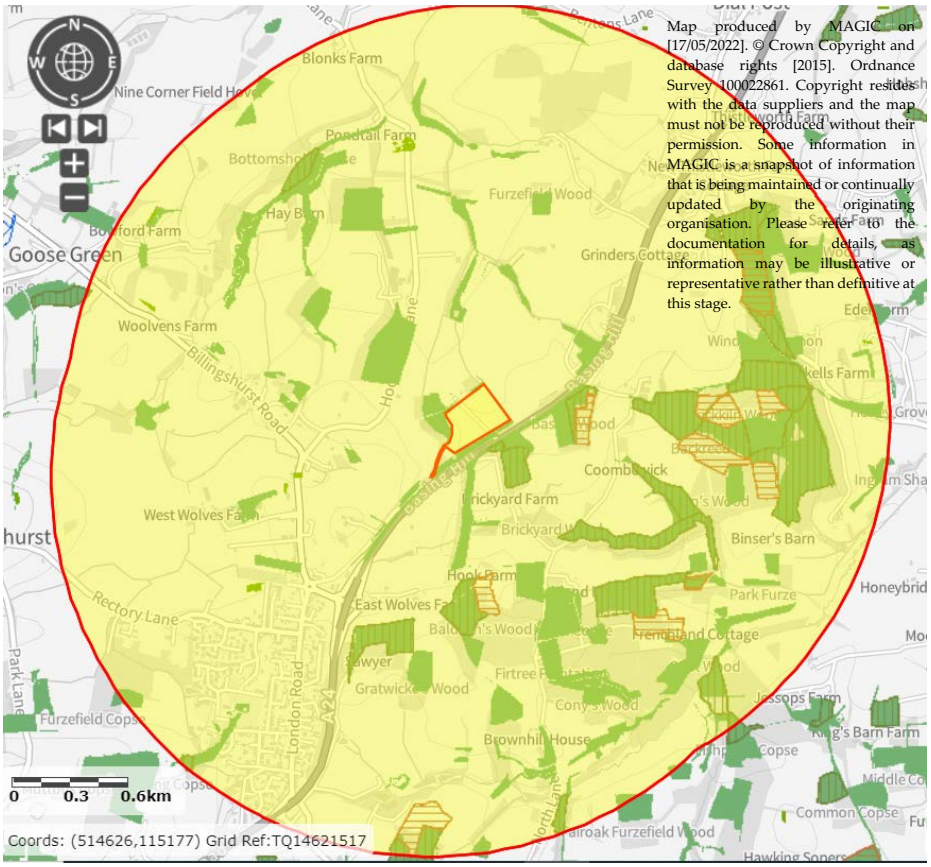

Figure 6: Deciduous woodland (forest green); traditional orchards (lime green); ancient woodland (brown horizontal hatches); ancient, replanted woodland (brown horizontal hatchings within 2km (red circle) around the red line boundary of the site.

3.7 OS mapping revealed only one waterbody (P1) within a 250m buffer of site (Figure 7), with another three identified within a 250m and 500m buffer of site. Pond 1 is located within Hooklands Farm approximately 25m west of site, with the remaining ponds located approximately 400m south, the other side of the A24.

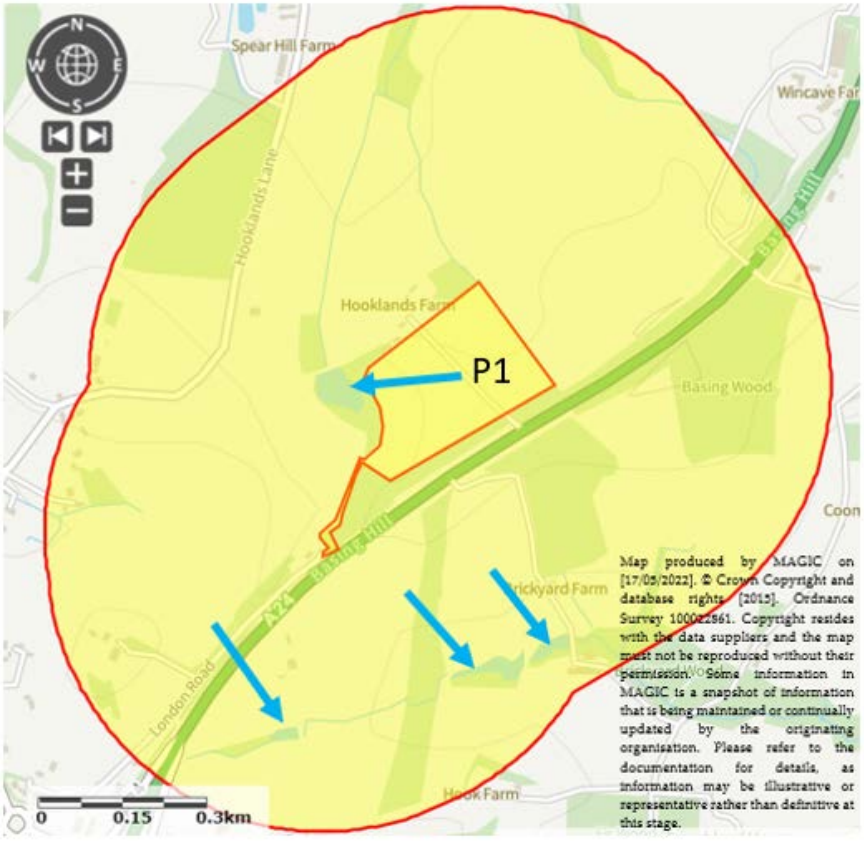

Figure 7: Pond within a 500m buffer (red circle) around the red line boundary of the site.

3.8 The search also revealed that two European Protected Species (EPS) licences were needed within a 2km radius around the red line boundary; one for hazel dormouse *c.* 775m south west in 2019 (2018-38151-EPS-MIT); and the other for common pipistrelle bats *c.* 1.4km north from 2017 (2017-31760-EPS-MIT) (Figure 8).

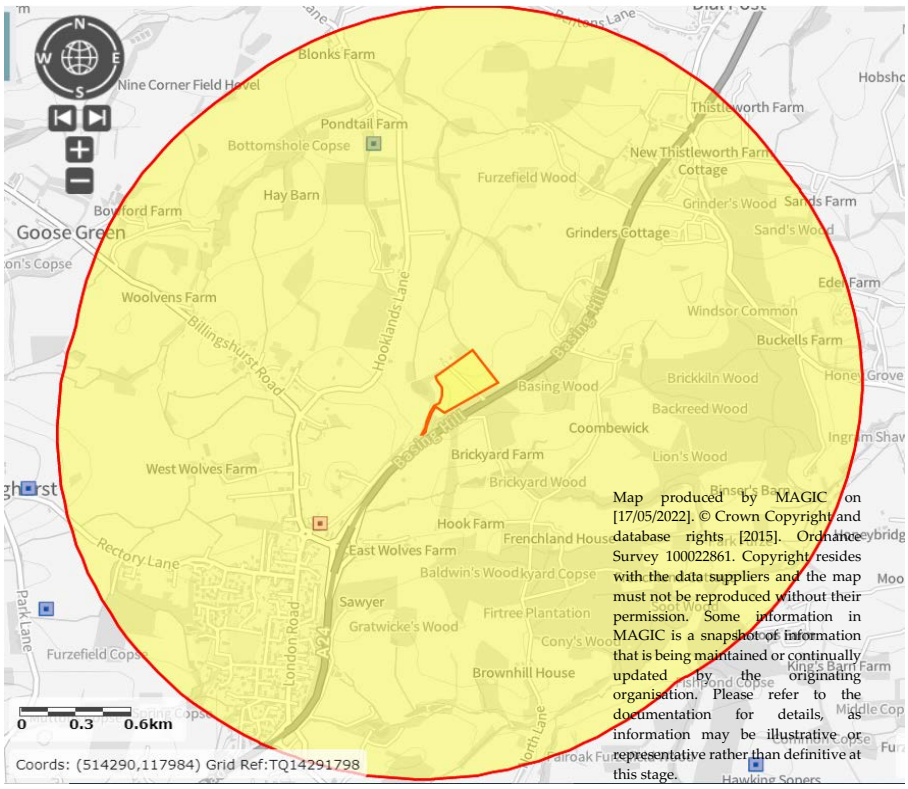

Figure 8: EPS licences required within 2km of site

3.9 A 1km radius data search was purchased from SxBRC. The records closest to site, recorded within the last 10 years and relevant to the habitats on site have been included in Table 2. Note that no bat records were returned from within 1km of site during the last decade, with the most recent returned from 2007. Details regarding the data requests are included in Appendix 4.

Table 2: Notable species records within 2km of the site in the last 10 years

Species	Status	Closet Record to Site (Year Recorded)	Most recent record
Common Toad *Bufo bufo*	Wildlife and Countryside Act (1981 as amended) Schedule 9.4b/9.4c/9.5a; Natural Environment and Rural Communities Act (2006) Section 41	*c.* 940 m southwest (2014)	2014
Great Crested Newt *Triturus cristatus*	European Protected Species. Conservation of Habitats and Species Regulations (2010) Schedule 2; Habitat and Species Directive (1992) Annex 4; Wildlife and Countryside Act (1981 as amended) Schedule 9.4b/9.4c/9.5a.	*c.* 828 m southwest (2014)	2014

	Natural Environment and Rural Communities Act (2006) Section 41		
Purple Emperor *Apatura iris*	Wildlife and Countryside Act (1981 as amended) Schedule 9.4b/9.4c/9.5a; RedList GB post2001 NT; Sussex Rare	*c.* 1.1 km southwest (2013)	2013
Small Heath Butterfly *Coenonympha pamphilus*	Natural Environment and Rural Communities Act (2006) (2006) Section 41; UK BAP Priority; RedList GB post2001 NT	*c.* 1.1 km southwest (2013)	2013
Wall Butterfly *Lasiommata megera*	Natural Environment and Rural Communities Act (2006) Section 41; UK BAP Priority; RedList GB post2001 NT	*c.* 1.1 km southwest (2014)	2014
White Admiral *Limenitis camilla*	Natural Environment and Rural Communities Act (2006) Section 41 UK; BAP Priority; RedList GB post2001 VU	*c.* 920 m southeast (2020)	2020
Brown Hairstreak *Thecla betulae*	Wildlife and Countryside Act (1981 as amended) Schedule 9.4b/9.4c/9.5a; Natural Environment and Rural Communities Act (2006) Section 41; UK BAP Priority; RedList GB post2001 VU; Sussex Rare	*c.* 318 m southwest (2016)	2016
Figure of Eight Moth *Diloba caeruleocephala*	Natural Environment and Rural Communities Act (2006) Section 41; UK BAP Priority	*c.* 286 m southwest (2017)	2017
Hazel Dormouse *Muscardinus avellanarius*	European Protected Species. Conservation of Habitats and Species Regulations (2010) Schedule 2; Habitat and Species Directive (1992) Annex 4; Wildlife and Countryside Act (1981 as amended) Schedule 9.4b/9.4c/9.5a. Natural Environment and Rural Communities Act (2006) Section 41	*c.* 863 m southwest (2020)	2020
West European Hedgehog *Erinaceus europaeus*	UK BAP Priority, IUCN RedList GB post2001 VU	*c.* 984 m southwest (2018)	2018
Slow Worm *Anguis fragilis*	Wildlife and Countryside Act (1981 as amended) Schedule 5; Natural Environment and Rural Communities Act (2006) Section 41; Bern Convention Appendix 3	*c.* 881 m southwest (2014)	2014
Common Lizard *Zootoca vivipara*	Wildlife and Countryside Act (1981 as amended) Schedule 5; NERC Act (2006) Section 41; Bern Convention Appendix 3	*c.* 881 m southwest (2014)	2014
Grass Snake *Natrix helvetica*	Wildlife and Countryside Act 1981 (as amended) Schedule 5; Natural Environment and Rural	*c.* 881 m southwest (2014)	2014

	Communities Act (2006) Section 41; Bern Convention Appendix 3		
Herring Gull *Larus argentatus*	Natural Environment and Rural Communities Act (2006) Section 41; UK BAP Priority; Birds of Conservation Concern Red	Within 2 km	2020
Cuckoo *Cuculus canorus*	Natural Environment and Rural Communities Act (2006) Section 41; UK BAP Priority; Birds of Conservation Concern Red	Within 2 km	2020
Barn Owl *Tyto alba*	Birds Directive Annex 1; Wildlife and Countryside Act (1981 as amended) Schedule 1	Within 2 km	2014
Red Kite *Milvus milvus*	Birds Directive Annex 1; Wildlife and Countryside Act (1981 as amended) Schedule 1	Within 2 km	2020
Skylark *Alauda arvensis*	Natural Environment and Rural Communities Act (2006) Section 41; UK BAP Priority; Birds of Conservation Concern Red	Within 2 km	2020
Yellowhammer *Emberiza citrinella*	Natural Environment and Rural Communities Act (2006) Section 41; UK BAP Priority; Birds of Conservation Concern Red	Within 2 km	2020
Linnet *Linaria cannabina*	Natural Environment and Rural Communities Act (2006) Section 41; UK BAP Priority; Birds of Conservation Concern Red	Within 2 km	2020
Bullfinch *Pyrrhula pyrrhula*	Natural Environment and Rural Communities Act (2006) Section 41; UK BAP Priority; Birds of Conservation Concern Amber	Within 2 km	2020
Grey Wagtail *Motacilla cinerea*	Birds of Conservation Concern Red	Within 2 km	2015
Nightingale *Luscinia megarhynchos*	Birds of Conservation Concern Red	Within 2 km	2020
Marsh Tit *Poecile palustrus*	Natural Environment and Rural Communities Act (2006) Section 41; UK BAP Priority; Birds of Conservation Concern Red	Within 2 km	2017
House Sparrow *Passer domesticus*	Natural Environment and Rural Communities Act (2006) Section 41; UK BAP Priority; Birds of Conservation Concern Red	Within 2 km	2020
Dunnock *Prunella modularis*	Natural Environment and Rural Communities Act (2006) Section 41; UK BAP Priority; Birds of Conservation Concern Amber	Within 2 km	2020
Starling *Sturnus vulgaris*	Natural Environment and Rural Communities Act (2006) Section 41; UK BAP Priority; Birds of Conservation Concern Red	Within 2 km	2020

Song Thrush *Turdus philomenos*	Natural Environment and Rural Communities Act (2006) Section 41; UK BAP Priority; Birds of Conservation Concern Red	Within 2 km	2020
Mistle Thrush *Turdus viscivorus*	Birds of Conservation Concern Red	Within 2 km	2020

Phase 1 Habitat Survey

3.10 The proposed development site was comprised of priority habitat deciduous woodland, mature treelines, hardstanding and different grassland types, suspected to be cut for hay each year. Further areas of priority habitat deciduous woodland border the site to the southern and northern aspects. The site slopes downwards with a gradual gradient from the southern boundary to the northern. It should be noted that the entire survey area is covered by an Environmental Stewardship Agreement.

3.11 A habitat map can be found in Appendix 1. Only species of note have been listed within this section, the full species list can be found within Appendix 3, with photos of site found within Appendix 2.

Priority habitat lowland mixed deciduous woodland

3.12 A small area of priority habitat deciduous woodland lies within the red line boundary on the western extent. This area measures approximately 70m^2 and is part of a much larger area of priority habitat that lines the A24, presumed to be planted to buffer the noise and sight of the dual carriageway around the same time that was built.

3.13 Species recorded within the small section with the red line boundary included occasional ash, hazel, dog rose, willow and oak, with frequent hawthorn, blackthorn and field maple. The understory showed signs of regular disturbance and was comprised of abundant bramble and common nettle; frequent garlic mustard, cleavers, lesser celandine and ground ivy; with rare lords and ladies. A few log/ dead wood piles were also recorded within this area of woodland.

Hard standing

3.14 A concrete access track ran from the A24 up to Hooklands farmhouse and other farm buildings through the centre of site. This runs roughly north west to south east.

Treelines

3.15 Two mature, parallel treelines lined the above access track up towards the farm buildings. Species composed of dominant pedunculate oak, with occasional ash and a single rare fir near the southern boundary. The understory composed of semi-improved grassland, as described below although it is important to note that this area was clearly less disturbed and supported additional species such as occasional bluebells and wild strawberry, plus rare primrose and early purple orchid.

Neutral improved grassland

3.16 The field east of the access route up to the farm was comprised of improved grassland. The grass was of a medium sward and was comprised of abundant white clover, frequent perennial ryegrass, red fescue, creeping bent and false oat grass, curled dock, plus rare spear thistle and silverweed. It is suspected that this field was sown with a clover lay to fix nitrogen.

Neutral semi-improved grassland

3.17 The remaining grassland on site was identified as neutral semi-improved grassland. The grass was of a long to medium sward and was comprised of the above-mentioned grass species plus frequent Yorkshire fog, sweet vernal grass, bugle and meadow foxtail; occasional timothy, glaucous sedge, creeping buttercup and selfheal. A distinct band of locally abundant ox-eye daisy was recorded near the southern boundary of the western field. Notably, a patch of occasional bluebells plus rare early purple orchid were noted between T38 and T36 on the arboreal report.

Marshy grassland

3.18 Marshy grassland was recorded within the north western aspect of the western main field, where the natural gradient of the land is at its lowest. Species comprised of abundant smooth and hard rushes; frequent sweet vernal grass and marsh foxtail; with occasional marsh thistle and birds foot trefoil.

Target Notes [1]

Target Note 1 – Early purple orchids

3.19 Early purple orchids and bluebells were recorded under the eastern treeline, between T38 and T36 with approximate location shown on the habitat map in **Appendix 1.**

Target Note 2 – 'Moderate' potential bat roost tree

3.20 Mature ash tree T38, assessed as having 'moderate' bat roost potential, with approximate location shown on the habitat map in **Appendix 1.**

Protected Species

Roosting Bats

3.21 Only trees within the red line survey to be impacted by site works were inspected for bat roost potential. This includes the following trees identified within the arboricultural report (Broad oak tree consultants, 2022): T5, T40, T38, T10, T30, T31, T37 and T39 in addition to group G9.

3.22 T38, a mature ash tree with ash dieback within the mature treeline was considered to have 'moderate' potential for roosting bats, due to its size and age, plus two suspected pruning wounds which could both provide roosting opportunities for a variety of bats. This bat roost potential tree is shown on the habitat map in Appendix 1. The remaining trees to be impacted within both the woodland and the mature treeline were assessed as having 'negligible' potential for roosting bats due to their limited size and/or lack of features.

Commuting and Foraging Bats

3.23 The mature treelines and section of deciduous woodland offer potential for foraging and commuting bats, whilst the hardstanding and grassland offers more limited opportunities. Pond 1, whilst offsite, also offers good foraging habitat for species associated with waterbodies, such as soprano pipistrelle and Daubentons bats. It is considered that the majority of the commuting and foraging potential for bats is located along the field's boundary features, which are mostly off site except the small section of woodland in the west and the treelines that dissects the site.

[1] The location of the Target Notes can be seen within the habitat map in Appendix 1.

Badgers

3.24 No evidence of badgers, such as setts, latrines or snuffle holes, were identified anywhere on site or in the surrounding area. It is considered possible that the species are present within the local area, as the local landscape offers some habitat for the species and it is therefore considered that badgers may use the site for commuting and foraging purposes.

Great Crested Newts (GCN)

3.25 One pond (P1) was located approximately 25m west of the northern survey boundary, with three more present approximately 400m south of the sites red line boundary. The three ponds located south of the red line boundary are separated from site by the A24 dual carriageway, which is considered a significant barrier to commuting GCNs.

3.26 Pond 1 is stocked with fish, and large fish presence in a pond is well documented to have a negative impact on GCN populations, due to the predation of GCN eggs and larvae, preventing the pond from establishing as a breeding pond. The pond was also extremely turbid and had evidence of waterfowl presence during the survey in terms of breeding geese, which is also known to reduce GCN suitability. The surrounding terrestrial habitat does have good suitability for foraging and commuting GCN as it is surrounded by woodland, although the grassland immediately surrounding the pond is grazed by waterfowl, which reduces protection from predation.

3.27 Pond 1 was assessed for habitat suitability for GCN using the Habitat Suitability Index (HSI) and the results are summarised in Table 3 below. WB1 returned a 'poor' score for GCN suitability (Table 3).

Table 3: HSI calculation for P1

SI No	SI Description	SI Value
1	Geographic location	1
2	Pond area	0.8
3	Pond permanence	0.9
4	Water quality	0.33
5	Shade	1
6	Water fowl effect	0.01
7	Fish presence	0.33
8	Pond Density	0.95
9	Terrestrial habitat	1
10	Macrophyte cover	0.3
HSI Score		**0.43**
Pond suitability (see below)		Poor

Reptiles

3.28 The woodland edges and long grassland on site are suitable reptile habitat, with good connectivity across the wider landscape. It is considered that the north or site is more suitable for reptiles due to its being south facing, whereas the southern boundary is likely to be more heavily shaded throughout the day. When the fields are cut for hay however, the suitability for reptiles in this habitat type is reduced and it is considered that reptiles would then remain within the boundary features.

3.29 The log/dead wood pile within the deciduous woodland could offer refuge opportunites, in addition to the woodland which could provide hibernation opportunities.

Hazel dormice

3.30 The deciduous woodland offers optimal hazel dormice habitat within the red line boundary, including species which provide food sources for dormice such as hawthorn and blackthorn. The treeline is considered sub optimal for the species due to a lack of understory, whilst the hardstanding and grassland offer negligible suitable dormouse habitat. The suitable on-site habitat also has connectivity to large off-site areas of deciduous woodland, although the nearest ancient woodland block not separated from site by the A24 is over 1.3km north of site.

Nesting Birds

3.31 The trees and deciduous woodland could provide potential for birds to nest within, several birds nests and a large group of corvid species were recorded within the red line boundary during the survey.

Other Species

3.32 Due to a lack of suitable habitat and/ or connectivity the site was not considered suitable for other protected species such as barn owls, water voles or otters and they will not be discussed further in this report.

4.0 Discussion

4.1 The following paragraphs consider the effects of the development on designated sites, priority habitats and protected and priority species. Where the desk study and Phase 1 survey provide sufficient evidence for an assessment of effects on any of these groups to be taken through planning, these are detailed below, the need for additional surveys and when and how these should be completed are summarised, if required.

Effects on Designated Sites

4.2 There is one internationally designated area within 10km of the site's red line boundary; Arun Valley Ramsar, SAC, SPA and SSSI *c.* 7.75km west of site. The site is not considered functionally linked to Arun Valley SPA and at this distance, it is considered that there are no direct impacts in terms of habitat loss, or indeed the isolation or fragmentation of habitats. Furthermore, the distances involved reduce impacts resulting from changes to lighting, water run off and impacts resulting from construction.

4.3 There are no statutory sites within 2km of the sites red line boundary, however the site does fall within impact risk zones for SSSI sites in the wider area. The development type however, is not listed against those that may have an impact upon protected sites in the area.

4.4 The site also falls within the Sussex North Water Supply Zone which '*includes supplies from a groundwater abstraction which cannot, with certainty, concude no adverse effect on the integrerity of; Arun Valley SAC, SPA and Ramsar site*' (Natural England, 2021). The site

proposals do not require additional water supplies and as such, is considerd not to negatively impact the Arun Valley site in the wider area.

4.5 There are two Local Wildlife Sites within 1km of site, the closest being Hooklands Farm Meadow *c.* 380m north of the red line survey boundary, but within the farms wider area. Due to this distances involved, it is considered that there will be no direct impacts in terms of habitat loss, or indeed the isolation or fragmentation of habitats between the proposed development site and the above designated sites. Furthermore, the distances involved reduce impacts resulting from any potential changes to lighting, water run-off and impacts resulting from construction.

4.6 Regarding all of the above, it is considered that the proposed development adheres to local planning policies.

Effects on Priority Habitats

4.7 Government guidance[2] requires the protection of ancient woodland, with at least a minimum 15m buffer between the woodland and development. Ancient woodland is located within the wider landscape; however, there closest parcel is located the opposite side of the A24, within Calves croft *c.* 70m south of site and it is therefore not to be impacted, directly or indirectly, by the proposed development.

4.8 Lowland mixed deciduous woodland is located on site, listed as a habitat of principle importance for the conservation of biodiversity under Section 41 of the NERC Act 2006. This means that development needs to consider impacts on these habitats to prevent their removal or degradation. Any unavoidable losses of this habitat type would need to be compensated through creation of compensatory planting within any proposed scheme.

4.9 Whilst the plans have been designed to avoid large areas of woodland, restricting it to a small area on the western extent of site, removal of this habitat type should be kept to the smallest area as possible, with buffer zones and sensitive works implemented throughout the rest of the site (specifically along the southern boundary), to prevent its degradation.

[2] https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences

4.10 It should be noted that whilst a small section is to be removed as per site plans, a strip of woodland is to be retained along the A24 and as such, whilst plans do involve priority habitat loss, it is considered that the woodland would remain connectivity, would not become isolated or fragmented and maintain landscape functionality.

4.11 Considering the distances from the proposed development site and other off site priority habitats, it is considered no impacts such as habitat loss, isolation, or fragmentation, would occur on them as a result of the development.

Effects on other on-site Habitats

4.12 Other than priority habitat woodland as discussed above, the development plans will also affect upon the treelines and grassland types on site, to make way for the haul road and re-graded field.

4.13 Three different types of grassland were identified across the site during the survey, however only two grass species were in flower on the day of the survey and it is therefore possible that not all grass species were recorded on the day. It is therefore recommended that areas of the semi-improved grassland within the western field could be stripped of top soil and translocated onto the new areas of proposed landscaping, once the re-grading of the site has been completed. Wildflower meadows could be sown onto the new re-graded landscape, particularly on the eastern field which is currently of lower quality. Wildflower meadows are discussed in more detail in the Enhancements section below.

4.14 It must be noted that a patch of early purple orchids and bluebells were recorded under the eastern treeline, between T38 and T36. This area is where the new haul road is proposed to cross the existing access track. It is recommended that this area of grassland is retained and the haulage road tweaked to the north as it crosses the access road, in order to retain the orchids on site. Alternatively, this section of topsoil should be removed and translocated to another area of treeline but its retainment is preferred. Prior to any works, areas of species rich grassland should be identified, maintained where possible, and if not possible translocated to the newly re-graded areas.

4.15 The parallel mature treelines that dissect the site are considered to hold the most ecological value and these are to be largely retained as per site plans. A total of six trees are to be removed along this feature, two ash trees that must be felled due to ash dieback and oaks that are small, in poor condition or overcrowded. This is likely to result in a gap in the treeline of 5-10m. Any trees to be lost should be replaced, and it is considered that should replacement trees be planted either side of the haul road, minimal impacts on site or wider landscape functionality would occur as a result of the development.

4.16 Due to the retainment of the majority of treelines and off-site woodland, incorporation of new and supplementary planting into the final design, and other enhancements recommended in the enhancements section below, it is considered that the proposals would adhere to local planning policies.

4.17 The Environment Act requires for granted developments to provide a biodiversity value post-development which exceeds the pre-development biodiversity value of the onsite habitat. Proposals also need to provide a net gain in biodiversity in accordance with the NPPF and local planning policies.

Effects on Protected Species

Bats

4.18 Whilst the majority of trees on site are to be retained or were classed as having 'negligible' bat roost potential, one tree, T38 located along the treeline was assessed as having 'moderate' potential for roosting bats. This tree is to be removed as per site plans, and as such further survey is required to establish whether it is in use by roosting bats. Moderate bat roost trees require two dusk or dawn surveys, to be undertaken between May-August, with supplementary survey work in September acceptable. If during the surveys it is shown to be a bat roost, an additional survey will be required to take the total number up to three surveys. In this case, a Natural England bat licence would be required before its removal.

4.19 The remainder of the trees to be removed as per site plans are considered to have 'negligible' bat roost potential and as such, can be removed without further consideration for the species. If any other trees not listed within point 3.2 of this report are to be removed

for the development, further bat assessments would be required. It is recommended that all mature trees however are maintained as much as possible within the design of the scheme, both within the survey boundary and across the wider site.

4.20 Whilst the majority of habitat on site as grassland is sub optimal for bats, it is considered that the site offers commuting and foraging potential, with bats most likely utilising the small section of decidious woodland, plus off site boundary feautres and mature treeline within site.

4.21 It is considered that the removal of six trees within the treeline for the new haul road would result in a gap of approximately 10m within the treeline. The trees to be removed either have ash dieback or are young, overcrowded specimens and any trees to be removed as per the development should be replaced.

4.22 It is expected that despite their removal, the exiting mature trees and their canopy spread would still provide 'hop over' points (figure 9) so bats could still utilise the feature as a potential commuting and forgaing route. If the retained tree crowns do not provide this, it is recommended that newly planted trees are planed either side of the haul road, ensuring the bats can still fly within the site boundaries.

Figure 9: 'Hop-overs' created using trees to guide bats over roads (Limpens et al. 2005)

4.23 Whilst a small section of woodland is to be removed for the haul road, a strip of woodland is to be retained along the A24 and therefore would not break up the linear features, or indeed potential bat commuting and foraging routes. The new haul road is not expected

to be very wide, busy or lit from artificial lighting and therefore indirect impacts is considered to be minimal.

4.24 Only one EPS licence for bats were required within 2km of the sites red line boundary, for common pipistrelle bats *c.* 1.4km north in 2017. No bat records were returned from the record search within 1km of site during the last decade, the most recent returned was from 2007.

4.25 The Bat Conservation Trust survey guidelines (Collins 2016) state that in table 4.1, "*guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of habitat features within the landscape, to be applied using professional judgement*". It is important that proportionality is employed when recommending further survey work for bat species on a proposed development site. As stated within section 8.2.7 of these guidelines (Collins 2016), the following points need to be taken into account with regard to planning activity surveys:

- Likelihood of bats being present;
- Likely species concerned;
- Number of individuals;
- Type of habitat affected;
- Predicted impacts of the proposed development on bats;
- Type and scale of proposed development.

4.26 Considering all of the above, as the site propososals involve the retainment of the majority of mature trees on site, plus woodland off site, and that there are no operational impacts with regards to altertion of lighting, it is considered that linear features will not be significantly impacted and no further activity surveys are recommended.

4.27 New lighting is not expected as part of the proposals, however if required, the lighting scheme will have to consider bats in the surrounding area as well as within the site. All bat species are nocturnal, resting in dark conditions in the day and emerging at night to feed. Bats are known to be affected by light levels, which can affect both their roosting and foraging behaviour. This needs to be considered with a sympathetic lighting scheme, with special consideration to all the boundary features. Recommendations include:

- Installing lighting only if there is a significant need;

- Using LED luminaries due to their lower intensity, sharp cut-off and good colour rendition – any lights with UV elements or metal halide lights should not be used;
- Lights with peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone 2012);
- Lights with an upward light ratio of 0% and good optical control;
- Careful consideration of column height to avoid light spill;
- Any external security lights should use motion-sensors and short (1-minute) timers.
- Avoid putting lighting near tree and hedgerows and angling light away from these linear features which could be used by commuting and foraging bats.

Badgers

4.28 Whilst there was no evidence of badgers found within or around the site, it was considered possible that badgers could use the site for foraging and commuting purposes, and as such, best practice guidelines are recommended to be followed, to help ensure no individuals are harmed during the construction phase of the project.

4.29 Best practice guidelines recommended that:

- Any excavations and trenches associated with construction are either covered at night or supplemented with a means of escape for any badgers that may fall into the excavation whilst foraging;
- Any open pipes or conduits laid should be blocked off each night to prevent badgers from entering them;
- If possible, construction work should only take place between dawn and dusk with no late evening work to reduce possible disturbance.

4.30 If these methods are followed, no significant residual impacts are predicted on badgers or other mammals on site or within the local area.

Great Crested Newts

4.31 One pond is located within 250m of site, however this has been assessed as 'Poor' suitability for GCN using the HSI calculator, and is unlilely to supoort the species due to the prescence of fish stock, breeeding geese and a lack of aquatic vegetation. The three ponds located between 250m and 500m of site have also been ruled out as they are located the other side of the A24 dual carriageway, a signigifcant barrier to dispersal.

4.32 No EPS licences were required within 1km of the site for the species, however a record was returned from 2014 approximately 830m south west of site. Considering the lack of suitable ponds within 500m of the survey red line boundary, plus the distance involved from the histroic record, no further surveys for the species are considered necessary.

Reptiles

4.33 The grassland and offsite woodland edge in the north of site has the most suitability for reptiles due to its south facing aspect, and this area is to be unaffected by site works. The grassland across site currently has a long sward which provides good habitat for reptiles, however once the field is cut for hay, becomes less suitable due to a lack of cover. Records for common lizard, slow worm and grass snake were all returned within 1km of the site, although the closest were all located 880m south west from site and date back to 2014.

4.34 It is recommended that once the field is cut for hay, the grassland is kept short to continue being unsuitable for the species. The small amount of deciduous woodland to be removed could offer refuge and hibernation opportunites and as such, it is recommended that this ground level habitat type is removed under supervision within the active season (March-September inclusive), on a warm day so that any reptiles present can move away. As such, the proposals are not considered to be constrained by the species and no further surveys are recommended.

4.35 If the grassland is kept long however, reptile presence/absence surveys would be recommended. The optimal period for reptile surveys is April/May or September on suitable dry days with temperatures between 8°C and 18°C. Seven survey visits are required, and the results of a potential reptile survey should inform what, if any, further mitigation for reptiles is required.

Hazel dormice

4.36 One EPS licence was required within 2km of the site's boundary the species, *c.* 775m south west in 2019, with the closest record returned for hazel dormouse *c.* 863 m southwest of site in 2020. There is also direct connectivity between the site and the EPS licence location, via the woodland that runs parallel to the A24.

4.37 The small section of deciduous woodland is considered optimal for dormice, with the treeline sub optimal and all other habitats on site negligible. Due to the small amount of dormouse suitable habitat to be removed on site (assuming the road is approximately 4m wide and the extent is likely to be 0.02ha in total) and the habitat features remaining connectivity after removal, it is considered that if Reasonable Avoidance Methods (RAMs) are undertaken, potential dormice on site should not be significantly affected. RAMs for hazel dormouse include:

- Timing of above ground vegetation removal (20cm above ground) between October and April to avoid the active breeding season;
- Limiting the use of heavy machinery during this vegetation removal, as dormice hibernate on ground level;
- Removal of above ground vegetation should be undertaken from the north, working south so that any potential dormice present can move south and disperse along the A24 woodland;
- Removal of woodland ground vegetation to be undertaken between May and September in order to avoid the hibernation season; and
- Supervision by an ecologist of all above activities. This will also protect any potenital reptiles within the woodland.

Nesting Birds

4.38 The treelines and deciduous woodland on site have the potential to support nesting birds. All birds, their nests and eggs are protected under the Wildlife and Countryside Act 1981 (as amended). Any removal of these habitat types is to be undertaken outside of the breeding bird season (March-September inclusive) or immediately after a nesting bird check by a suitably qualified ecologist. If active nests are identified, works in the vicinity of the nest must cease until the birds have fledged the nest.

Other Species

4.39 The proposed development is not constrainted by barn owls, otters or water voles due to a lack of suitable habitat and/or connectivity.

4.40 If all of the recommendations are followed, it is believed that the proposals will adhere to local planning policies, by taking all necessary steps to ensure no harm to protected species occurs as a result of the development.

Ecological Enhancements

4.41 Several enhancements can be made to the final development to help reduce potential ecological impacts, as well as to try and achieve net gain. It is important to utilise native species of local provenance in landscaping schemes to enhance the ecological value of the development.

Trees and hedges

4.42 It is recommended that any trees recently lost are replaced. These should include native species of value to wildlife such as hazel (*Coryllus avellana*), holly (*Ilex aquifolium*), wild cherry (*Prunus avium*) and apple (*Malus sp.*). Trees provide foraging opportunities for bats through provision of insect prey, plus nesting bird habitat, and also help to improve wildlife corridors around the wider site for species such as badgers, amphibians, small mammals and birds. Other recommended species include:

- Oak (*Quercus robur*)
- Rowan (*Sorbus aucuparia*)
- Elder (*Sambucus nigra*)
- Goat willow (*Salix caprea*)
- Hornbeam (*Carpinus betulus*)
- Common alder (*Alnus glutinosa*)
- Hawthorn (*Crataegus monogyna*)
- Blackthorn (*Prunus spinosa*)
- Field maple (*Acer campestre*)

4.43 At the base of existing treelines and woodland edges, native herbaceous plants and bulbs should be planted to attract bees, butterflies and other insects as well as providing ground cover for smaller animals. Seeds that are tolerant of semi-shade that are suitable for sowing beneath established trees should be used. As a guide, the following species can be included in the mix; however, appropriate seed mixes should be bought from native species stockists such as Emorsgate Seeds:

- Yarrow (*Achillea millefolium*)
- Agrimony (*Agrimonia eupatoria*)
- Garlic mustard (*Alliaria petiolata*)
- Common knapweed (*Centurea nigra*)
- Wild Basil (*Clinopodium vulgare*)
- Hedge bedstraw (*Galium album*)
- Wood avens (*Gerum urbanum*)
- Oxeye daisy (*Leucanthemum vulgare*)
- Cowslip (*Primula veris*)
- Selfheal (*Prunella vulgaris*)
- Red campion (*Silene dioica*)
- Hedge woundwort (*Stachvs sylyatica*)
- Upright hedge parsley (*Torilis japonica*)
- Tufted vetch (*Vicia cracca)*

Wildflower meadows and orchards

4.44 The new graded field and landscaped soil areas could be established as a wildflower meadow. To establish successfully, it is important that the soil imported should be sub soil, to ensure less nutrient rich soil and lower chance of undesirable species outcompeting wildflower species.

4.45 Wildflower meadows can contain a high diversity of plant species which support many species of insects and therefore provide food for small mammals, birds and bats. Not only is this habitat important for biodiversity but it provides benefits in terms of aesthetics, air quality, carbon sequestration, drainage, health and well-being and reduced management frequency and costs.

4.46 The following should be considered when creating wildflower meadows:

- Use an appropriate seed mix from local native species stockists and tailor them to the soil type present.
- In areas where grassland already exists, the grass and weeds should be removed to prevent competition. The fertility of the soil will also need to be reduced either by

removing the topsoil or by closely mowing the area for several seasons and removing the cuttings.

- Before sowing, the ground needs to be prepared through ploughing or rotovating.
- Seeds are best thrown in March-April or August-September.
- Plug plants can be used for species that are difficult to establish from seed such as meadow cranesbill (*Geranium pratense*), field scabious (*Knautia arvensis*) and clustered bellflower (*Campanula glomerata*). These should be planted in weed-free soil in late March-April and should be well-watered.
- Ensure yellow rattle (*Rhinanthus minor*) is included withing the seed mix as this will help to reduce competition from rigorous grass species.
- A lot of management is required until establishment but after this the meadows only need to be cut once or twice a year.

4.47 A new area of orchard could be planted within the site. This would provide increased pollinator opportunities, insect levels and in turn prey for bats, plus increase aesthetic appeal.

Bat roost enhancements – boxes

4.48 To enhance the local bat population and provide additional roosting opportunities within the red line survey boundary and wider site, additional bat boxes can be hung on any retained mature trees. Woodcrete boxes are recommended as they are breathable and long-lasting.

4.49 Bat boxes could be erected on existing mature trees along the southern red line boundary, in addition to mature trees within the treelines. This will enhance the local bat population and provide roosting opportunities. Recommended boxes include:

- Vivara Pro WoodStone Bat Box – A general purpose bat box that supports a range of species (Figure 10). These can be hung on trees in a variety of heights and aspects in order to provide a variety of micro-climates.
- Large Multi Chamber WoodStone Bat Box – This is a multipurpose box designed for larger colonies and a range of bat species including pipistrelles, noctules and brown long-eared bats (Figure 10).

Figure 10: Vivara Pro WoodStone Bat Box (left) and Large Multi Chamber WoodStone Bat Box (right)

4.50 Bat boxes should be installed at least 3m from the ground (up to 5m), on south and west facing aspects and away from artificial lighting.

Reptiles and birds

4.51 Nest boxes can be installed in order to provide new nesting opportunities for birds and can be hung on any retained mature trees. Bird boxes made from woodcrete or similar are recommended due their longevity.

4.52 It is recommended that log and brash piles are created for use as refugia and hibernacula for use by reptiles, amphibians, small mammals and invertebrates at the edges of the site. They are also important for saprophytic bryophytes and saprophytic insects, and in turn bats.

4.53 They should be placed in a variety of locations (damp and sunny spots) and next to existing vegetation, so that there is cover immediately adjacent. They should contain a mixture of log piles and shapes with some small diameter material to create a diverse structure (Figure 11). These should be stacked and perhaps some leaf litter added, plus planting around log piles with species such as honeysuckle or clematis can also add value.

Figure 11: Examples of log piles that can be made on site

5.0 Ecological Impact Assessment

5.1 This section of the report forms an EcIA (Ecological Impact Assessment) and is designed to quantify and evaluate the potential impacts of the development on habitats and species present on site, or within the local area.

Methodology

5.2 The approach to this assessment accords with guidance presented within the CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM 2018). In essence, an EcIA assesses the activities associated with a proposed scheme that are likely to generate changes within identified zone of influence, on identified ecological features and receptors. The proposals are subsequently reviewed and mitigation and compensation measures are outlined which help to reduce negative impacts.

5.3 The zone of influence of the development is defined as:

- The project red line, for effects on habitats and species;
- Adjacent habitat, considered by species, for mobile species with territories or foraging ranges that may overlap the site.

5.4 Types of features considered in the assessment of effects, to meet legislative and policy requirements, are:

- Designated sites (European, national and local);
- Protected species;

- Habitats and species of principal importance (Section 41 list);
- Hedgerows and woodland, where not of principal importance; and
- Habitats, where not of principal importance, that may function as wildlife corridors or stepping stones

Baseline Ecological Conditions

5.5 The following important ecological features are identified within the wider landscape:

- Arun Valley Ramsar, SAC, SPA and and SSSI site; and
- SSSI impact risk zones.

5.6 The site contains the following important ecological features:

- Priority habitat lowland mixed deciduous woodland; and
- Mature treelines.

5.7 The site was confirmed as supporting or considered to have **potential** to support the following protected species:

- Foraging and commuting bats – woodland and treelines;
- Roosting bats – 'moderate' potential bat roost tree;
- Foraging and commuting badgers;
- Reptiles;
- Hazel dormice; and
- Nesting birds.

Impact Assessment and Mitigation

Table 4: Assessment of effects from the proposal after mitigation and compensation

Feature	Scale of Importance	Mitigation/Compensation Required	Residual Effect
Arun Valley Ramsar, SPA, SAC and SSSI	International	None required – proposed works will not have a significant adverse effect on the statutory designated site, due to the distances involved and not being functionally linked to the site.	Not Significant
Impact Risk zones for protected sites	National	None required – proposed works is not listed against those that may impact protected sites.	Not Significant

within the wider area			
Priority habitat- lowland mixed deciduous woodland	National	Limiting removal of habitat type to as small an area as possible. Compensation in the form of supplementary planting.	Minor negative
Mature tree lines	Site	Retainment of most individual trees within the tree line. Only a small number of trees to be removed, of which they have ash dieback or are overcrowded/poor form. Compensation in the form of supplementary planting recommended to retain the tree line feature post development.	Not significant
Roosting bats	Local	Majority of the bat potential roost trees to be retained, with only one 'moderate' potential tree to be removed. Enhancements in the form of bat box installation.	To be determined after further surveys
Commuting and foraging bats	Local	Retention of the majority of trees within the tree lines, plus restricting deciduous woodland removal to the smallest area as possible. Removal of small sections of both habitat types is not considered to fragment the habits or inhibit commuting or foraging bats. Mitigation in terms of supplementary planting, hop-over points and a sensitive lighting scheme (if required), especially along the length of the linear features.	Not significant
Badgers	Site	None required- precautionary method of works during construction.	Not Significant
GCN	Local	None required- no suitable ponds within 500m of site.	Not Significant
Reptiles	Local	If the grassland is kept long, further presence/ absence surveys are required. However, if the grassland is cut for hay, it is recommended that it is kept short to remain unsuitable for the species group and no further surveys are required. As a precaution, removal of ground	Not Significant

		level woodland features should be undertaken during the active season. Enhancements in the form of hibernacula creation and supplementary planting.	
Hazel dormouse	Local	Only a small area of suitable habitat to be removed, using Reasonable Avoidance Methods and under ecological watching brief. Enhancements in the form of supplementary planting.	Not Significant
Nesting Birds	Local	Removal of suitable vegetation to be undertaken outside of nesting bird season or under ecological watching brief. Mitigation for building loss by installation of bird boxes or supplementary planting recommended.	Not Significant

Cumulative impacts

5.8 The works are relatively small scale, with scope to enhance the site via compensatory planting such as wildflower meadows or orchards. The works are not considered likely to have any cumulative impact on the surrounding area or negatively affect the ecology of adjacent habitats.

6.0 Conclusions

6.1 The site does not within or adjacent to any designated sites. One internationally protected site lies within 10km of site, Arun Valley SPA, SAC Ramsar and SSSI.

6.2 There are no statutory designed sites within 2km of the red line survey boundary, but two Local Wildlife sites. Due to the distances involved, it is considered that there are no direct impacts in terms of habitat loss, or indeed the isolation or fragmentation of habitats between the proposed development site and the above designated sites.

6.3 The site lies with Impact Risk Zones for protected sites within the wider area, however the development is not listed against those that may impact upon sites. Furthermore, the development will not require additional groundwater abstraction and as such is considered not to negatively impact the Arun Valley site or indeed the wider area.

6.4 The proposed development site consists of priority habitat lowland deciduous woodland, mature treelines, hardstanding and grassland comprising neutral semi improved, marshy and improved. Further areas of priority habitat woodland exist off site but borders much of the survey boundary.

6.5 Whilst the woodland and mature treelines on site are considered to hold the most ecological value, the grassland on site also offers ecological value. It is recommended that all areas of higher value are identified and translocated and areas of lower quality are re seeded with species of higher value.

6.6 A patch of early purple orchids and bluebells were recorded under the eastern treeline, between T38 and T36 and this is likely to be impacted by the new haul road. It is highly recommended that this area of grassland is retained and the haulage road tweaked to the north as it crosses the existing access road, in order to retain the orchids on site, or if this is not possible, to translocate the area of grassland within the scheme.

6.7 Sections of priority habitat woodland and treeline removal should be reduced to the smallest area possible, and any unavoidable losses of this habitat type would need to be compensated through creation of compensatory planting within any proposed scheme. Due to the size of the planned removals, the works are not considered significantly fragment the features.

6.8 One tree, T38 was assessed as having 'moderate' potential for roosting bats and as such, two further surveys have been recommended. All others due to be impacted by the works are considered to have 'negligible' bat roost potential and as such, can be removed without further consideration for the species.

6.9 The woodland, treelines and offsite boundary features have suitability for commuting and foraging bats, with connectivity across the wider landscape. As the proposed development involves the retainment of the majority of these features, with only small sections to be removed, no further activity surveys are recommended.

6.10 If lighting is required for the development, a sensitive lighting scheme should be implemented, particularly around the boundary habitats and treeline linear feature.

Enhancement planting across the site should also be undertaken as part of the development proposal.

6.11 Whilst no evidence of badgers, such as setts or latrines, was identified on site at the time of the survey, it is considered likely that they use the site for commuting and foraging purposes. As such, precautionary methods of work have been outlined to avoid harming any individuals that may use the site.

6.12 There are no suitable ponds for GCN within 500m of site, as such it is considered that no further surveys are required and the development is not constrained by GCN.

6.13 The long grassland and woodland edge features provide suitable habitat for common reptile species. The development includes removal of grassland habitat, however it is expected that the field is cut for hay, which will then become less suitable due to a lack of cover. If the grassland is cut for hay, and kept short afterwards, no further surveys are recommended. However, if grassland is kept long, further surveys are recommended.

6.14 Suitable hazel dormouse habitat of deciduous woodland is within the red line survey boundary. As the removal of this feature is limited to a small area, and connectivity as a whole will be maintained along the A24, no further surveys have been recommended but Reasonable Avoidance Methods must be implemented.

6.15 Birds may use the woodland and treelines to nest within. Removal of these habitat types should avoid the bird nesting season (March – September inclusive) or be conducted under ecological watching brief.

6.16 Owing to a lack of suitable habitat and/or connectivity, the site is not considered to be constrained by other protected/notable species such as barn owls, water voles or otters.

6.17 Recommendations for enhancements have been made within this report, aimed at improving the ecological value of both the red line survey boundary and the wider site post development. Biodiversity net gain will also need to be considered.

7.0 References

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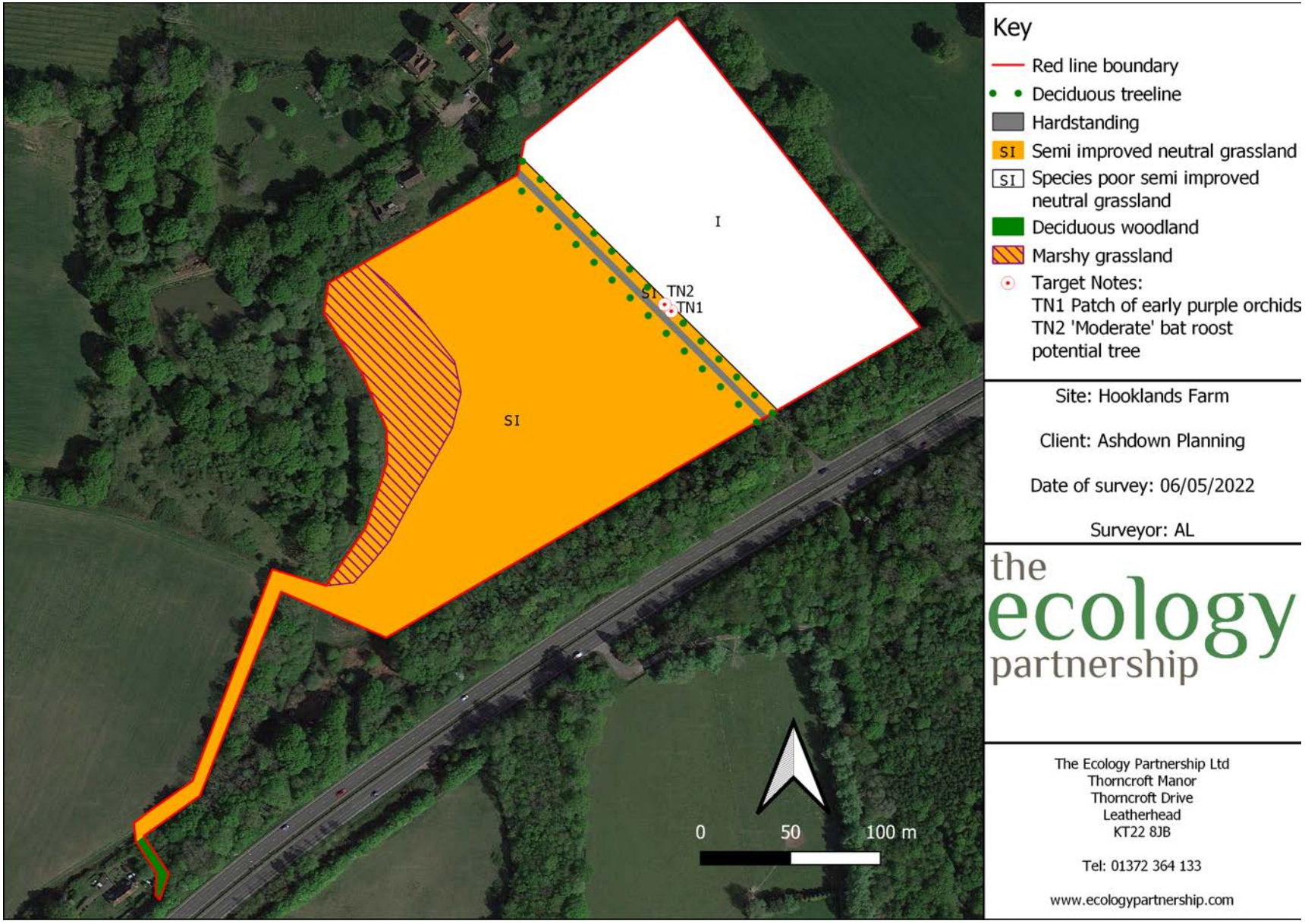
Internet resources:

Horsham District Council: www.horsham.gov.uk/

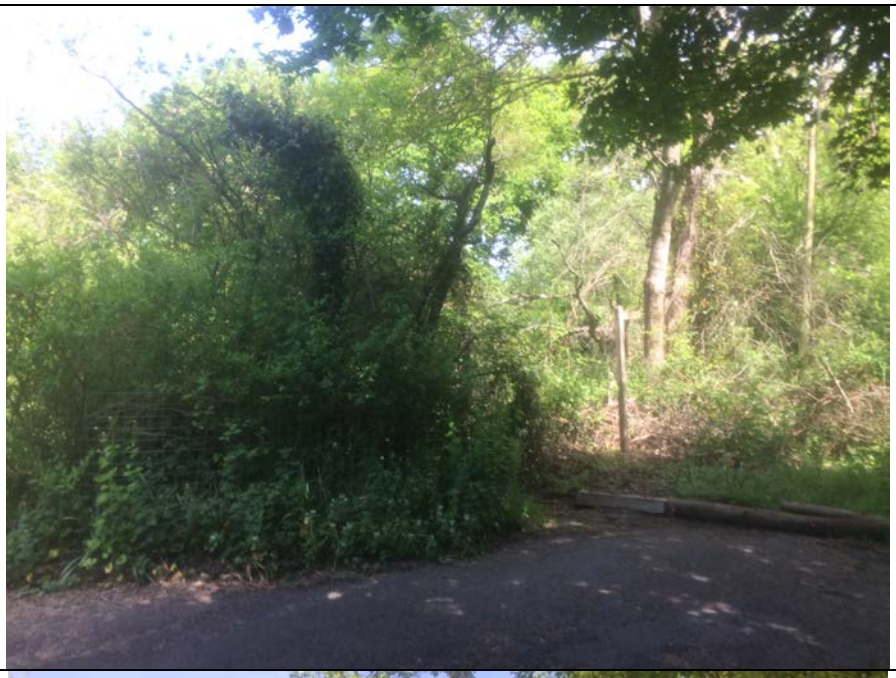
Google Maps: www.google.co.uk/maps

Magic Interactive Map: www.magic.gov

Appendix 1: Phase 1 Habitat Map

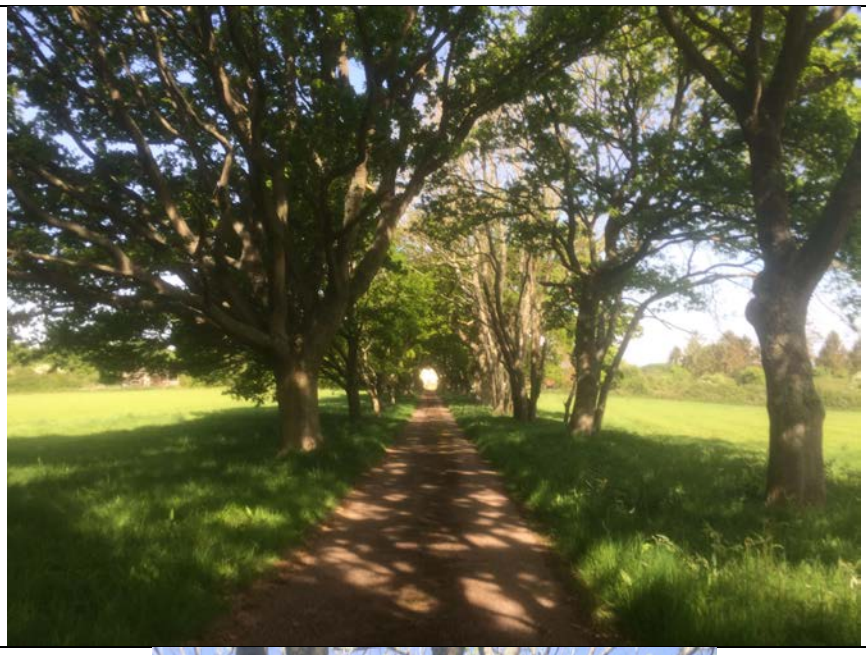


Appendix 2: Photos

Photograph 1: Deciduous woodland at the end of London road, where the newly proposed haul road will extend from	
Photograph 2: Deciduous woodland to be removed as per site plans, with evidence of regular disturbance and an abundant nettle understory	

Photograph 3: Showing the pinch point where the new haul road is to be created, with adjacent off site mature oak trees to be retained	
Photograph 4: Marshy grassland in the north east of the western field, facing north	

Photograph 5: Overview of the western field with semi-improved grassland, facing west	
Photograph 6: Showing species poor semi-improved grassland along the south eastern boundary, with adjacent deciduous woodland edge	

Photograph 7: Treelined concrete access track leading from the A24 to the farm buildings	
Photograph 8: Ash tree T38 with two potential roosting features, considered to have 'moderate' bat roost potential	

Photograph 9: Ash trees T38 and T40 within the treeline with ash dieback, to be removed	
Photograph 10: Area of early purple orchids under the treeline between T38 and T36 (approximate location shown in Appendix 1 habitat map)	

Photograph 11: Pond 1 located 25m from the red line survey boundary, showing turbid water, no aquatic vegetation and geese occupation	

Appendix 3: Species List

Common name	Latin name	DAFOR score
Neutral semi- improved grassland		
Sweet vernal grass	*Holcus lanatus*	F
Ox eye daisy	*Leucanthemum vulgare*	LA
Perennial rye-grass	*Lolium perenne*	F
Creeping bent	*Agrostis stolonifera*	F
Meadow foxtail	*Alopecurus pratensis*	F
Creeping buttercup	*Ranunculus repens*	F
False oat-grass	*Arrhenatherum elatius*	O
Cocksfoot	*Dactylis glomerata*	O
Red fescue	*Festuca rubra agg*	O
Meadow buttercup	*Ranunculus acris*	O
Common sorrel	*Rumex acetosa*	O
Curled dock	*Rumex crispus*	O
Yarrow	*Achillea millefolium*	O
Greater stitchwort	*Stellaria holostea*	O
Lesser celandine	*Ranunculus ficaria agg*	O
Glaucous sedge	*Carex flacca*	O
Bracken	*Pteridium aquilinum*	O
Common nettle	*Urtica dioica*	O
Germander speedwell	*Veronica chamaedrys*	O
Birds foot trefoil	*Lotus corniculatus*	O
Hogweed	*Heracleum mantegazzianum*	O
Red fescue	*Festuca rubra agg*	O
Lesser celendine	*Ranunculus ficaria agg*	O
Bluebells	*Hyacinthoides non-scripta*	O
Daffodil	*Narcissus pseudonarcissus*	O
Cats ear	*Hypochaeris radicata*	O
Curled dock	*Rumex crispus*	O
Cleavers	*Galium aparine*	O
Timothy	*Phleum pratense*	O
Wild strawberry	*Fragaria vesca*	O
Selfheal	*Prunella vulgaris*	O
Daisy	*Bellis perennis*	R

Cats ear	*Hypochaeris radicata*	R
Ribwort plantain	*Plantago lanceolata*	R
Common vetch	*Vicia sativa*	R
Agrimony	*Agrimonia eupatoria*	R
Early purple orchid	*Orchis mascula*	R
Marshy grassland		
Soft rush	*Juncus effusus*	A
Hard rush	*Juncus inflexus*	A
Sweet vernal grass	*Anthoxanthum odoratum*	F
Meadow foxtail	*Alopecurus pratensis*	F
Marsh thistle	*Cirsium palustre*	O
Glaucous sedge	*Carex flacca*	O
Birds foot trefoil	*Lotus corniculatus*	O
Mullein	*Verbascum thapsus*	R
Ragwort	*Senecio jacobaea*	R
Improved grassland		
White clover	*Trifolium repens*	A
Perennial rye-grass	*Lolium perenne*	F
Curled dock	*Rumex crispus*	F
Red fescue	*Festuca rubra agg*	F
False oat grass	*Arrhenatherum elatius*	F
Creeping bent	*Agrostis stolonifera*	F
Broad leaved dock	*Rumex obtusifolius*	O
Dandelion	*Taraxacum sp.*	O
Spear thistle	*Cirsium vulgare*	R
Silverweed	*Potentilla anserina*	R
Cats ear	*Hypochaeris radicata*	R
Priority habitat deciduous woodland		
Bramble	*Rubus fruticosus*	A
Common nettle	*Urtica dioica*	A
Field maple	*Acer campestre*	F
Blackthorn	*Prunus spinosa*	F
Hawthorn	*Crataegus monogyna*	F
Garlic mustard	*Alliaria petiolata*	F
Ground ivy	*Glechoma hederacea*	F
Cleavers	*Galium aparine*	F
Lesser celandine	*Ranunculus ficaria agg*	F
Ash	*Fraxinus excelsior*	O

Willow	*Salix sp*	O
Dog rose	*Rosa canina*	O
Hazel	*Corylus avellana*	O
Pedunculate oak	*Quercus robur*	O
Bugle	*Ajuga reptans*	O
Bluebell	*Hyacinthoides hispanica*	O
Common sorrel	*Rumex acetosa*	O
Lords and Ladies	*Arum maculatum*	R
Primrose	*Primula vulgaris*	R
Treelines		
Pedunculate oak	*Quercus robur*	D
Ash	*Fraxinus excelsior*	O
Fir	*Pinaceae sp.*	R

Appendix 4: Ecological data search summary

Sussex Biodiversity Record Centre

Ecological Data Search SxBRC/22/083 - Summary Report

An ecological data search was carried out for land at Hooklands Farm, Pulborough on behalf of Aimee Littlechild (Ecology Partnership) on 06/05/2022.

The following datasets were consulted for this report:

	Requested	Radius/buffer size
Designated sites, habitats & ownership maps	Yes	1km
Protected, designated and invasive species	Yes	1km

Summary of results

Sites and habitats

Statutory sites	None present
Non-statutory sites	2 LWS
Section 41 habitats	2 habitats
Ancient and/or ghyll woodland	Present

Protected and designated species

International designations	13 species	29 records
National designations	46 species	302 records
Other designations	88 species	457 records
Total	**93 species**	**481 records**
Invasive non-native	11 species	30 records

The report is compiled using data held by Sussex Biodiversity Record Centre (SxBRC) at the time of the request. SxBRC does not hold comprehensive species data for all areas. Even where data are held, a lack of records for a species in a defined geographical area does not necessarily mean that the species does not occur there – the area may simply not have been surveyed.

This summary page may be published.
The full report and maps may not be published or otherwise shared.

The data search report is valid until 06/05/2023 for the site named above.

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