



Preliminary Ecological Appraisal

Land Off Lake Lane,
Barnham,
West Sussex

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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 and 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 snapshot 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

Background

1.1 The Ecology Partnership was commissioned by Dowsett Mayhew to undertake a site assessment and preliminary ecological appraisal (PEA) of land off Lake Lane, Barnham, Bognor Regis, West Sussex, PO22 0AJ.

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 (Section 4);
- An impact assessment (Section 5); and
- Conclusions (Section 6).

Site Context and Status

1.4 The site is situated on the eastern edge of the village of Barnham in West Sussex, approximately 4 miles north east of the town of Bognor Regis (SU 97321 04526 – site centre point). The site is approximately 0.3ha in size.

1.5 The aerial photograph overleaf (Figure 1) shows the site and its immediate surroundings. The red line depicts the approximate site boundary and survey area.



Figure 1: Approximate location of the site, indicated by red line boundary (Image taken 13/11/2020 © 2020 Google)

Description of Proposed Development

- 1.6 The development proposals are understood to be for a small caravan site.

Planning Policies

- 1.7 Any application will be assessed against the policy guidance provided by the National Planning Policy Framework, as well as relevant planning policies from the Arun District Council Local Plan Part 2011-2031. These policies included the following which are considered relevant to Ecology, Biodiversity and Nature Conservation:
- Policy ENV SP1: Natural Environment

- Policy ENV DM1: Designated Sites of biodiversity or geological importance
- Policy ENV DM2: Pagham Harbour
- Policy ENV DM3: Biodiversity Opportunity Areas
- Policy ENV DM4: Protection of trees
- Policy ENV DM5: Development and biodiversity

1.8 This report addresses the site in relation to nature conservation and wildlife, and the local planning requirements as well as national planning and nature conservation legislation.

1.9 The site was surveyed by The Ecology Partnership to assess its ecological value and to ensure compliance with national and local plan policies. This 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 Practice 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 and habitat linkages and features (ponds, woodlands etc.) within the wider landscape.

Preliminary Ecological Appraisal

2.2 An extended preliminary ecological appraisal was undertaken on 18th November 2020 by Joel Cronin BSc (Hons) MSc QCIEEM. 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). In

addition, the dominant plant species in each habitat were recorded. The potential of the site to support protected species was also assessed.

Protected Species Assessments

- 2.3 Any evidence of protected species was recorded. Standard methods of search and measures of presence, or likely absence based on habitat suitability were used for bats in trees and buildings (Collins 2016), breeding birds¹, dormice (Bright *et al.* 2006), great crested newts (ARG 2010), reptiles (Froglife 2015), badgers (Cresswell *et al.* 1990) and water voles (Strachan *et al.* 2011).

Limitations

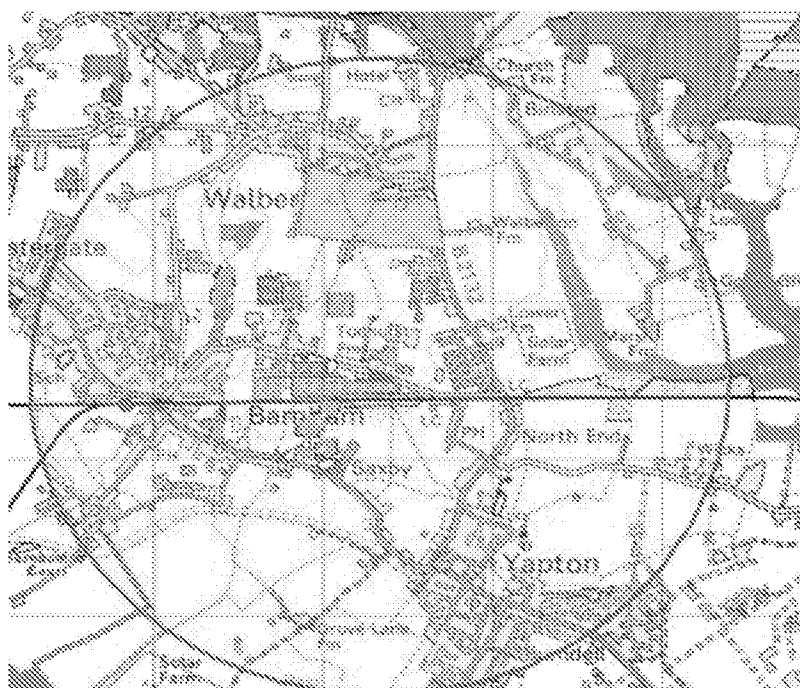
- 2.4 It should be noted that while every effort has been made to provide a comprehensive description of the site, no single investigation could ensure the complete characterisation and prediction of the natural environment. The site was visited over the period of one site visit, as such seasonal variations 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.
- 2.5 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.

¹ <https://www.bto.org/our-science/projects/birdatlas/methods/breeding-evidence>

3.0 Results

Desktop Study

- 3.1 There are no nationally designated sites within 2km of the red line boundary. The closest site is Fairmile Bottom Site of Special Scientific Interest (SSSI) approximately 4.2km north of the site.
- 3.2 There is one internationally designated site within 10km of the site: Duncton to Bignor Escarpment (Special Area of Conservation – SAC and SSSI) approximately 8.5km north of the site.



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Figure 2: Priority habitats found within the wider landscape in relation to the site (site boundary shown in red with 2km buffer surrounding). Deciduous woodland is shown in dark green, ancient & semi-natural woodland with vertical brown hatching, traditional orchards in olive green, lowland fens in dark pink and coastal and floodplain grazing marsh in blue

- 3.3 The surrounding landscape is mainly dominated by greenhouse and agricultural fields with some residential development to the west and south east. The site is on the eastern edge of the village of Barnham. However, there are a number of priority habitats within 2km of the site (Figure 2):

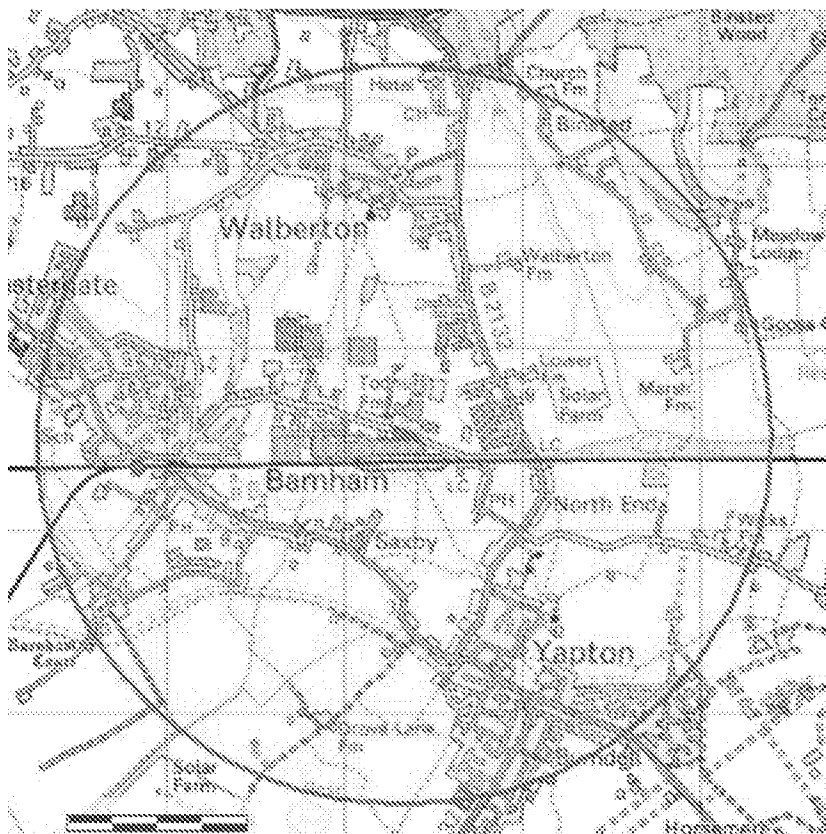
- Approximately 220m from the site was deciduous woodland

- Approximately 810m from the site was wood-pasture and parkland
- Approximately 900m from the site was ancient and semi-natural woodland
- Approximately 1.1km from the site was coastal and floodplain grazing marsh
- Approximately 1.8km from the site were traditional orchards
- Approximately 1.8km from the site were lowland fens

3.4 One European Protected Species Licence was detected within 2km of the site boundary (Figure 3):

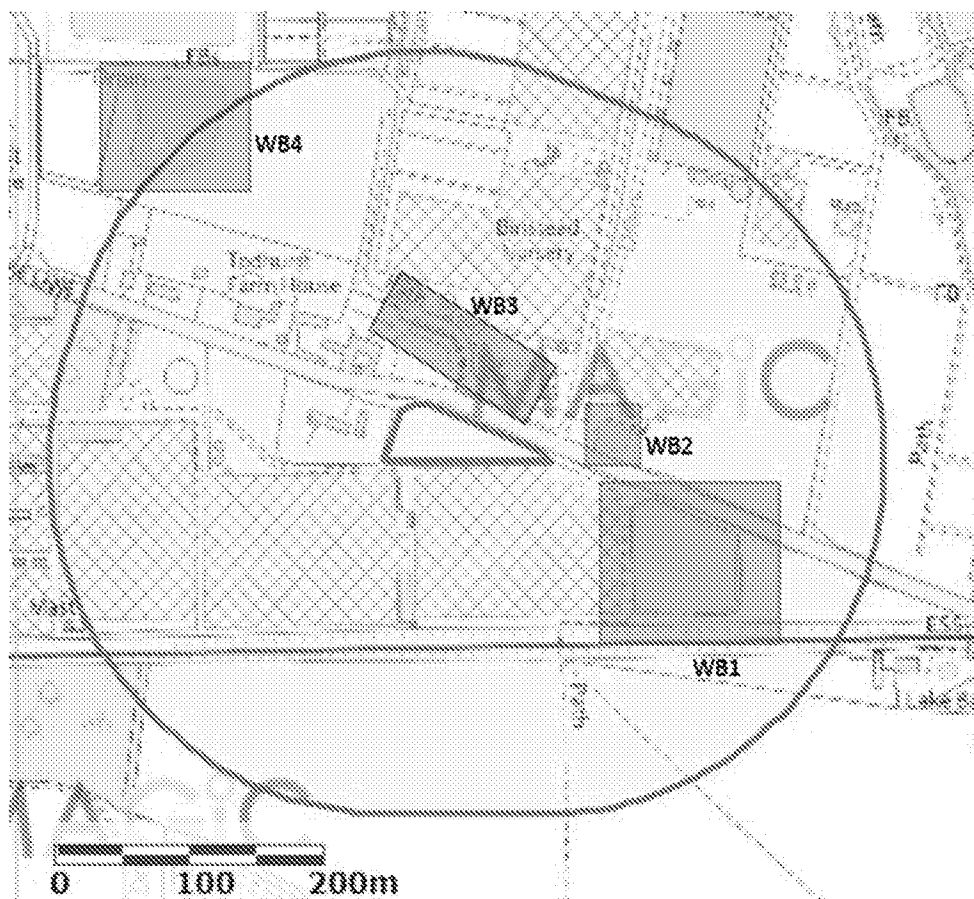
- Granted in 2016 for common pipistrelle (*Pipistrellus pipistrellus*) approximately 1.9km west of the site

3.5 Four waterbodies were present within 250m of the site red line boundary (Figure 4).



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Figure 3: European Protected Species licences within 2km of the site shown by blue box (site boundary shown in red with 2km buffer surrounding)



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Figure 4: Waterbodies present within 250m of the red line boundary. The 250m buffer zone is shown in yellow

Phase 1 Habitat Survey

- 3.6 The survey allows for a general site assessment of the flora present on site and the broad habitats present on site.
- 3.7 The site consisted of a central area of semi-improved grassland with a line of trees along the western and northern boundaries and sections of scrub and tall ruderals. Along the southern site boundary of the site was a strip of semi-improved grassland/tall ruderals mosaic and some scattered saplings were present across the site. An area of bare earth was present in the south west corner of the site and with planted saplings around the edge. The plant species abundances on site were assessed using the DAFOR scale where appropriate. DAFOR scores and scientific names are listed in Appendix 2.

Semi-Improved Grassland

- 3.8 The main central section of the site consisted of semi-improved grassland. At the time of the survey this area had a short sward height and appeared to be regularly mown. Species present in this area included abundant perennial ryegrass and frequent white clover, doves foot cranesbill, ribwort plantain, daisy, creeping buttercup.

Semi-Improved Grassland/Tall Ruderals Mosaic

- 3.9 Along much of the southern site boundary, adjacent to the edge of an off-site greenhouse, was a strip of longer sward grassland with intermixed tall ruderal areas forming a mosaic habitat. This area also had a gradient that sloped towards the greenhouse. Species were the same as for the semi-improved grassland, but also included more ruderal species. Species present included frequent perennial rye grass, fleabane and creeping thistle with occasional white clover, doves foot cranesbill, ragwort, ribwort plantain, creeping buttercup, daisy, Yorkshire fog, dandelion, bristly ox-tongue, cocksfoot, curly dock, ground ivy, common bent grass, false oat grass and common vetch.

Scrub

- 3.10 Growing in patches under the treeline along the northern site boundary were areas of scrub that extended under the trees. Species present were dominated by bramble with occasional common nettle.

Tree Line

- 3.11 Along the northern and western edges of the site was a line of trees. Tree species present included frequent Austrian pine, oak, hawthorn and hazel with occasional ash and alder. Ground layer species present included frequent bracken with occasional common nettle and bramble.

Tall Ruderals

- 3.12 Along the western site boundary and a section of the southern site boundary were areas of tall ruderals. Species present were dominated by common nettle with frequent creeping thistle and ground ivy.

Scattered Trees

- 3.13 Across the site were a small number of scattered trees. The majority of these trees appeared to have been recently planted being saplings with tree guards still present. A line of hawthorn saplings was present roughly around the area of bare earth in the south west corner. Species present included abundant hawthorn with frequent guelder rose and rare silver birch and blackthorn.

Bare Earth

- 3.14 In the south west corner of the site was an area of bare earth. This area supported no plants.

Target Notes²

Target Note 1 – A short line of planted hawthorn saplings was noted

Protected Species

Bats

- 3.15 There were no buildings on site to assess for roosting bat potential.
- 3.16 None of the trees on site were considered to have potential to support roosting bats. Trees were assigned roosting potential on the basis of their maturity and size in addition to any observed features typically associated with roosting bats.
- 3.17 The tree line and scrub present on site offered some suitability for commuting and foraging bats and were linked to the tree lined road along the north of the site, Lake Lane. However, the habitats surrounding the site were largely comprised of large greenhouses and agricultural fields with some residential development to the west. All of which were considered to be suboptimal in terms of foraging habitat. The site has limited connectivity across the landscape.

² See Appendix 1 for Habitat Map showing target note locations

Reptiles

- 3.18 The majority of the site consisted of short sward semi-improved grassland which offered limited suitability for reptile species. The tree line, semi-improved grassland/tall ruderals mosaic, tall ruderals and areas of scrub around the site margins offered some suitability for common reptile species. These areas were limited in their extents.

Dormice

- 3.19 The site boundaries along the northern and western edges supported a tree line, but the tree line had a limited understory with only small sections of scrub set within. These areas offered some superficial suitability for dormice. The species present in these areas provided some suitable food sources for dormice and some limited connectivity to very small off-site areas of hedgerow and woodland. There was no connectivity to any large tracts of suitable habitat such as deciduous woodland. There are no European protected species licences for dormice within 2km of the site.

Badgers

- 3.20 No setts or other evidence of badger presence or activity were detected during the survey. With the semi-agricultural surroundings of the site, badgers may be to be present in the local landscape and may venture on to the site for foraging and commuting purposes.

Great Crested Newts (GCN)

- 3.21 There were four waterbodies identified within 250m of the red line boundary (Figure 3). However, WB1 was a reservoir that had a thick black polythene lining and supported very little aquatic vegetation. WB2, WB3 and WB4 were located on private land on the other side of Lake Lane from the site. Only WB3 could be observed from the road and was dry at the time of survey. The survey was during a period of wet weather it is expected that this waterbody only supports water in times of heavy rainfall or not at all.
- 3.22 WB2 was completely obscured from view by the presence of thick vegetation and WB4 was located approximately 220m from the site and separated from the site by agricultural

fields, a small number of residences and Lake Lane which are together considered to provide a sufficient barrier to GCN dispersal.

- 3.23 The tree line and areas of scrub, semi-improved grassland/tall ruderals and tall ruderals all offered potential habitat for GCN during their terrestrial phase, but were limited in their extents. The nearest record of GCN presence is approximately 3.8km south east of the site.

Other Species

- 3.24 The scrub areas and trees on site were considered to have potential to support nesting birds with several common bird species seen on site at the time of the survey.
- 3.25 Some evidence of rabbit presence in the form of droppings and accompanying small excavations was detected on site, but no burrows were detected.
- 3.26 Due to a lack of suitable habitat, no potential for any other protected species, such as otters or water voles, was identified within the site. These are not considered further within the assessment.

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 insufficient evidence for an assessment of effects on any of these groups to be taken through planning, the need for additional surveys and when and how these should be completed are summarised, if required.

Effects on Designated Sites

- 4.2 There are no statutory designations on or adjacent to the site. There are also no statutory designations within 2km of the site. The nearest designation is Fairmile Bottom (SSSI) approximately 4.2km north of the site. The site lies within the impact zone for this SSSI unit. However, the site proposals fall outside the particular impacts listed at this distance. As such no impacts to this SSSI unit, direct or indirect, are predicted.

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- 4.3 There is one internationally designated site within 10km of the site: Duncton to Bignor Escarpment (SAC and SSSI) approximately 8.5km north of the site. At this distance no impacts, direct or indirect, to the site or its qualifying features are predicted.
- 4.4 The other protected sites within the wider landscape are of sufficient distance as to rule out any predicted impacts resulting from the development proposals.

Effects on Off Site Ancient Woodland

- 4.5 Government guidance³ requires avoidance of damage to ancient woodland, with at the least a 15m buffer to avoid physical damage to trees and more, plus other mitigation, if other negative effects such as recreational damage or air pollution are likely. Ancient and semi-natural woodland is located within the wider landscape. However, all units of this habitat are well over 15m from the red line boundary, with the closest being located approximately 900m north west. Consequently, no direct impacts are anticipated and as the development is small scale any increase in recreational pressure is predicted to be minimal.

Effects on Priority Habitats and Onsite Habitats

- 4.6 The closest priority habitat is an area of deciduous woodland located approximately 220m south west of the site. This area is buffered from the site by a railway line and some large greenhouses. Other priority habitats are located over 800m from the site.
- 4.7 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 as a result of the development.
- 4.8 The site is dominated by semi-improved grassland with a tree line, scrub, tall ruderals and semi-improved grassland/tall ruderals mosaic areas around the site margins. An area of bare earth was present in the south west corner and some scattered trees were present across the site. The grassland, ruderal and scattered tree sapling habitats were considered

³ <https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences>

to be of lower botanical interest. The loss or removal of these habitats would not be considered to result in a significant impact as these habitats are common and widespread. However, to attain a 'biodiversity net-gain', any losses to these areas would be likely to require compensation. This is further discussed in the enhancements section of this report.

- 4.9 The tree line and scrub areas were the most ecologically valuable features on site. These formed part of the green infrastructure of the local area. These areas were limited in their extents, but should be considered in terms of provision of local interest.
- 4.10 The proposals are for the development of a small caravan site. The tree line and scrub areas along the northern and western boundaries should be retained and protected during site works and tree protection should follow recommendations from an arboriculturalist in terms of root protection areas.
- 4.11 The tall ruderals and semi-improved grassland/tall ruderals mosaic areas along the site margins have also been recommended to be retained and enhanced where possible. To achieve a biodiversity net gain any losses will have to be compensated for on or off site. It is considered that enhancements can be made which would increase the ecological value of the site post-development. Such enhancements are outlined further below and would contribute to providing a net gain in line with local and national policy.
- 4.12 The habitats within the red line boundary have been assessed for their potential to support a number of protected species. These are discussed individually below.

Effects on Protected Species

Bats

- 4.13 There were no buildings on site to assess for potential to support roosting bats.
- 4.14 Any proposed development must consider ecological networks and green infrastructure, in line with both national and local policies. As such, the tree line and scrub areas should be retained and enhanced, in addition to remaining unlit to preserve their ecological functionality for foraging and commuting bats.

-
- 4.15 None of the trees on site were considered to have potential to support roosting bats due to their immaturity and a lack of features typically associated with roosting bats. However, not all of the trees within the tree line could be fully investigated due to the presence of thick vegetation. The tree line is to be retained within the future development. If works to any of the trees within the tree line on site, are required then it is recommended that an update survey of these trees is undertaken by a suitably qualified ecologist prior to the commencement of any works.
- 4.16 The site was considered to mainly provide sub-optimal foraging habitat for bats. The tree line and scrub areas on site had some suitability for foraging and commuting bats in the local area, but these areas were limited in their extents and are to be retained within the scheme. The site is largely isolated from suitable habitats within the local surroundings. Consequently, it is considered that bat transect surveys are not required.
- 4.17 To prevent unnecessary disturbance to bats, sensitive lighting will need to be incorporated within the scheme to ensure that the habitats within the development site are not altered for bats. As bats are considered likely to use the tree line on site, these areas would need to be retained as dark corridors or sections with no significant increase in external lighting. Bats are known to be influenced by light levels, which can affect both their roosting and foraging behaviour. This needs to be considered with a sympathetic lighting scheme used for proposals if any artificial lighting is required. The following guidance is taken from The Bat Conservation Trust guidance. Recommendations include, but are not limited to:
- Installing lighting only if there is a significant need;
 - Using LED luminaires 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;
 - Avoid putting lighting near tree lines or hedgerows and angling light away from these linear features which are used by commuting and foraging bats;
 - Planting a barrier or using man-made features required within the scheme to form a barrier.

- 4.18 It is also recommended that any development should incorporate bat friendly features such as bat boxes to enhance the roosting opportunities for bats in the area.
- 4.19 Bat boxes should be erected on retained mature trees post-development to provide new roosting opportunities for bats. Suitable bat boxes include a variety of woodcrete or similarly constructed bat boxes as these are long-lasting and require minimal maintenance. Recommended boxes include:
- Vivara Pro WoodStone Bat Box – A general purpose bat box that supports a range of species (Figure 5). 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. These should be hung on mature trees around the site (Figure 5)

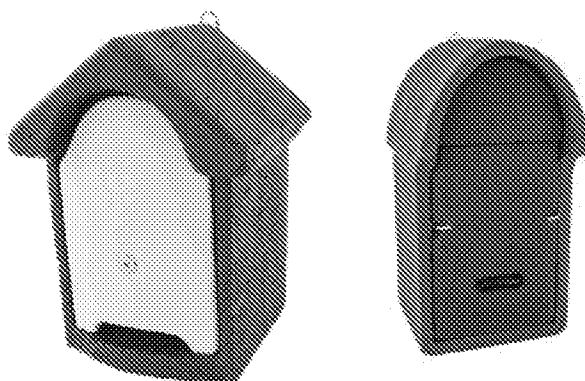


Figure 5: Vivara Pro WoodStone Bat Box (left) and Large Multi Chamber WoodStone Bat Box (right)

Reptiles

- 4.20 The tree line, scrub, semi-improved grassland/ tall ruderals mosaic and tall ruderals areas offered some suitability for reptiles. However, these areas were limited in their extents and are to be largely retained as part of the proposals. It is recommended that the semi-improved grassland area is continued to be managed to a short sward height to prevent it becoming suitable for reptile species.

- 4.21 It is illegal to intentionally disturb habitats occupied by common species of reptile, as they are fully protected under the Wildlife and Countryside Act 1981. As the tree line, scrub, semi-improved grassland/ tall ruderals mosaic and tall ruderals areas could offer some limited suitability for reptiles it is recommended that if any suitable habitat requires clearance this should be done sensitively under ecological supervision as a precaution. Given the limited suitable habitat present on site it is considered that no further surveys for reptile species are required.
- 4.22 The following method of works is recommended under an ecological watching brief:
- Vegetation removal works are to be carried out using hand tools only.
 - Potential refugia such as log and brash piles should be removed carefully by hand.
 - Works will proceed in a linear progression, beginning from the centre of the site and working towards the edges, to encourage reptiles to disperse into suitable habitat around the site margins and neighbouring habitat.
 - Vegetation will be strimmed down using the following method in suitable weather conditions (avoiding rain/wet conditions):
 1. Day 1: Strim to 200mm
 2. Day 2: No works to vegetation to allow any animals present to vacate the site
 3. Day 3: Strim to ground level
 4. Day 4: No works to vegetation to allow any remaining animals present to vacate the site
 5. Day 5: End of sensitive clearance process

Dormice

- 4.23 There was some superficially, suitable habitat present on site for dormice in the form of the tree line and scrub sections along the northern and western boundaries. These areas had limited connectivity to the wider landscape.
- 4.24 Given the limited area of suitable habitat present on site and its isolation from any large tracts of suitable habitat off-site it is considered that these on site areas alone could not support a dormouse population and as such dormouse surveys are not required for this site.

Badgers

- 4.25 No evidence evidence of badger presence or activity was detected on site. However, it is considered likely that badgers are present in the local area and may use the site for foraging and commuting. The plans for the development are expected to primarily take place on the existing semi-improved grassland. Therefore, with the prevalence of more suitable surrounding habitat it is considered unlikely that the development of the site will have any impact on badger foraging or commuting habitats. Although there are safety measures that can be taken to ensure that no badgers are harmed during the development process:
- Any trenches or excavations on site should either be covered over at night or have a plank of wood placed in to allow any animals to escape if they were to accidentally fall in
 - Any open pipes or conduit laid should be blocked off each night to prevent badgers from entering them
- 4.26 The retention of the margin habitats, and provision of enhanced ecological networks, would ensure that badger access to foraging habitats and water is retained.

Great Crested Newts (GCN)

- 4.27 There were four off-site waterbodies within 250m of the site (WB1-WB4 - Figure 4). WB1 was noted to be a polythene lined reservoir and was consequently considered unsuitable to support GCN. WB3, a drainage ditch, was dry at the time of survey and considered to rarely support water if at all. Consequently, WB3 was considered unsuitable to support GCN. WB4 was located approximately 220m from the site boundary and was considered to be suitably buffered from the site to prevent GCN dispersal. As a result, WB1, WB3 and WB4 are scoped out of any further assessment.
- 4.28 WB2 was located approximately 50m from the site boundary. If this pond were identified as a GCN breeding pond, and considering the loss of habitat is largely restricted to semi-improved grassland, which is considered sub optimal for GCN, the proposed development would be considered unlikely to impact GCN, as per Natural England licence risk assessment below in Figure 6.

- 4.29 It must be noted that this result is with the loss of the semi-improved grassland/tall ruderals mosaic and tall ruderals areas only, the areas to be retained being the tree line and scrub areas. The tree line and scrub areas are to be retained within the scheme and will be buffered from the proposed development area.
- 4.30 Provided that the tree line and scrub areas are retained, no further surveys are recommended, and it is considered that the site is not constrained by the presence of this species. Sensitive clearance under ecological supervision is recommended for any clearance of the tall ruderals or semi-improved grassland/tall ruderals areas as per the method in 4.22 and the semi-improved grassland is recommended to be maintained at a short sward height to prevent it becoming more suitable. If there are to be significant impacts to the tree line and/or scrub areas then further surveys may be required.

Component	Likely effect (select one for each component; select the most harmful option if more than one is likely; lists are in order of harm, top to bottom)	National offence probability score
Great crested newt breeding pond(s)	No effect	0
Land within 100m of any breeding pond(s)	0.001 - 0.01 ha lost or damaged	0.05
Land 100-250m from any breeding pond(s)	0.1 - 0.5 ha lost or damaged	0.1
Land >250m from any breeding pond(s)	No effect	0
Individual great crested newts	No effect	0
	Maximum	0.1
Rapid risk assessment result:		GREEN: OFFENCE HIGHLY UNLIKELY

Guidance on risk assessment result categories

"Green: offence highly unlikely" indicates that the development activities are of such a type, scale and location that it is highly unlikely any offence would be committed should the development proceed. Therefore, no licence would be required. However, bearing in mind that this is a generic assessment, you should carefully examine your specific plans to ensure this is a sound conclusion, and take precautions (see **Non-licensed avoidance measures tool**) to avoid offences if appropriate. It is likely that any residual offences would have negligible impact on conservation status, and enforcement of such breaches is unlikely to be in the public interest.

Figure 6: Natural England licence risk assessment

Other species

- 4.31 It is recommended that if any trees or sections of scrub are to be removed, or have work done, that these works should be undertaken outside 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.

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- 4.32 It is also recommended that if any rabbit burrows are encountered during works that these should be excavated sensitively using hand tools or sensitive machine work under ecological supervision to allow any animals present within to disperse safely.

Site Enhancements

- 4.33 Site enhancements have been recommended to improve the quality of the site for protected species, provide net gains to biodiversity post-development and to ensure that the proposals comply with local planning policy. It is important to use native species of local provenance in landscaping schemes to enhance the ecological value of a development.
- 4.34 All trees are recommended to be retained where possible. Trees provide foraging opportunities for bats through the provision of insect prey and as such it is recommended that a number of native tree species are planted along the site boundaries, infilling gaps, as well as along internal accessways and across the site post-development. These enhancements will help to improve wildlife corridors around the site for species such as bats, badgers, amphibians, small mammals and birds.
- 4.35 It is recommended that the perimeter of the site, is planted with hedgerows or subject to enhancement planting to provide connectivity around and across the site. Any new hedgerows should be planted with native species to maximise their value for biodiversity, including any that will form part of the new garden area. Species that should be planted include: hazel, holly, elder, alder buckthorn (*Frangula alnus*), guelder rose (*Viburnum opulus*), dog rose (*Rosa canina*) and dogwood (*Cornus sp.*). At the bases of hedgerows, native herbaceous plants and bulbs should be planted at the base to attract bees, butterflies and other insects as well as providing ground cover for smaller animals. Seeds that are tolerant of semi-shade and are suitable for sowing beneath newly planted or established hedges should be used. An appropriate seed mix should be bought from a native species stockist such as Emorsgate Seeds.
- 4.36 Open spaces in developed areas can also provide suitable habitat for a variety of species. It is recommended that post development open space areas are planted with wildflower species. Of particular benefit to bats are night-flowering species that attract night-flying invertebrate prey. The following native species are considered suitable:

-
- Nottingham catchfly (*Silene nutans*)
 - Night-flowering catchfly (*Silene noctiflora*)
 - Bladder campion (*Silene vulgaris*)
 - Soapwort (*Saponaria officinalis*)
 - Wild marjoram (*Origanum vulgare*)
 - Borage (*Borago officinalis*)
 - Yarrow (*Achillea millefolium*)
 - Primrose (*Primula vulgaris*)
 - Corn marigold (*Glebionis segetum*)
 - Perforate St John's-wort (*Hypericum perforatum*)
 - Wood forget-me-not (*Myosotis sylvatica*)
 - Ox-eye daisy (*Leucanthemum vulgare*)
 - Corncockle (*Agrostemma githago*)
 - Cornflower (*Centaurea cyanus*)

4.37 Bird boxes should also be installed on site to provide additional nesting opportunities for birds. Recommended boxes include Schwegler bird nest boxes or other similar woodcrete bird nest boxes. They can be placed on trees post-development.

4.38 Log and brush piles should be created under hedgerows to provide refugia and hibernacula for amphibians, reptiles, small mammals and invertebrates. Log piles should be located in a variety of locations, such as damp places, with some situated in more sunny locations and these should be stacked then have leaf litter added (see Figure 7). Planting around log piles with such species as honeysuckle or clematis can also add value. Such refugia can attract reptiles, small mammals, and invertebrates. A total of 4 log piles should be created around the edges of the site.

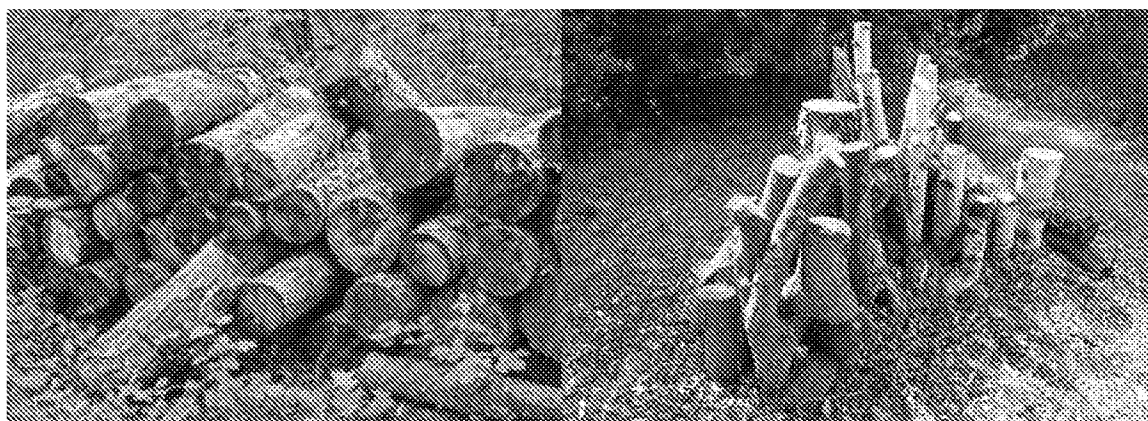


Figure 7: Pictures above showing how log piles can be created within the edges of the site or in the retained habitats on site

5.0 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 site contains the following important ecological features:

- Tree line
- Scrub sections

5.6 In addition, the site is considered to have potential to support the following important ecological features:

- Reptiles
- GCNs
- Nesting birds

Table 1: Assessment of effects from the proposal after mitigation and compensation

Feature	Scale of Importance	Mitigation/Compensation Required	Residual Effect
Duncton to Bignor Escarpment (SSSI/SAC)		No impacts predicted	Not significant
Fairmile Bottom SSSI	National	No impacts predicted	Not significant
Offsite priority habitats	Local	No impacts predicted	Not significant
Tree line and scrub areas	Local	Avoiding harm by retaining the tree line and scrub within the proposals and replacing if removal is absolutely necessary. Sensitive lighting also required.	Not significant

Bats	Site	Sensitive lighting scheme and the retention of the boundary habitats on site that act as potential foraging and commuting routes. Additional enhancement planting around the site edges.	Not significant
GCN	Site	Site considered largely sub optimal. Avoiding harm by retaining the tree line and scrub areas. Sensitive clearance for suitable grassland and tall ruderals areas. Use of log piles within the edge habitats for enhancement	Not significant
Reptiles	Site	Retention of suitable margin habitat and sensitive clearance under ecological supervision for any areas requiring removal.	Not significant
Nesting Birds	Site	Mitigating direct harm to nests by removal of any suitable habitat outside of nesting bird season or after a check by a suitably qualified ecologist Compensation in the form of the installation of bird boxes and replacement planting	Not significant

Summary

- 5.7 The scheme should also be considered in conjunction with other surrounding proposals to determine cumulative impacts on ecological features. There are a number of residential developments in the local area including: Y/49/17/OUT is a development of up to 45 residential dwellings; Y/80/16/OUT is a residential development for up to 100 residential dwellings; Y/44/17/OUT is a development of up to 70 residential dwellings; Y/88/18/OUT is for the development of up to 38 residential dwellings.; Y/92/17/OUT is for the development of up to 300 new dwellings. These proposals include open space provision and on site mitigation for habitat losses. It is considered that the mitigation outlined for the site in the enhancements section above will mitigate for habitat losses on site.
- 5.8 The development site is largely semi-improved grassland and it is considered that mitigation for any habitat losses will be achievable on site. A more detailed mitigation and enhancement plan will be possible once the proposals are finalised.

6.0 Conclusions

- 6.1 The site is not designated for its nature conservation value and does not lie adjacent to any statutory sites.
- 6.2 The site is located approximately 8.5km from Duncton to Bignor Escarpment (SAC/SSSI) and at this distance no impacts are predicted on this designated site from the development.
- 6.3 The site is located approximately 4.2km from Fairmile Bottom (SSSI) and lies within the zone of influence for this SSSI. However, the development is of small scale and falls outside the impacts listed at this distance.
- 6.4 The site consists primarily of semi-improved grassland with a surrounding tree line and sections of scrub, tall ruderals and semi-improved grassland/tall ruderals mosaic. Some scattered trees are also present across the site and an area of bare earth was present in the south west corner. The site is surrounded by large greenhouses and agricultural fields with residential development to the west.
- 6.5 The habitats on site are considered to have potential for supporting reptiles and nesting birds. It is recommended that the tree line and scrub areas are retained, enhanced and suitably buffered from any future development. The tall ruderals and semi-improved grassland/tall ruderals mosaic areas have also been recommended to be retained where possible.
- 6.6 There were no standing structures on site to assess for roosting bat potential. None of the trees on site were considered suitable to support roosting bats. It is recommended that all mature trees are retained and buffered from any future development. If works to any of the trees within the tree line are required then an update survey of the trees on site by a suitably qualified ecologist prior to the works commencing is recommended.
- 6.7 The site was considered to be largely sub-optimal for bats, but tree line and scrub sections on site could provide foraging and commuting opportunities for bats. These features are recommended to be retained and enhanced as part of the proposals. As such no further

surveys are recommended at this time. If tree line and scrub areas are to be significantly impacted, then further surveys may be required.

- 6.8 A sensitive lighting scheme for the perimeter of the site, including the tree line in particular, has been recommended. Enhancement planting for the perimeter of the site has also been recommended.
- 6.9 The tree line, scrub, tall ruderals and semi-improved grassland/tall ruderals mosaic areas on site have potential to support common reptile species, but these areas were limited in their extents. As the proposals are of small scale and the suitable edge habitats are to be largely retained the loss of suitable habitat is expected to be of small scale. Consequently, sensitive vegetation removal under ecological supervision has been recommended for any clearance of suitable habitat. It is also recommended that management of the semi-improved grassland area is continued to keep the vegetation to a low sward height
- 6.10 The site was not considered to support species such as dormice and no evidence of badgers was identified.
- 6.11 Four waterbodies were detected within 250m of the site. WB1, WB3 and WB4 were ruled out of the assessment. With the limited extent of suitable habitat present on site and the retention of the tree line and scrub areas the proposals are considered highly unlikely to impact GCN and as such no further survey work is recommended for this species. Sensitive clearance under ecological supervision has been recommended for any small scale clearance of suitable habitat. Further surveys may be required if the tree line and scrub areas are to be significantly impacted.
- 6.12 There is potential for nesting birds within the trees and scrub on site. If any suitable habitat is to be removed it should be undertaken outside of the nesting bird season (March-September) inclusive, or after a nesting bird check by a suitably qualified ecologist.
- 6.13 Recommendations for enhancements have been made within this report, aimed at improving the ecological value of the site and providing a net gain in biodiversity post-development.

7.0 References

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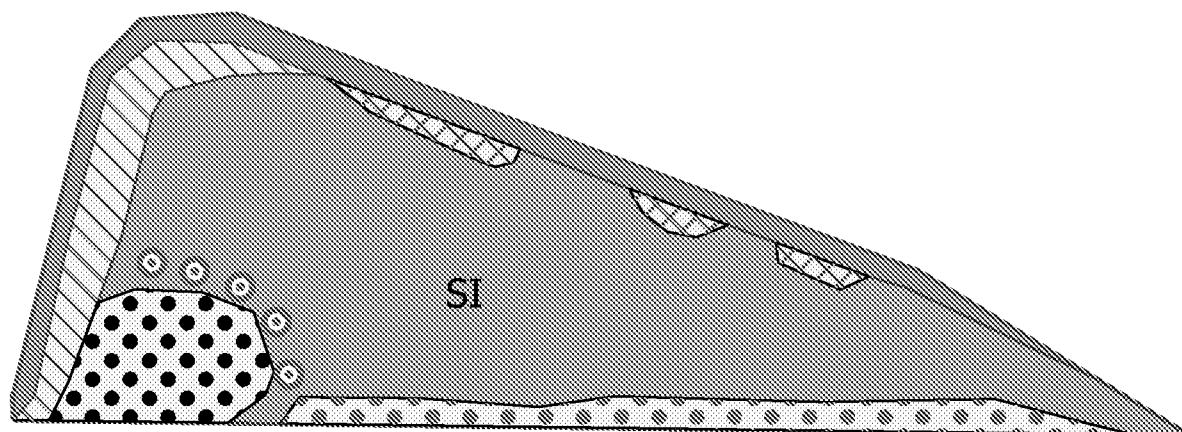
Internet resources:

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

Magic Interactive Map: www.magic.gov.uk

Arun District Council: <https://www.arun.gov.uk/>

Appendix 1: Phase 1 Habitat Map



Legend

-  Target Note-Line of Hawthorn Saplings
-  Bare ground
-  Scrub
-  Semi-Improved Grassland-Tall Ruderals Mosaic
-  Semi-Improved Grassland
-  Tree Line
-  Tall Ruderals
-  Lake Lane Redline

Site: Land Off Lake Lane, West Sussex

Client: Dowsett Mayhew

Survey Date: 18th November 2020

Surveyor: Joel Cronin

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Appendix 2: Full Species List

Common name	Latin name	DAFOR score
Semi-Improved Grassland		
Perennial rye-grass	<i>Lolium perenne</i>	A
White clover	<i>Trifolium repens</i>	A
Doves foot cranesbill	<i>Geranium molle</i>	A
Ribwort plantain	<i>Plantago lanceolata</i>	F
Daisy	<i>Bellis perennis</i>	F
Creeping buttercup	<i>Ranunculus repens</i>	F
Ragwort	<i>Senecio jacobaea</i>	O
Fescue	<i>Festuca sp.</i>	O
Yorkshire fog	<i>Holcus lanatus</i>	O
Dandelion	<i>Taraxacum officinale</i>	O
Bristly ox-tongue	<i>Helminthotheca echioides</i>	O
Self heal	<i>Prunella vulgaris</i>	O
Common mouse ear	<i>Cerastium fontanum</i>	O
Common vetch	<i>Vicia sativa</i>	O
Common cats ear	<i>Hypochaeris radicata</i>	O
Autumn hawkbit	<i>Scorzoneroides autumnalis</i>	O
Creeping thistle	<i>Cirsium arvense</i>	O
Fleabane	<i>Pulicaris dysenterica</i>	R
Cocksfoot	<i>Dactylis glomerata</i>	R
Ground ivy	<i>Glechoma hederacea</i>	R
Spear thistle	<i>Cirsium vulgare</i>	R

Semi-Improved Grassland/Tall Ruderals Mosaic		
Perennial rye-grass	<i>Lolium perenne</i>	F
Creeping thistle	<i>Cirsium arvense</i>	F
Fleabane	<i>Pulicaris dysenterica</i>	F
White clover	<i>Trifolium repens</i>	O
Doves foot cranesbill	<i>Geranium molle</i>	O
Ragwort	<i>Senecio jacobaea</i>	O
Ribwort plantain	<i>Plantago lanceolata</i>	O
Creeping buttercup	<i>Ranunculus repens</i>	O
Daisy	<i>Bellis perennis</i>	O
Yorkshire fog	<i>Holcus lanatus</i>	O
Dandelion	<i>Taraxacum officinale</i>	O
Bristly ox-tongue	<i>Helminthotheca echioides</i>	O
Cocksfoot	<i>Dactylis glomerata</i>	O
Curly dock	<i>Rumex crispus</i>	O
Ground ivy	<i>Glechoma hederacea</i>	O
Common bent grass	<i>Agrostis capillaris</i>	O
False oat grass	<i>Arrhenatherum elatius</i>	O
Common vetch	<i>Vicia sativa</i>	O
Fescue	<i>Festuca sp.</i>	R
Self heal	<i>Prunella vulgaris</i>	R
Common mouse ear	<i>Cerastium fontanum</i>	R
Common cats ear	<i>Hypochaeris radicata</i>	R

Autumn hawkbit	<i>Scorzoneroides autumnalis</i>	R
Spear thistle	<i>Cirsium vulgare</i>	R
Common nettle	<i>Urtica dioica</i>	R
Willow	<i>Salix sp.</i>	R
Gelder rose	<i>Viburnum opulus</i>	R
Scrub		
Bramble	<i>Argemone anserina</i>	D
Common nettle	<i>Urtica dioica</i>	O
Tree line		
Austrian pine	<i>Pinus nigra</i>	F
Oak	<i>Quercus robur</i>	F
Hawthorn	<i>Crataegus monogyna</i>	F
Hazel	<i>Corylus avellana</i>	F
Ash	<i>Fraxinus excelsior</i>	O
Alder	<i>Alnus glutinosa</i>	O
Ground Layer		
Bracken	<i>Pteridium sp.</i>	F
Common nettle	<i>Urtica dioica</i>	O
Bramble	<i>Rubus fruticosus</i>	O
Stinking iris	<i>Iris foetidissima</i>	R
Tall ruderals		
Common nettle	<i>Urtica dioica</i>	D
Creeping thistle	<i>Cirsium arvense</i>	F
Ground ivy	<i>Glechoma hederacea</i>	F

Yorkshire fog	<i>Holcus lanatus</i>	O
Cleavers	<i>Galium aparine</i>	O
Knapweed	<i>Centaurea nigra</i>	O
Ribwort plantain	<i>Plantago lanceolata</i>	O
Bramble	<i>Rubus fruticosus</i>	O
Stinking iris	<i>Iris foetidissima</i>	R
Broad leaved dock	<i>Rumex obtusifolius</i>	R
Hogweed	<i>Heracleum sphondylium</i>	R
Yarrow	<i>Achillea millefolium</i>	R
Ragwort	<i>Senecio jacobaea</i>	R
Bristly ox-tongue	<i>Helminthotheca echioides</i>	R
White dead nettle	<i>Lamium album</i>	R
Scattered Trees		
Hawthorn	<i>Crataegus monogyna</i>	A
Guelder rose	<i>Viburnum opulus</i>	F
Silver birch	<i>Betula pendula</i>	R
Blackthorn	<i>Prunus spinosa</i>	R

Appendix 3: Photo Document

Photo 1:

Site overview with the off-site greenhouse to the right with the area of bare earth in the front right with some hawthorn saplings surrounding. The tree line is on the left with semi-improved grassland in front



Photo 2:

The tree line along the western boundary with the tall ruderals in front



Photo 3:

The tree line along the northern site boundary with an area of scrub extending out from the tree line



Photo 4:

View of the southern site boundary with the area of semi-improved grassland/tall ruderals mosaic and some scattered trees visible within the semi-improved grassland area on the right

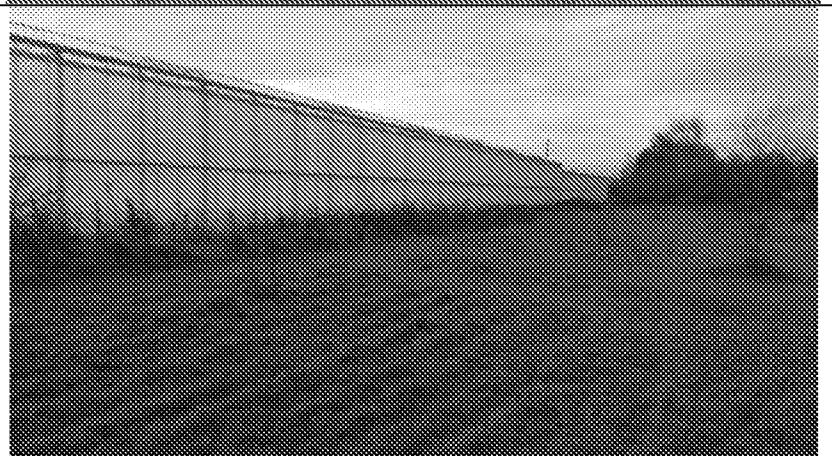


Photo 5:
View of WB1, the lined
reservoir



Photo 6:
View of the vegetation
surrounding WB2



Photo 7:
View of WB3 which was
dry



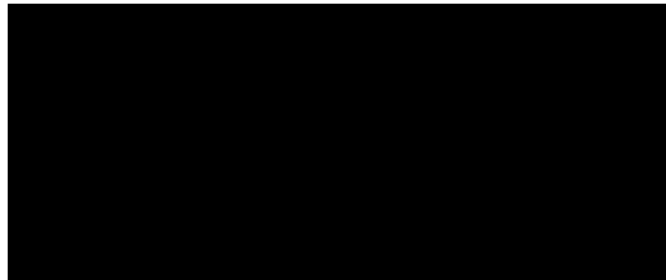
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