



**Preliminary Ecological Appraisal
and Biodiversity Net Gain Assessment**

**Land at Former Westholme Nursery,
Littlehampton**

CONTENTS

1.0	INTRODUCTION	3
2.0	PREVIOUS SURVEYS.....	5
3.0	METHODOLOGY	6
4.0	RESULTS.....	9
5.0	DISCUSSION	19
6.0	BIODIVERSITY NET GAIN ASSESSMENT	24
7.0	IMPACT ASSESSMENT	26
8.0	CONCLUSIONS	26
9.0	REFERENCES	27
APPENDIX 1: HABITAT MAP.....		30
APPENDIX 2: CONDITION ASSESSMENT		31
APPENDIX 3: PHOTOGRAPHS.....		34
APPENDIX 4: SPECIES LIST		40

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 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 update the Preliminary Ecological Appraisal (PEA) completed in 2020 and undertake a Biodiversity Net Gain (BNG) assessment of land at the former Westholme Nursery, Littlehampton, BN17 7PP, hereafter referred to as the 'site' (Figure 1). The Ecology Partnership also conducted bat emergence surveys on the disused house (building 1) in September 2023 and June 2024, and a terrestrial (presence/absence) survey for reptiles in 2024.

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 opportunities offered by a project to deliver ecological enhancement.

Site Context

1.3 The site is situated on the northern outskirts of Littlehampton, West Sussex (TQ 0342 0402), totalling c. 0.6ha in area. The site primarily comprises ephemeral vegetation and features two residential units, one of which is disused, as well as a disused barn, a garage, and an outbuilding. The wider landscape most prominently features residential areas and agricultural fields.



Figure 1: Red line boundary and immediate surroundings

Proposed Development

- 1.4 The proposed development includes the demolition of the existing buildings and the construction of residential dwellings with associated infrastructure and landscape planting (Figure 2).



Figure 2: Proposed development.

Planning Policies and Legislation

- 1.5 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 2024) as well as the Arun District Council. Arun Local Plan 2011– 2031 includes the following policies 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

- 1.6 The Environment Bill received Royal Assent on 9th November 2021 and is now enacted as the Environment Act 2021. Part 6 (Nature and Biodiversity) and Schedule 14 of the Environment Act 2021 insert a new section 90A and Schedule 7A into the Town and Country Planning Act 1990 (TCPA), which contain the provisions requiring mandatory biodiversity net gain for development granted planning permission pursuant to the TCPA. These provisions require developments to provide a biodiversity value post-development that exceeds the predevelopment biodiversity value of the onsite habitats by at least 10%.
- 1.7 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 Regulation 2017.
- 1.8 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 Practice for Planning and Development.

2.0 Previous Surveys

- 2.1 The Ecology Partnership conducted a site survey in September 2020 and produced a PEA dated September 2020, although the site boundary did not include the residential dwelling (building 5) in the southwestern corner of the site (Figure 3).



Figure 3: Previous site red line boundary.

- 2.2 The site had been recently cleared and primarily comprised bare ground with three buildings including a residential dwelling, a barn and a small outbuilding. The site also included small

areas of tall ruderal, scrub, shrubs and scattered trees were also identified along the northern boundary of the site, as well as near the southern area of the site.

- 2.3 The PEA identified that building 1 has ‘low’ suitability for roosting bats and Reasonable Avoidance Measures (RAMs) were recommended in relation to reptiles for removal of the rubble pile and remaining areas of suitable vegetation. The PEA also suggested the removal of any scrub or buildings (2 and 3) outside of the nesting bird season or after a check by a suitably qualified ecologist.

3.0 Methodology

Desktop Study

- 3.1 A desktop study search was completed using an internet-based mapping service (magic.defra.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. In addition, biological records were requested from the Sussex Biodiversity Records Centre (SxBRC) with a search radius of 1km around the site. This includes protected species and non-statutory designated sites and habitats.

Phase 1 Habitat Survey and UKHab

- 3.2 The site was surveyed on 11th October 2023 by senior ecologist Alice Bailey BSc (Hons) ACIEEM and assistant ecologist Adam Broda BSc (Hons) MSc. An updated walkover survey was undertaken by principal ecologist Eddie Selwyn BSc (Hons) MSc ACIEEM. The surveyors identified the habitats present, following the UKHab classification system. The site was surveyed on foot and the existing habitats and land uses were recorded on an appropriately scaled map. The potential for the site to support protected species was also assessed (CIEEM 2017).
- 3.3 In addition, the abundance of plant species in each habitat was also recorded using the DAFOR scale. This assigns species abundance to one of the following categories: Dominant, Abundant, Frequent, Occasional, or Rare.

Bats

Preliminary Roost Assessment

- 3.4 The buildings on site were internally and externally assessed for their suitability for roosting bats. The surveyors checked for evidence of roosting bat species and Potential Roosting Features (PRFs).
- 3.5 The surveyors assessed the buildings visually and searched for evidence such as:
- Staining beneath or around a hole caused by natural oils in bat fur.
 - Bat droppings beneath a hole, roost or resting area.
 - Bat droppings and/or insect remains beneath a feeding area.
 - Audible squeaking from within a hole.
 - Insects (especially flies) around a hole.
 - Dead bats.

Dusk Emergence Surveys

- 3.6 Building B1 has 'low' suitability for roosting bats and therefore a dusk emergence survey was carried out on 26th September 2023 and 3rd July 2024. The survey started 15 minutes before sunset and was completed 1 and a half hours after sunset. The surveys followed Bat Conservation Trust guidelines (Collins 2023). Surveyors were positioned to cover all aspects of the building and areas of interest (Figure 3). An Infra-Red (IR) camera (Canon XA20) with IR lamps (Nightfox) was utilised during the survey to support surveyors. All surveyors were equipped with an Echo Meter Touch 2 Pro. Surveyors in 2023 included Adam Broda BSc (Hons) MSc and Alistair McNaughton BSc (Hons). Surveyors in 2024 included Eddie Selwyn BSc (Hons) MSc ACIEEM and Sophie Baker BSc (Hons) MSc.

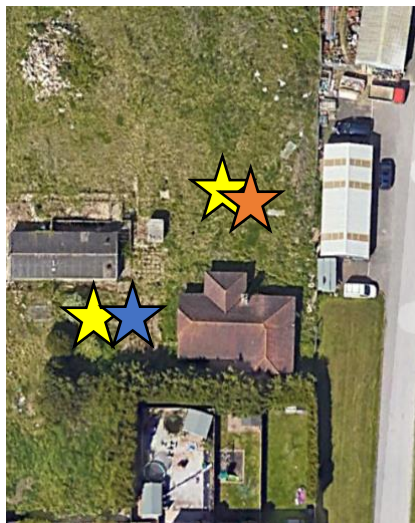


Figure 3: Surveyor locations during the emergence survey (surveyors - yellow stars, infrared camera in 2023 - blue star and infrared camera in 2024).

Reptiles

- 3.7 A terrestrial (presence/absence) survey for reptiles was undertaken between 12th April and 4th June 2024. Prior to the commencement of the survey, areas of suitable habitat within the site were set up with artificial refugia (roofing felts) for reptiles on 27th March 2024 (Figure 3).



Figure 4: Artificial Refugia Locations

- 3.8 The timing and number of surveys completed were based on guidelines produced by Froglife (1999) and Gent and Gibson (1998). A total of seven survey visits were undertaken to check the refugia for the presence of reptiles. Visits will only be carried out if the weather conditions are suitable for locating reptiles. On each visit to the site, a minimum of one circuit to check all refugia will be carried out. Natural refugia were also surveyed during the visits. Any natural refugia, such as log piles and brash piles, were lifted and hand-searched for evidence of reptiles.

Protected Species Assessments

- 3.9 Any evidence of additional protected species was recorded. Standard methods of search and measures of presence, or likely presence based on habitat suitability were used for bats in trees and buildings (Collins 2023), breeding birds (BTO 2020), hazel dormice *Muscardinus avellanarius* (Bright *et al.* 2006), great crested newts *Triturus cristatus* (ARG 2010), reptiles (Froglife 2015), badgers *Meles meles* (Creswell *et al.* 1990) and water voles *Arvicola amphibius* (Strachan *et al.* 2011).

Limitations

- 3.10 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. Therefore, the survey provides a general assessment of potential nature conservation value of the site and does not include a definitive plant species list.

4.0 Results

Desktop Study

- 4.1 There are two international statutory designated sites within 15km of the site (Figure 5). The closest is Arun Valley Ramsar, Special Area of Conservation (SAC) and Special Protection Area (SPA), c. 9.2km north, designated for Annex II Ramshorn Snail, wet meadows and breeding waterbird populations. The second is Duncton to Bignor Escarpments SAC, c. 10km northwest, designated for Annex I beech forest habitats.



Figure 5: International statutory designated sites within 15km (yellow circle) of the site.

- 4.2 There are no nationally statutory designated sites within 2km of the site and the closest is West Beach Local Nature Reserve (LNR), c. 2.5km south, designated for sand flats, shingle and sand dune habitats.

4.3 There are no non-statutory designated sites within 1km of the site and the closest is Poling Copse Local Wildlife Site (LWS), c. 1.9km northeast, designated for ancient semi-natural woodland.

4.4 There are several areas of priority habitat within the wider area (Figure 6):

- Coastal and floodplain grazing marsh, c. 13m northeast
- Deciduous woodland, c. 660m
- Ancient semi-natural woodland, c. 1.5km north-east
- Ancient replanted woodland, c. 2km north-east

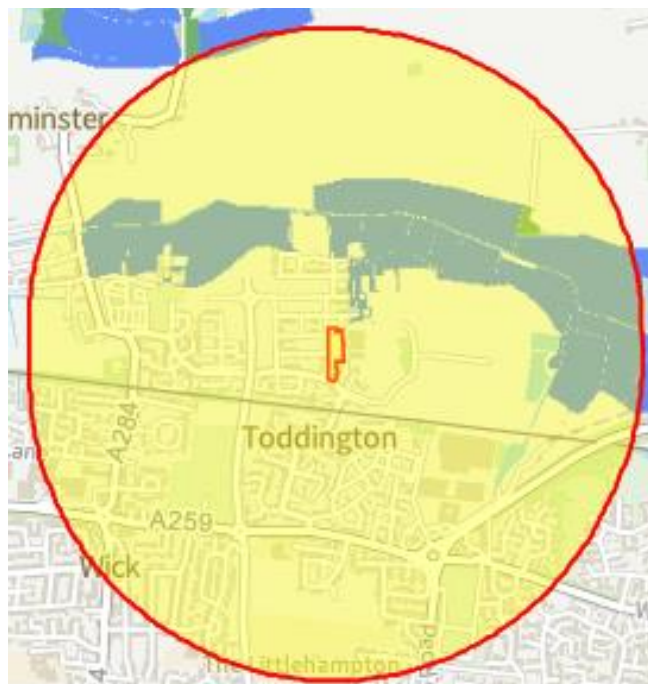


Figure 6: Priority habitats within 1km of the red line boundary: coastal and floodplain grazing marsh (dark blue), deciduous woodland (green).

4.5 There are two ponds present within 250m of the site (Figure 7). The closest pond is c. 130m east of the site and the other pond is c. 200m south of the site.

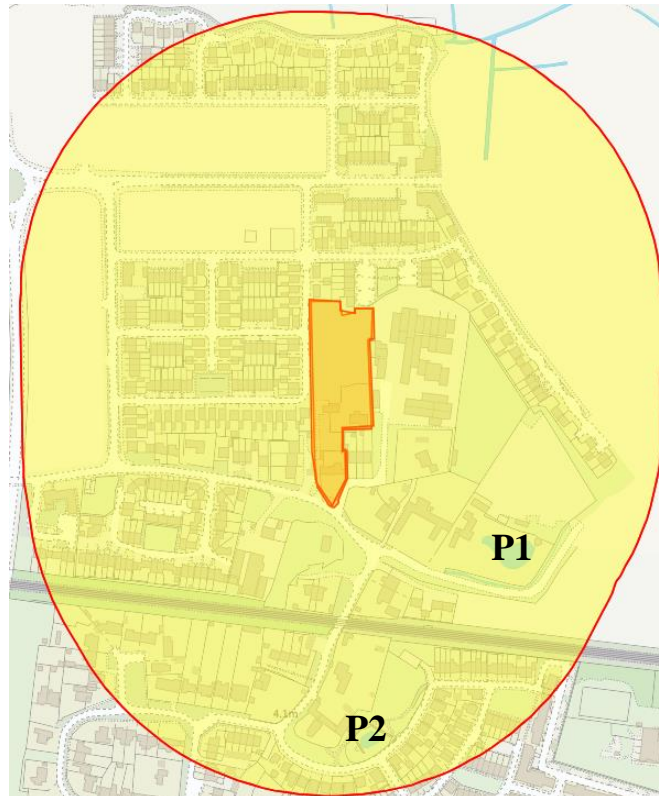


Figure 7: Ponds located within 250m of the site.

- 4.6 The closest great crested newt class survey licence return with great crested newts present is c. 1.8km northeast, dated 24/06/2014 (Figure 8).
- 4.7 The closest past European Protected Species (EPS) licenses for each species is:
- Bat - located c. 330m southwest of the site, 2012-2014 for the destruction of a resting place for brown long-eared *Plecotus auritus*, common pipistrelle *Pipistrellus pipistrellus* and natterer's bat *Myotis nattereri*.
 - Great crested newt – located c. 2.2km northeast of the site, 2014 – 2015 for the destruction of a resting place.
 - Hazel dormouse – located c. 7.5km northwest of the site, 2019 – 2024 for the destruction of a breeding site.

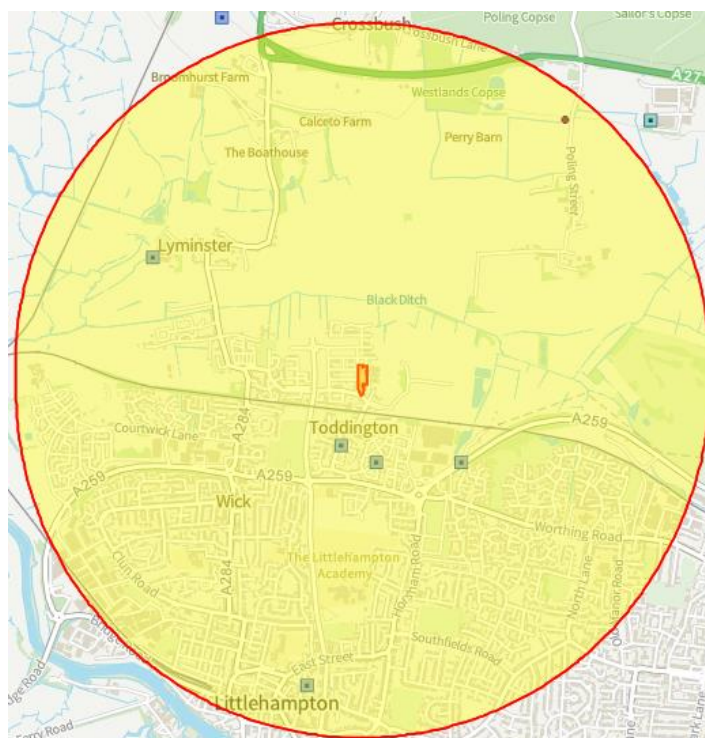


Figure 8: EPSM licences for bats (blue squares) and GCN licence return data (purple dot) within 2km of the site.

- 4.8 A 1km biological records search was requested from SXBRC. Some species have not been included due to the age of the record and the likelihood of presence on site due to habitat types (Table 1).

Table 1: Notable species records within 1km of the site in the last 10 years

Species	Status	Closest record to site
Stag Beetle <i>Lucabufonus cervus</i>	Wildlife and Countryside Act (1981 as amended) Schedule 5; Habitats Directive Annex 2; NERC Act (2006) Section 41	1km south-east (2021)
Slow Worm <i>Anguis fragilis</i>	Wildlife and Countryside Act (1981 as amended) Schedule 5; NERC Act (2006) Section 41	On site Maximum count 7 Minimum count 1 (Between 01.06.17 and 12.07.17)
Common Lizard <i>Zootoca vivipara</i>	Wildlife and Countryside Act (1981 as amended) Schedule 5; NERC Act (2006) Section 41	On site – 1 adult (05.06.2017)
Western European Hedgehog <i>Erinaceus europaeus</i>	NERC Act (2006)	820m west (2017)
Brown long-eared Bat <i>Plecotus auritus</i>	Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 Schedule 2; Habitat and Species Directive (1992) Annex 4; Wildlife and Countryside Act (1981 as amended) Schedule 5	920m north-west (2021)
Barn Owl <i>Tyto alba</i>	Wildlife and Countryside Act (1981 as amended) Schedule 1	1.4km west (2019)

UKHab Survey

4.9 The site was subject to clearance in June 2020, prior to the survey undertaken by The Ecology Partnership in September 2020. Historic satellite imagery from Google Earth suggests the site was cleared of all nursery buildings in early 2015, and since then rank grassland and scattered scrub took over the site, with the scrub gradually developing across the site to become the principal habitat component by 2018. Photographs and discussions with the landowner confirmed that the land was also cleared in mid-2019.

4.10 In May 2024, the site was dominated by ephemeral vegetation, with five buildings present. Multiple lines of scrub, treelines and areas of scrub were identified around the southern portion of the site. An area of modified grassland was also present at the southern corner of the site. Two brash piles were also present.

Tall Forbs

4.11 The majority of the site comprised tall forbs and included bristly oxtongue and ribwort plantain were abundant throughout the site, with common nettle, false oat grass and a mustard species frequently observed. Common reed was also locally abundant near the north-eastern corner of the site.

Buildings and Hardstanding

4.12 A hardstanding driveway was present south of the occupied residential building. Hardstanding was also present around small areas of the buildings including the barn on site, with a path leading from Toddington Lane into the site.

4.13 Five buildings were present on site (Figure 9).



Figure 9: Buildings present within the site.

- 4.14 Building 1 was a single-storey brick house in the southeast corner of the site. The house was disused and in disrepair with broken windows. The roof comprised interlocking tiles, with hanging tiles on the western aspect. This building could not be internally accessed safely at the time of the survey. However, some internals could be observed externally through open windows.
- 4.15 Building 2 was an open-sided, single-storey disused barn with windows, concrete flooring, concrete walls and a corrugated roof. This building was internally assessed and was largely empty, with no sealed loft voids.
- 4.16 Building 3 was a small outbuilding shed comprised of breezeblocks with a concrete floor and no door. The building was overgrown with ivy.
- 4.17 Building 4 was a garage connected to building 5 via a wall. The garage is constructed of brick with a flat roof and the garage was not internally assessed at the time of the survey.
- 4.18 Building 5 was a two-storey brick-built occupied residential dwelling featuring interlocking roof tiles. Two loft voids were present, one on the eastern aspect and another on the southwest aspect. Both loft voids were still used for storage.

Treelines

- 4.19 Along the southeast site boundary is a tree line dominated by leylandii, which are semi-mature to mature and c. 10 - 15m tall. Between Building 1 and 2, this treeline became more scattered and frequently featured silver birch, rowan and whitebeam. These trees were semi-mature and younger, being c. 5 - 10m in height.

Hedgerows

- 4.20 A cherry laurel dominated hedgerow was present along the western boundary near the access way. This hedgerow was c. 1m wide and 2m tall.
- 4.21 A line of ornamental vegetation was also present along the eastern boundary of the site, behind an adjacent building. This frequently featured species including hebe, sweet box and kohuhu.

Bramble Scrub

- 4.22 A small area of bramble scrub was present in the south-eastern corner of the site on the eastern aspect of building 1. This abundantly featured bramble and common nettle, with buddleja also occasionally found.
- 4.23 A small area of bramble scrub was also present on the southern aspect of building 2, with common nettle and bramble again abundantly present.

Other Neutral Grassland

- 4.24 An area of other neutral grassland was present in the southern portion of the site. This frequently featured yarrow, red fescue, common bent and false oat grass. This was of moderate sward height, c. 10cm tall, and had not been recently mown at the time of the survey.

Brash/Debris Earth Piles

- 4.25 Three material piles were present on site. The first was a pile of rubble and brash north of building 2, with significant common nettle growth. The second was a brash pile with significant ivy growth, north of building 1. Finally, an earth pile with significant bindweed growth was present between buildings 2 and 5.

Protected Species

Bats

Preliminary Roost Assessment

- 4.26 The trees within the site do not support PRFs for roosting bats.

-
- 4.27 Building 1 was considered to have ‘**low**’ suitability for roosting bats. This is due to the presence of loose hanging clay tiles on the western aspect of the building and lifted weatherboarding and roof tiles. The building supports a loft void, although it could not be assessed in the updated survey. The survey in 2020 did not record any evidence of roosting bats in the loft void.
- 4.28 Buildings 2, 3 and 4 were all considered to have ‘**negligible**’ suitability for roosting bats. This is owing to a lack of bat roosting features such as lifted tiles or roof voids, as well as light and draughty conditions not suitable for bats.
- 4.29 Building 5 supports hanging tile and interlocking roof tiles which were generally very well sealed. Likewise, no gaps were observed under any of the well-sealed soffits. Internally, no evidence of bats was identified such as droppings or feeding remains. Both loft voids were well sealed, and while light could be observed entering from the external environment, this light came through grates too small for bats. The loft voids were also currently in use for storage and were small enough to be thoroughly inspected, with no obvious areas for roosting observed. As such, building 5 was considered to have ‘**negligible**’ suitability for roosting bats.

Bat Emergence Surveys

- 4.30 The disused house (building 1) was subject to a bat emergence survey on 26th September 2023 and 3rd June 2024.

26th September 2023

- 4.31 On the date of the survey, sunset was at 18:50, with a survey start time of 18:20. The temperature during the survey was 18°C, falling to 16°C by the end. The weather was cool and dry, with a light breeze (1 on the Beaufort scale) and 10% cloud cover.
- 4.32 No bats were recorded emerging from building 1. The first pass recorded was a common pipistrelle at 19:20 foraging around the treeline on site and over the building. A total of five passes were recorded during the survey, all of which were common pipistrelle. Bats were generally recorded commuting over the treeline to the south of the house, north over the house. The final pass was recorded at 19:43. It is considered likely that all recorded passes were by the same individual.

3rd June 2024

- 4.33 On the date of the survey, sunset was at 21:09, with a survey start time of 20:54. The temperature during the survey was 17°C, falling to 16°C by the end. The weather was dry, with a light breeze (1 on the Beaufort scale) and 40% cloud cover.
- 4.34 No bats were recorded emerging from building 1. The first pass recorded was a noctule at 21:24 flying over the site. The next recorded bat was a common pipistrelle at 21:52 and was recorded commuting near the building. A total of six passes were recorded during the survey, including noctule, common pipistrelle, soprano pipistrelle and brown long-eared. The final pass was recorded at 22:25 for a soprano pipistrelle.

Foraging and commuting habitat

- 4.35 The treeline on site may have some suitability for foraging and commuting bats as a linear feature. However, the site has limited connectivity to surrounding areas of woodland or treeline, with the majority of habitat on site providing minimal foraging opportunities. Common pipistrelle were recorded commuting from the treeline over building 1 during the emergence survey. As such, the site is considered to have '**negligible**' suitability for foraging and commuting bats, with the treeline having '**low**' suitability.

*Reptiles*

- 4.37 The majority of the site consisted of ruderal vegetation, with bramble scrub and the treelines offering some refugia from predators and basking for reptile species. The brash and debris piles are considered to provide the most suitable habitat for reptiles on site, providing some basking opportunities and refuge from predators.
- 4.38 SxBRC returned records for slow worms and common lizards on site in 2017. These records indicate that a reptile survey was undertaken within the site between June and July 2017. The surveys recorded a peak of 7 slow worms and 1 common lizard.

Reptile presence/absence surveys

- 4.39 The site was subject to reptile presence/absence surveys between April and June 2024 and during the survey, no reptiles were recorded.

Table 2- Reptile Survey Weather Conditions

Check	Date	Temp Start	Temp End	Cloud Cover (Oktas)	Wind Speed (Beaufort)	Precipitation
1	17/04/2024	9	10	0	1	0
2	24/04/2024	9	9	2	1	0
3	08/05/2024	12	14	0	1	0
4	15/05/2024	17	17	4	2	0
5	22/05/2024	14	14	4	1	0
6	29/05/2024	15	16	4	2	0
7	04/06/2024	18	18	6	1	0

Great crested newts

- 4.40 There are no ponds on site and both ponds within 250m are separated from the site by dispersal barriers including roads, residential areas and fencing, meaning migration to the site from these ponds is unlikely. The site also has limited terrestrial suitability for great crested newts, with only the areas of bramble scrub as well as brash/rubble piles providing some refugia from predators and foraging opportunities.
- 4.41 As such, based on the limited habitat, the lack of local records and the distance to the closest past EPS licence (2.2km) and newt class licence return (1.8km), it is considered that great crested newts are unlikely to be present within the site and no further surveys are recommended and this species.

Hazel dormice

- 4.42 The bramble scrub provides a limited suitable habitat for dormice, however, there is limited connectivity to the wider landscape. No records of dormice were returned within 1km of the site and the closest past EPS licence is 7.5km northwest of the site.
- 4.43 As such, based on the limited habitat, no records within 1km and the distance to the closest past EPS licence (7.5km), it is considered that dormice are unlikely to be present within the site and no further surveys are recommended and this species.

Other species

- 4.44 The treelines and scrub on site were considered suitable to support common breeding and nesting birds.

4.45 It was not considered likely that other protected species such as otters or water voles were present due to a lack of suitable features. As such, no further surveys are recommended, and these species will not be discussed further within this report.

5.0 Discussion

5.1 The following paragraphs consider the effects of the development on designated sites, priority habitats and protected and priority species. Where the desk study and UKHab 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.

5.2 Provisional recommendations are also given for means to achieve net biodiversity gain, following the principle (CIEEM *et al.* 2016) of following the mitigation hierarchy of; avoidance, minimisation of loss, compensation on site and biodiversity offset.

Effects on designated sites

5.3 The site does not fall within or adjacent to any statutory and non-statutory sites. The Impact Risk Zones (IRZ) indicate the development will have a likely impact on SSSIs/SACs/SPAs and Ramsar sites.

5.4 There are two internationally designated sites within 15km of the site, the closest of which is Arun Valley SAC, SPA, Ramsar, SSSI approximately 9.2km north of the site. Duncton to Bignor Escarpment SAC, c. 10km north-west, designated for Annex I beech forest habitats. The closest statutory designated site is Climping Beach SSSI approximately 2.8m southwest of the site and the closest non-statutory designated site is West Beach LNR, c. 2.5km south of the site.

5.5 Based on the IRZ and due to the distance of these statutory sites from the site, it is considered that no direct negative impacts will occur as a result of any developments on site.

Effects on priority habitats

5.6 The closest priority habitat is a coastal and floodplain grazing marsh located approximately 13m north of the site. It is recommended that construction safeguards are implemented to avoid any impacts from water, dust, noise and light. With the implementation of construction safeguards, it is considered that the proposed development will have no direct or indirect impact on any priority habitats.

Effects on on-site habitats

Protected Species

Bats

5.7 Buildings 2 – 5 were considered to have ‘**negligible**’ suitability for roosting bats and the trees on site are not considered suitable for roosting bats. As such, further bat emergence surveys for bats are not recommended for these buildings or trees on site.

5.8 The September 2023 and June 2024 bat emergence surveys did not record any roosting bats in building 1 and no further surveys are required.

Foraging and commuting habitats

5.9 The habitats on site are considered to provide limited opportunities for bats in the local area. At most, the treeline may have ‘**low**’ potential for foraging bats. Further activity surveys for bats are therefore not recommended.

5.10 It is recommended that a sensitive lighting scheme is implemented as part of the scheme. All bat species are nocturnal, resting in dark conditions in the day and emerging at night to feed. Many species of bats are known to sample light levels before emerging from their roost; only emerging for their night’s hunting when the light intensity outside reaches a critical level after sunset. Artificial lighting can restrict and shorten the time bats spend foraging at night or completely discourage bats from using an area at all. This needs to be considered, with a sympathetic lighting scheme for the development. Recommendations include:

- No potential bat roost or commuting feature should be illuminated by artificial lighting, lighting should be positioned to point away from any roosting site, leaving the entrance and exit points in darkness, this should consider the bat potential trees identified, as well as on and offsite green corridors potentially in use by bats;
- Lighting should only be installed if there is a significant need;
- Light levels should be kept low where possible;
- 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;

- Lighting should be avoided near treelines or hedgerows, with light angled away from these areas, bats use linear features such as treelines to commute across the landscape to forage; and
- Lights should have focussed luminance on their target area, preventing spill and pollution into other areas of the site and local area.

Reptiles

- 5.11 The reptile survey in 2024 did not record any reptiles present on the site. Although there is historical evidence of reptiles having been present on site as well as within the wider area, based on the recent habitat impacts to the site and the large amount of new residential development adjacent to the site, which has isolated the site, it considered that reptiles are not present within the site and no further consideration will be detailed in this report concerning reptiles.

- 5.13 It is 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.

Other species

- 5.14 The treelines, scrub and hedgerow on site are considered suitable habitat for nesting and breeding birds.
- 5.15 Birds are likely to use the trees and scrub on site for foraging and breeding. It is understood that the trees and scrub on site will not be disturbed. If disruption is necessary, it is recommended that any tree or scrub removal should be implemented outside the breeding bird season (March-August inclusive) or immediately after a nesting bird check by a suitably

qualified ecologist. If an active nest is identified, works in the vicinity of the nest must cease until the birds have fledged the nest.

- 5.16 The site did not support habitats which are considered suitable to support other protected species including otters or water voles.

Ecological Enhancements

- 5.17 Several enhancements can be incorporated within the development scheme to help reduce potential ecological impacts to provide net gains to biodiversity in line with NPPF (2023) and the proposed Environment Bill. It is important to utilise native species of local provenance in landscaping schemes to enhance the ecological value of a development.

- 5.18 New hedgerows and treelines should be planted with native species including:

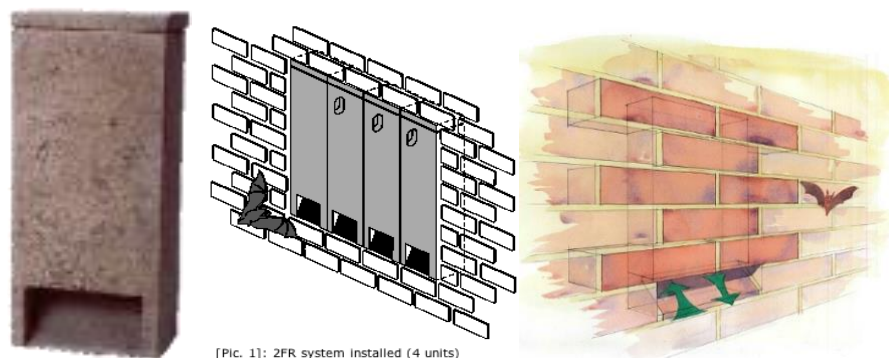
- Wild privet (*Ligustrum vulgare*);
- Dogwood (*Cornus sanguinea*);
- Hawthorn (*Crataegus monogyna*);
- Hazel (*Corylus avellana*);
- Spindle (*Euonymus europaeus*);
- Honeysuckle (*Lonicera periclymenum*);
- Beech (*Fagus sylvatica*);
- Guelder-rose (*Viburnum opulus*).

- 5.19 Log piles can be created using any woody material removed during works for use as refugia by wildlife (Figure 10). These can be located close to retained scrub and hedgerows. They can be situated in a variety of locations, such as damp places with some situated in sunnier locations. They can be placed, around the very edges of the site and positioned under mature trees. These should be stacked and perhaps some leaf litter added. Planting around log piles with species such as honeysuckle or clematis can also add value.



Figure 10: Log piles and hibernacula can be created within the edges of the site or in the retained habitats on site

- 5.20 To enhance the local bat population and provide additional roosting opportunities within the site, bat boxes can be hung on trees within the site or installed onto the brickwork of the new development (Figure 11). These provide good opportunities for crevice-dwelling species such as pipistrelles. The opening of the bat box/tube will be the only section visible, and they are designed so that they require little to no maintenance. Several of these tubes can be established in a row together providing a good-sized roost space. The bat tubes should be inserted in the brickwork at least 4m from ground level in a location not illuminated by artificial lighting. Habitat, in association with the Bat Conservation Trust, provides a range of boxes which are unfaced for render or designed to match the brickwork of the building.



[Pic. 1]: ZFR system installed (4 units)

Figure 11: Bat tubes incorporated into the wall of a building to provide roosting space.

- 5.21 Additional bird nesting opportunities can also be installed on site, as integrated boxes within proposed buildings and within existing trees on site. Hardwearing woodcrete boxes, or similar, are recommended. Figure 12 gives examples of suitable bird boxes, of which these or similar, could be installed into the brickwork of the building or into the trees. The box should be positioned on a north or east facing aspect and at least 2m above the ground if possible. These would cater for species such as house sparrows and wagtails. A total of two of these boxes is recommended.



Figure 12: Examples of suitable bird boxes which could be installed on site – NHBS terraced sparrow box with custom brick facing (left), Vivara Pro Barcelona WoodStone Open Nest Box (centre) and Vivara Pro Seville 32mm WoodStone Nest Box (right)

6.0 Biodiversity Net Gain Assessment

6.1 A Biodiversity Net Gain assessment has been undertaken for the proposed development, which was carried out using the Statutory Biodiversity Metric. The habitat baseline is detailed in Figure 13 and habitat creation is in Figure 14.

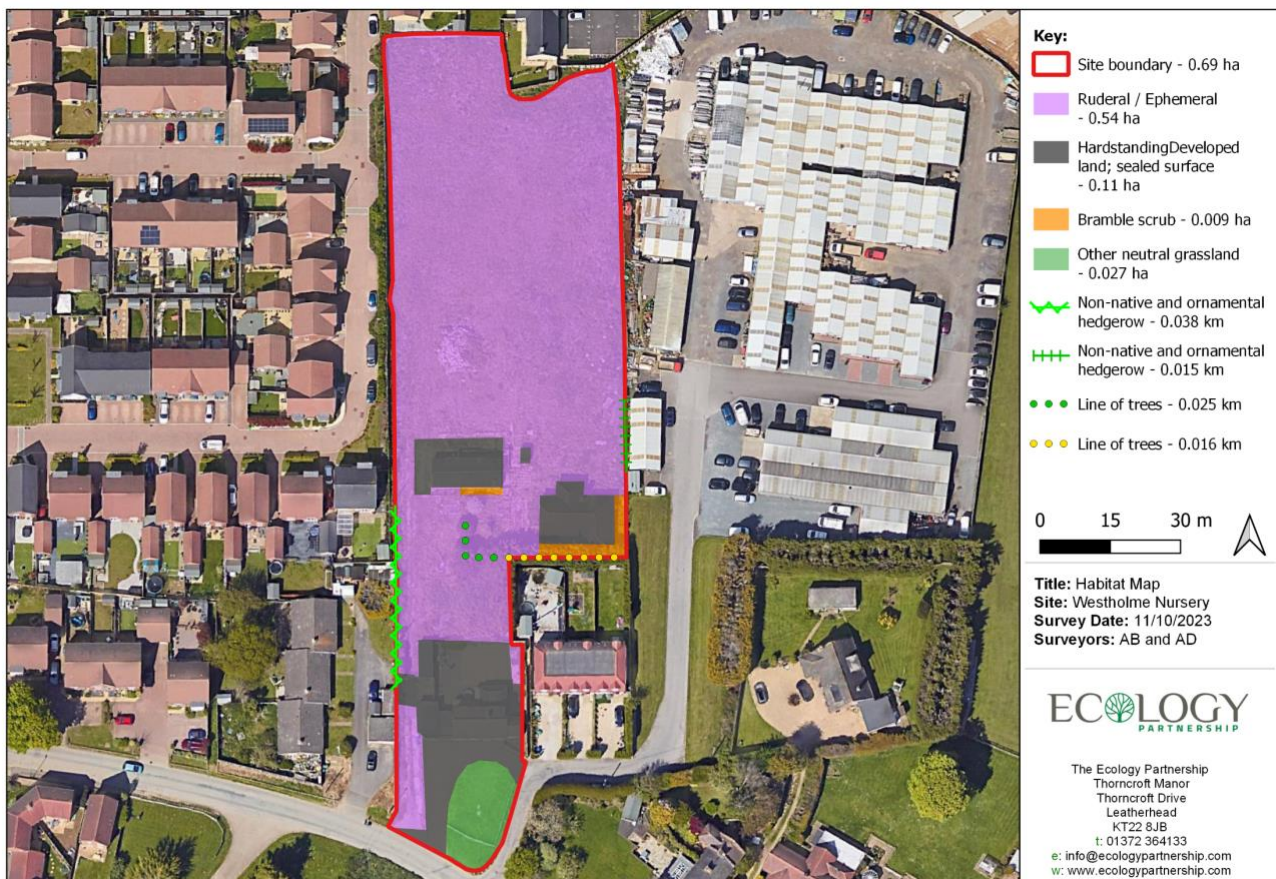


Figure 13: Habitat baseline.



Figure 14: Habitat creation.

6.2 The proposed development will result in a **-65.98%** biodiversity net loss in habitat units and a **+119.96%** net gain in hedgerow units and does not satisfy the trading rule (Figure 15). The proposed development will have to seek offsite biodiversity units to offset the loss of the proposed development.

FINAL RESULTS				
Total net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	Habitat units		-1.52	
	Hedgerow units		0.22	
	Watercourse units		0.00	
Total net % change (Including all on-site & off-site habitat retention, creation & enhancement)	Habitat units		-65.98%	
	Hedgerow units		119.96%	
	Watercourse units		0.00%	
Trading rules satisfied?	No - Check Trading Summaries ▲			
Unit Type	Target	Baseline Units	Units Required	Unit Deficit
Habitat units	10.00%	2.31	2.54	1.75
Hedgerow units	10.00%	0.19	0.20	0.00
Watercourse units	10.00%	0.00	0.00	0.00

Figure 15: Headline results.

7.0 Impact Assessment

- 7.1 This section of the report form and 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.
- 7.2 The approach to this assessment accords with guidance presented within the CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM 2018).
- 7.3 Table 3 summarises the impacts and required mitigation for each receptor as previously detailed in the discussion.

Table 3: Assessment of the effects from the proposal after mitigation and compensation

<i>Feature</i>	<i>Scale of Importance</i>	<i>Mitigation/Compensation</i>	<i>Residual Effect</i>
Internationally designated Statutory Sites	International	None required due to scale of and distance from the works.	Not significant
Roosting Bats	Site	The buildings do not support roosting bats. Installation of bat boxes on retained trees and newly constructed buildings.	Not significant
Commuting and foraging bats	Local	Sensitive lighting measures in place.	Not significant
Badgers	Local	Measures to avoid harm to badgers during the works.	Not significant
Breeding birds	Local	Retain trees and scrub on site. Tree or scrub removal should be implemented outside the breeding bird season (March-September inclusive) or immediately after a nesting bird check by a suitably qualified ecologist.	Not significant
Reptiles, Great Crested Newts, Dormice, Water Voles and Otters	N/A	Considered unlikely to be present on site.	Not significant

8.0 Conclusions

- 8.1 The site does not fall within or adjacent to any statutory and non-statutory sites. The Impact Risk Zones indicate the development will not have a likely impact on SSSIs/SACs/SPAs and Ramsar sites. There are two internationally designated sites within 15km of the site, the closest of which is Arun Valley SAC, SPA, Ramsar, SSSI approximately 9.2km north of the site. Duncton to Bignor Escarpments SAC, c. 10km north-west, designated for Annex I beech forest habitats. The closest statutory designated site is Climping Beach SSSI approximately 2.8m southwest of the site and the closest non-statutory designated site is West Beach LNR, c. 2.5km

south of the site. Due to the distance of these statutory sites from the site, it is considered that no direct negative impacts will occur as a result of any developments on site.

- 8.2 The closest priority habitat is a coastal and floodplain grazing marsh located approximately 13m north of the site. It is recommended that construction safeguards are implemented to avoid any impacts from water, dust, noise and light. With the implementation of construction safeguards, it is considered that the proposed development will have no direct or indirect impact on any priority habitats.
- 8.3 The proposed development will result in a **-65.98%** biodiversity net loss in habitat units and a **+119.96%** net gain in hedgerow units and does not satisfy the trading rule (Figure 15). The proposed development will have to seek offsite biodiversity units to offset the loss of the proposed development.
- 8.4 The September 2023 and June 2024 bat emergence surveys did not record any roosting bats in building B1.
- 8.5 The site is considered to have 'low' suitability for foraging and commuting bats. A sensitive lighting scheme is required to minimise disturbance to roosting and foraging bats during the development period.
- 8.6 There is potential for badgers to use the site for commuting and foraging. As such, measures to minimise risk to badgers during the works have been recommended within this report.
- 8.7 Birds are likely to use the trees and scrub on site for foraging and breeding. It is understood that the trees and scrub on site will not be disturbed. If disruption is necessary, it is recommended that any tree or scrub removal should be implemented outside the breeding bird season (March-August inclusive) or immediately after a nesting bird check by a suitably qualified ecologist. If an active nest is identified, works in the vicinity of the nest must cease until the birds have fledged the nest.

9.0 References

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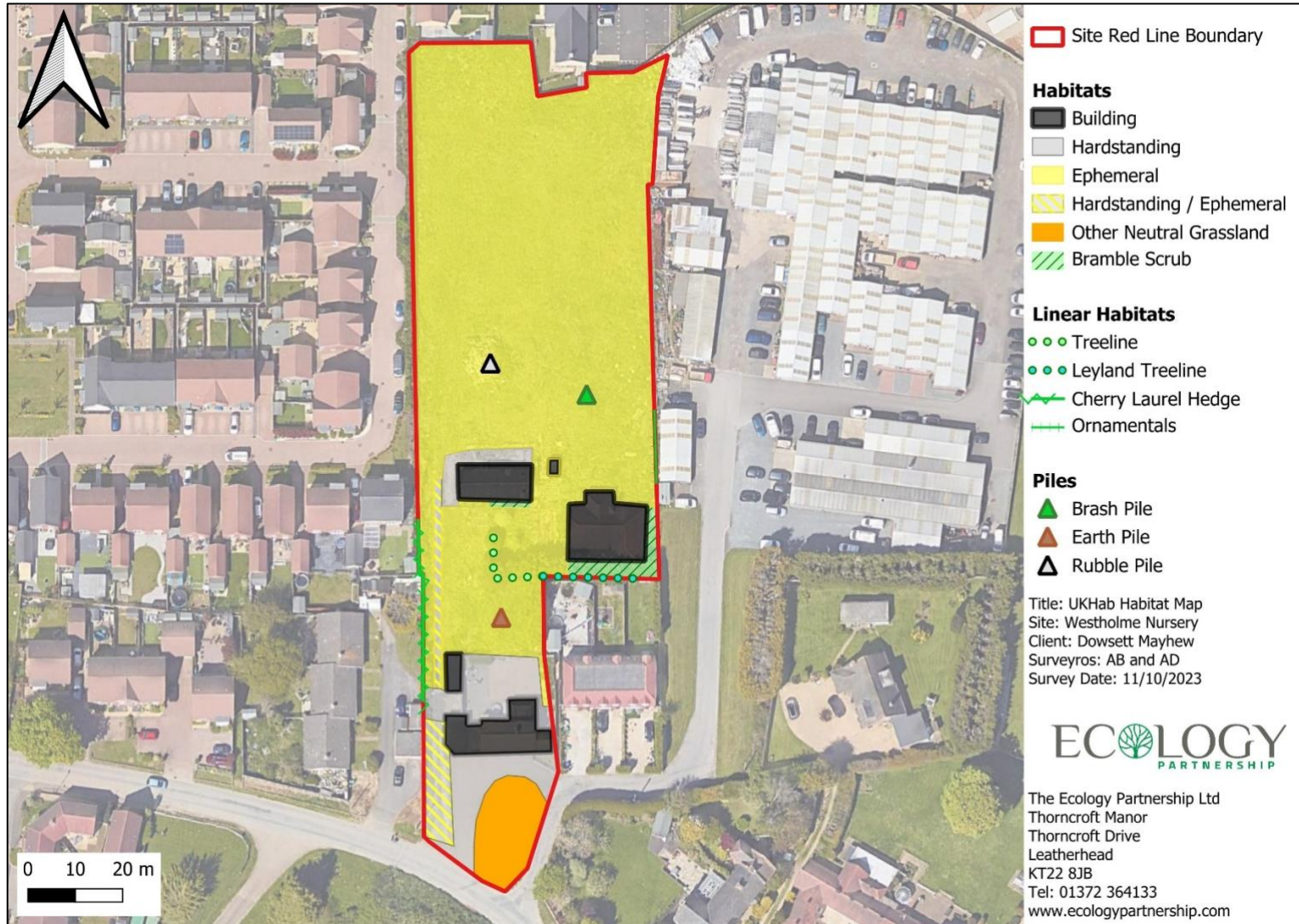
Internet resources:

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

Magic Interactive Map: www.magic.gov.uk

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Appendix 1: Habitat Map



Appendix 2: Condition Assessment

Condition Sheet: GRASSLAND Habitat Type (medium, high & very high distinctiveness)		
UKHab Habitat Type(s): All other grassland types and tall ruderal (ie. not amenity/modified)		
Condition Assessment Criteria		Other neutral grassland
1	The grassland is a good representation of the habitat type it has been identified as, based on its UKHab description - the appearance and composition of the vegetation closely matches the characteristics of the specific grassland habitat type. Indicator species listed by UKHab for the specific grassland habitat type are consistently present. Note - this criterion is essential for achieving Moderate or Good condition for non-acid grassland types only.	Fail
2	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.	Pass
3	Cover of bare ground is between 1% and 5%, including localised areas, for example, rabbit warrens (Footnote 1)	Fail
4	Cover of bracken is less than 20% and cover of scrub (including bramble) is less than 5%.	Pass
5	Combined cover of species indicative of sub-optimal condition (Footnote 2) and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area. If any invasive non-native plant species (as listed on Schedule 9 of WCA) are present, this criterion is automatically failed.	Pass
Additional Criterion - must be assessed for all non-acid grassland types		
6	There are 10 or more vascular plant species per m ² present, including forbs that are characteristic of the habitat type (species referenced in Footnote 2 and 4 cannot contribute towards this count). Note - this criterion is essential for achieving Good condition for non-acid grassland types only.	Fail
		Condition
		Poor
Condition Assessment Result		
Good	Passes 5 of 6 criteria, including essential criterion 1 and 6	
Moderate	Passes 3 or 4 of 6 criteria, including essential criterion 1	
Poor	Passes 0, 1, 2 criteria of 6 criteria; OR Passes 3 or 4 criteria excluding criterion 1 and 6	
<p>Footnote 1. For example, this could include small, scattered areas of bare ground allowing for plant colonisation, or localised patches not exceeding 5% cover.</p> <p>Footnote 2. Species indicative of sub-optimal condition for this habitat type include: Creeping thistle, spear thistle, curled dock, broad-leaved dock, common nettle, creeping buttercup, greater plantain, white clover, cow parsley.</p>		

Condition Sheet: URBAN - NON PRIORITY Habitat Type		
<p>UKHab Habitat Type(s): Sparsely vegetated land - Ruderal/ephemeral and Tall forbes; Urban – Allotments/Bioswale/Cemeteries and churchyards/Open mosaic habitats on previously developed land(OMH)/Rain garden/SUDs/bare ground/all green walls and roofs</p>		
Condition Assessment Criteria		Tall Forbs
1	Vegetation structure is varied, providing opportunities for vertebrates and invertebrates to live, eat and breed. A single structural habitat component or vegetation type does not account for more than 80% of the total habitat area.	Fail
2	The habitat parcel contains different plant species that are beneficial for wildlife, for example flowering species providing nectar sources for a range of invertebrates at different times of year.	Pass
3	Invasive non-native plant species (listed on Schedule 9 of WCA ¹) and others which are to the detriment of native wildlife (using professional judgement)? cover less than 5% of the total vegetated area Note - to achieve Good condition, this criterion must be satisfied by a complete absence of invasive non-native species (rather than <5% cover).	Pass
Condition		Moderate
Condition Assessment Result		
Good	Passes 3 of 3 core criteria; AND Meets the requirements for good condition within criteria 2 and 3	Passes 3 of 3 core criteria; AND Meets the requirements for good condition within criteria 2 and 3; AND Passes additional criterion 4
Moderate	Passes 2 of 3 core criteria; OR Passes 3 of 3 core criteria but does not meet the requirements for good condition within criteria 2 and 3	Passes 2 of 3 of 4 criteria; OR Passes 4 of 4 criteria but does not meet the requirements for good condition within criteria 2 and 3
Poor	Passes 0 or 1 of 3 core criteria	Passes 0 or 1 of 4 criteria

Condition Sheet: LINE OF TREES Habitat Type			
Condition Assessment Criteria		TL1	TL2
1	More than 70% of trees are native species.	Pass	Fail
2	Tree canopy is predominantly continuous with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide.	Pass	Pass
3	One or more trees has veteran features and or natural ecological niches for vertebrates and invertebrates, such as presence of standing and attached deadwood, cavities, ivy or loose bark.	Fail	Fail
4	There is an undisturbed naturally-vegetated strip of at least 6 m on both sides to protect the line of trees from farming and other human activities (excluding grazing). Where veteran trees are present, root protection areas should follow standing advice ²	Fail	Fail
5	At least 95% of the trees are in a healthy condition (deadwood or veteran features valuable for wildlife are excluded from this. There is little or no evidence of an adverse impact on tree health by damage from livestock or wild animals, pests or diseases, or human activity.	Pass	Pass
		Condition	Moderate Poor
Condition Assessment Result			
Good	Passes 5 of 5 criteria		
Moderate	Passes 3 or 4 of 5 criteria		
Poor	Passes 0, 1 or 2 of 5 criteria		
<p>Footnote 2 -Veteran trees can be classified if they have four out of the five following features:</p> <ol style="list-style-type: none"> 1. Rot sites associated with wounds which are decaying >400 cm²; 2. Holes and water pockets in the trunk and mature crown >5 cm diameter; 3. Dead branches or stems >15 cm diameter; 4. Any hollowing in the trunk or major limbs; 5. Fruit bodies of fungi known to cause wood decay. 			

Appendix 3: Photographs

Photograph 1:
Eastern loft void (building 5)



Photograph 2:
South-western loft void
(building 5)



Photograph 3:
Building 4



Photograph 4:
Northern aspect of building 5.



Photograph 5:
Accessway to site.



Photograph 6:
Southern aspect of building 5.



Photograph 7:
Building 4 taken from southern perspective.



Photograph 8:
North-western corner of building 5.



Photograph 9:
Earth pile between building 4 and 2.



Photograph 10:
Building 2, taken from northern perspective.



Photograph 11:
Internal of building 2.



Photograph 12:
Building 3. Ivy growth can be seen.



Photograph 13:
Building 1. Interlocking tiles can be seen.



Photograph 14:
Building 1. Hanging tiles can be seen.



Photograph 15:
Bramble scrub bordering building 1.



Photograph 16:
Tall Forbs



Photograph 17:
Brash pile.



Photograph 18:
Debris pile.



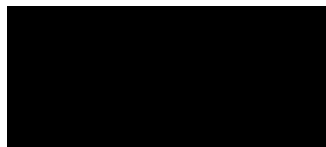
Appendix 4: Species List

Common name	Latin name	DAFOR score
Tall Forbs		
Bristly oxtongue	<i>Helminthotheca echioides</i>	A
Ribwort plantain	<i>Plantago lanceolate</i>	A
Common nettle	<i>Urtica dioica</i>	F
False oat grass	<i>Arrhenatherum elatius</i>	F
Mustard sp.	<i>Brassica sp.</i>	F
Bramble	<i>Rubus fruticosus</i>	O
Horse tail	<i>Equisetum arvense</i>	O
Bindweed	<i>Convolvulus sp.</i>	O
Creeping bent	<i>Agrostis stolonifera</i>	O
Dovesfoot cranesbill	<i>Geranium molle</i>	O
Creeping buttercup	<i>Ranunculus repens</i>	O
Cocksfoot	<i>Dactylis glomerata</i>	O
Creeping thistle	<i>Cirsium arvense</i>	O
Hogweed	<i>Heracleum sp.</i>	O
Common field speedwell	<i>Veronica persica</i>	O
Ragwort	<i>Jacobaea vulgaris</i>	O
Common ivy	<i>Hedera helix</i>	R
Common fleabane	<i>Erigeron canadensis</i>	R
Wall barley	<i>Hordeum murinum</i>	R
Scentless mayweed	<i>Tripleurospermum inodorum</i>	R
Fat hen	<i>Chenopodium album</i>	R
Dandelion	<i>Taraxacum officinale</i>	R
Knapweed	<i>Centaurea nigra</i>	R

Black nightshade	<i>Solanum nigrum</i>	R
Annual mercury	<i>Mercurialis annua</i>	R
Common fumitory	<i>Fumaria officinalis</i>	R
White dead nettle	<i>Lamium album</i>	R
Red dead nettle	<i>Lamium purpureum</i>	R
Sun spurge sp.	<i>Euphorbia helioscopia</i>	R
Common vetch	<i>Vicia sativa</i>	R
Spear thistle	<i>Cirsium vulgare</i>	R
Creeping cinquefoil	<i>Potentilla reptans</i>	R
Mayweed	<i>Tripleurospermum sp.</i>	R
Rosa sp.	<i>Rosa sp.</i>	R
Cow parsley	<i>Anthriscus sylvestris</i>	R
Mugwort	<i>Artemisia vulgaris</i>	R
Canadian fleabane	<i>Erigeron canadensis</i>	R
Purple toadflax	<i>Linaria purpurea</i>	R
Other neutral grassland		
Yarrow	<i>Achillea millefolium</i>	F
Red fescue	<i>Festuca rubra</i>	F
Common bent	<i>Agrostis capillaris</i>	F
False oat grass	<i>Arrhenatherum elatius</i>	F
Cocksfoot	<i>Dactylis glomerata</i>	O
Doves foot cranesbill	<i>Geranium molle</i>	O
Ribwort plantain	<i>Plantago lanceolata</i>	O
Ragwort	<i>Jacobaea vulgaris</i>	O
Creeping buttercup	<i>Ranunculus repens</i>	O
Common knapweed	<i>Centaurea nigra</i>	R
Common fleabane	<i>Pulicaria dysenterica</i>	R
Dandelion	<i>Taraxacum sp.</i>	R
Hogweed	<i>Heracleum sp.</i>	R
Smaller catstail	<i>Phleum bertolonii</i>	R
Canadian fleabane	<i>Erigeron canadensis</i>	R
Bramble scrub		
Bramble	<i>Rubus fruticosus</i>	A
Common nettle	<i>Urtica dioica</i>	A
Buddleja	<i>Buddleja sp.</i>	O
Scattered trees and treeline		
Leyland cypress	<i>Cupressus x leylandii</i>	LA
Silver birch	<i>Betula pendula</i>	F
Whitebeam	<i>Sorbus aria</i>	F
Rowan	<i>Sorbus aucuparia</i>	F
Elder	<i>Sambucus nigra</i>	F
Portugal laurel	<i>Prunus lusitancia</i>	F

Ornamentals		
Hebe	<i>Hebe sp.</i>	F
Sweet box	<i>Sarcococca confusa</i>	F
Portugal laurel	<i>Prunus iusitanica</i>	F
Kohuhu	<i>Pittosporum tenuifolium</i>	F
Laurel hedgerow		
Cherry laurel	<i>Prunus laurocerasus</i>	D

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