

Hallam Land Management

Land to the South of Grevatt's Lane, Ancton

ECOLOGICAL ASSESSMENT – SITE B

February 2022

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1.0 NON-TECHNICAL SUMMARY

Report Scope and Methodology

- The Site is proposed for a new golf course and facilities with associated infrastructure.
- An extended Phase 1 survey, desk study and range of protected species have been completed by FPCR to inform this assessment.

Key Findings

- Six international designated sites were located within 15km of the Site including Solent and Dorset Coast SPA located 0.5km to the southwest, Pagham Harbour SPA/Ramsar/SSSI 10.6km to the south-west, Duncton to Bignor Escarpment SAC 11.5km to the north, Arun Valley SAC/SPA/Ramsar 12.2km to the north, Chichester and Langstone Harbours SPA/Ramsar/SSSI 14.5km to the east and Solent Maritime SAC 14.5km to the east. The change in land use, habitat creation and drainage proposals will provide a betterment for nutrient run off and ensure there will be no adverse effects to the integrity of these designations. Due to the nature of the proposals and the intervening distances, no effects are anticipated on the integrity of these international designations.
- No SSSIs were located within 2km of the Site.
- One non-statutory site, Elmer Rocks LWS is located 0.4km south of the Site. For the same reasons detailed above for statutory sites, there will not be a detrimental recreational effect either.
- The Site is dominated by arable habitats bordered by deciduous woodland, arable margins (of varying quality, including species rich) and hedgerows, all of which classify as habitats of principal importance (NERC S.41). The Ryebank Rife runs along the eastern boundary and through the centre of the site and connects to an onsite and offsite ditch network. These were considered to be of no more than local importance.
- One of the four hedgerows onsite was important under the Hedgerow Regulations and all were considered moderate to moderately high value under HEGS.
- Two ponds were located within 250m of the Site and the Ryebank Rife and ditch network onsite was not considered suitable to support breeding habitat for Great Crested Newts.
- In addition, the Site provided some degree of suitable habitat for a range of protected/notable species including bats, birds, hazel dormice, reptiles and riparian mammals. Surveys for which are being conducting during the 2021/2022 survey season. A low population of slow worm and common lizard were recorded onsite as well as a range of common and widespread bats. Static bat detector surveys have picked up a small number of barbastelle bat echolocation registrations.
- No hazel dormouse or riparian mammal evidence has been recorded to date.

- All hedgerows (except a small section of H1 and H4 and entirety of H2) and mature trees will be retained wherever possible. The vegetation losses for access will be compensated for through appropriate additional planting within the scheme.
- Vegetation clearance works will be undertaken following a precautionary working method statement to ensure reptiles and breeding birds are not harmed.
- The proposals will achieve a measurable biodiversity net gain on all three of the biodiversity units of measure, these being habitats/ linear features - hedgerows and tree lines / rivers and streams, which were assessed using the DEFRA metric 3.0. The assessment also meets the future BNG of 10% gain detailed in the Environment Act (2021), which is not currently mandatory. The conclusion is a gain of 49.24% for habitats, 33.56% for linear features – hedgerows/tree lines and 6.53% for linear features rivers/streams.
- In addition, a range of additional enhancement will be introduced including bat and bird boxes (on trees and within buildings) and native species planting within landscape proposals.
- Additional mitigation and recommendations for enhancement will be provided upon the completion of the protected species surveys. Such measures will ensure their Favourable Conservation Status.

Further Work

- Survey work to be completed in 2022
 - Bat Activity Surveys (April to July)
 - Breeding Bird Surveys (April to June)
 - Great Crested Newt Surveys (March to June)
 - Dormice Surveys (March to July)
 - Riparian mammal (April to June)

2.0 INTRODUCTION

- 2.1 The following Ecological Assessment has been prepared by FPCR Environment & Design Ltd. on behalf of the applicant Hallam Land Management in support of a full planning application for a new golf course on land Grevatt's Lane, Ancton, West Sussex (central OS Grid Reference: SU 98791 00971).
- 2.2 A habitat survey including initial observations of any suitable habitats for, or evidence of, protected or notable species undertaken on 23rd August 2021. This informed the need for specific species surveys during the 2021/2022 survey season and this report discusses the initial findings of surveys carried out.

Site Location and Context

- 2.3 Site B covers an area of approximately 73ha and is located to the south of Grevatt's Lane at the eastern edge of the Bognor Regis urban area. The site is primarily used for agricultural (arable) purposes and is generally flat. The site comprises three field parcels and the boundaries comprise a variety of woodland, hedgerows and trees. Ryebank Rife separates the northern and southern fields.
- 2.4 Beyond the woodland at the southern boundary lies the northern edge of Ancton and residential properties located there. Grevatt's Lane (A259) forms the northern boundary and from which the site is accessed. Access to the site is from Grevatt's Lane and a private road leading to the eastern boundary which is an agricultural access. To the west and east are agricultural fields, whilst there is a small industrial complex, Baird's Business Park, to the north east.

Site Proposals

- 2.5 Full planning application for the laying out of an 18 hole 72 par golf course, a 9 hole golf course, practice greens and a driving range; the formation of a new access onto the A259; the construction of a club house with associated golf club facilities; the construction of a maintenance building and external area of hardstanding; the construction of a buggy compound; the laying of parking, new roads and paths; new landscape planting, surface water drainage basins and water storage reservoir, and other earthworks and infrastructure

3.0 LEGISLATION AND POLICY

3.1 Detail on the relevant national and local policy and legislation for ecology in relation to development sites are provided in *Appendix A*. The national policy and legislation most relevant here are:

- The Environment Act 2021;
- The Conservation of Habitats and Species Regulations (“The Habitats Regulations”) 2019 (amended) in relation to the European Protected Species (EPS) great crested newt, (GCN), bats (all species) and dormouse; and European protected sites i.e. Special Areas of Conservation (SAC), Special Protection Areas (SPAs) and Internationally protected “Ramsar Sites” (collectively known as “Natura 2000 sites”). Annex II bat species of particular relevance in relation to SACs designated for bats.
- The Wildlife and Countryside Act 1981 (WCA) (as amended)¹ in relation to all wild birds (including Schedule 1 species), other animals (notably Schedule 5 species), flora (those listed in Schedules 8 and 9) and Sites of Special Scientific Interest (SSSI);
- Protection of Badgers Act 1992;
- Natural Environmental and Rural Communities (NERC) Act 2006 in relation to various priority species and habitats;
- Hedgerow Regulations 1997 made under Section 97 of the Environment Act 1995;
- National Planning Policy Framework (NPPF) (2019);
- Local Nature Reserves (LNR) as designated most recently by the NERC Act 2006;
- Non-statutory protected local sites including County Wildlife Sites (CWS), Sites of Importance for Nature Conservation (SINC), Local Wildlife Sites (LWS) and Ancient Woodland Inventory (AWI) sites;
- Local Biodiversity Action Plans (LBAP); and
- Birds of Conservation Concern 5 (BoCC5)².

¹ Act of Parliament, (1981). The Wildlife and Countryside Act 1981 (as amended), London: HMSO

² BTO. (2021). *The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain*. [online] <https://www.bto.org/our-science/publications/birds-conservation-concern/status-our-bird-populations-fifth-birds>

4.0 METHODOLOGY

Desk Study

- 4.1 In order to compile existing baseline information, relevant ecological information was requested from the following consultees and sources:
- Sussex Biodiversity Records Centre (SBRC)
 - Multi Agency Geographic Information for the Countryside (MAGIC) website³;
 - Colour 1:25,000 OS base maps⁴;
 - Aerial photographs from Google Earth⁵.
- 4.2 The search area for biodiversity information was related to the significance of sites and species and potential zones of influence, as follows:
- 15km around the site for sites of International Importance (e.g. Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Ramsar sites).
 - 2km around the site for sites of National or Regional Importance (e.g. Sites of Special Scientific Interest (SSSIs))
 - 1km around the site for sites of County Importance (e.g. Biological Heritage Sites (BHS)) and species records (e.g. protected, Local Biodiversity Action Plan (LBAP) or notable species).

Habitats/Flora

- 4.3 The survey was based on the standard Extended Phase 1 Habitat Survey Methodology as recommended by Natural England⁶, to identify specific habitats and features of ecological interest.
- 4.4 Habitats were marked on a base plan and where appropriate, target notes made, where appropriate. An inspection of the Site for the presence of any invasive weed species covered under the Weed Act 1959⁷ was also carried out. Features such as trees were considered with regard to their ecological value and potential to provide suitable habitats for protected species.
- Consideration was given to the presence of invasive species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) (WCA) and under the Weed Act 1959. Any rare or notable flora including those listed as priorities in the Post 2010 UK Biodiversity Framework⁸, species listed under the NERC Act, Local Biodiversity Action Plan (LBAP) Priority Species/Habitats, any IUCN Red listed⁹, Red Data Book (RDB)¹⁰ and any national, regional, county or vice-county rarities were duly noted.
- 4.5 Where feasible, target notes and species lists were compiled for individual areas and assessments of abundance were made using the DAFOR scale. Vascular plant nomenclature follows Stace (2010)¹¹. Whilst the species lists collected should not be regarded as exhaustive, sufficient

3 [Online]. <http://magic.defra.gov.uk/>

4 [Online]. www.ordnancesurvey.co.uk

5 [Online]. www.maps.google.co.uk

6 JNCC. (1990). Handbook for Phase 1 habitat survey – a technique for environmental audit. Peterborough: JNCC

7 Act of Parliament. (1959). The Weed Act 1959. London: HMSO.

8 JNCC and Defra (on behalf of the Four Countries' Biodiversity Group). 2012. UK Post-2010 Biodiversity Framework. July 2012

9 International Union for Conservation of Nature (IUCN), Red List 2012

10 The Vascular Plant Red Data List for Great Britain (2005), Cheffings, C. and Farrell, L. (Eds)

11 Stace, C.A. (2010). New Flora of the British Isles. (3rd Ed.). Cambridge: Cambridge University Press

information was gained during the survey to enable classification and assessment of broad habitat types and identify features of interest.

Hedgerows

- 4.6 In addition, hedgerows were surveyed using the Hedgerow Evaluation and Grading System (HEGS)¹². This method of assessment includes noting down canopy species composition, associated ground flora and climbers, structure of the hedgerow including height, width and gaps, along with associated features such as; the number and species of mature trees, banks, ditches and grass verges.
- 4.7 Each hedgerow was given a grade using HEGS with the suffixes '+' and '-', representing the upper and lower limits of each grade respectively. These grades represent a continuum on a scale from 1+ (the highest score and denoting hedges of the greatest nature conservation priority) to 4- (representing the lowest score and hedges of the least nature conservation priority) as follows:

Grade 1 – High to very high value;

Grade 2 – Moderately high to high value;

Grade 3 – Moderate value;

Grade 4 – Low value.

Hedgerows graded 1 or 2 are considered to be a priority for nature conservation.

- 4.8 Hedgerows were broadly assessed against the Wildlife and Landscape criteria contained within The Hedgerow Regulations 1997 to determine whether they qualified as 'Important Hedgerows'. This was achieved using a methodology in accordance with both the Regulations and DEFRA guidance. It should be noted that hedgerows may also qualify as Important under the Archaeology and History criteria of the Hedgerow Regulations 1997 Act, which is beyond the scope of this assessment.

Habitat Condition Assessments

- 4.9 Defra has developed a metric, version 3.0, based on evaluating each individual habitat's value. All habitats/habitat compartments onsite have been assessed using the technical guidance document¹³ provided by Defra for use with this biodiversity metric. The guidance provides a list of criteria for a range of broad habitat types which are used to determine whether habitat fall into a 'poor', 'moderate' or 'good' condition score.

Fauna

- 4.10 During the extended phase 1 habitat survey, observations, identification and signs of any species protected under the following list of Acts and Regulations (collectively referred to herein as 'Protected Species') were recorded:
- Schedule 1 of the Wildlife and Countryside Act 1981 (as amended);

¹² Clements, D. & Toft, R. (1992). Hedgerow Evaluation and Grading System (HEGS) – a methodology for the ecological survey, evaluation and grading of hedgerows. Countryside Planning and Management

¹³ Natural England. (2021). Biodiversity Metric 3.0 Auditing and accounting for Biodiversity User Guide. [online] file:///C:/Users/KAW2/Downloads/Biodiversity%20Metric%203.0%20User%20Guide.pdf

- The Protection of Badgers Act 1992;
 - The Conservation of Habitats and Species Regulations 2019 (Amendment) (EU Exit)
- 4.11 Consideration was also given to the existence and use of the Site by other fauna listed as one or more of the following (collectively referred to herein as 'Notable Species'):
- Species of Principal Importance (SPI) for the conservation of biodiversity in England on the Natural Environment and Rural Communities (NERC) Act, Section 41 (S41);
 - Species listed on any Local Biodiversity Action Plan (LBAP) initiatives; and
 - Red Data Book (RDB) species.
- 4.12 The phase 1 habitat survey identified suitability for a range of protected species surveys as detailed within this report. Consequently, further survey for a range of species groups was undertaken throughout the course of the 2021/2022 survey season.
- 4.13 Reptile surveys have been completed and the results are discussed in this report, where methodologies followed Froglife Advice Sheet 10: Reptile Survey Methods¹⁴. Full details of reptile survey methodologies are provided in *Appendix B*.
- 4.14 The following provides a summary of the protected species programme currently underway. Details of survey methodologies are provided in *Appendix B* with full details and results of surveys.
- Bat Activity Surveys – Monthly transect and automated static detector surveys undertaken from August to October 2021. These surveys are being undertaken in accordance with the *Bat Surveys for Professional Ecologists: Good Practice Guidelines*¹⁵ for sites of moderate suitability for commuting and foraging bats.
 - Riparian Mammal Surveys – One survey completed in September 2021, which followed the Water vole mitigation handbook¹⁶, Water Vole Field Signs and Habitat Assessment¹⁷, New Rivers and Wildlife Handbook¹⁸ and details within Channin (2003)¹⁹.
 - Dormouse Surveys – One survey per month from August to November 2021. This is in accordance with current good practice guidelines (Bright, Morris and Mitchell-Jones) 2006²⁰.
 - Wintering Bird Surveys – completed in November 2021, December 2021, and January 2022 with one programmed for February 2022. In accordance with Winter Farmland Bird Survey as used for the British Trust for Ornithology (BTO)^{21,22}.

Survey Limitations

- 4.15 This assessment aims to provide baseline ecological data for the Site and as such presents an overview of the habitats and features present. Due to the transient and complex nature of

¹⁴ Froglife (1999) Froglife Advice Sheet 10: reptile survey. Froglife, London

¹⁵ Bat conservation Trust (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines, Bat Conservation Trust, London

¹⁶ Dean, M., Strachan, R., Gow, D & Andrews, (2016) The Water Vole Mitigation Handbook. The Mammal Society Guidance Series. Eds F. Matthews & P. Chanin. The Mammal Society, London.

¹⁷ Dean, M., (2021), Water Vole Field Signs and Habitat Assessment: A Practical Guide to Water vole Surveys, Pelagic Publishing

¹⁸ RSPB, the National Rivers Authority, and the RSNC 1994

¹⁹ Channin, P (2003) Ecology of the European Otter. Conserving Natura 2000 Rivers Ecology Series No. 10. English Nature, Peterborough

²⁰ Bright PW, Morris PA and Mitchell-Jones A (2006) Dormouse Conservation Handbook, 2nd Edition. English Nature, Peterborough.

²¹ Bibby, C.J., N.D. Burgess & D.A. Hill (1992): Bird Census Techniques. London: Academic Press

²² Gilbert, G., Gibbons, D.W., and Evans, J. (1998). Bird Monitoring Methods: a manual of techniques for key UK species. RSPB, Sandy

ecosystems, no investigation can provide a complete representation or prediction of the natural environment present, however every effort has been made to ensure an accurate description of the Site is presented following best practice guidance, experience and professional judgement.

- 4.16 Data provided by third party sources collated during the desk study, is generally made up from a wide range of sources including (but not limited to) those submitted by ecological consultancies, wildlife conservation organisations and volunteers. As such, this data is typically focused on areas of known nature conservation, and is reliant upon formal surveys having been undertaken within an area or the presence of an expert within the locality (particularly for invertebrate records) and as such this data can never be fully relied upon as a complete ecological dataset for any given area. Rather, this data is used as a guide to likely presence of notable ecological features and can never be relied upon for likely absence.
- 4.17 Some protected species surveys need to be completed in 2022, the assessment of the presence/likely absence and/or populations of protected/notable species has been compiled on the baseline surveys and desk studies completed, and the data collected to date provides an insight into the ecological features present onsite. This report aims to discuss initial findings of surveys carried out and to provide an initial assessment on mitigation measures for protected species utilising a precautionary approach.
- 4.18 The Site boundary was extended in November 2022 to include an additional arable field in the north-west of the Site. This means that specific bat, reptile, dormouse and riparian mammal surveys were not undertaken in this area, however as adjoining areas have been surveyed such data has been extrapolated to this north western area based on the habitats present.
- 4.19 The data from the bat static detectors installed in October 2021 recorded on different nights as one of the original statics failed and so this was replaced on 27th October and recorded successfully. This is not considered to be a constraint as data was successfully gathered along the central hedgerow and can therefore inform this assessment.

5.0 RESULTS

Desk Study (Figure 1)

Statutory Sites

Internationally Designated Sites of Nature Conservation Importance

- 5.1 Six internationally designated sites are present with 15km of the Site, some have multiple overlapping designations including those of a national statutory basis e.g. SSSI. Of these the closest is Pagham Harbour SPA / Ramsar / SSSI which is c. 10.6km southwest, meaning the site is outside the 5km zone of influence as identified by the Arun District Council Local Plan, Policy ENV DM2²³.
- 5.2 All other designated sites are over 11km from the Site, further details including reasons for designation are provided in *Table 1* below and can be seen in *Figure 1*.

Table 1: Statutory Sites of International Conservation Value within 15km of the Site

Site Name	Designation	Approximate Distance & Direction from Site	Summary Description
Statutory			
Solent and Dorset Coast	SPA	0.5km S	The site is located along the coasts of Dorset, Hampshire, Isle of Wight and West Sussex and adjacent areas offshore. It overlaps, abuts and is close to many designated areas. The site regularly supports more than 1% of the Great Britain breeding populations of three species listed in Annex I of the Birds Directive including sandwich tern <i>Sterna sandvicensis</i> , common tern <i>Sterna hirundo</i> and little tern <i>Sternula albifrons</i> .
Pagham Harbour	SPA / Ramsar / SSSI	10.6km SW	The site comprises an area of eustarine basin with extensive saltmarsh and intertidal mud-flats, surrounded by lagoons, reed swamp and wet grassland. The mud flats are rich in invertebrates and are important habitats for wintering wildfowl and waders including Ruff and Pintails as well as breeding birds including Little Tern.
Duncton to Bignor Escarpment	SAC / SSSI	11.6km N	An example of mature beech woodland on a steep scarp face with all stages of succession present. A rare fern, snail and a notable moth community have all been recorded.
Arun Valley	SAC / SPA / Ramsar	12.1km NE	An extensive area of grazing marsh dissected by drainage ditches which support a rich flora and a diverse community of breeding birds. Several uncommon invertebrates are also present including the Annex II species, Ramshorn snail, which is a primary reason for the designation of the site.
Chichester and	SPA / Ramsar / SSSI	15km W	Large estuarine basin with extensive mud and sandflats. Supports internationally important numbers of certain

²³ Arun District Council. (2018). Arun Local Plan 2011 to 2031. [online] <https://www.arun.gov.uk/download.cfm?doc=docm93jjm4n12863.pdf&ver=13003>

Site Name	Designation	Approximate Distance & Direction from Site	Summary Description
Langstone Harbours			wildfowl / waders including ringed plover, redshank, dunlin, curlew, shelduck, teal and greenshank. The wide range of habitats present supports important plant communities.
Solent Maritime	SAC	15km W	Major estuarine system with a complex of marine and estuarine habitats including Annex 1 habitats (Estuaries, Spartine swards and Atlantic salt meadows) which are the primary reasons for designation

Nationally Designated Sites of Nature Conservation Importance

- 5.3 No nationally designated statutory sites of nature conservation importance were located within the 2km search area.

Non-Statutory Sites

- 5.4 There is one Local Wildlife Site (LWS), Elmer Rocks LWS, located 410m south within a 1km search radius of the Site. This LWS is designated for supporting vegetated shingle, an internationally rare habitat. The intertidal area supports a diverse community including intertidal sand and eight 'rock islands' constructed in the early 1990s in the mid-tide zone to form a coastal defence against the eroding coastline. The rock islands have provided a habitat type that is very rare, if not unique, in West Sussex.

Protected/Notable Species

- 5.5 A number of species records were returned from the SBRC as summarised in *Table 2* and can be seen in *Figure 1*.

Table 2: Desktop Study Results, Protected and Notable Species Records

Species	Conservation Status	Approx. Location Relative to Site
Bats		
Bat species	Hab Reg Sch2, WCA Sch5, NERC S41	One record 814m NW
Brown Long-eared Bat <i>Plecotus auritus</i>	Hab Reg Sch2, WCA Sch5, NERC S41	Two records, closest 45m S
Common Pipistrelle <i>Pipistrellus pipistrellus</i>	Hab Reg Sch2, WCA Sch5, NERC S41	Multiple records, closest 45m S
Daubenton's Bat <i>Myotis daubentonii</i>	Hab Reg Sch2, WCA Sch5	Two records, closest 45m S
Long-eared bat Species <i>Plecotus sp.</i>	Hab Reg Sch2, WCA Sch5, NERC S41	One record 495m W
Myotis Species <i>Myotis sp.</i>	Hab Reg Sch2, WCA Sch5, NERC S41	Three records, closest 45m S
Natter's Bat <i>Myotis nattereri</i>	Hab Reg Sch2, WCA Sch5	Two records closest 45m S
Noctule <i>Nyctalus noctule</i>	Hab Reg Sch2, WCA Sch5, NERC S41	One record 45m S
Nyctalus Species <i>Nyctalus sp.</i>	Hab Reg Sch2, WCA Sch5, NERC S41	Two records, closest 45m S
Pipistrelle Species <i>Pipistrellus sp.</i>	Hab Reg Sch2, WCA Sch5, NERC S41	Two records closest 45m S

Serotine <i>Eptesicus serotinus</i>	Hab Reg Sch2, WCA Sch5, NERC S41	Multiple records, closest 45m S
Soprano Pipistrelle <i>Pipistrellus pygmaeus</i>	Hab Reg Sch2, WCA Sch5, NERC S41	Three records, closest 45m S
Western Barbastelle <i>Barbastella barbastellus</i>	Hab Reg Sch2, WCA Sch5, NERC S41	One record, 45m S
Whiskered Bat <i>Myotis mystacinus</i>	Hab Reg Sch2, WCA Sch5	Two records, closest 45m S
Whiskered/Brant's <i>Myotis mystacinus/brandtii</i>	Hab Reg Sch2, WCA Sch5	One record, 669m NE
Mammals (Excluding Bats)		
European Water Vole <i>Arvicola amphibius</i>	WCA Sch5, NERC S41	One historical record (1997) adjacent to south-western boundary
West European Hedgehog <i>Erinaceus europaeus</i>	NERC S41	Multiple records, closest 60m S
Birds		
Cuckoo <i>Cuculus canorus</i>	NERC S41	One record 400m SW
House Sparrow <i>Passer domesticus</i>	NERC S41	One record 254m W
Amphibians and Reptiles		
Common Frog <i>Rana temporaria</i>	WCA Sch5	One record 146m S
Slow-worm <i>Anguis fragilis</i>	WCA Sch5, NERC S41	Two records, closest 125m S
Palmate Newt <i>Lissotriton helveticus</i>	WCA Sch5	One record 146m S
Great Crested Newt <i>Triturus cristatus</i>	Hab Reg Sch2, WCA Sch5, NERC S41	Multiple records, closest 880m NE
Plants		
Jersey Cudweed <i>Gnaphalium luteoalbum</i>	WCA Sch8	One record 61m SW
Key: NERC S41 – Natural Environment & Rural Communities Act 2006 Section 41, Hab reg Sch2 – Conservation of Habitats & Species Regulations 2019 (Amendment) Schedule 2, WCA – Wildlife & Countryside Act 1981.		

- 5.6 A number of species of moth protected under NERC S41 were also returned from SxBRC; these included knot grass *Acronicta rumicis*, green-brindled vrescent *Allophytes oxyacanthae*, mottled rustic *Caradrina Morpheus*, sallow *Cirrhia icteritia*, small emerald *Hemistola chrysoprasaria* and dark spinach *Pelurga comitata*. For clarity these have been plotted in *Figure 1*.

Habitats/Flora

- 5.7 The locations of the habitats described below are illustrated in *Figure 2: Phase 1 Plan*. A botanical species list is provided in *Appendix C*.

Arable

- 5.8 The Site was dominated by four field compartments, the majority of which comprised a winter sown cereal crop and one field comprised oilseed rape *Brassica napus*.

Arable Field Margins

- 5.9 The arable margins varied in width (1m – 5m) and quality with some margins consisting of a few ruderal species compared with the eastern margins of the southern field which were species rich and classify as a Habitat of Principal Importance (HPI) under Section 41 of the NERC Act 2006.
- 5.10 The small cereal crop compartment in the southeast of the Site supported the most diverse margins, especially along its eastern edge. Red fescue *Festuca rubra* was the abundant grass within these more species-rich margins with frequent cock's-foot *Dactylis glomerata* and occasional

Italian ryegrass *Lolium multiflorum*. The Site is under an agri-environment scheme and the species rich margins appeared to have been seeded with an arable margin seed mix of some description, with a range of herbaceous species characteristic of arable field margins including occasional common poppy *Papaver rhoeas*, sainfoin *Onobrychis viciifolia* and cornflower *Centaurea cyanus*. Common bird's-foot trefoil was locally frequent while corn marigold *Chrysanthemum segetum* and kidney vetch *Anthyllis vulneraria* were rarely encountered.

Priority Deciduous Woodland

- 5.11 The woodland along the western, eastern and southern edges of the southern field was a HPI deciduous woodland with a wide range of tree species. The canopy was made of species such as pedunculate oak *Quercus robur*, ash *Fraxinus excelsior*, lime *Tilia* sp. and horse chestnut *Aesculus hippocastanum* whilst the understorey consisted of species such as sycamore *Acer pseudoplatanus*, hazel *Coryllus avellana*, holly *Ilex aquifolium*, field maple *Acer campestre* and yew *Taxus baccata*.
- 5.12 The ground layer consisted of a range of species and was dependent on light levels. A footpath ran through the centre of the woodland. Where heavily shaded, ivy *Hedera helix* dominated compared with more open areas which included species such as hart's-tongue fern *Asplenium*, pendulous sedge *Carex pendula*, bramble *Rubus fruticosus* agg and stinking iris *Iris foetidissima*. The non-native invasive species montbretia *Cromosmia x crocosmiiflora* was noted in places along the southern boundary of the woodland.

Treelines

- 5.13 Many of the field boundaries were made up of tree lines as opposed to hedgerows. They included a range of ages from mature to sapling and abundant species included pedunculate oak, elder *Sambucus nigra*, field maple, sycamore and elm *Ulmus procera*. In damper areas, such as adjacent to ditches, alder *Alnus glutinosa* and crack willow *Salix fragilis* were dominant.

Tall Ruderal

- 5.14 An area in the northeast corner of the southern field was fenced off and consisted of tall ruderal vegetation. Abundant species included broad-leaved dock *Rumex obtusifolius*, common nettle *Urtica dioica*, creeping cinquefoil *Potentilla reptans*, common knapweed *Centaurea nigra*, teasel *Dipsacus fullonum* and *Buddleja* sp.
- 5.15 Along its southern extent, the banksides and tops of Ryebank Rife supported small patches of ruderal vegetation dominated by locally abundant great willowherb *Epilobium hirsutum* and common nettle with frequent cock's foot and false-oat grass *Arrhenatherum elatius*.

Dense Scrub

- 5.16 The southern/eastern margins of ditch D2 were dominated by dense scrub habitats comprising frequent bramble with occasional poplar *Populus* sp., aspen *Populus tremula*, hawthorn *Crataegus monogyna* and sycamore. This habitat continued southwards along Ryebank Rife where it abutted the southern woodland habitats.

Ditches

- 5.17 Ryebank Rife ran between the northern and southern fields and along the eastern boundary of the southern field. It was approximately 2-3m wide and very steep sided. At the time of the survey, there was some flow to the water, but it was shallow. The ditch itself contained very few aquatic or marginal, but common reed *Phragmites australis* was abundant. The banks were heavily vegetated with saplings of field maple, sycamore and elder, with bramble, common nettle, common hogweed *Heracleum sphondylium*, broad-leaved dock and creeping thistle *Cirsium arvense*.
- 5.18 Ditch D1 connected to Ryebank Rife in the south-east of the Site. As with Ryebank Rife, this was a steep sided ditch supported a narrow channel at the bottom with shallow water approximately 20cm deep on average. Furthermore, as with Ryebank Rife, the northern/western margins were largely dominated by tall ruderal vegetation with scattered patches of scrub. The southern/eastern margin was dominated by dense scrub vegetation described above.
- 5.19 Ditch D2 ran north eastwards off Ryebank Rife through the most northern field and it continued offsite towards A259. This was very heavily vegetated at the time of the survey. Similar species as Ryebank Rife were noted as well as meadowsweet, hedge bedstraw *Galium album* and meadow vetchling *Lathyrus pratensis*.
- 5.20 The remaining drainage ditches D3 and D4 were both dry and dominated by the surrounding hedgerow/woodland vegetation with limited marginal vegetation indicating that they were likely dry throughout most of the year. Ditch 3 was very shallow profile and was characterised more as a depression at the base of the hedgerow than a ditch. Ditch D4 within the woodland along the western boundary was dry at the time of the survey, which had a shallow profile, approximately 0.5m deep and 1m wide. There was little vegetation in the channel itself due to its shaded position within the woodland. However, the banks were covered with ivy and hart's-tongue fern *Asplenium scolopendrium*.

Species Poor Semi-Improved Grassland

- 5.21 A small compartment of species-poor semi-improved grassland is present in the north western corner of the north western field compartment. This was dominated by coarse species and is represented by an outgrown field corner alongside a planted hedgerow. This habitat is of limited coverage and diversity.

Hedgerows

- 5.22 There were four hedgerows onsite, all of which contain over 80% native species and qualify as a HPI.
- 5.23 Under the HEGs criteria two hedgerows (H3 and H4) were assessed as having moderately high to high value and two (H1 and H2) were moderate value. One hedgerow (H4) was classified as important under the Wildlife and Landscape criteria of the Hedgerow Regulations 1997 due to the number of woody species recorded.
- 5.24 Details of the hedgerow' composition, structure and associated features are summarised in *Table 3* below including their assessment against the HEGS.

Table 3: Hedgerow Evaluation

Ref	Canopy Sp.	Length (m)	Notes	HEGS Value and Score	Important Under REGS / Average Species per 30m
H1	<i>Ag, Cm, Fe, Sfra, Sn</i>	150	Hedge along ditch and between arable fields. No standard trees, one connection, gap present.	-3 Moderate value	Not important 5sp/30m
H2	<i>Fs, Sfra, Cm, Ag</i>	482	Hedgerow bisecting large arable fields in the south of the Site	3+ Moderate Value	Not important
H3	<i>Cm, Qr, Bp, Ps, Rf, Rc, Ca, Scap</i>	25	Small section of planted hedge at the entrance to the northwestern field from the A259	-2 Moderately High to High Value	Not important
H4	<i>Cm, Qr, Bp, Ps, Rf, Rc, Ca, Scap, Prsp, Sfra, Ac, Ug, Ag</i>	740	Planted hedge along the A259 on the northern boundary of the north western arable field	2 Moderately High to High Value	Important (8sp/30m)

Key to hedgerow species: *Ag* – *Alnus glutinosa* (Alder), *Ac* – *Acer campestre* (field maple), *Bp* – *Betula pendula* (Silver birch), *Cm* – *Crataegus monogyna* (Hawthorn), *Fe* – *Fraxinus excelsior* (Ash), *Fs* – *Fagus sylvatica* (Beech), *Ps* – *Prunus spinosa* (Blackthorn), *Prsp* – *Prunus* sp. (A Cherry), *Qr* – *Quercus robur* (Pedunculate oak), *Rc* – *Rosa canina* (Dog Rose), *Rf* – *Rubus fruticosus* (Bramble), *Sn* – *Sambucus nigra* (Elder), *Scap* – *Salix caprea* (Goat willow), *Sfra* – *Salix fragilis* (Crack Willow), *Ug* – *Ulmus glabra* (Wych Elm).

Fauna

Badgers

- 5.25 No records of badger were provided from within the search area by SBRC and no evidence of badger was recorded onsite during the surveys. This species does not currently pose a constraint to the proposals and is not considered further in this report.

Great Crested Newts (GCN)

- 5.26 No ponds were present onsite. The Ryebank Rife runs through the centre of the Site and is choked with vegetation and dry in places, which reduced flow with some pools of 20cm deep water. The state of these ditches will need to be reassessed during the breeding period (March to June), to gauge if there are suitable conditions present.
- 5.27 The majority of the arable habitats onsite providing little opportunities for foraging or areas of rest of shelter, although the hedgerows and woodland could provide this.
- 5.28 Examination of the OS map and aerial photos identified two offsite ponds within a 250m radius of the Site (*Figure 3*). Pond P1 is present 25m south of the northern western field compartment, separated from the Site by scrub, tussock grassland and the Ryebank Rife. Pond P2 is situated approximately 175m south within the existing residential development, where this is a garden pond separated by a number of gardens, properties and road infrastructure. There were no consultation

records of GCN in either of these ponds, with the nearest record to Site located 880m northeast from the eastern boundary (1.8km east from P1 and 2.1km north-east of P2), separated by arable fields. Based on the lack of records and the separation of the ponds, accompanied by the poor terrestrial habitats within the Site, this species is thought to be absent. Although presence/likely absence surveys in 2022 will confirm this.

Bats

General Habitat Suitability

- 5.29 The deciduous woodland, hedgerows, treelines and Ryebank Rife provided foraging and commuting opportunities for bats.

Roosting Habitat

- 5.30 There were no buildings present onsite.
- 5.31 A total of 37 trees along the boundaries of the woodland and within hedgerows were identified as providing opportunities to support roosting bats during ground tree assessment survey conducted in October and November 2021. Locations of these trees are shown on *Figure 2* and details are summarised in *Table 4* with further details provided in *Appendix D*.
- 5.32 These were classified as having high, moderate, or low bat roost suitability, of which 19 trees were assessed as having low; 15 moderate and three high roosting potential.

Table 4: Trees with Bat Potential 2021

Roost Suitability	Ecology Tree Reference
Low	T1, T5, T8, T10, T13, T16, T18, T23, T25, T26, T27, T29, T31, T32, T33, T34, T35, T36, T37.
Moderate	T2, T3, T4, T6, T7, T9, T11, T12, T14, T19, T20, T22, T24, T28, T30.
High	T15, T17, T21.

Activity Transect Surveys

- 5.33 Activity transect surveys have been completed in August, September and October 2021. Bat activity was recorded from nine different bat species/species groups (see *Table 5* and *Figures 4, 5 and 6*).
- 5.34 The majority of activity occurred along the western and southern boundaries of the site, by the woodland edges, along the treelines by the Ryebank Rife and treeline on the eastern boundary.

Table 5: Activity Transect Surveys Summary

Date	Total Contacts	Species Recorded (no. contacts)	Activity Summary
31 st August 2021 <i>Figure 4</i>	18	Common Pipistrelle (10) <i>Myotis</i> sp. (3) Soprano Pipistrelle (2) Serotine (1) <i>Nyctalus</i> sp. (1) Barbastelle (1)	Bats were recorded during point counts D, F and H. The majority of contacts and the only bats observed foraging were located along the eastern boundary of the Site by T4 and along the treeline south of the Ryebank Rife.
20 th September 2021 <i>Figure 5</i>	30	Common Pipistrelle (13) Barbastelle (6) <i>Nyctalus</i> sp. (5) Soprano Pipistrelle (4) <i>Myotis</i> sp. (1) <i>Pipistrelle</i> sp. (1)	Contacts occurred during point counts C, E, G and H. Single passes were recorded from <i>Myotis</i> sp. and pipistrelle sp. The majority of contacts occurred along the western boundary of the Site, by the woodland edge and dense scrub.
19 th October 2021 <i>Figure 6</i>	27	Common Pipistrelle (12) Soprano Pipistrelle (8) Nathusius' Pipistrelle (3) <i>Nyctalus</i> sp. (3)	The majority of the activity was mainly located by woodland edge on the western and southern boundaries of the Site. Three foraging bats were also recorded in the northern field compartment by the Ryebank Rife. Notably three Nathusius' pipistrelles were recorded foraging onsite.

Automated Static Bat Detector Surveys

- 5.35 Six static bat detectors have been deployed onsite to complement the bat activity transect, two during each survey. A total of eleven different species/species groups were recorded by the static detectors. The most frequently recorded bat species were common pipistrelle (NERC S41) species, which comprised 62.89% of the activity recorded. Other species/species groups recorded in low numbers comprised *Myotis* sp (13.33%), soprano pipistrelle (NERC S41, 12.92%), barbastelle *Barbastella barbastellus* (NERC S41/Annex II, 4.06%), noctule (NERC S41, 2.25%), serotine (NERC S41, 1.39%), *Nyctalus* species (1.31%), *Plecotus* species (0.92%), Nathusius pipistrelle (0.48%), *Pipistrellus* species (0.43%) and *Nyctalus/Eptesicus* species (0.01%). The majority of activity occurred along the southern woodland boundary, where a total of 5338 registrations were recorded.
- 5.36 Over the total six statics, barbastelle bats were recorded on five statics with a peak of 106 registrations along the Ryebank Rife. This is an of Annex II species, meaning it is a less commonly encountered in the UK.
- 5.37 *Table 6* below summarises the activity levels recorded and the locations for each of the units deployed, which can be seen in *Figures 4, 5 & 6*.

Table 6: Automated Static Surveys Summary

Survey Period	Unit Reference/ Location	Total Registrations Over Five Nights	Species Recorded (in order of abundance and total number of registrations)	Summary of Activity	Annex II Species
25 th – 30 th Aug 2021	A – Northern boundary parallel to Grevatt's Lane	532	10 Species/species groups: - Common Pipistrelle (232) - Soprano Pipistrelle (136) - <i>Nyctalus</i> sp. (52) - Noctule (33) - <i>Myotis</i> sp. (32) - Barbastelle (31) - Serotine (13) - Nathusius' Pipistrelle (1) - Pipistrelle sp. (1) - Long-eared sp. (1)	Common and soprano pipistrelles were recorded throughout the night, each night and accounted for the majority of registrations. <i>Nyctalus</i> sp. were also recorded on every night, with the majority recorded between 20:00 and 22:00. Noctules and <i>Myotis</i> sp. were recorded on three nights, with the latter recorded in low numbers throughout the night. Serotines were recorded in low numbers on four night, with the majority of registrations recorded between 20:00 and 21:00.	Barbastelles were recorded every night the static was deployed, with the majority of registrations recorded between 03:00 and 04:00. The most barbastelle registrations in a single night was 13 which occurred on the fourth night.
25 th – 30 th Aug 2021	B – Western boundary within edge of broadleaved woodland	186	7 Species/species groups: - Barbastelle (84) - Common Pipistrelle (67) - Soprano Pipistrelle (14) - <i>Myotis</i> sp. (12) - Serotine (5) - <i>Nyctalus</i> sp. (2) - <i>Nyctalus/Eptesicus</i> sp. (2)	Common and soprano pipistrelles were recorded throughout the night, every night. <i>Myotis</i> sp. were also recorded on every night of the survey but more sporadically throughout the evening. Serotine registrations were all recorded on the final night between 21:00-22:00 and 02:00-3:00. <i>Nyctalus</i> sp. and <i>Nyctalus/Eptesicus</i> sp. were recorded on two nights.	Barbastelles were the most frequently recorded species, on four of the five nights. Most registrations occurred between 23:00 and 02:00 over the survey period, with the peak count of 48 registrations on the final night.
20 th – 25 th Sept 2021	C – Southern boundary within edge of broadleaved woodland	5377	11 Species/species groups: - Common Pipistrelle (3683) - <i>Myotis</i> sp. (705) - Soprano Pipistrelle (705) - Pipistrelle sp. (107) - Long-eared sp. (55) - Barbastelle (49) - Nathusius' Pipistrelle (29) - <i>Nyctalus</i> sp. (28) - Serotine (8) - Noctule (8) - <i>Nyctalus/Eptesicus</i> sp. (2)	Common pipistrelles activity peaked between 20:00 and 23:00 and on the final two nights of recording. Similar numbers of <i>Myotis</i> sp. and soprano pipistrelle registrations were recorded throughout the night, each night. Pipistrelle sp., long-eared sp. and <i>Nyctalus</i> sp. were recorded every night in low numbers. Nathusius' pipistrelle was recorded on four nights of the survey with the most registrations recorded between 23:00 and 00:00. Low numbers of serotine, noctule and <i>Nyctalus/Eptesicus</i> sp. were recorded.	Barbastelles were recorded on four nights and registrations ranged from 20:00 to 03:00, with most activity recorded 22:00 - 23:00. Most barbastelle registrations (28) occurred on the fifth night.
20 th – 25 th Sept 2021	D – Treeline south of Ryebank Rife	525	9 Species/species groups: - Common Pipistrelle (308) - Barbastelle (106) - <i>Myotis</i> sp. (64) - <i>Nyctalus</i> sp. (14)	Common pipistrelles made up over half of recordings and were recorded on all five nights, with most registrations recorded between 19:00 – 22:00.	Barbastelle were recorded on four nights of the survey with most (82) registrations being recorded on the first night and the lowest number (4) on the fourth night. The most

Survey Period	Unit Reference/ Location	Total Registrations Over Five Nights	Species Recorded (in order of abundance and total number of registrations)	Summary of Activity	Annex II Species
			- Soprano Pipistrelle (12) - Pipistrelle sp. (9) - Serotine (6) - Nathusius' Pipistrelle (5) - Long-eared sp. (1)	<i>Myotis</i> sp, <i>Nyctalus</i> sp. and soprano pipistrelles were also recorded every night, with the latter two recorded mostly in the first half of the evening. Serotines and Nathusius' pipistrelle were recorded sporadically on three nights of the survey. Pipistrelle sp. and long-eared sp. were only recorded on one night.	registrations were recorded between 01:00 – 02:00 over the survey period.
19 th – 26 th Oct 2021	E – Eastern boundary within edge of broadleaved woodland	127	6 Species/species groups: - Common Pipistrelle (58) - <i>Myotis</i> sp. (52) - Soprano Pipistrelle (8) - Barbastelle (7) - <i>Nyctalus</i> sp. (1) - Long-eared sp. (1)	Bats were recorded on four nights while the detector was deployed. Common pipistrelles were recorded throughout the night over the survey period with a peak of 28 registrations on the final night. <i>Myotis</i> sp. had a peak of 23 registrations on the third night, with most registrations recorded between 19:00 and 20:00. Low numbers of soprano pipistrelles, <i>Nyctalus</i> sp. and long-eared sp. were recorded.	Barbastelle registrations were recorded in low numbers on two nights with sporadic recording between 22:00 – 05:00.
27 th Oct – 1 st Nov 2021	F – Centre of hedgerow H2 in the middle of the Site	16	4 Species/species groups: - Common Pipistrelle (6) - Long-eared sp. (3) - Soprano Pipistrelle (1) - <i>Myotis</i> sp. (1)	Bats were only recorded during the third and fourth nights the static was deployed. Common pipistrelles were recorded on both of these nights between 18:00 – 23:00. Long-eared sp. were recorded on the fourth night with a single registration between 20:00 – 21:00 and two registrations between 22:00 – 23:00. A single pass was recorded from both a soprano pipistrelle and <i>Myotis</i> sp.	No Annex II species were recorded.

Breeding Birds

- 5.38 Habitats onsite were considered suitable to support a range of common and widespread species, with hedgerows and scrub providing suitable breeding and foraging for generalist species including the robin *Erithacus rubecula*, blackbird *Turdus merula* and common and widespread tit/finch species recorded during the Phase 1 survey. The arable environs also provided suitable habitat for farmland birds including the skylark *Alauda arvensis* observed onsite, although no specific surveys were conducted.

Wintering Birds

- 5.39 The Site supports an assemblage largely comprising common and widespread species typical of the habitats present (*Figures 7, 8 and 9 and Appendix E*). The interiors of arable fields support some suitability for foraging farmland birds but only small numbers of overwintering skylark *Alauda arvensis* (NERC S.41, BoCC red list), linnet *Linaria cannabina* (NERC S.41, BoCC red list) and meadow pipit *Anthus pratensis* (BoCC amber list) are present. Congregations of black-headed gull *Chroicocephalus ridibundus* (Amber list) and small numbers of herring gull *Larus argentatus* (NERC S.41, BoCC Red list) also make use of the open arable fields for foraging/roosting. A small number of snipe *Gallinago gallinago* (BoCC amber list) were also recorded within the arable fields during the January survey. Arable field interiors and margins also provide foraging opportunities for kestrel *Falco tinnunculus* (BoCC amber list) and sparrowhawk *Accipiter nisus* (BoCC amber list).
- 5.40 Woodland, hedgerow and scrub habitats support a generalist/woodland bird assemblage comprised of common and widespread species. Congregations of wintering thrushes have been identified onsite including fieldfare *Turdus pilaris* (WCA Sch1, BoCC red list), redwing *Turdus iliacus* (WCA Sch1, BoCC amber list) and song thrush *Turdus philomelos* (NERC S.41, BoCC amber list). Other notable species recorded in these habitats included dunnock *Prunella modularis* (NERC S.41, BoCC amber list) and wren *Troglodytes troglodytes* (BoCC amber list).
- 5.41 Other notable species recorded overflying the Site include starling *Sturnus vulgaris* (NERC S.41, BoCC red list), stock dove *Columba oenas* (BoCC amber list) and grey wagtail *Motacilla cinerea* (BoCC amber list).
- 5.42 During a separate site visit undertaken on 26th January 2022 eleven dark bellied brent geese *Branta bernicla bernicla* were observed foraging/loafing in the southern field. This species was seen again in the same area during the second site visit on 31st January 2022 with 13 geese observed briefly loafing (observed for 10 minutes) before leaving the site and flying southwards towards the coast.
- 5.43 The assemblage of winter birds regularly present onsite were considered to be typical of the habitats present onsite and no significant populations of notable species were recorded.

Dormice

- 5.44 There were no consultation results of dormice within 1km radius, however the deciduous woodland, hedgerows and scrub habitats onsite offered suitability as foraging and commuting potential for dormice. Nesting tube surveys in September, October and November 2021, recorded no dormice (see *Figure 10*).

Reptiles

- 5.45 The habitats on site were generally considered to be sub-optimal for reptiles due to the large amounts of arable habitat which dominated the Site. The deciduous woodland, hedgerow bases, scrub, and tall ruderal around the peripheries of the Site provided some structural diversity for basking, commuting and foraging.
- 5.46 Reptile refugia were deployed onsite in 2021 in suitable positions as shown in *Figure 11*. Seven reptile surveys were undertaken during September and October 2021, with a low population of slow worm (peak count of three adults) and common lizard (peak of three adults) recorded. Survey results are summarised in *Table 7*.

Table 7: 2021 Reptile Survey Results

Date	Slow Worm		Common Lizard	
	Adult	Juvenile	Adult	Juvenile
13 th September 2021	1	-	1	-
17 th September 2021	2	2	1	3
20 th September 2021	-	-	2	1
24 th September 2021	3	2	3	1
27 th September 2021	2	1	1	-
5 th October 2021	1	-	2	-
11 th October 2021	3	-	-	-

Riparian Mammals

- 5.47 The consultation data returned a single historical record (1997) of water vole within the Rybank Rife in the north-western extent of the Site with no records of otters. The Ryebank Rife and onsite drainage ditches offered some foraging opportunities but this is limited to a few species that would not necessarily be enough for year around.
- 5.48 A riparian mammal survey was undertaken on 17th September 2021. Ditch locations are provided in *Figure 3* and a detailed description is provided in paragraphs 5.17 – 5.20.
- 5.49 The Ryebank Rife and a network of ditches ran across and alongside field boundaries. The majority of the onsite ditches were dry. The Ryebank Rife was slow flowing and levels were reflected in the degree of rainfall received, there were small pool created that were around 20cm depth at the time of survey, this is unlikely to provide sufficient water to elude predators. The Rife profiles were similar across the Site, being approximately 1 – 1.5m deep with very steep sloping banks and channel widths of approximately 0.5m. All the ditches were choked by ruderal and scrub vegetation, suppressing the aquatic and marginal vegetation within the channels. In limited areas that were devoid of woody vegetation, the ditches supported some limited amounts of aquatic vegetation, largely restricted to common duckweed and fool's watercress.
- 5.50 The channels were subjected to riparian mammal surveys where no evidence of water voles or otters were recorded.

6.0 DISCUSSION AND RECOMMENDATIONS

- 6.1 The proposals have been assessed against the current ecological baseline to review the potential impacts anticipated and to provide recommendations for mitigation, compensation and/or ecological enhancement where appropriate. This report aims to provide an early assessment based on surveys undertaken and employing a precautionary approach where data set are incomplete. The assessment of impacts and recommendations for mitigation are based on proposals for the development (Land Use Parameters Plan Drawing).

Desk Study

Statutory Designated Sites

Internationally Designated Sites of Nature Conservation Importance

- 6.2 Owing to the recreation nature of the proposals, and the distance between the Site and the European designated sites and the absence of any residential dwellings, there will be no adverse recreational impacts on these designations.
- 6.3 The closest internationally designated site is the Solent and Dorset Coast SPA which is located c. 0.5km south of the Site. The Site falls outside of the nitrate vulnerability zone for the area. The Ryebank Rife joins a ditch network that eventually discharges into the sea to the south of the Site. The outfall into the sea is approximately 650m east of the Solent and Dorset SPA designation. The existing land use of the Site is arable which is regularly ploughed exposing the earth, which aids in the rate of leaching into Rife. The golf course will provide large areas of permanent habitat coverage with grassland, scrub and tree planting, which will absorb and minimise runoff of water and nutrients; this will result in a betterment of the water quality in the Rife and at the point of discharge into the sea, thus not affecting the foraging resources for designated species at the SPA.
- 6.4 During the construction phase temporary drainage measures will be implemented to ensure sediment and increases in water levels do not increase pre-development rates. Measures will be implemented within a Construction Environmental Management Plan (CEMP) where Guidance for Pollution Prevention (GPPS) and Pollution Prevention Guideline (PPG) will be followed.
- 6.5 The next closest internationally designated site is Pagham Harbour SPA/SAC/SSSI, which is located c. 10.6 km to the south west of the Site. The zone of influence for Pagham Harbour is stated as 5km within the Arun Valley Local Plan (Policy ENV DM2), and therefore, as the Site lies outside of the zone of influence, consequently no significant impacts are predicted upon this SPA/SAC/SSSI. This is further strengthened by the proposals not being residential, but purely recreational, whereby users are unlikely to visit Pagham Harbour.
- 6.6 Four other internationally designated sites were identified within the 15km search area, however, as the Site is at least 11km from any of them and is outside of their zone of influence, no significant impacts are expected from the proposed golf course development.

Non-Statutory Designated Sites

- 6.7 As above, due to the recreational nature of the proposals, land use change and habitat creation, it is considered that proposals would not lead to an impact on the integrity of the Elmer Rocks LWS.

Habitats

- 6.8 The majority of habitats present within the Site are limited both in their range and diversity due to account of the Site's arable and managed nature.

Arable Field Margins

- 6.9 The HPI field margins were limited in extent and will be lost to facilitate the proposals, however, this will create a significant opportunity to increase the number of other beneficial habitats onsite.
- 6.10 The trading rules with the BNG calculation, see paragraph 6.21 below, cannot be met with regards to the loss of priority arable margin habitats identified within the Site. These farmland habitats cannot be fully maintained and new areas of such habitats will not be created, owing to the nature of the proposals. It is therefore considered that the provision of species rich grassland habitats, managed appropriately will provide a suitable offset, despite not satisfying the strict trading rules built into the metric, this will provide alternative positive gains.
- 6.11 Beneficial habitats will include areas of wetland created adjacent to the waterbodies including species such as hemp agrimony *Eupatorium cannabinum*, water avens *Geum rivale*, yellow flag iris *Iris pseudacorus* and greater birdsfoot trefoil *Lotus pedunculatus*. Wildflower meadows and areas of rough grassland will be created throughout the scheme. These habitats will be sensitively managed in accordance with a Landscape and Ecological Management Plan (LEMP).

Broadleaved Woodland / Treelines / Scrub

- 6.12 The woodland along the western, eastern and southern edges of the southern field are HPI deciduous woodland with a wide range of tree species. The large resource of mature trees within the woodlands provided inherent value owing to their age and structure, offering foraging and commuting resources for the local fauna, as a result these were assessed as being of local importance. These woodlands will be retained and buffered by the proposals.
- 6.13 There will be a loss of some individual trees and dense scrub to the northeast to allow for access for the car park and club house and pedestrian access to Par 3. Removal of an individual tree will be required on the bank of the Ryebank Rife, to facilitate works to the Ryebank Rife.
- 6.14 Substantial habitat creation will be undertaken across the site including planting of trees, shrub and woodland groups created between the fairways 'roughs', which will add a number of native species, thus increasing linkages between existing parcels, the increase in these habitats will result in a betterment for wildlife.
- 6.15 These new habitats will be managed sensitively and in accordance with a LEMP, which will include measures such as replacing plants if less than 75% establishment of original planting.

Hedgerows

- 6.16 The four hedgerows onsite were between moderate to high, with all considered as HPI due to supporting >80% native species. Hedgerow H4 was 'Important' under Hedgerow Regulations 1997.
- 6.17 The majority of hedgerows will be retained and enhanced through proposals, there will be a partial loss of hedgerow H1 in the northern field to facilitate the first hole and hedgerow H4 will also have small sections lost to provide a visual splay for access onto the main road, as mentioned this is 'important' under HECS, however as it is only a small section the impacts will not be significant.

- 6.18 Hedgerow H2, which runs west to east across the central field will be removed to facilitate the golf course design, however sections of this hedgerow will be translocated to start new lineages or help to strengthen those that exist.
- 6.19 The main benefits of translocating hedgerows include:
- Allows mature & complex ecological resources to be retained on or near the site;
 - Generates ecological resources for new habitat creation schemes rapidly;
 - Provides ecological function, structure & habitat diversity more quickly than habitat creation using saplings or nursery materials;
 - Quick visual screening, wind breaks and landscape benefits;
 - Maintains native species of local provenance; and
 - May have a smaller carbon footprint than habitat creation using nursery materials.
- 6.20 The hedgerow translocation will ideally be undertaken during the dormant season (end of November to February, inclusive) with the detailed methodology provided in a CEMP/LEMP.
- 6.21 In addition, native species-rich hedgerows will be planted around the golf club and car park linking to existing and newly created habitats. The existing hedgerows will be 'gapped' up with further native species in order to provide enhancements and increased foraging opportunities with the inclusion of species that are fruit and/or nut bearing. Species will include spindle *Euonymus europaeus*, hawthorn *Crataegus monogyna*, hazel *Corylus avellana*, field maple *Acer campestre*, blackthorn *Prunus spinosa*, dogwood, *Cornus sanguinea* and dog rose *Rosa canina*.
- 6.22 Management of existing and new hedgerows will be on a three-year rotational basis to maximise the biodiversity value of the hedgerows, this is particularly important for species such as blackthorn, that can spread rapidly,
- 6.23 During construction works, all retained woodland habitats, hedgerows and trees will be protected through the implementation of appropriate measures including root protection areas and protective fencing in accordance with BS 5837 (2012) Trees in Relation to Design, Demolition and Construction and/or as indicated by any Arboricultural Assessment, which will be detailed within a CEMP.
- 6.24 The increasing variety and management will ensure that there is a betterment for wildlife across the Site.

Riparian Habitats

- 6.25 The Ryebank Rife and ditch D2 have some small lengths that will need to be culverted/bridged to allow access, these will be limited in extent and will not affect the ecological function of these features. The existing ditch network will be enhanced through removal of dense scrub and tall ruderal vegetation, which should aid in the water retention. Where removal takes place areas will be left to natural colonise, while areas will have native marginal and aquatic planting added to ensure immediate coverage.
- 6.26 Eight waterbodies and two irrigation reservoirs will be created and connected via a new network of ditches which will bisect through the golf course. The waterbodies and ditches will be created with biodiversity in mind and will include creation of banks with a variety of profiles to include marginal shelves and areas of bank at 45° to provide suitable burrowing opportunities for water vole.

- 6.27 Ditch D1 which occurs in the south east forming a L-shape which then continues to run adjacent to Ryebank Rife, will be lost to facilitate the creation of hole three. A length of the ditch D2 will be culverted to allow for the creation of hole one over the top, with sections of the original ditch retained to the north and south where it joins the Ryebank Rife. To compensate for sections of this loss, a new ditch will bypass the culvert in ditch D2 and run south along the site's boundary and join the Rife. To facilitate the quick establishment of this new ditch, reedbeds will be translocated from D1 & D2 before they are filled/culverted, where there is additional material these will be used to with the waterbodies proposed around the site. Reedbeds are important to a range of wildlife and will provide a valuable resource straight away in the newly created areas. The methodology for removal and management will be provided in the CEMP/LEMP.
- 6.28 A number of new waterbodies will be created through the golf course, creating stepping stone habitats for a range of species ranging from invertebrates to amphibians. Where possible existing aquatic/marginal material will be used/translocated, however due to the number of waterbodies created additional plug planting will take place which will include grasses rushes, sedges, reeds and herbs to provide diversity. It is also important that natural colonisation and bare ground areas are incorporated, as these alone create microhabitats during periods of establishment. Management will be detailed within the LEMP, which will ensure that these habitats are monitored, and that reedbeds are cut/removed to ensure that stagnant waterbodies are avoided.

Biodiversity Net Gain

- 6.29 The habitats created through the scheme has demonstrated that for the three units of measure for biodiversity net gain (habitats and linear features hedgerows/treelines and rivers and streams), that there will be a measurable delivery of positive net gain using the Defra 3.0 Biodiversity Metric tool, which meets the requirements of the NPPF. The scheme can also ensure that 10% biodiversity net gain achieved in line with the current Environmental Act (2021) for habitats and linear features such as hedgerows where there is a +49.24% and +33.56% score respectively. The assumptions made during the calculation and habitat classifications referring to UK Habitat Classification, can be seen in the FPCR Biodiversity Net Gain Report (February 2022). The habitats that are fundamental in the creation of biodiversity gains are the areas of scrub and woodland type planting that make up the 'rough' between the greens, as these will have structural mosaic and also the expanses of waterbodies with a ditch network, which will have associated planting in sections.

Protected and/or Notable Species

Bats

Trees

- 6.30 The majority of potential roost trees will be retained and buffered within the periphery features such as woodland or edges of ditch habitats, with exception to T32 which will be removed to facilitate the works across the Ryebank Rife. T34 had a shallow knot hole and was classified as low potential to support roosting bats. In accordance with the BCT guidance, no further survey work is required, however, a precautionary approach of soft felling will be undertaken and if works have not commenced more than a year since the initial assessment, an update ground-based tree assessment will be carried out. A small footbridge is proposed over the Rife near T7 (moderate)

and T8 (low), however the proposed works are unlikely to affect any roosting behaviours, if present or have a detrimental effect on the trees themselves.

- 6.31 The majority of the bat potential trees are contained within the woodland parcels, and as the golf course will not be lit any indirect effects on any roosting bats would be negligible. There are a number of retained trees located along Ryebank Rife that have a varying degree (low to moderate) of roosting opportunities. Those located on the western stretch of the Rife, will be positioned nearer the proposed club house, although these are of a sufficient distance to be unaffected by the lighting needed around these built environments.

Activity Surveys

- 6.32 Nine different species/species groups have been recorded commuting and foraging during the activity transect surveys conducted in 2021, with the woodland edges along the western and southern boundaries and along the Ryebank Rife being the most regularly used. Common pipistrelles were the most frequently recorded species during the activity transects. This is unsurprising given they are the most abundant bat species in the UK. Seven barbastelle contacts were recorded during the transects which accounted for 9.3% of total contacts, these were found along all boundary features and along the Ryebank Rife.
- 6.33 Based on the findings from the transect surveys, it is considered that the linear boundary features and associated edge habitats present onsite provide foraging habitats and commuting routes for bats and are of good ecological value.
- 6.34 Automated detectors recorded eleven different species/species groups (in order of abundance): common pipistrelle, soprano pipistrelle, *Myotis* species, barbastelle, pipistrelle species, *Nyctalus* species, long-eared species, noctule, Nathusius' pipistrelle, serotine and *Nyctalus/Eptesicus* species. The majority of recordings were from common and widespread species with common pipistrelle *Pipistrellus pipistrellus* comprising 62.89% of total registrations, soprano pipistrelle *Pipistrellus pygmaeus* 12.92% and *Myotis* species *Myotis* sp, 13.33%.
- 6.35 During the total automated surveys completed (six units), a total of 277 barbastelle registrations were recorded with a peak of 106 registrations along the Ryebank Rife. This species is an Annex II species of the Habitats Directive and a species of Principal Importance under S41 of the NERC Act (2006). The Joint Nature Conservation Committee (JNCC)²⁴ UK status and distribution information for barbastelles shows that there are records of these species in the vicinity of the Site, although this is not in sufficient detail to accurately assess; JNCC note that:
- "The barbastelle is widely distributed across southern England and across Wales but is likely to have been significantly under-recorded within its range."*
- 6.36 Barbastelle bats are known to utilise woodland, streams and rivers. The Ryebank Rife and woodland onsite do provide opportunities for navigational and foraging, however the indicative roosting habitats of woodlands are very limited in the wider area. Barbastelles are known to commute/foraging over large distances and their change is dependant on the time of the year, with females foraging increasing in distance during the summer months. The suitable habitats on site are restricted to the peripheries, where number recorded are not high or consistent to suggest that the Site is integral to this species.

²⁴ The Joint Nature Conservation Committee UK Status & Trends: Barbastelle. <http://jncc.defra.gov.uk/publications/JNCC312/species.asp?FeatureIntCode=S1308>. Assessed 06.08.16

- 6.37 Regardless, the proposals will see habitat features used by bats, and particularly barbastelles retained, enhanced and supplemented with new habitats that will promote navigational and foraging, with new stepping stone habitats created through the site providing linkages east to west, through the 'roughs' between the greens. The new ditches, waterbodies, scrub and grassland will all promote habitats for invertebrates, increasing prey item availability to bats.
- 6.38 Where outside lighting is required around the car park and club house buildings, this will be on a timer and designed to minimise illumination of surrounding habitats used by the local bat population. Measures will include low lux emitted lights and positioning them to ensure that they are directed away from natural habitats. In the car parks and any paths leading to the club house, will have low level lighting with downward facing positioning, and depending on the design rear light baffles or cowls added to direct light. The design of lighting will be based upon guidelines presented by the Bat Conservation Trust & Institute of Lighting Engineers 'Bats and Lighting in the UK'.

Enhancements

- 6.39 The advantage of this scheme is that most of the habitats created will remain within areas of darkness, with no additional lighting proposed within the golf course. The site will be separated from built environments to the south, means that the local bat population is unlikely to be affected in the long term by the proposals negatively. It is also likely that as new habitats mature, they will provide a more foraging resources which will be beneficial to the favourable conservation status of local bat population, including the rarer Annex II barbastelles.
- 6.40 The soft landscaping will provide habitats of greater value to bats than the existing arable use, with areas of herb rich grassland, shrub, hedgerows, waterbodies and wetland to provide a foraging resource, with well-structured linear wood edge habitats to provide navigational corridors. Any trees felled as part of the development will be used to create a number of log piles located along the retained woodland belt in the south. This will provide additional habitat for insects which will increase the amount of prey items available to foraging bat species. The approximate location of these can be seen in Urban Wilderness Softworks General Arrangement Reference Plan (February 2022).
- 6.41 To enhance bat roosting opportunities onsite twenty-two bat boxes will be erected within the retained woodland areas and mature trees onsite. These will be erected between three and four meters and installed on trunks with no surrounding branches or vegetation to allow clear flight paths. A range of models, listed below, will be used that will provide roosting opportunities for range of species that were recorded including barbastelle. Roosting opportunities will be provided on the buildings within the scheme.
- 6.42 The location of the bat boxes can be seen in the Urban Wilderness Softworks General Arrangement Reference Plan (February 2022), the locations may change slightly dependant on the trees structural suitability. The number of bat boxes and aspects are detail below per bat box type:
- Twelve Vincent Pro boxes – Single boxes on the SE or SW aspect of trees – these will be on trees within existing woodland boundaries (south and west) and on existing mature trees along the Rife to the west and east. These benefit barbastelle, pipistrelles, brown long-eared and some Myotis species.

- Seven large colony box such as Schwegler 1FS – Single box on each tree on a SW or SW aspect. These will work better on the existing trees within the site (as above). These have a large internal space for groups of bats used by noctule and brown long-eared, can be used as a nursery roost.
- Seven Vivara Pro Woodstone and 1FD boxes – One of each bat box on one tree, at different aspects but avoiding direct south aspect. These are good boxes for smaller bat species such as common pipistrelles.

6.43 Suitable boxes for buildings include:

- Beaumaris Woodstone bat box – Two boxes to be installed in close proximity at the highest point, on the SE or SW on both the club house and the maintenance building.

Birds

- 6.44 The Site potentially offers foraging and nesting habitat for a range of common and widespread generalist species due to the woodlands which largely surround the fields, with some hedgerow lengths and areas of scrub. In general, most of these habitats are to be retained and where they are losses new habitats are to be created, with species that will provide dense canopies for nest and fruit/nut bearing native species to increasing foraging opportunities. The measures taken will see that common and widespread generalist species will benefit from the proposals in the long term.
- 6.45 The existing arable habitats do provide areas skylark, linnet and meadow pipit, which were recorded during the initial wintering bird survey. The proposals will see all the arable habitats removed and their loss will not be compensated for, however the number of such species were low and due to the context of the local landscape such species are not solely reliant on the habitats within the Site.
- 6.46 Small numbers of dark bellied brent geese were recorded observed foraging/loafing in the southern field in late January 2022. No evidence of this species had been recorded during previous wintering bird surveys undertaken at low and high tides. The nearest SPA designated for this species is Pagham Harbour SPA located approximately 10.6km west and due to the separation the site is not an important resource for those small number of birds recorded, as they were infrequently recorded; it is considered that the site does not constitute functionally linked land which would impact the SPA. The golf course will provide foraging/loafing opportunities for this species in the future.
- 6.47 As mentioned in the above Habitat sections, the habitats created will benefit a number of species, these are also relevant to the bird assemblages within the local area. The losses will be isolated to the arable content, however nesting opportunities within woodland will be retained, and the degree of new planting within new and existing hedgerows as well as the habitat stepping stone habitats through the golf course, will be of benefit for foraging too as fruit/nut provisions will be significantly increased. The open waterbodies will also provide opportunities for birds that were previously absent or poorly represented.
- 6.48 During construction any removal of vegetation should be undertaken outside of the bird breeding season (March to August inclusive) to minimise the risk of disturbance to breeding birds. If this is not possible, such vegetation should be checked prior to removal by a suitably experienced ecologist. If active nests are found, vegetation should be left untouched and suitably buffered from

works until all birds have fledged. Specific ecological advice should be sought prior to undertaking the clearance.

- 6.49 To further enhance nesting opportunities for birds, a variety of different bird box designs will be installed on buildings and trees to encourage use by a more diverse range of species; those to be proved include:

- 3 x 25mm hole – suitable for small passerine species such as blue tit
- 3 x 32mm hole – suitable for larger passerine species such as great tit
- 3 x 45mm hole – suitable for starlings
- 4 x open fronted – suitable for robins, blackbirds, wrens etc.
- 2 x house sparrow terrace (similar to Schwegler 1SP)
- 2 x kestrel nest box – these will be installed at approximately 5m in height on trees
- Pole mounting barn owl box – to be located close to existing areas used by barn owls to the east of site

- 6.50 All boxes, with the exception of the house sparrow terraces and barn boxes, will be installed on suitable mature trees. The sparrow terrace will be installed on a building with strong connective links to the GI. All of the boxes will be oriented between north and east and be at least 3m from ground level.

Hazel Dormouse

- 6.51 No evidence of dormice has been found on site or during the desk studies, and are not currently a constraint to the development proposals. It is noted that further surveys are required, however within the context of the suitable habitats that do exist, these will be retained, with the exception of the loss of hedgerow H2 the bisects west to east, however, the hedgerow does not connect to the woodland in the east. This accompanied by the creation of further areas of tree and scrub planting, would increase the foraging and refuge opportunities for this species should they be present.

Reptiles

- 6.52 Surveys in 2021 identified a low population of slow worm and common lizard, with peak adult counts of three. Sightings of both species were recorded on the northern, eastern and southern boundaries of the southern field, as well as along the Ryebank Rife and ditch D1. Juveniles from both species were also recorded within these areas which suggests that the Site supports a breeding population.
- 6.53 The proposals will retain and enhance the majority of the periphery habitats where reptiles were sighted, with exception of the arable field margin and ruderal habitat bordering D1. The latter comprises a small area within the eastern extent, however, the entire eastern boundary will be retained and enhanced, with habitat creation through 'rough' areas of the proposals, increasing commuting, foraging and hibernation opportunities for reptiles.
- 6.54 It is recommended that in order to avoid injury to reptiles during Site clearance and construction a period of supervised passive displacement is undertaken which would push any reptiles present into surrounding habitats to be retained. This would involve two cuts; the first to 200mm and the second 1-2 hours later to 50mm. All arisings should be removed from the working area to prevent potential refugia areas. The area should be regularly strimmed during suitable weather to prevent

formation of suitable habitat for use by reptiles and areas closest to retained habitats should be scraped back to bare earth. All potential hibernation sites present within the working area should be removed carefully by hand. Any individuals found would be immediately placed in areas of retained habitat in order to minimise stress to individuals.

- 6.55 Passive displacement would be undertaken during the active period for reptiles, between late-March to early-October, during suitable weather conditions when the daytime temperatures are above 10°C. All suitable habitats that are to be retained should be fenced off, to prevent machinery or materials being moved within this area which may cause injury or death to reptiles.
- 6.56 Proposals include a range of habitat creation measures that will provide good quality habitat for reptiles, including a mosaic of scrub, grassland and riparian features that will be managed for their biodiversity and will provide a range of basking and foraging opportunities for this group.

Riparian Mammals

- 6.57 The ditches within the site varied in their degree to retain water, and those that did were heavily vegetated with no open areas. During the surveys no evidence of any riparian mammals were found. There was a recorded in 1997 of water vole in the south west, and it is possible that Ryebank Rife could provide opportunities for a population to spread off this corridor; however the current survey would suggest that if water voles are present in the wider area they are not using the ditch network within the Site.
- 6.58 The proposals will retain the ditches that are present, although there might be some disturbance to ditch D2 during the habitat clearance of vegetation on the bank edges, that are proposed to ensure green 1 is created. There will also be access over Ryebank Rife from the club house onto the southern parts of the golf course, this will only result in a small culvert/bridge to be created. In both circumstances there currently is no evidence to suggest that riparian mammals are present, however as records do exist, updated surveys will be undertaken to assess this closer to the proposed construction commencement. If riparian mammals are recorded within the habitats to be affected then a licence from Natural England might be required.

Conclusion

- 6.59 Mitigation measures will ensure the protection of protected species rec onsite. The habitat creation will provide improvements to the habitat diversity within the Site will benefit a number of fauna species. These measures will lead to an **overall minor - moderate beneficial direct effect in the long term at a Local level.**

Key

- Site Boundary

1km Buffer

Local Wildlife Site (LWS)

Special Protection Area (SPA)

Nitrate Vulnerability Zone
- Water Vole

Hedgehog

Common Frog

Great Crested Newt

Palmate Newt

Slow-worm
- Bat Species

Brown Long-eared Bat

Common Pipistrelle

Daubenton's Bat

Eptesicus Bat species

Long-eared Bat species

Myotis Bat

Nathusius's Pipistrelle

Natterer's Bat

Noctule Bat

Nyctalus Bat species

Pipistrelle

Serotine

Soprano Pipistrelle

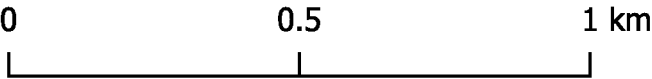
Western Barbastelle

Whiskered Bat

Whiskered/Brandt's
- Cuckoo

House Sparrow

Jersey Cudweed





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Key

- Site Boundary
- Phase 1 Points
 - Scrub - scattered
 - Broadleaved tree
 - Trees with Bat Potential (with ref.)
- Phase 1 Lines
 - Standing water
 - Dry ditch
 - Intact hedge - species-poor
 - Native species hedgerow
 - Broadleaved trees
- Phase 1 Habitats
 - Built Environment: hardstanding
 - Broadleaved woodland - semi-natural
 - Standing water
 - Scrub - dense/continuous
 - Arable Margin - tussock-forming grassland
 - Arable Margin - Game Bird Cover Mix
 - Other tall herb and fern - ruderal
 - Poor semi-improved grassland
 - Cultivated/disturbed land - arable

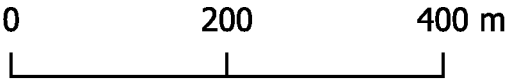


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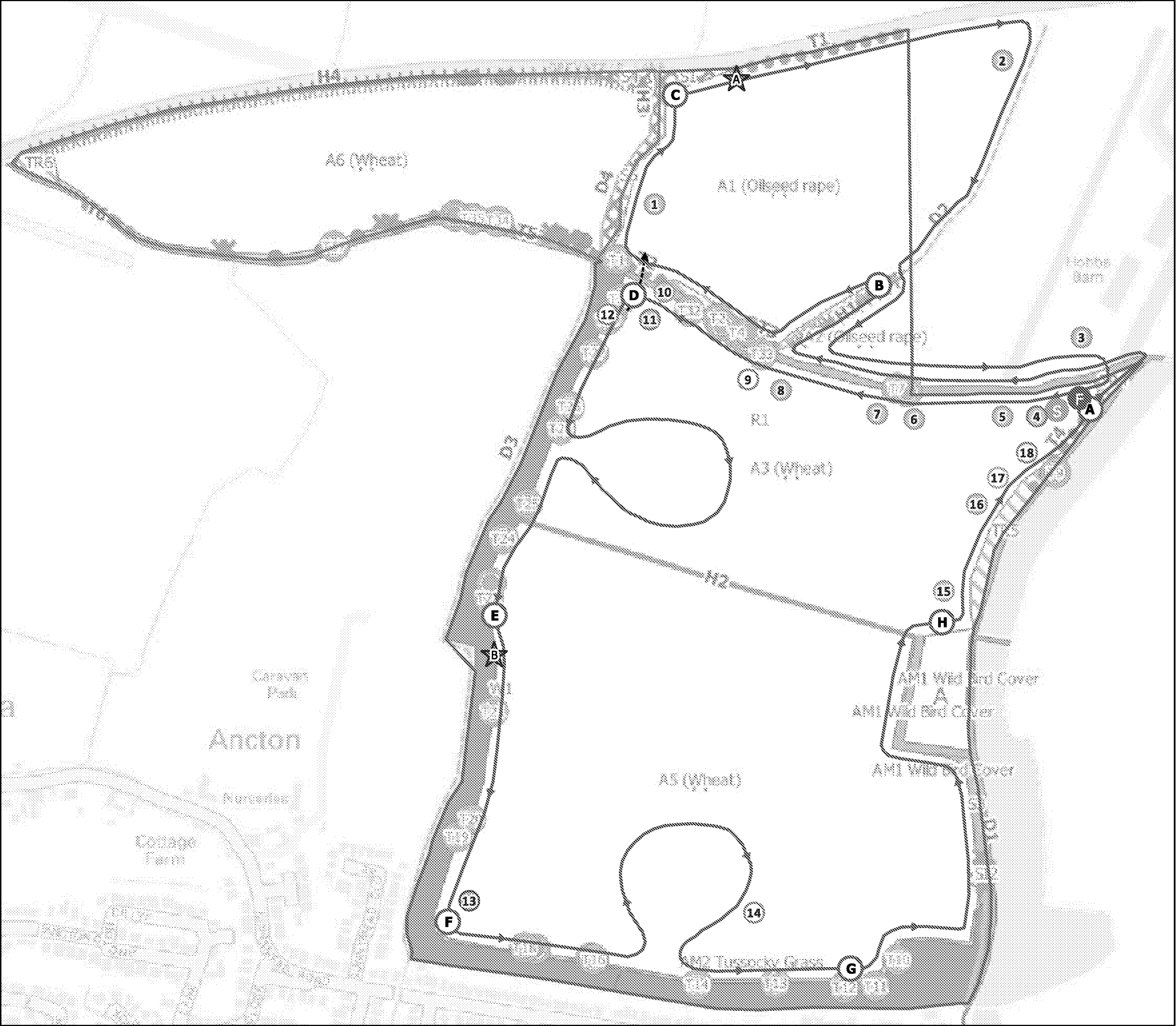
Key

- Site Boundary
- 250m Buffer
- Pond (with reference)
- Ditch with standing water (with reference)
- Dry Ditch (with reference)



Hallam Land Management
Land to the south of Grevatt's Lane,
Ancton

WATERBODY LOCATIONS PLAN



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Key:

- Site Boundary
- Additional Survey Area
- Start point
- Finish point
- Point Count (with ref.)
- Transect Route
- Flight Path
- Static Detector Locations

Bat Contacts (with ref.)

- Common Pipistrelle
- Soprano Pipistrelle
- Myotis Species
- Nyctalus Species
- Barbastelle
- Serotine

Unit A & B: 25th-30th August

Plan Reference	Time	Species	Passes	Behaviour
Start	19:51			
PCA	19:51-19:54			
PCB	20:03-20:06			
1	20:13	Common Pipistrelle	1	Commuting
PCC	20:17-20:20			
2	20:27	Common Pipistrelle	1	Commuting
3	20:43	Common Pipistrelle	1	Commuting
4	20:46	Soprano Pipistrelle	1	Commuting
5	20:47	Common Pipistrelle	3	Foraging
6	20:50	Common Pipistrelle	2	Commuting
7	20:50	Common Pipistrelle	1	Commuting
8	20:52	Common Pipistrelle	Continuous	Foraging
9	20:53	Myotis species	1	Commuting
PCD	20:56-20:59			
10	20:56	Common Pipistrelle	Continuous	Foraging
11	20:58	Soprano Pipistrelle	1	Commuting
12	20:59	Myotis species	1	Commuting
PCE	21:07-21:10			
PCF	21:23-21:26			
13	21:24	Barbastelle	1	Commuting
14	21:27	Myotis species	1	Commuting
PCG	21:33-21:36			
PCH	21:43-21:46			
15	21:43	Common Pipistrelle	Continuous	Foraging
16	21:48	Common Pipistrelle	4	Foraging
17	21:49	Nyctalus species	1	Commuting
18	21:49	Serotine	1	Commuting
Finish	21:51			

Hallam Land Management
Land to the south of Grevatt's Lane,
Ancton
BAT TRANSECT PLAN (31.08.21)

Figure 4

scale @ A3
1:4700

drawn
RM

issue
9/12/2021

rev
10351-E-03



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Key:

Site Boundary

Additional Survey Area

Start & Finish Points

Start point

Finish point

Transect Route

Point Count (with ref.)

Flight Arrow

Static Detector Locations

Unit C & D: 20th-25th September

Bat Contacts (with ref.)

Common Pipistrelle

Soprano Pipistrelle

Pipistrelle Species

Myotis Species

Nyctalus Species

Barbastelle

Plan Reference	Time	Species	Passes	Behaviour
Start	19:06			
PCA	19:09-19:09			
PCB	19:15-19:18			
1	19:25	Myotis species	1	Commuting
PCC	19:26-19:29			
2	19:28	2x Common Pipistrelle	3	Foraging
3	19:29	Common Pipistrelle	Continuous	Foraging
PCD	19:40-19:43			
4	19:45	Common Pipistrelle	Continuous	Foraging
5	19:46	Nyctalus species	1	Commuting
6	19:47	Common Pipistrelle	3	Foraging
PCE	19:49-19:52			
7	19:50	Common Pipistrelle	Continuous	Foraging
8	19:52	Soprano Pipistrelle	2	Commuting
9	19:53	Common Pipistrelle	2	Commuting
PCF	20:02-20:05			
10	20:05	Nyctalus species	1	Commuting
11	20:13	Soprano Pipistrelle	1	Commuting
12	20:13	Common Pipistrelle	1	Commuting
13	20:15	Common Pipistrelle	1	Commuting
PCG	20:17-20:20			
14	20:18	Common Pipistrelle	1	Commuting
15	20:20	Barbastelle	1	Commuting
16	20:21	Nyctalus species	1	Commuting
17	20:21	Pipistrelle species	1	Commuting
18	20:34	Soprano Pipistrelle	1	Commuting
19	20:37	Barbastelle	1	Commuting
PCH	20:52-20:55			
20	20:52	Barbastelle	2	Commuting
21	20:52	Nyctalus species	1	Commuting
22	20:53	Common Pipistrelle	2	Commuting
23	20:53	Soprano Pipistrelle	2	Commuting
24	20:55	Common Pipistrelle	2	Commuting
25	20:58	Barbastelle	3	Foraging
26	20:59	Common Pipistrelle	Continuous	Foraging
27	21:00	Nyctalus species	1	Commuting
28	21:02	Barbastelle	1	Commuting
29	21:04	Common Pipistrelle	Continuous	Foraging
30	21:04	Barbastelle	3	Foraging
Finish	21:06			



Hallam Land Management

Land to the south of Grevatt's Lane,
Ancton

BAT TRANSECT PLAN (20.09.21)

scale @ A3
1:4750

drawn
RM

issue
9/12/2021

drawing / figure number

Figure 5

rev

10351-E-04





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Key:

- Site Boundary

Additional Survey Area

S

 Start point

F

 Finish point

Transect Route

Point Count (with ref.)

 Flight Arrow

★

 Static Detector Locations
- Bat Contacts

Common Pipistrelle

Soprano Pipistrelle

Nathusius Pipistrelle

Nyctalus Species

Start & Finish Points

S

 Start point

F

 Finish point

Unit E: 19th-26th October

Unit F: 27th October-1st November

Plan Reference	Time	Species	Passes	Behaviour
Start	18:02			
PCA	18:02-18:07			
PCB	18:31-18:36			
1	18:43	Common Pipistrelle	Continuous	Foraging
2	18:44	Common Pipistrelle	2	Commuting
3	18:44	Soprano Pipistrelle	Continuous	Foraging
4	18:44	Nyctalus species	1	Commuting
PCC	18:46-18:51			
5	18:46	Common Pipistrelle	Continuous	Foraging
6	18:46	Soprano Pipistrelle	Continuous	Foraging
7	18:49	Nathusius' Pipistrelle	Continuous	Foraging
8	18:51	Common Pipistrelle	Continuous	Foraging
9	18:55	Nyctalus species	2	Commuting
10	18:56	Soprano Pipistrelle	3	Foraging
PCD	18:59-19:04			
11	18:59	Soprano Pipistrelle	1	Commuting
12	19:00	Nathusius' Pipistrelle	Continuous	Foraging
13	19:03	Common Pipistrelle	4	Foraging
14	19:05	2x Common Pipistrelle	Continuous	Foraging
15	19:05	Soprano Pipistrelle	2	Commuting
16	19:08	Nathusius' Pipistrelle	4	Foraging
17	19:16	Common Pipistrelle	Continuous	Foraging
PCE	19:19-19:24			
18	19:19	2x Common Pipistrelle	Continuous	Foraging
19	19:21	Nyctalus species	5	Foraging
20	19:23	Soprano Pipistrelle	3	Foraging
21	19:24	Common Pipistrelle	Continuous	Foraging
22	19:24	Common Pipistrelle	2	Commuting
23	19:24	Soprano Pipistrelle	5	Foraging
PCF	19:34-19:39			
24	19:41	Common Pipistrelle	2	Commuting
PCG	19:43-19:48			
PCH	19:55-20:00			
25	20:04	Nathusius' Pipistrelle	Continuous	Foraging
26	20:04	Common Pipistrelle	Continuous	Foraging
27	20:06	Soprano Pipistrelle	Continuous	Foraging
Finish	20:11			

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issue

9/12/2021

drawing / figure number

Figure 6

rev

10351-E-05

Hallam Land Management

Land south of Grevatt's Lane,
Ancton

BAT TRANSECT PLAN (19.10.21)

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masterplanning ✎ environmental assessment ✎ landscape design ✎ urban design ✎ ecology ✎ architecture ✎ arboriculture

ARUN DISTRICT COUNCIL W/2020/0001 Job Name\QGIS 2.14\PLANS\Bat Figures\XXXX-E-XX Bat Transect Plan 3 (xx.xx.xx).qgs



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Key

- Site Boundary
- Additional Survey Area
- Fly over only

Protected and Notable Species

BoCC Red Listed Species

- FF Fieldfare
- GL Grey Wagtail
- ST Herring Gull
- LI Linnet
- SG Starling

BoCC Amber Listed Species

- BH Black-headed Gull
- D Dunnock
- K Kestrel
- MP Meadow Pipit
- RE Redwing
- ST Song Thrush
- SH Sparrowhawk
- SD Stock Dove
- VP Woodpigeon
- WR Wren

- NERC Species of Principal Importance
- Schedule 1 Species



Hallam Land Management
Land south of Grevatt's Lane,
Ancton

**WINTERING BIRD SURVEY RESULTS -
LOCATION OF NOTABLE SPECIES (09.11.21)**

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25/1/2022

drawing / figure number

Figure 7

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10351-E-01



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Key

- Site Boundary
- Additional Survey Area
- Fly Over Only

Protected and Notable Species

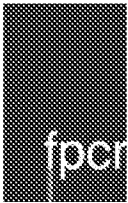
BoCC Red Listed Species

- FF Fieldfare
- GR Greenfinch
- HG Herring Gull
- LI Linnet
- S Skylark
- SG Starling

BoCC Amber Listed Species

- BH Black-headed Gull
- D Dunnock
- K Kestrel
- MP Meadow Pipit
- RE Redwing
- RO Rook
- ST Song Thrush
- SH Sparrowhawk
- WP Woodpigeon
- WR Wren

- NERC Species of Principal Importance
- Schedule 1 Species



Hallam Land Management
Land South of Grevatt's Lane,
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WINTERING BIRD SURVEY RESULTS -
LOCATION OF NOTABLE SPECIES (17.12.21)

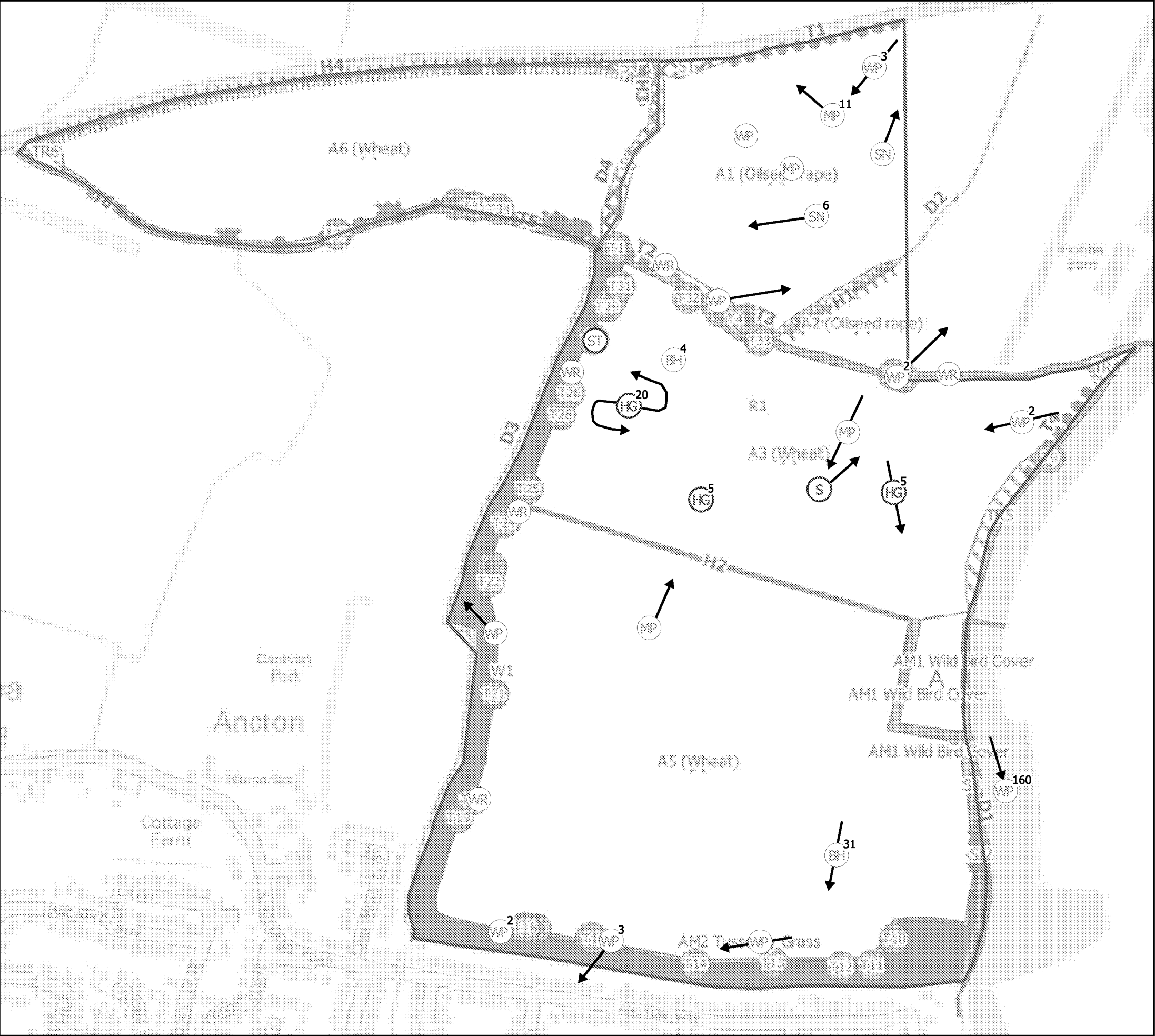
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Figure 8

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Key

- Site Boundary
- Additional Survey Area
- Fly Over Only

Protected and Notable Species

BoCC Red Listed Species

- HG Herring Gull
- S Skylark

BoCC Amber Listed Species

- BH Black-headed Gull
- MP Meadow Pipit
- SN Snipe
- ST Song Thrush
- WP Woodpigeon
- WR Wren

- NERC Species of Principal Importance
- Schedule 1 Species



Hallam Land Management
Land South of Grevatt's Lane,
Ancton

WINTERING BIRD SURVEY RESULTS -
LOCATION OF NOTABLE SPECIES (25.01.22)



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drawing / figure number

Figure 9

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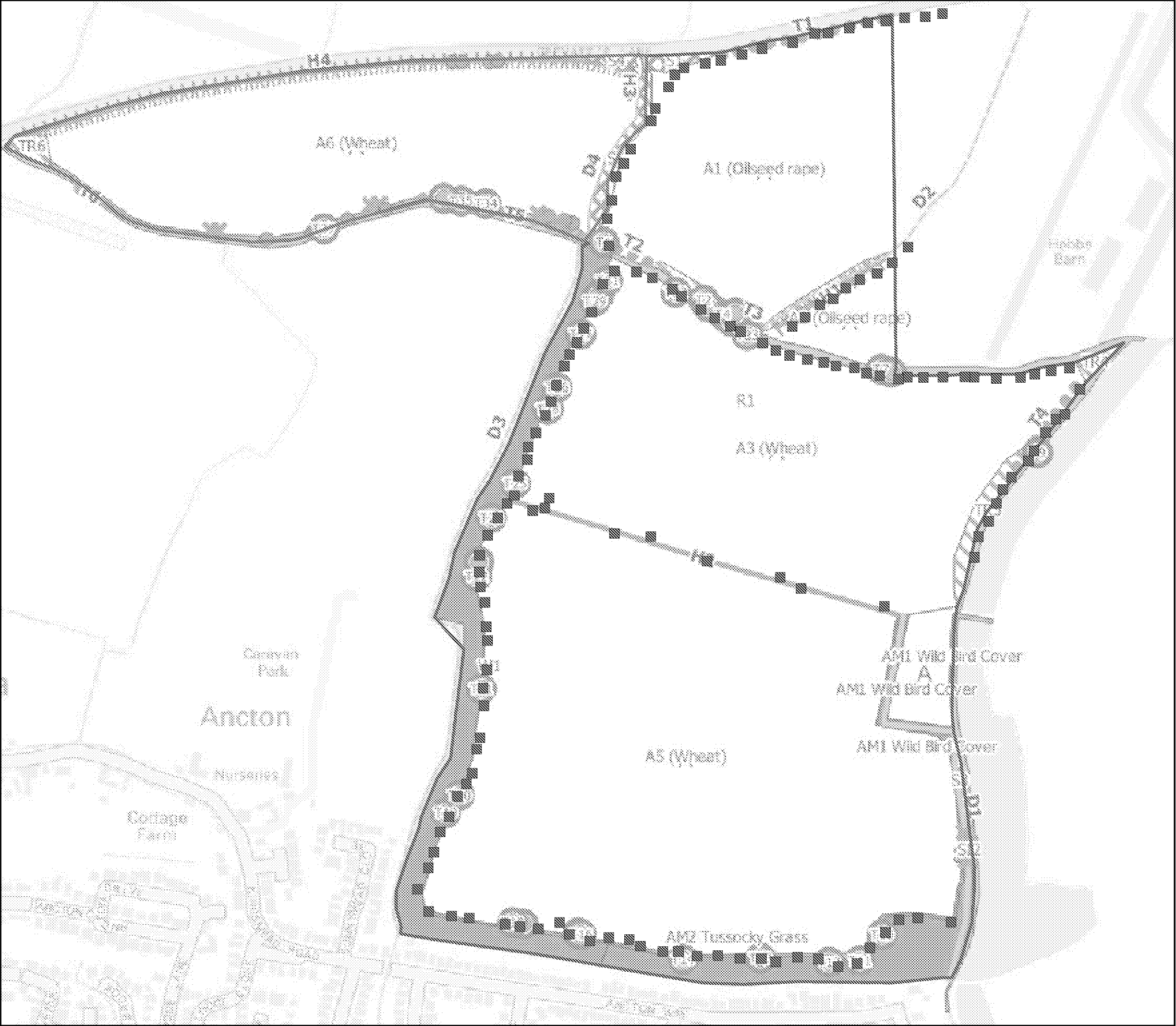
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issue

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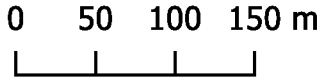


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Key:

- Site Boundary
- Additional Survey Area
- Tube Locations



Hallam Land Management
Land to the south of Grevatt's Lane,
Ancton

DORMOUSE SURVEY PLAN

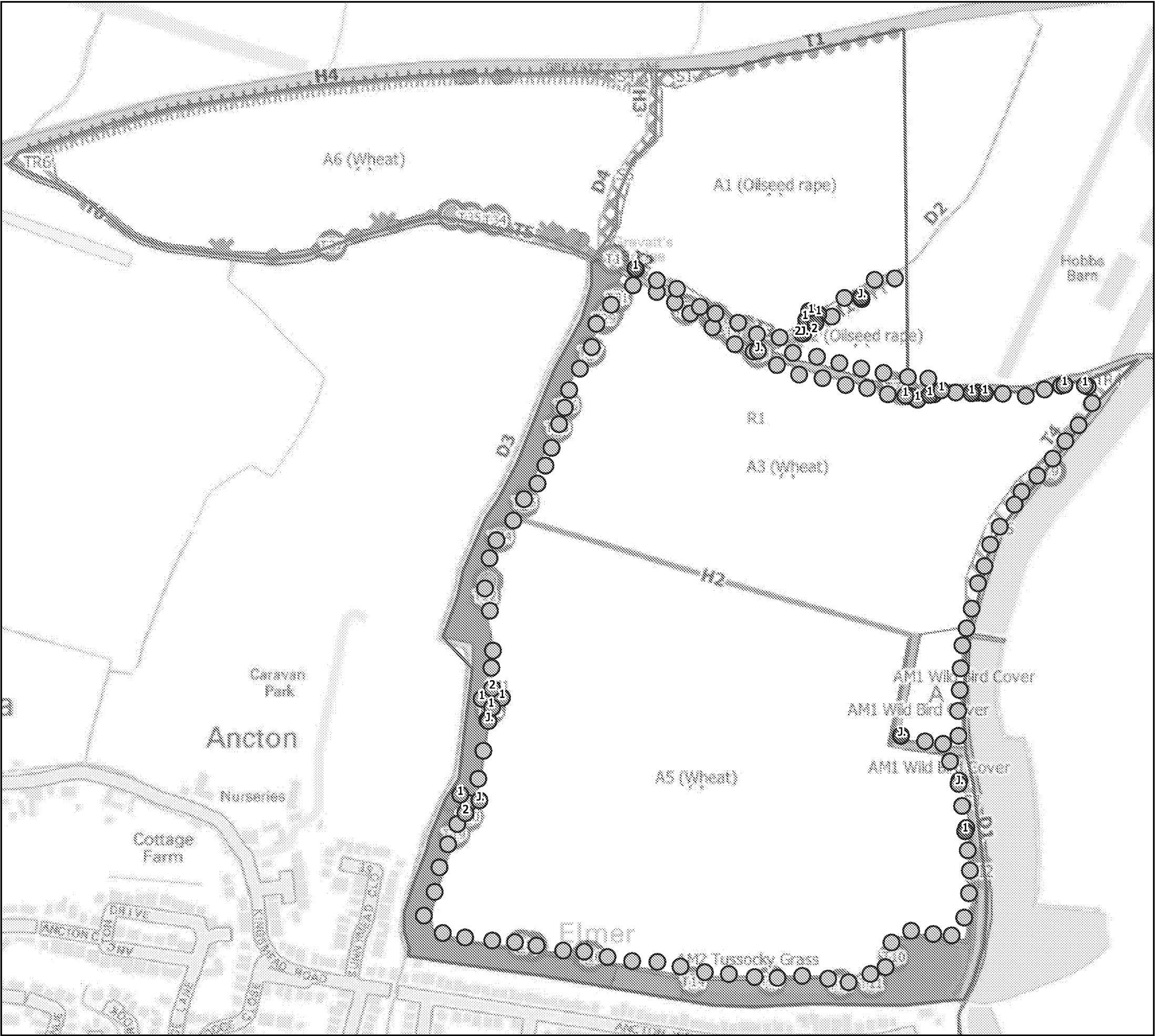
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issue
26/1/2022

drawing / figure number
Figure 10

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10351-E-01



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Key

-  Site Boundary
-  Additional Survey Area

Reptile Survey Results

Species Identified (with adult or juvenile numbers)

-  Common Lizard
-  Slow Worm
-  Reptile Tin Locations



Hallam Land Management
Land to the south of Grevatt's Lane,
Ancton
REPTILE SURVEY PLAN



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10351-E-01

APPENDIX A: RELEVANT LEGISLATION, POLICY AND GUIDANCE

Legislative Framework

- 1.1 The applicable legislative framework is summarised as follows:
- Environment Act 2021;
 - Natural Environment and Rural Communities Act 2006 (NERC);
 - Wildlife and Countryside Act (1981) (as amended) (WCA);
 - The EC Birds Directive (Directive 79/409/EEC) as translated into UK law by The Conservation of Habitats and Species Regulations 2017 (as amended);
 - The EC Habitats Directive (Directive 92/43/EEC) as translated into UK law by The Conservation of Habitats and Species Regulations 2017 (as amended); and
 - The Protection of Badgers Act (1992).

Habitats

- 1.2 The degree to which habitats and species receive consideration within the planning system relies on many mechanisms, including:
- Inclusion within a specific policy, for example veteran trees, ancient woodland and linear habitats within the National Planning Policy Framework (NPPF), or local planning policies;
 - A non-statutory site designation (e.g. Local Wildlife Site);
 - Habitats considered as Habitats of Principal Importance (HPI) for the conservation of biodiversity and species considered as Species of Principal Importance (SPI) for the conservation of biodiversity as listed within Section 41 of the NERC Act (2006); and
 - Habitats identified as being a Priority Habitat and species identified as being a Priority Species within the local Biodiversity Action Plan.

Protected/Notable Species

- 1.3 Principal pieces of legislation protecting wild species are Part 1 of the Wildlife and Countryside Act 1981 (as amended) (WCA) and the Conservation of Habitats and Species Regulations 2019 (Amendment) (UK Exit). Some species, for example badgers, also have their own protective legislation (Protection of Badger Act 1992). The impact that this legislation has on the Planning system is outlined in ODPM 06/2005 Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System.
- 1.4 This guidance states that as the presence of protected species is a material consideration in any planning decision and it is therefore essential that the presence or otherwise of protected species, and the extent to which they are affected by proposals, is established prior to planning permission being granted. Furthermore, where protected species are present and proposals may result in harm to the species or its habitat, steps should be taken to ensure the long-term protection of the species, such as through attaching appropriate planning conditions for example.

- 1.5 In addition to protected species, there are those that are otherwise of conservation merit, such as those listed as SPI for the purpose of conserving biodiversity under the NERC Act 2006. These are recognised in the NPPF which advises that when determining planning applications, LPA's should aim to conserve and enhance biodiversity by applying a set of principles including:

- If significant harm resulting from a development cannot be avoided, adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- Development proposals where the primary objective is to conserve or enhance biodiversity should be encouraged.

Bats

- 1.6 Bats and their habitats are protected under the Wildlife and Countryside Act 1981 (as amended) and by the Conservation of Habitats and Species Regulations 2019. In summary this makes it an offence to damage destroy or obstruct any place used by bats for breeding and shelter, disturb a bat, or kill, injure or take a bat. Seven bat species are listed as SPI under the provisions of the NERC Act 2006 of which three were recorded on site; soprano pipistrelle, noctule and brown long-eared.

Badgers

- 1.7 Badgers are protected under the Protection of Badgers Act 1992. This act is based on the need to protect badgers from baiting and deliberate harm or injury. The act makes it an offence to:
- Wilfully kill, injure, take possess or cruelly ill-treat a badger, or attempt to do so;
 - To intentionally or recklessly interfere with a sett. Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access routes

Birds

- 1.8 The Wildlife and Countryside Act 1981 (as amended) is the principal legislation affording protection to UK wild birds. Under this legislation all birds, their nests and eggs are protected bylaw and it is an offence, with certain exceptions to recklessly or intentionally:

- Kill, injure or take any wild bird;
- Take, damage or destroy the nest of any wild bird while in use or being built;
- Take or destroy the egg of any wild bird.

Species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) are specially protected at all times.

Great Crested Newts

- 1.9 Great crested newts and the places they use for shelter or protection are protected under European law through Annexes 2 and 4 of the EU Habitats and Species Directive, the Bern Convention and the Conservation of Habitats & Species Regulations 2019; and in the UK through Schedule 2 of the Wildlife and Countryside Act 1981 (as amended). In summary it is an offence to deliberately or recklessly to take, injure or kill a great crested newt; to intentionally or recklessly damage, destroy or obstruct access to any structure or place used for breeding, shelter or protection by the species;

intentionally or recklessly disturb while it is occupying a structure or place which it uses for such purpose; or intentionally take or destroy the eggs of a great crested newt.

Hazel Dormice

- 1.10 The hazel dormouse is listed under Annex IVa of the EC Habitats Directive and as a result is covered by the Conservation of Habitats and Species Regulations 2019. It is also protected under the Wildlife and Countryside Act 1981 (*as amended*). Taken together, these protect both animals (individuals and populations) and their nests from injury, killing, destruction or disturbance. In addition, hazel dormouse is listed as a SPI under S41 of the NERC Act (2006).

Reptiles

- 1.11 All common reptile species, including grass snake *Natrix natrix*, slow worm *Anguis fragilis*, common lizard *Zootoca vivipara* and adder *Vipera berus* are partially protected under the Wildlife and Countryside Act 1981. In summary this legislation protects the species from intentional killing, injury or sale, offering for sale, or possessing, transporting or publishing advertisements for the purposes of sale.

Water Voles

- 1.12 Water voles are fully protected under Section 9 of the Wildlife and Countryside Act 1981 (*as amended*). This makes it an offence to: -
- Intentionally kill, injure or take water voles from the wild;
 - Intentionally or recklessly damage or destroys any structure or place used for shelter or protection by water vole;
 - Intentionally or recklessly disturb water voles whilst occupying a structure or place which it uses for shelter or protection;
 - Intentionally or recklessly obstructs access to any structure or place which water vole uses for shelter or protection; and
 - Sells, offers or exposes for sale, or has in his possession or transports for the purpose of sale, any live or dead water vole, or any part of, or anything derived from, such an animal.

Water voles are a SPI under Section 41 NERC Act (2006).

Relevant Planning Policy

National Planning Policy Framework (NPPF) 2021

- 1.13 The National Planning Policy Framework (NPPF) sets out the Government's planning policy for England. As such, the NPPF must be a material consideration for local authorities when considering planning decisions. The following relate to ecology/biodiversity:

Policy 15 – Conserving and enhancing the natural environment

170. The planning system should contribute to and enhance the natural and local environment by:

- protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);
- recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;
- minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.

171. Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.

172. Great weight should be given to conserving and enhancing landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to these issues. The conservation and enhancement of wildlife and cultural heritage are also important considerations in these areas, and should be given great weight in National Parks. Where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality. The scale and extent of development within these designated areas should be limited. Planning permission should be refused for major development other than in exceptional circumstances, and where it can be demonstrated that the development is in the public interest. Consideration of such applications should include an assessment of:

- a) the need for the development, including in terms of any national considerations, and the impact of permitting it, or refusing it, upon the local economy;
- b) the cost of, and scope for, developing outside the designated area, or meeting the need for it in some other way; and
- c) any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated.

174. When determining planning applications, local planning authorities should apply the following principles:

- a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;
- c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and

- d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.

176. The following should be given the same protection as habitats sites:

- a) potential Special Protection Areas and possible Special Areas of Conservation;
- b) listed or proposed Ramsar sites; and
- c) sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Area of Conservation, and listed or proposed Ramsar sites.

177. The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site.

Local Planning Policies

- 1.14 The Arun District Local Plan (2018) includes the following policies of relevance:

Policy ENV SP1 – Natural Environment

“Arun District Council will encourage and promote the preservation, restoration and enhancement of biodiversity and the natural environment through the development process and particularly through policies for the protection of both designated and non-designated sites. Where possible it shall also promote the creation of new areas for habitats and species. In relation to designated sites, development will be permitted where it protects sites list in Table 17.1-17.7 that are recognised for the species and habitats contained within them.”

Policy ENV DM1 – Designated sites of biodiversity or geological importance

“a. Proposed development likely to have an adverse effect on land with the designated features of any Site of Biodiversity or Geological Importance as listed in Tables 17.1-17.7 or any subsequently designated sites (either individually or in combination with other developments), will not normally be permitted. Consideration will be given to the exact designated features present on the site, their scarcity/rarity and recognition of the protection offered by their existing status. Development on wildlife sites with the highest value will only be permitted exceptionally where the following can be demonstrated:

- i. There is no alternative solution (which shall be adequately demonstrated by the developer).*
- ii. There are reasons of public health or public safety or*
- iii. There are benefits of primary importance to the environment or*
- iv. There are imperative reasons of overriding public interest.*

Notwithstanding the above however, the presumption in favour of sustainable development does not apply where development requiring appropriate assessment under the Birds or Habitats Directives is being considered, planned or determined.

b. In determining any planning application affecting Sites of Biodiversity or Geological Importance the Council will ensure that the intrinsic natural features of particular interest are safeguarded or enhanced having regard to;

- i. The European, National or Local status and designation of the site;*
- ii. The nature and quality of the site's features, including its rarity value;*
- iii. The extent of any adverse impacts on the notified features of interest;*
- iv. The need for compensatory measures in order to re-create remaining features of habitats on or off site.*

c. Where appropriate the Council will ensure the effective management of designated sites through the imposition of planning conditions or Section 106 agreements as appropriate."

Policy ENV DM2 – Pagham Harbour

"a. Within Zone A (0-400m from the boundary) as identified on the Policies Map, development will only be permitted in exceptional circumstances where the developer is able to demonstrate there will be no detrimental effects on Pagham Harbour, including non-native species and the water environment. Regard shall also be had to tests 1-4 as set out in Policy DM1...

b. Within Zone B (0-5km) for all new residential development and development which is likely to have an impact on Pagham Harbour will be required to:

- i. Make developer contributions toward the agreed strategic approach to access management at Pagham Harbour.*
- ii. Create easily accessible new green spaces for recreation within or adjacent to the development site. These shall be capable of accommodating the predicted increases in demand for local walking, including dog walking. Good pedestrian links shall be provided between housing areas and new and existing green space in order to discourage car use.*

c. Major developments (as defined in the GDPO 1995 as amended) taking place outside Zone B and close to its boundary will be considered on a case by case basis to determine any potential effects on Pagham Harbour, and the need for any avoidance and mitigation measures."

Policy ENV DM5 – Development and biodiversity

"Development schemes shall, in the first instance, seek to achieve a net gain in biodiversity and protect existing habitats on site. They shall also however incorporate elements of biodiversity including green walls, roofs, bat and bird boxes as well as landscape features minimising adverse impacts on existing habitats (whether designated or not). Development schemes shall also be appropriately designed to facilitate the emergence of new habitats through the creation of links between habitat areas and open spaces. Together, these provide a network of green spaces which serve to reconnect isolated sites and facilitate species movement.

Where there is evidence of a protected species on a proposed development site, planning applications shall include a detailed survey of the subject species, with details of measures to be incorporated into the development scheme to avoid loss of the species. This involves consideration of any impacts that will affect the species directly or indirectly, whether within the application site or in an area outside of the site, which may be indirectly affected by the proposals. All surveys shall

be carried out at an appropriate time of year and shall be undertaken by a qualified and, where appropriate, suitably licensed person.

All developments shall have regard to Natural England's standing advice for protected species."

APPENDIX B: DETAILED SURVEY METHODOLOGY

Badgers

- 1.1 All hedgerows, scrub and other suitable habitats within the site and immediately adjacent to the site boundary, were searched for evidence of badger activity. The standard methodology was used, as outlined by Harris, Creswell and Jefferies (1991)¹. This involved a thorough search for evidence indicating the presence of badgers, including:
- setts, including earth mounds, evidence of bedding and runs between setts;
 - latrines, often located close to setts, at territory boundaries or adjacent to favoured feeding areas;
 - prints and paths or track ways;
 - hairs caught on rough wood or fencing; and
 - other evidence including snuffle holes, feeding and playing areas and scratching posts.
- 1.2 The identification of snuffle holes, scratching posts or feeding signs on their own is not necessarily conclusive evidence of the presence of badgers. A number of such signs may need to be seen in conjunction before they can be said to be conclusive of badger activity.
- 1.3 Where setts are found, their status and level of activity is noted. Sett status is broadly categorised as follows:
- *Main sett* – usually continuously used with many signs of activity around, a large number of holes and conspicuous spoil mounds.
 - *Annexe sett* – usually located close to a main sett and connected to it by well used paths. Annexes may not be continuously occupied.
 - *Subsidiary sett* – lesser used setts comprising a few holes and without associated well-used paths. Subsidiary setts are not continuously occupied.
 - *Outlier sett* – one or two holes without obvious paths. These are used sporadically.
- 1.4 Level of activity is described as:
- *Well used* – clear of debris, trampled soil mounds and obviously active, with signs of activity such as presence of prints, dislodged guard hairs around the entrances.
 - *Partially used* – some associated debris or plants at the entrance. Could be used with minimal excavation and usually with signs of activity within the vicinity, for example, badger pathways.
 - *Disused* – partially or completely blocked entrances.

¹ Harris, S., Creswell, P. and Jefferies, D., (1991). (Report) *Surveying Badgers*. The Mammal. Society, Bristol.

Bats

Ground-Based Tree Surveys

- 1.5 During the Phase 1 habitat survey, trees were assessed for the presence of Potential Roosting Features (PRF) for bats such as the following (Based on P16, British Standard 8596:2015 Surveying for bats in trees and woodland, October 2015):
- Natural holes (e.g. knot holes) arising from naturally shed branches or branches previously pruned back to a branch collar.
 - Man-made holes (e.g. cavities that have developed from flush cuts or cavities created by branches tearing out from parent stems).
 - Woodpecker holes.
 - Cracks/splits in stems or branches (horizontal and vertical).
 - Partially detached, loose or bark plates.
 - Cankers (caused by localised bark death) in which cavities have developed.
 - Other hollows or cavities, including butt rots.
 - Compression of forks with occluded bark, forming potential cavities.
 - Crossing stems or branches with suitable roosting space between.
 - Ivy stems with diameters in excess of 50mm with suitable roosting space behind (or where roosting space can be seen where a mat of thinner stems has left a gap between the mat and the trunk).
 - Bat or bird boxes.
 - Other suitable places of rest or shelter.
- 1.6 Certain factors such as orientation of the feature, its height from the ground, the direct surroundings and its location in respect to other features may enhance or reduce the potential value.
- 1.7 Trees were classified into general bat roost potential groups based upon the presence of these features. *Table B.1* (below) broadly classifies the potential categories as accurately as possible as well as discussing the relevance of the features. This table is based upon Table 4.1 and Chapter 6 in *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (J., Collins (Bat Conservation Trust, 2016) ².
- 1.8 Although the British Standard 8596:2015 document groups trees with moderate and high potential, these have been separated below (as per Table 4.1 in *The Bat Conservation Trust Guidelines*) to allow more specific survey criteria to be applied.

² Collins, J. (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)*. The Bat Conservation Trust, London

Table B.1: Classification and Survey Requirements for Bats in Trees

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey Work / Actions
Confirmed Roost	Evidence of roosting bats in the form of live / dead bats, droppings, urine staining, mammalian fur oil staining, etc.	A Natural England derogation licence application will be required if the tree or roost site is affected by the development or proposed arboricultural works. This will require a combination of aerial assessment by roped access bat workers (where possible, health and safety constraints allowing) and nocturnal survey during appropriate periods (e.g. nocturnal survey - May to August) to inform on the licence. Works to tree undertaken under supervision in accordance with the approved good practice method statement provided within the licence. However, where confirmed roost site(s) are not affected by works, work under a precautionary good practice method statement may be possible.
High Potential	A tree with one or more Potential Roosting Features that are obviously suitable for larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter protection, conditions (height above ground level, light levels, etc) and surrounding habitat. Examples include (but are not limited to); woodpecker holes, larger cavities, hollow trunks, hazard beams, etc.	Aerial assessment by roped access bat workers (if appropriate) and / or nocturnal survey during appropriate period (May to August). Following additional assessments, tree may be upgraded or downgraded based on findings. If roost sites are confirmed and the tree or roost is to be affected by proposals a licence from Natural England will be required. After completion of survey work (and the presence of a bat roost is discounted), a precautionary working method statement may still be appropriate.
Moderate Potential	A tree with Potential Roosting Features which could support one or more potential roost sites due to their size, shelter protection, conditions (height above ground level, light levels, etc) and	A combination of aerial assessment by roped access bat workers and / or nocturnal survey during appropriate period (May to August).

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey Work / Actions
	surrounding habitat but unlikely to support a roost of high conservation status (i.e. larger roost, irrespective of wider conservation status). Examples include (but are not limited to); woodpecker holes, rot cavities, branch socket cavities, etc.	Following additional assessments, tree may be upgraded or downgraded based on findings. After completion of survey work (and the presence of a bat roost is discounted), a precautionary working method statement may still be appropriate. If a roost site/s is confirmed a licence from Natural England will be required.
Low Potential	A tree of sufficient size and age to contain Potential Roosting Features but with none seen from ground or features seen only very limited potential. Examples include (but are not limited to); loose/lifted bark, shallow splits exposed to elements or upward facing holes.	No further survey required but a precautionary working method statement may be appropriate.
Negligible/No Potential	Negligible/no habitat features likely to be used by roosting bats	None.

* The Conservation of Habitats & Species Regulations 2019 (Amendment) (EU Exit) affords protection to “breeding sites” and “resting places” of bats. The EU Commission’s Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC, February 2007 states that these are places “where there is a reasonably high probability that the species concerned will return”.

Manual Activity Transects

- 1.9 The primary objective of the activity surveys was to identify foraging areas, commuting routes and general species utilisation of the site. Surveys followed BCT guidance (2016), where survey effort is based on the habitats present. Given the size, proximity to linear features such as the Ryebank Rife, woodlands and ditches, it was concluded that monthly surveys would be required between April to October.
- 1.10 In line with the BCT guidance the transect routes were predetermined prior to the survey, based on routes adopted in previous surveys. These were implemented to comprehensively cover all areas of the site and included point counts which were three-minutes in duration, during which time all bat activity was recorded. These point counts were strategically located throughout the site to account for any habitat loss and/or potential impacts from the proposed development, and to further ensure a comprehensive coverage of habitats.
- 1.11 Dusk transects each commenced at sunset and continued for approximately 2-3 hours. Surveys were undertaken in conditions that were as close to optimal as possible, as described

within the BCT guidance (2016), where sunset temperatures were 10°C or above, with no rain or strong winds. Dawn surveys commenced 2 hours before sunrise and ended at sunrise, or later if bat activity continued.

- 1.12 The surveys were undertaken by appropriately experienced/licenced ecologists from FPCR. Each transect was walked at a steady pace using a Wildlife Acoustic Inc. Echo Meter Touch bat detector and Apple Inc. iPad.
- 1.13 Post-survey, the bat calls recorded on the transect were then analysed by experienced ecologists using Kaleidoscope software (Wildlife Acoustics Inc.) to verify the bat species and activity levels.
- 1.14 Details of the nocturnal, manual activity surveys completed during 2021 are presented in *Table B.2* below.

Table B.2: Nocturnal Activity Survey Timings and Weather Conditions

Survey Ref/ Date	Survey Type	Start Time	Sunset /Sunrise Time	Finish Time	Weather Conditions (temp °C; cloud cover %; wind (beaufort); and rain)
Transect 1 – 31 st August 2021	Dusk Transect	19:51	19:51	21:51	16 - 15°C, 80% -90% cloud, wind 2, no rain.
Transect 2 – 20 th September 2021	Dusk Transect	19:06	19:06	21:06	19 - 15°C, 20-50% cloud, wind 1, no rain.
Transect 3 – 19 th October 2021	Dusk Transect	18:02	18:02	20:10	18°C, 100% cloud, wind 2, no rain.

Automated Activity Surveys

- 1.15 Two static, passive recording, broadband detectors were deployed on site. These automated logging systems, Song Meter SM4BAT FS detectors (from Wildlife Acoustics Inc.), herein referred to as static detectors, save all recordings onto an internal storage device, which can be collected and analysed following the survey.
- 1.16 The static detectors were deployed each month between August and October 2021, where they were left for a period of five consecutive nights, in line with the current guidance (BCT, 2016).
- 1.17 The static units were programmed to activate 30 minutes before dusk and record continuously until 30 minutes following sunrise. The output from these detectors was subject to computer analysis using the software package Kaleidoscope Viewer (Wildlife Acoustics Version 5.1.3).
- 1.18 The SM4BAT records sound files of up to 12 seconds in length before a new file is created. The analysis of the SM4BAT files recorded can highlight the presence of more than one bat if they are recorded simultaneously on the same sound file. However, it is not possible to determine whether consecutive sound files have been recorded as the result of a single bat passing the detector as it commutes across the landscape, or by one bat repeatedly triggering the detector as it forages in close proximity for an extended period (unlike the transect section above where the number of bats can often be visually identified). Therefore, each sound file is counted as a single bat pass or registration and the number of registrations provides an indication of the relative importance of the site / the detector location for bats.

- 1.19 The timings for each automated activity survey completed, along with descriptions of the locations of static (passive) detector units deployed during each, are detailed in *Table B.3* below with the location also shown on the plan in *Figures 4, 5 & 6*.

Table B.3: Static Detector Survey Dates

Position (Figures 4, 5 & 6)	Periods Recorded	Area Covered
A	25 th – 30 th August 2021	Northern boundary parallel to Grevatt's Lane
B		Western boundary within the broadleaved woodland boundary
C	20 th – 25 th September 2021	Southern boundary within the broadleaved woodland boundary
D		Treeline south of Ryebank Rife
E	19 th – 26 th October 2021	Centre of hedgerow H2 in the middle of the site
F	27 th October – 1 st November 2021	Eastern boundary within broadleaved woodland boundary

Birds

Winter Bird Survey

- 1.20 The survey methodology employed was based on that recommended in standard literature e.g. Winter Farmland Bird Survey as used for the British Trust for Ornithology (BTO)^{4,5}. Standard BTO species codes and symbols for bird activities were used to identify birds and denote activity, sex and age where appropriate.
- 1.21 To provide a reasonable level of accuracy for determining the population status of the wintering birds on the site, one survey has been undertaken in November 2021 (*Table B.4*), with one each month programmed for December 2021, January 2022 and February 2022 between 08.00 and 16.00hrs.
- 1.22 A route was mapped out prior to the surveys being undertaken, paying particular attention to any linear features, such as hedgerows and tree lines, and natural features such as areas of scrub and waterbodies. The surveyor walked this predefined transect during each visit. All birds seen or heard were marked on a plan using standard BTO notation. Bird surveys were not undertaken in unfavourable conditions such as heavy rain or strong wind, which may negatively affect the results.

Table B.4. Wintering Bird Survey Date and Weather Conditions

Date	Sunrise	Cloud Cover (%)	Rain	Wind	Visibility
09.11.2021	07:08	90	None	Light air	Excellent

Dormice

4 Bibby, C.J., N.D. Burgess & D.A. Hill (1992): *Bird Census Techniques*. London: Academic Press

5 Gilbert, G., Gibbons, D.W., and Evans, J. (1998). *Bird Monitoring Methods: a manual of techniques for key UK species*. RSPB, Sandy

- 1.23 Dormouse presence/likely absence surveys were undertaken in accordance with current good practice guidelines within The Dormouse Conservation Handbook⁶. Surveys involved placing standard dormouse nest tubes every 20m in suitable habitat, approximately 1.5m above ground. A total of 150 tubes were installed on site on 27th August 2021 and subsequent checks have been completed in September, October and November 2021. Surveys were undertaken by suitably qualified ecologists.
- 1.24 Guidelines provide an index of probability, which indicates the likelihood of finding dormice during the survey period (*Table B.5*). The final survey score is calculated by multiplying the sum of the months that tubes were checked by the number of tubes used, based on 50 tubes as a standard (i.e. 50=1). Fewer tubes reduce the overall score (i.e. 25 tubes = 0.5) and more tubes increase the score (i.e. 100 tubes = 2). A survey effort score of 20 or above is required to provide confidence in the survey results.

Table B.5: Index of probability for nest tube surveys

Month	Index of Probability
April	1
May	4
June	2
July	2
August	5
September	7
October	2
November	2

Limitations

- 1.25 Due to the timing of commission, the surveys undertaken in 2021 have not reach a survey effort score of 20 and currently have a score of 11, however surveys are ongoing and will continue into 2022. Should evidence of dormice be recorded during this time, appropriate mitigation will be provided.

Reptiles

- 1.26 Strategic reptile presence/likely absence surveys were undertaken within the survey area following current guidance^{7,8,9}. These surveys were completed between and September and October 2021 (*Table B.6*).
- 1.27 Artificial refugia (0.5m² sections of roofing felt) were placed throughout the survey area at a density of five refugia per hectare of suitable reptile habitat. These habitats included the field boundaries with pockets of tall ruderal vegetation, hedgerows, scrub around the ponds and scattered log piles. Refugia locations are shown in *Figure 9*.

6 Bright, P.W., Morris, P. & Mitchell-Jones, T. (2006) *The Dormouse Conservation Handbook*. English Nature, Peterborough.

7 Gent, T. & Gibson, S. (eds) (2003) *Herpetofauna Workers' Manual*. JNCC, Peterborough.

8 Froglife (2016) *Surveying for reptiles: Tips, techniques, and skills to help you survey for reptiles*. Froglife, Peterborough.

9 Natural England & Defra (2015) *Reptiles: surveys and mitigation for development and projects* - <https://www.gov.uk/guidance/reptiles-protection-surveys-and-licences> [Accessed 18.10.2021]

1.1 In 2021, refugia were left to bed in for a period of 14 days before seven survey visits were undertaken by experienced FPCR ecologists in suitable weather conditions. These include air temperatures between 9-19°C in the absence of strong winds and heavy rain.

1.2 Each survey visit included the following:

- Checking all refugia within the survey area at least once;
- Approaching refugia carefully from downwind and without casting a shadow so as not to disturb basking animals;
- Lifting and replacing refugia with care to check for the presence of reptiles underneath;
- Checking other suitable basking areas and resting places within the survey area, such as log piles.

Table B.6: Reptile Survey Weather Conditions 2021

Survey Dates & Weather Conditions 2021	
Date & Time	Weather
13 th September 2021 08:45	16°C, overcast, dry, 90-100% cloud cover, light air/breeze
17 th September 2021 08:55	17°C, sunny intervals, dry, 60-70% cloud cover, light breeze
20 th September 2021 09:00	15°C, sunny intervals, dry, 30-40% cloud cover, moderate breeze
24 th September 2021 08:40	14°C, sunny and clear, dry, 0-10% cloud cover, light breeze
27 th September 2021 10:40	15°C, sunny, rain earlier in day, 20-30% cloud cover, light breeze
5 th October 2021 09:00	15°C, sunny, rain earlier in day, moderate breeze
11 th October 2021 09:30	11°C, sunny intervals, dry, 10-20% cloud cover, light breeze

Population Assessment

1.3 Reptile populations were assessed in accordance with the Key Reptile Site Register criteria¹⁰. This system classifies populations of individual reptile species into three population categories according to importance (*Table B.7*). These categories are based on the peak number of adults observed during individual surveys.

Table B.7: Reptile population categories

Species	Low Population (no. of individuals)	Good Population (no. of individuals)	Exceptional Population (no. of individuals)
Adder <i>Vipera berus</i>	<5	5-10	>10

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

Species	Low Population (no. of individuals)	Good Population (no. of individuals)	Exceptional Population (no. of individuals)
Grass Snake <i>Natrix helvetica</i>	<5	5-10	>10
Common Lizard <i>Zootoca vivipara</i>	<5	5-20	>20
Slow Worm <i>Anguis fragilis</i>	<5	5-20	>20

Riparian Mammals

Otter

- 1.28 The survey methodology detailed below is used to determine the status of otters. The methodology follows that of the full survey detailed in the New Rivers and Wildlife Handbook¹¹ and Channin (2003)¹²¹³.
- 1.29 Due to the unlikely event of actual observation, the survey concentrated on locating field signs indicating otter presence or use. Such field signs include:
- Spraints – characteristic sweet-smelling, black tar-like (where fresh/relatively recent i.e. within a few weeks) or grey crumbly (when old) faecal deposits usually containing fish scales, bones and occasionally invertebrate exoskeleton and bird feathers.
 - Footprints – In good substrate typically asymmetrical and showing five toes arched around a large pad and, depending on substrate, webbing and claw marks. Poorer, generally coarser substrates do not often enable the identification of otter footprints.
- 1.30 Additional signs of otter presence may occur, although without additional evidence are usually not conclusive proof of current otter presence, such as:
- Feeding remains – Remains of fish and aquatic invertebrates
 - Slides/haul-outs – Routes into and out of the water, which are usually associated with terrestrial routes such as short cuts around meanders or along traditionally, used otter paths/routes.
 - Couches/hovers – above ground resting place. Usually associated with cover such as dense scrub, rushes or reed, flood debris or fallen trees. Many couches are rarely used whilst others more so. Difficult to prove use without radio tracking.
 - Holts – below ground resting site usually associated with spraints. Sometimes used with greater frequency than couches and can be important for breeding (natal holts) where other signs are usually absent. Notoriously difficult to find or prove without radio tracking.
- 1.31 Otter surveys can be undertaken at all times of the year, if weather conditions are suitable prior to and during the surveys.

Water Vole

¹¹ RSPB, the National Rivers Authority, and the RSNC 1994

¹² Channin, P (2003) *Ecology of the European Otter. Conserving Natura 2000 Rivers Ecology Series No. 10*. English Nature, Peterborough

¹³ Channin, P (2003) *Monitoring the European Otter. Conserving Natura 2000 Rivers. Ecology Series No.10*. English Nature, Peterborough

- 1.32 An initial habitat assessment was made by an experienced surveyor to determine the suitability of habitats within the site to support water voles. Habitat requirements were based on those detailed in the Water vole Mitigation Handbook¹⁴ and Water vole Field Signs and Habitat Assessment¹⁵ and include:
- dry areas above water level for nesting, either in burrows or above-ground woven nests;
 - steep bank profiles;
 - suitable bank substrate for burrowing;
 - daily water level fluctuations;
 - herbaceous marginal and bankside vegetation; and
 - suitable water depth.
- 1.33 The presence / likely absence surveys took place in accordance with those specified within Water Vole Mitigation Handbook (2016)¹⁶, and involved the identification of evidence of water vole activity within 5m of the banks of the waterbodies and any suitable habitat, including ditches. These surveys were undertaken by experienced ecologists during suitable conditions.
- 1.34 The banks/margins of the waterbodies and suitable habitat were surveyed for evidence of:
- *water voles* – live sightings
 - *latrines* - distinct piles of water vole droppings found near nest sites, at the ranges of territorial boundaries and where the animals enter and leave the water. The presence of droppings is the only field sign which can be used reliably on its own;
 - *burrows* - burrow entrances are typically wider than high with a diameter between 4 and 8cm. Generally, these burrow entrances are located at the water's edge;
 - *feeding stations* - areas with distinct neat piles of chewed lengths of vegetation along pathways or haul out platforms along the water's edge;
 - *footprints* - identifiable prints in soft margins of the watercourse;
 - *runs* - low tunnels that are pushed through the vegetation and often leading to burrows or feeding stations; and
 - *nest balls* – woven vegetation of approximately the size and shape of a rugby ball, usually found within a tuft of vegetation above the water line.
- 1.35 The survey within the reedbed was undertaken by walking a transect route through the reeds

¹⁴ Dean, M., Strachan, R., Gow, D & Andrews, (2016) *The Water Vole Mitigation Handbook. The Mammal Society Guidance Series*. Eds F. Matthews & P. Chanin. The Mammal Society, London.

¹⁵ Dean, M, (2021), *Water Vole Field Signs and Habitat Assessment: A Practical Guide to Water vole Surveys*, Pelagic Publishing

¹⁶ Dean, M., Strachan, R., Gow, D & Andrews, (2016) *The Water Vole Mitigation Handbook. The Mammal Society Guidance Series*. Eds F. Matthews & P. Chanin. The Mammal Society, London.

APPENDIX C: BOTANICAL LIST

Common Name	Latin Name	Arable margins	Tall ruderal	Ditches (including Ryebank Rife	Tree lines	Hedgerows	Woodland
Creeping bent	<i>Agrostis stolonifera</i>	✓ F					
False oat grass	<i>Arrhenatherum elatius</i>	✓ A					
Cock's foot	<i>Dactylis glomerata</i>	✓ F					
Yorkshire fog	<i>Holcus lanatus</i>	✓ O					
Perennial ryegrass	<i>Lolium perenne</i>	✓ A					
Dandelion	<i>Taraxacum officinale</i> agg.	✓ O					
Common nettle	<i>Urtica dioica</i>	✓ F		✓ F			
Common hogweed	<i>Heracleum sphondylium</i>	✓ O		✓ O			
Common mallow	<i>Malva sylvestris</i>	✓ O					
Broad-leaved dock	<i>Rumex obtusifolius</i>	✓ F	✓ F				
Hedge bindweed	<i>Calystegia sepium</i>	✓ O		✓ O			
White clover	<i>Trifolium repens</i>	✓ O					
Elder	<i>Sambucus nigra</i>			✓ O			✓
Bramble	<i>Rubus fruticosus</i>			✓ F	✓		
Common fleabane	<i>Pulicaria dysenterica</i>	✓ R					
Creeping thistle	<i>Cirsium arvense</i>	✓ F		✓ O	✓		
Creeping cinquefoil	<i>Potentilla reptans</i>	✓ R	✓ F				
Greater plantain	<i>Plantago major</i>	✓ R					
Perforate St John's wort	<i>Hypericum perforatum</i>	✓ R					
Ribwort plantain	<i>Plantago lanceolata</i>	✓ R					
Bristly oxtongue	<i>Helmenthotheca echioides</i>	✓ R	✓ F				
Common reed	<i>Phragmites australis</i>			✓ F			
Yarrow	<i>Achillea millefolium</i>	✓ R					

Common Name	Latin Name	Arable margins	Tall ruderal	Ditches (including Ryebank Rife	Tree lines	Hedgerows	Woodland
Oxeye daisy	<i>Leucanthemum vulgare</i>	✓ R					
Old man's beard	<i>Clematis vitalba</i>			✓ O		✓	
Scarlet pimpernel	<i>Anagallis arvensis</i>	✓ R					
Hop trefoil	<i>Trifolium campestre</i>	✓ R					
Red clover	<i>Trifolium pratense</i>	✓ O					
Bird's foot trefoil	<i>Lotus corniculatus</i>	✓ R	✓ O				
Fat hen	<i>Chenopodium album</i>	✓ R					
Daisy	<i>Bellis perennis</i>	✓ R					
Great willowherb	<i>Epilobium hirsutum</i>		✓ R	✓ R			
Field maple	<i>Acer campestre</i>			✓ R	✓		✓
Sycamore	<i>Acer pseudoplatanus</i>			✓ F	✓		✓
Dog rose	<i>Rosa canina</i>			✓ R	✓		
Ivy	<i>Hedera helix</i>			✓ O	✓		✓
Teasel	<i>Dipsacus fullonum</i>	✓ R	✓ O	✓ R			
Blackthorn	<i>Prunus spinosa</i>			✓ O	✓	✓	✓
Field bindweed	<i>Convolvulus arvensis</i>			✓ R			
Dogwood	<i>Cornus sanguinea</i>			✓ R	✓		
Tufted vetch	<i>Vicia cracca</i>			✓ R			
Spear thistle	<i>Cirsium vulgare</i>	✓ R					
Ash	<i>Fraxinus excelsior</i>			✓ O	✓	✓	✓
Hawthorn	<i>Crataegus monogyna</i>			✓ O	✓	✓	✓
Burdock	<i>Arctium sp.</i>	✓ R					
False brome	<i>Brachypodium sylvaticum</i>	✓ R		✓ O			
Apple	<i>Malus sp.</i>			✓ R	✓		
Common orache	<i>Atriplex patula</i>	✓ O					

Common Name	Latin Name	Arable margins	Tall ruderal	Ditches (including Ryebank Rife	Tree lines	Hedgerows	Woodland
Hazel	<i>Coryllus avellana</i>			✓ R	✓		✓
English oak	<i>Quercus robur</i>			✓ R	✓		✓
Buddleja	<i>Buddleja sp.</i>	✓ R	✓ O				
Common knapweed	<i>Centaurea nigra</i>		✓ O				
Bittersweet	<i>Solanum dulcamara</i>		✓ R				
Black bryony	<i>Dioscorea communis</i>				✓		✓
Prickly lettuce	<i>Lactuca serriola</i>	✓ O					
Poppy	<i>Papaver rhoeas</i>	✓ O					
Red campion	<i>Silene dioica</i>	✓ R					
Dovesfoot cranesbill	<i>Geranium mole</i>	✓ R					
Common ragwort	<i>Jacobaea vulgaris</i>	✓ O					
Horsetail	<i>Equisetum sp.</i>	✓ R					
Germander speedwell	<i>Veronica chamaedrys</i>	✓ R					
Scentless mayweed	<i>Tripleurospermum inodorum</i>	✓ O					
Sessile oak	<i>Quercus petraea</i>				✓		
Holm oak	<i>Quercus ilex</i>				✓		
Alder	<i>Alnus glutinosa</i>				✓	✓	✓
Horse chestnut	<i>Aesculus hippocastanum</i>						✓
Sweet chestnut	<i>Castanea sativa</i>						✓
Harts tongue fern	<i>Asplenium scolopendrium</i>						✓
Hedge woundwort	<i>Stachys sylvatica</i>						✓
Honeysuckle	<i>Lonicera periclymenum</i>						✓
Elm	<i>Ulmus procera</i>				✓		✓
Holly	<i>Ilex aquifolium</i>						✓

Common Name	Latin Name	Arable margins	Tall ruderal	Ditches (including Ryebank Rife	Tree lines	Hedgerows	Woodland
Crack willow	<i>Salix fragilis</i>				✓	✓	✓
Meadowsweet	<i>Filipendula ulmaria</i>			✓ F			
Meadow vetchling	<i>Lathyrus pratensis</i>			✓ R			
Upright brome	<i>Bromus erectus</i>			✓ R			
Mock orange	<i>Philadelphus sp.</i>						✓
White poplar	<i>Populus alba</i>						✓
Beech	<i>Fagus sylvatica</i>						✓
Lime	<i>Tilia sp.</i>						✓
Stinking iris	<i>Iris foetidissima</i>						✓
Yew	<i>Taxus baccata</i>						✓
Wild privet	<i>Ligustrum vulgare</i>						✓
White bryony	<i>Bryonia alba</i>					✓	
Pendulous sedge	<i>Carex pendula</i>						✓
Curled dock	<i>Rumex crispus</i>						✓
Hedge bedstraw	<i>Galium album</i>			✓ O			

APPENDIX D: ROOSTING BAT POTENTIAL TREES

Tree Ref.	Species	Surveys completed	Potential Roost Features (PRF)	Bat Potential Assessment
T1	Ash <i>Fraxinus excelsior</i>	Ground	Shallow knot hole	Low
T2	Ash	Ground	Occluded union	Moderate
T3	Ash	Ground	Knot hole	Moderate
T4	Ash	Ground	Woodpecker hole, occluded union	Moderate
T5	Ash	Ground	Shallow knot hole	Low
T6	English Oak <i>Quercus robur</i>	Ground	Vertical crack	Moderate
T7	Ash	Ground	Knot holes	Moderate
T8	Ash	Ground	Shallow knot hole	Low
T9	English Oak	Ground	Branch tear out & compression fork	Moderate
T10	Turkey Oak <i>Quercus cerris</i>	Ground	Shallow branch tear out	Low
T11	Aspen <i>Populus tremula</i>	Ground	Woodpecker hole	Moderate
T12	Sweet Chestnut <i>Castanea sativa</i>	Ground	Vertical crack	Moderate
T13	Sycamore <i>Acer pseudoplatanus</i>	Ground	Vertical crack	Low
T14	Ash	Ground	Knot hole	Moderate
T15	Sweet Chestnut	Ground	Woodpecker holes	High
T16	Sycamore	Ground	Lifted bark	Low
T17	Ash	Ground	Vertical and horizontal cracks	High
T18	Ash	Ground	Occluded union	Low
T19	Purple Plum <i>Prunus cerasifera Pissardii</i>	Ground	Knot hole	Moderate
T20	Sycamore	Ground	Knot hole	Moderate
T21	Dead	Ground	Woodpecker hole	High
T22	Ash	Ground	Woodpecker hole & occluded union	Moderate
T23	Bird Cherry <i>Prunus padus</i>	Ground	Branch tear out	Low
T24	Dead	Ground	Woodpecker hole	Moderate
T25	Ash	Ground	Shallow knot hole	Low
T26	Wild Cherry <i>Prunus avium</i>	Ground	Branch tear out	Low
T27	Ash	Ground	Occluded union	Low
T28	Ash	Ground	Knot hole	Moderate
T29	Ash	Ground	Knot hole	Low
T30	Ash	Ground	Woodpecker hole	Moderate
T31	Ash	Ground	Rot hole	Low
T32	Ash	Ground	Shallow knot hole	Low
T33	Ash	Ground	Knot hole	Low
T34	Field Maple <i>Acer campestre</i>	Ground	heavily matted ivy (> 50mm Dia.)	Low

Tree Ref.	Species	Surveys completed	Potential Roost Features (PRF)	Bat Potential Assessment
T35	Field Maple	Ground	heavily matted ivy (> 50mm Dia.)	Low
T36	English Oak	Ground	branch tear out	Low
T37	Field Maple	Ground	other vertical or horizontal crack or split	Low

Appendix E: Land to the south of Grevatt's Lane, Ancton – 2021/22 Wintering Bird Survey Results

Survey	Surveyor	Date	Cloud (%)	Rain	Wind	Visibility
1	OGJ	09.11.21	90	None	1-2	V. Good
2	OGJ	17.12.21	100	None	0-2	V. Good
3	OMS	25.02.22	100	None	2	Good

Species: British Common Name	Species: Latin name	Survey 1	Survey 2	Survey 3	Conservation Status & Protection
Pheasant	<i>Phasianus colchicus</i>	1	1	-	Not listed
Little Egret	<i>Egretta garzetta</i>	1	-	-	Green list
Sparrowhawk	<i>Accipiter nisus</i>	1	1	-	Green list
Buzzard	<i>Buteo buteo</i>	4 (+ 1 flyover)	-	1	Green list
Kestrel	<i>Falco tinnunculus</i>	1 (+ 1 flyover)	1	-	Amber list
Snipe	<i>Gallinago gallinago</i>	-	2	1	Amber list
Black-headed gull	<i>Chroicocephalus ridibundus</i>	133 (+ 32 flyovers)	4 (+ 9 flyovers)	4 (+ 31 flyovers)	Amber list
Herring gull	<i>Larus argentatus</i>	5 (+ 10 flyovers)	(8 flyovers)	5 (+ 25 flyovers)	Red list
Green woodpecker	<i>Picus viridis</i>	2	-	-	Green list
Stock dove	<i>Columba oenas</i>	1 (+ 3 flyovers)	1 (+ 2 flyovers)	-	Amber list
Woodpigeon	<i>Columba palumbus</i>	6 (+ 8 flyovers)	7 (+ 24 flyovers)	169 (+ 7 flyovers)	Amber list
Great spotted woodpecker	<i>Dendrocopos major</i>	3	2	1	Green list
Magpie	<i>Pica pica</i>	11 (+ 4 flyovers)	9	2	Green list
Jay	<i>Garrulus glandarius</i>	4 (+ 1 flyover)	2	-	Green list
Jackdaw	<i>Corvus monedula</i>	27	7 (+ 2 flyovers)	-	Green list
Rook	<i>Corvus frugilegus</i>	-	1	-	Amber list
Carrion crow	<i>Corvus corone</i>	18 (+ 4 flyovers)	12 (+7 flyovers)	111 (+ 2 flyovers)	Green list
Goldcrest	<i>Regulus regulus</i>	1	1	-	Green list

Species: British Common Name	Species: Latin name	Survey 1	Survey 2	Survey 3	Conservation Status & Protection
Blue tit	<i>Cyanistes caeruleus</i>	19 + 1 flock	16 + 1 flock	4	Green list
Great tit	<i>Parus major</i>	4 + 1 flock	6	1	Green list
Skylark	<i>Alauda arvensis</i>	(1 flyover)	1 (+ 1 flyover)	1	Red list NERC S.41
Long-tailed tit	<i>Aegithalos caudatus</i>	7 + 2 flocks	3 + 2 flocks	-	Green list
Nuthatch	<i>Sitta europaea</i>	-	1	-	Green list
Treecreeper	<i>Certhia familiaris</i>	3	1	-	Green list
Wren	<i>Troglodytes troglodytes</i>	10	9 (+ 1 flyover)	5	Amber list
Starling	<i>Sturnus vulgaris</i>	14 (+ 21 flyovers)	(6 flyovers)	-	Red list NERC S.41
Blackbird	<i>Turdus merula</i>	14	14	17	Green list
Fieldfare	<i>Turdus pilaris</i>	3	3 (+ 4 flyovers)	-	Red list WCA Sch. 1
Song thrush	<i>Turdus philomelos</i>	6	3	1	Amber list NERC S.41
Redwing	<i>Turdus iliacus</i>	13 (+ 12 flyovers)	11 (+ 6 flyovers)	-	Amber list WCA Sch. 1
Robin	<i>Erithacus rubecula</i>	15	11	12	Green list
Dunnoek	<i>Prunella modularis</i>	7	5	1	Amber list NERC S.41
Grey Wagtail	<i>Motacilla cinerea</i>	(1 flyover)	-	-	Amber list
Pied wagtail	<i>Motacilla alba</i>	(2 flyovers)	1 (+ 4 flyovers)	(1 flyover)	Green list
Meadow pipit	<i>Anthus pratensis</i>	3 (+ 1 flyover)	(2 flyovers)	12 (+ 2 flyovers)	Amber list
Chaffinch	<i>Fringilla coelebs</i>	3 (+ 1 flyover)	2 (+ 3 flyovers)	-	Green list
Greenfinch	<i>Carduelis chloris</i>	-	(1 flyover)	-	Red list
Linnet	<i>Carduelis cannabina</i>	(3 flyovers)	4	-	Red list NERC S.41
Goldfinch	<i>Carduelis carduelis</i>	31 (+ 4 flyovers)	9 (+ 1 flyover)	(1 flyover)	Green list
Total No. Species		35	35	19	(Total: 39)