



Preliminary Ecological Appraisal

Whitestones Farm

Main Road

Birdham

West Sussex

PO20 7QL



19th December 2018

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Notice to Interested Parties

To achieve the study objectives stated in this report, we were required to base our conclusions on the best information available during the period of the investigation and within the limits prescribed by our client in the agreement.

No investigative method can completely eliminate the possibility of obtaining partially imprecise or incomplete information. Thus, we cannot guarantee that the investigations completely defined the degree or extent of e.g. species abundances or habitat management efficacy described in the report.

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EXECUTIVE SUMMARY

- 0.1 Arbeco Ltd. were commissioned by The Trustees of D R Pick Grandchildren's Settlement c/o Savills to carry out a Preliminary Ecological Appraisal (PEA) at Whitestones Farm, Main Road, Birdham, West Sussex, PO20 7HU to help inform future development opportunities.
- 0.2 This report identifies the potential of the site to support protected habitats and species and evaluates the constraints that the presence of any protected species or species of conservation concern may place on any future development opportunities.
- 0.3 The habitats present within the proposed development footprint comprised arable farmland, semi-improved grassland, intact hedgerows, scrub, broad-leaved treeline, hardstanding, scattered trees and tall ruderal vegetation.
- 0.4 The habitats present on site provide suitable habitat for the following protected species: badgers *Meles meles*, bats, breeding birds, great crested newts *Triturus cristatus*, hazel dormice *Muscardinus avellanarius*, reptiles and invertebrates.
- 0.5 The site was considered to have moderate ecological value in a local context due to the majority of the site comprising arable farmland, with more valuable habitats along the site boundaries including hedgerows, semi-improved grassland, scattered trees and dense scrub.
- 0.6 Future development proposals for the site could have an impact on a range of important habitats and species which may be present. In order to inform the design and location for future development it is considered that a suite of additional ecological surveys will be required to include bird surveys, bat surveys, badger surveys, great crested newt surveys and reptile surveys, as detailed in Section 6 of this report.
- 0.7 It is recommended that the boundary habitats including hedgerows, semi-improved grassland, dense scrub and trees are retained as much as possible within the future development.
- 0.8 Recommendations for enhancements for biodiversity are set out in Section 6 of this report, including in-fill planting, planting of trees, hedgerows and wildflower corridors, installation of bat boxes and bird boxes, creation of hibernacula for reptiles and amphibians and provision of deadwood for invertebrates.

1 INTRODUCTION

- 1.1 Arbeco Ltd. were commissioned by a Preliminary Ecological Appraisal (PEA) at Whitestones Farm, Main Road, Birdham, PO20 7QL to help inform future development opportunities.
- 1.2 The objectives of the PEA were to assess the potential of the site to support protected species and/or species of conservation importance by identifying potential habitat for protected species and/or species of conservation concern and by evaluating the constraints that the presence of any protected species or species of conservation concern may place on the proposed allocation of the site.

Legislation and Policy

- 1.3 Certain habitats and species including nesting birds, bats, great crested newts, are afforded protection under the Conservation of Habitats and Species Regulations 2017 and the Wildlife & Countryside Act 1981 (as amended). Further information on the legislation is included in Appendix A.
- 1.4 In general, the above legislation makes it an offence to:
 - Deliberately/intentionally or recklessly kill, injure or take a protected species;
 - Intentionally or recklessly damage, destroy or obstruct access to any place that a protected species uses for shelter or protection whether the species is present or not;
 - Intentionally or recklessly disturb a protected species while it is occupying a structure or place that it uses for shelter or protection;
 - Deliberately take or destroy the eggs of species protected by this legislation (such as nesting birds).
- 1.5 Section 41 of the Natural Environment and Rural Communities Act (2006) lists the species and habitats of principal importance for the conservation of biodiversity in England and acts as a guide to local authorities in implementing their duties under Section 40, to have regard to the conservation of biodiversity in England.
- 1.6 The Protection of Badgers Act (1992) prohibits reckless and/or intentional cruelty, injury or killing of badgers and the interference with badger setts.
- 1.7 Under The National Planning Policy Framework (NPPF) (Ministry of Housing, Communities and Local Government, 2018) protected sites and species are a material consideration in determining planning applications in terms of minimising impacts on and providing net gains for biodiversity.
- 1.8 The Chichester Local Plan Review 2016-2035: Preferred Approach (Chichester District Council, 2018) sets out criteria for the protection and enhancement of biodiversity under Policy DM29: Biodiversity. It states that planning permission will be granted for development where it can be demonstrated that all the following criteria have been addressed:

- The biodiversity value of the site is safeguarded;
- Demonstrable harm to habitats or species which are protected or which are of importance to biodiversity is avoided or mitigated;
- The proposal has incorporated features that enhance biodiversity as part of good design and sustainable development, and identifies and pursues opportunities for achieving a net gain in biodiversity;
- The proposal protects, manages and enhances the plan area network of ecology, biodiversity and geological sites, including the international, national and local designated sites (statutory and non-statutory), priority habitats, wildlife corridors and stepping stones that connect them;
- Any individual or cumulative adverse impacts on sites are avoided;
- The benefits of development outweigh any adverse impact on the biodiversity on the site. Exceptions will only be made where no reasonable alternatives are available; and planning conditions and/or planning obligations may be imposed to mitigate or compensate for the harmful effects of the development.

1.9 The Chichester Local Plan Review 2016-2035: Preferred Approach (Chichester District Council, 2018) also provides criteria for developments to contribute towards additional green infrastructure, and the protection and enhancement of existing green infrastructure. It states that planning permission will be granted where it can be demonstrated that all the following criteria have been addressed:

- The proposals maintain and, where appropriate, incorporate improvements to the existing network of green infrastructure, or the restoration, enhancement or creation of additional provision areas;
- Where appropriate, the proposals create new green infrastructure which is integrated into the development design and meets the needs of the communities within and beyond the site boundaries;
- The proposals contribute to improving the health and well-being of the local and wider community;
- The proposals do not lead to the dissection of the linear network of cycle ways, public rights of way, bridleways and ecological corridors; and
- Where appropriate, the Council will seek to secure via planning obligation provision for the future management and/or maintenance of green infrastructure.
- Development that will harm the green infrastructure network will only be granted if it can incorporate measures that avoid the harm arising or sufficiently mitigate its effects.
- The Council will expect that a legal agreement is entered in to where it is necessary to secure green infrastructure provision, or to ensure the long term sustainable management of green infrastructure. Unless stated elsewhere the Council will normally not be responsible for the long term maintenance and management of green infrastructure.

Site Description

- 1.10 The site is located in the village of Birdham, approximately 6 km south west of the town of Chichester, West Sussex (Ordnance Survey Grid Reference for the centre of the site: SZ 82356 99614). The site is approximately 13.3 ha in area and currently comprises arable farmland with some residential buildings and farm buildings that have been converted for retail use.
- 1.11 The location of the site is shown in Figure 1.1 and the extent of the site boundary is shown in Figure 1.2.
- 1.12 The site is bordered to the north by a busy main road, the A286, with residential area and playing field beyond, to the east by horticultural land and buildings, to the south by arable land and to the west by equestrian farmland and residential land.
- 1.13 The habitats in the wider landscape comprise mainly agricultural and horticultural land. There is a large area of mudflats approximately 1.2 km north west of the site, which is listed under the Priority Habitat Inventory. There is a small area of saline lagoon (approximately 0.7 km north of the site) and area of floodplain grazing marsh (the closest of which is 0.65 km north of the site), which are also listed under the priority habitat inventory. There is very little woodland with 2 km of the site, to the north of the site are scattered area of ancient woodland, the closest of which is Salterns Copse which lies approximately 1.4 km north of the site boundary.

Development Proposals

- 1.14 This report highlights any limitations and areas for enhancement relating to ecology at Whitestones Farm, which may help to inform the future development of the site.

2 METHODS

Desk Study

- 2.1 The Multi Agency Geographic Information for the Countryside (MAGIC) website provided by the Department for Environment, Food and Rural Affairs (Defra) was consulted for information with regard to protected habitats and species within 2 km of the proposed development (red line) boundary.
- 2.2 Aerial photos of the site (Google, 2018) were examined to determine habitats surrounding the site and hence species likely to be present in order to make appropriate recommendations in the wider landscape context.
- 2.3 Biological records were obtained from Kent Biological Records Centre (KBRC). The records were screened for age and relevance to only include records from the past ten years for species that could occur on site.

Field Survey

- 2.4 The survey was conducted in accordance with The Handbook for Phase 1 Habitat Survey (JNCC, 2010), and included searches for signs of protected species, as described in the Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017).
- 2.5 A Preliminary Ecological Appraisal (PEA) survey of the site was carried out by a suitably qualified ecologists, Georgina Baulcomb BSc (Hons) MSc and Sophie Bracken BSc (Hons) MRes on 28th November 2018 in order to evaluate any habitat on the site with the potential to support protected species and/or other species of conservation concern that could be relevant in respect of planning policies.
- 2.6 In addition, the habitats within the survey area were assessed for their potential to support legally protected or otherwise notable flora and fauna. Where suitable habitat was identified on site, a search was conducted for signs indicating the presence of protected species such as droppings, burrows, tracks and evidence of feeding. Where species are not specifically evaluated, this indicates that no habitat of potential value for these species was identified during the survey.
- 2.7 Consideration was also given to habitats outside the site, in order to evaluate the ecological context of the site within the wider landscape. Adjacent habitats were also considered with respect to their own ecological value and their potential to enhance the ecological value of habitats within the site.
- 2.8 Searches were made for invasive non-native plant species focussing on those species currently listed in the revised Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).
- 2.9 The plant species nomenclature follows that of Stace (2010). Plant species observed within each habitat type were recorded using the DAFOR system which stands for Dominant, Abundant, Frequent, Occasional or Rare.

Habitat Suitability Index

- 2.10 To assess whether a waterbody has suitability for great crested newt, an initial assessment of the water body in addition to the adjacent terrestrial habitats is required. A formal assessment methodology termed the Habitat Suitability Index (HSI) for the great crested newt was developed by Oldham et al (2000). HSI is a means of evaluating habitat quality and quantity. HSI is a numerical index between 0 and 1, whereby 0 indicates unsuitable habitat and 1 represents optimal habitat. The HSI for great crested newt incorporates ten suitability indices, all of which are factors thought to affect great crested newts.
- 2.11 Ten factors were scored for the pond, using the scoring system identified by Oldham et al (2000). These scores were calculated from assessments on the factors (listed below) based on field calculations and from desk-based studies. Each score was subsequently converted to a Suitability Index (SI) on a scale of 0.01 to 1. These factors included:
- | | |
|-----------------------------|------------------------|
| 1. Geographic location zone | 6. Waterfowl |
| 2. Pond area | 7. Fish |
| 3. Permanence | 8. Pond count |
| 4. Water quality | 9. Terrestrial habitat |
| 5. Shade | 10. Macrophytes |
- 2.12 The ten SI scores are multiplied together and the tenth root of this number is calculated $(x)^{1/10}$. The resulting score obtained is the HSI score which gives an indication as to the suitability of the pond for supporting great crested newt. The resulting score was subsequently compared to the categorical scale (detailed below) which indicates the suitability of the waterbody to support great crested newt:
- < 0.5 = poor
 - 0.5-0.59 = below average
 - 0.6-0.69 = average
 - 0.7-0.79 = good
 - >0.8 = excellent

Survey Constraints

- 2.13 Due to seasonal behaviour of animals and the seasonal growth patterns of plants, ecological surveys may be limited by the time of year in which they are undertaken. This survey was undertaken in November and, as such, it may not provide a complete list of the plants and animals that may be present, or which may seasonally utilise the site.
- 2.14 However, the information gathered for this ecological survey has facilitated an evaluation of the habitats on site and the likely use of the site by legally protected and notable species. This survey has also given appropriate baseline data for the determination of the requirement for further surveys and/or mitigation and enhancement works.

3 RESULTS

Desk Study

- 3.1 Records of designated sites and European sites within 2 km of the site boundary were obtained from Multi Agency Geographic Information for the Countryside (MAGIC) website provided by the Department for Environment, Food and Rural Affairs (Defra).

Designated sites

- 3.2 Statutory designated sites located within 2 km of the proposed development, are detailed in Table 3.1.

Table 3.1 Statutory designated sites located within 2 km of the proposed site

Site Name	Site Designation	Site Description	Distance and direction from proposed site
Solent Maritime	Special Area of Conservation (SAC)	The Solent encompasses a major estuarine system and comprises tidal river, mud flats, sand flats, salt marshes	1.3 km N
Chichester and Langstone Harbours	Special Protection Area (SPA)	Chichester and Langstone Harbours are large, sheltered estuarine basins comprising extensive sandflats and mudflats that are exposed at high tide. The mudflats support rich species of algae, invertebrates and waterbirds, including colonies of breeding terns.	1.3 km N
	Ramsar site		
Chichester Harbour	Site of Special Scientific Interest (SSSI)	Chichester Harbour is one of the few remaining undeveloped coastal areas of Southern England. Its natural beauty is largely attributed to the combination of wide expanses and intricate creeks, which support diverse wildlife, including Brent geese, dunlin and little egrets.	1.3 km N
	Area of Outstanding Natural Beauty (AONB)		

- 3.3 There are four non-statutory designated sites located within 2 km of the proposed site: Birdham Pool Local Wildlife Site (LWS), Chichester Yacht Basin Meadow and Pool (LWS), Chichester Canal (LWS) and Salterns Copse (LWS), as detailed in Table 3.2.

Table 3.2 Non-statutory designated sites located within 2 km of the proposed site

Site name	Site description	Distance and direction from proposed site
Birdham Pool Local Wildlife Site (LWS)	Birdham pool is an old mill pool, which is bisected by a causeway. One side is the Marina and the other is shallow wetlands that support diverse bird species including heron <i>Ardea</i> sp and kingfishers <i>Alcedo atthis</i> .	0.75 km N
Chichester Yacht Basin Meadow & Pool LWS	No information provided.	1.4 km NE
Chichester Canal LWS	Chichester Canal comprises a mosaic of open water, marginal vegetation, banks and bordering hedgerows. It forms an important aquatic and terrestrial wildlife corridor linking areas of semi-natural habitat between Chichester Harbour and local gravel pits. The canal supports a well-established water vole <i>Arvicola terrestris</i> , as well as water shrews, bats and dragonflies.	1.1 km NNE
Salterns Copse LWS	Salterns copse is a small area of ancient woodland that supports rich bird and invertebrate communities, as well as the Schedule 8 protected native bluebell <i>Hyacinthoides non-scripta</i> .	1.4 km NNE

- 3.4 There are two waterbodies located within 500 m of the site boundary, approximately 210 m north and 90 m south of the site. In addition, there is a network of drainage ditches that border the site and extend in all directions. The waterbodies within 500 m of the site boundary are shown in Figure 3.1.

Biological Records

- 3.5 Biological records were obtained from Sussex Biodiversity Records Centre (SxBRC) and screened for age and relevance.

Bats

- 3.6 At least eight species of bat have been recorded within 2 km of the site within the last ten years including: brown long-eared *Plecotus auritus*, common pipistrelle *Pipistrellus pipistrellus*, Daubenton's bat *Myotis daubentonii*, Nathusius's pipistrelle *Pipistrellus nathusii*, Natterer's bat *Myotis nattereri*, noctule *Nyctalus noctula*, serotine *Eptesicus serotinus* and soprano pipistrelle *Pipistrellus pygmaeus*.
- 3.7 The closest recorded bat roost belonged to a long-eared species bat *Plecotus* sp. and was recorded approximately 0.25 km north-north-west of the site boundary (SU 8246 0016). Additionally, a *Myotis* sp roost was recorded approximately 0.4 km north-north-west of the site boundary (SU 82373 00316).

Badgers

- 3.8 It was not possible to establish whether badger setts have been recorded within 2 km of the site within the last ten years as this information is confidential.

Breeding birds

- 3.9 One hundred and fifty-seven species of notable Sussex birds have been recorded within 2 km of the site within the last ten years. This includes lapwing *Vanellus vanellus* and grey partridge *Perdix perdix*, both of which are listed under the Natural Environment and Rural Communities Act (Section 41) as species of principal importance for conservation in England.
- 3.10 The Brent goose *Branta bernicla* has been recorded at peak counts of international importance, representing an estimated 6% of the population, within 2 km of the site at Chichester and Langstone Harbours (SPA, Ramsar site).

Hazel Dormice

- 3.11 No hazel dormice have been recorded within 2 km of the site within the last ten years.

Great crested newts

- 3.12 One record of two male great crested newts was recorded within 2 km of the site within the last ten years, approximately 2 km south-south-east of the site boundary.

Reptiles

- 3.13 One species of reptile, slow-worm *Anguis fragilis* has been recorded within 2 km of the site within the last ten years, approximately 1.7 km north-north-west of the site boundary.

Invertebrates

- 3.14 Eighteen designated invertebrate species have been recorded within 2 km of the site within the last ten years. This includes the Sussex rare Jersey tiger moth *Euplagia quadripunctaria* and dingy skipper *Erynnis tages*, a UK Biodiversity Action Plan priority species.

Plants

- 3.15 Twenty-three plant species of conservation concern have been recorded within 2 km of the site within the last ten years. This includes marsh-mallow *Althaea officinalis*, which was recorded 1.8 km NNE of the site and is Nationally Scarce and Sussex Rare, as well as being listed on the post-2001 Red List for Great Britain.

Other species

- 3.16 European water vole *Arvicola amphibious* have been recorded within 2 km of the site boundary within the last 10 years, the closest of these records was approximately 0.5 km south of the site (SZ 8244 9890).
- 3.17 Multiple records of West European hedgehog *Erinaceus europaeus*, a UK Biodiversity Action Plan priority species, exist within 2 km of the site boundary within the past 10 years, the closest of which was 0.2 km north-east of the site.

Field Study

Phase 1 Habitat Survey

- 3.18 The habitats present on site are shown in Figure 3.2. Target notes of features of ecological value on site are noted in Appendix B. The habitats present on the site are described below broadly in the order of their extent.
- 3.19 The habitats within the redline boundary comprised arable farmland, semi-improved grassland, intact hedgerows, scrub, hardstanding, broad-leaved treeline, scattered trees and tall ruderal vegetation.

Arable

- 3.20 The vast majority of the site is arable farmland that is sown, harvested and ploughed annually. Crops vary from year to year but include sweetcorn, wheat, barley and peas.

Semi-Improved Grassland

- 3.21 A thin strip of semi-improved grassland extends along the south west, west, north-west and east of the site, alongside hedgerows 1-4. The grassland species include abundant Yorkshire fog *Holcus lanatus*. Flowering species comprise frequent bristly ox tongue *Helminthotheca echioides*, cleavers *Galium aparine* and creeping thistle *Cirsium arvense*. Occasional common ragwort *Jacobaea vulgaris*, *Geranium* sp, field speedwell *Veronica persica*, curled dock *Rumex crispus* and rare wild carrot *Daucus carota*, strawberry *Fragaria vesca*, common hogweed *Heracleum sphondylium*, creeping buttercup *Ranunculus repens*, *Euphorbia* sp, hawksbeard *Crepis* sp and scarlet pimpernel *Anagallis arvensis* were also present within the grassland.

Hedgerow 1

- 3.22 Hedgerow 1 extended along the south of the access road leading from the main road to Whitestone Farm Cottages, which are at the centre of the site. The hedgerow was dominated by alder *Alnus glutinosa*, with abundant hawthorn *Crataegus monogyna* and frequent bramble. The ground flora included frequent white dead nettle *Lamium album* and occasional nettle *Urtica dioica*. The hedgerow was in the phase of establishment and had some gaps present.

Hedgerow 2

- 3.23 Hedgerow 2 was an intact hedgerow that extends along the eastern boundary of the buildings and gardens at Whitestone Farm Cottages. This hedgerow was dominated by blackthorn *Prunus spinosa* and hawthorn, with abundant dogwood. Field maple *Acer campestre*, dog rose *Rosa canina* and spindle *Euonymus europaea* were present occasionally in the hedgerow and ivy *Hedera helix* was present occasionally at ground level.

Hedgerow 3

- 3.24 Hedgerow 3 is an intact hedgerow that forms the north-east boundary of the site. The hedgerow is dominated by alder and blackthorn with abundant bramble.

Hedgerow 4

- 3.25 Hedgerow 4 lies along the north west and south west boundaries of the site. The hedgerow is dominated by blackthorn and hawthorn with frequent bramble. There were occasional oak trees *Quercus robur*, along the hedgerow.

Hedgerow 5

- 3.26 Hedgerow 5 is a species-poor hedgerow to the south of the farm buildings at Whitestone Farm Cottages. It is dominated by laurel *Prunus laurocerasus*, which was the only species present.

Scrub

- 3.27 Areas of dense scrub were located at intermittent points along hedgerows 3 and 4, and along the south-eastern site boundary. These areas of scrub were dominated by bramble with occasional nettle and rare cow parsley *Anthriscus sylvestris*, ivy and broad-leaved dock *Rumex obtusifolius*.

Hardstanding

- 3.28 A hardstanding access road leads from the A286 to the centre of the site, where there is a hardstanding car park area.

Broadleaved Treeline

- 3.29 A broad-leaved treeline extended along part of the north-west boundary, which was dominated by alder with rare occurrences of Norway maple *Acer platanoides* frequent bramble within the understory. A bird's nest was located within the bramble in this treeline.

Scattered Trees

- 3.30 Scattered trees were present along hedgerows 1-4. Species present included oak, field maple, Norway maple willow *Salix sp*, poplar *Populus tremula*.

Tall Ruderal

- 3.31 Very small areas of tall ruderal vegetation were located along the hardstanding at the centre of the site. These areas comprised abundant common ragwort *Senecio jacobaea*, occasional teasel *Dipsacus fullonum* and bramble and rare rosebay willowherb.

Protected Species

- 3.32 The habitats present on site were considered suitable for a range of protected species including bats, badgers, breeding birds, hazel dormice, great crested newts and reptiles. These species are considered in greater detail below.

Bats

- 3.33 The hedgerows and treelines provide suitable habitat for foraging and commuting bats. A full bat tree assessment was outside the scope of the survey but trees of a size, age and species suitable for roosting bats were recorded on site.

Badgers

- 3.34 The arable habitat, semi-improved grassland, scrub and hedgerows across the site provide suitable foraging and sett building habitat for badgers. Additional foraging opportunities are provided seasonally by the arable land on site. Rabbit holes were recorded on site; however, these were not of a size big enough for use by badgers. No other signs of badgers including, sett building activity, prints, mammal pathways, guard hairs or snuffle holes were recorded on site during the survey.

Breeding birds

- 3.35 The scattered trees, treelines and hedgerows on site all provide suitable nesting opportunities for breeding birds. During the survey, two birds' nests were recorded in the hedgerow/scrub on site (Target Note 1, Figure 3.2). In addition, eight bird species were recorded during the survey, including starling *Sturnus vulgaris*, rook *Corvus frugilegus*, jackdaw *Corvus monedula*, blackbird *Turdus merula*, black-headed gull

Chroicocephalus ridibundus, greater-spotted woodpecker *Dendrocopos major*, goldcrest *Regulus regulus* and wood pigeon *Columba palumbus*.

- 3.36 Although brent geese peak counts of international importance have been recorded within 2 km of the site, according to the Solent Waders and Brent Goose Strategy current use mapping 2017 (Hampshire and Isle of Wight Wildlife Trust, 2017), the site is not currently used by brent geese and is not a candidate site.

Hazel Dormice

- 3.37 Hedgerow 3 was a dense hedgerow that was intact along the eastern site boundary and part-way along the north-west site boundary. The hedgerow included bramble and hawthorn that provide a good food source for hazel dormice and provide protection against predation.

Great crested newts

- 3.38 Suitable terrestrial habitat for great crested newts on site included semi-improved grassland and dense scrub. There are no waterbodies present on site, two are present within 500 m of the site boundary, as well as a network of ditches.

Reptiles

- 3.39 The boundary habitats including semi-improved grassland, scrub, hedgerows and tall ruderal vegetation provide suitable habitat for reptiles such as adder *Vipera berus*, grass snake *Natrix helvetica*, common lizard *Lacerta vivipara* and slow worm *Anguis fragilis*. There was a compost site located in the centre of the site where the boundary meets residential gardens (Target Note 2, Figure 3.2), this provides good habitat for common species of reptiles, especially for grass snakes that use compost heaps to incubate their eggs and young.
- 3.40 Bordering the site to the east is a mosaic area of tall ruderal, dense scrub and semi-improved grassland. The area also contains brash piles and straw piles that are outside of the site boundary, which provide basking opportunities making the area highly suitable for reptiles.

Invertebrates

- 3.41 The semi-improved grassland and hedgerows along the site periphery provide diverse flowering species that have the potential to support diverse invertebrate species.

Other Species

- 3.42 European water vole *Arvicola amphibious* have been recorded within 2 km of the site boundary within the last 10 years, the closest of these records was approximately 0.5 km south of the site.

3.43 Multiple records of West European hedgehog *Erinaceus europaeus* exist within 2 km of the site boundary within the past 10 years, the closest of which was 0.2 km north-east of the site.

Plants

3.44 No invasive plant species or plants of conservation concern were recorded on site during the survey.

4 EVALUATION

- 4.1 This evaluation seeks to outline the suitability of the site to support protected species and habitats, their status and the constraints that the presence of any protected species or species of conservation concern may place on any future development of the site.

Habitats

- 4.2 The habitats present on site comprise a large arable field with boundary habitats including intact hedgerows, semi-improved grassland, scrub, scattered trees, broad-leaved treeline and tall ruderal vegetation.

Protected sites

- 3.45 There are three statutory sites within 2 km of the proposed development site, Chichester Harbour (AONB, SSSI) and Chichester and Langstone Harbours (SPA, Ramsar site) and Solent Maritime (SAC). Four non-statutory designated sites are also situated within 2 km of the site boundary: Birdham Pool (LWS), Chichester Yacht Basin Meadow and Pool (LWS), Chichester Canal (LWS) and Salterns Copse (LWS).
- 4.3 The site is situated within the Impact Risk Zones of the three statutory designated sites. If the future development falls into one or more of the following categories, Natural England must be consulted:
- Infrastructure: pipelines, pylons, overhead cables, transport proposals and aviation proposals.
 - Wind and solar energy: minerals, oil and gas (quarries, oil and gas exploration/extraction).
 - Non-residential developments exceeding 1ha.
 - Residential developments of 100 units or more.
 - Air pollution: any industrial or agricultural development that could cause air pollution.
 - Combustion e.g. waste incineration, sewage treatment works.
 - Discharges: any discharge of water or liquid waste of more than 5m³/day to ground or surface.
 - Water supply: large infrastructure such as warehousing/industry where net additional gross internal floorspace exceed 1 km².
- 4.4 Furthermore, for new residential developments, financial contributions may be required to mitigate for increased recreational disturbance.
- 3.46 As the site comprises arable farmland with boundary habitats including hedgerows, semi-improved grassland and trees, the site does not possess the wetland habitats of Chichester Harbour (AONB, SSSI) Chichester and Langstone harbours (SPA), Birdham Pool (LWS), Chichester Yacht Basin Meadow and Pool (LWS) or Chichester Canal (LWS) and Salterns Copse (LWS). Additionally, the site does not contain ancient woodland habitats that Salterns Copse is designated for.

Species

Bats

- 4.5 All species of bat present in the UK receive full protection under The Conservation of Habitats and Species Regulations 2017, and the Wildlife and Countryside Act 1981 (as amended).
- 4.6 The hedgerows and treelines along the site boundaries provide suitable foraging and commuting habitat for bats and at least eight bat species have been recorded within 2 km of the site within the last 10 years.
- 4.7 Records of bats roosting within 2 km of the site include a brown long-eared bat roost only 0.25 km from the site. There are a small number of oak trees along the site boundary that are of a suitable age to support roosting bats. There are buildings on site that have the potential to support roosting bats.
- 4.8 Should the proposed development impact the mature trees along the site boundary or any of the buildings on site, further surveys will be required to ascertain whether these structures are used by roosting bats.
- 4.9 The proposed development will result in increased lighting across the site which is likely to have a disturbance effect on bat species. An appropriate lighting scheme will need to be incorporated to ensure that the design is sensitive to bat species.

Badgers

- 4.10 Badgers receive full protection under the Protection of Badgers Act 1992.
- 4.11 Although no evidence of badgers was recorded during the survey, the site presents suitable habitat for sett building and foraging badgers. As badgers are highly mobile animals, it is possible that badgers may use the site for sett building in the future.
- 4.12 Should a period of one year elapse between the time of the survey and the commencement of works on site, a site walkover should be undertaken to determine whether badgers have arrived on site since the time of the initial survey.

Breeding birds

- 4.13 Breeding birds are protected by the Wildlife and Countryside Act 1981 (as amended). Under this legislation it is an offence to intentionally kill, injure or take the birds or their eggs, or to intentionally destroy or disturb a nest, when it is in use or being built.
- 4.14 The hedgerows and treelines on site offer suitable nesting locations for breeding birds. A variety of bird species were recorded on site during the survey. If any boundary hedgerows or trees are to be impacted, for example to improve access to the site, nesting birds may also be impacted. It would therefore be necessary to follow a mitigation strategy to prevent the potential disturbance, injury or death of nesting birds and to prevent a net loss of nesting opportunities on site. This would include avoiding sensitive timings or a pre-works check by a suitably qualified ecologist.

Hazel Dormice

- 4.15 Hazel dormice and their habitat are fully protected by both the Wildlife and Countryside Act 1981 and the Habitats Regulations. The hazel dormouse is a European Protected Species and a priority species under the UK Biodiversity Action Plan, and has been adopted as a species of Principal Importance in England under Section 41 of the NERC Act (2006).
- 4.16 The intact hedgerow on site (hedgerow 3) provides suitable habitat for hazel dormice due to the presence of berry-bearing species and density of the hedgerow that provides protection from predation. This hedgerow has connectivity to a small wooded area bordering the site to the east, however, arboreal connectivity beyond this area is weak, with no connectivity to the area of ancient woodland 0.5km north of the site.
- 4.17 This hedgerow is therefore considered to be suboptimal for hazel dormice and there are no records of hazel dormice within 2 km of the site within the last 10 years. However, it is still possible that hazel dormice may be present.
- 4.18 If the development proposals are to impact this hedgerow, further surveys will be necessary to determine the presence of hazel dormice within this habitat.

Great crested newt

- 4.19 Great crested newts are fully protected by both the Wildlife and Countryside Act 1981 and the Habitats Regulations, the species is a European Protected Species and a priority species under the UK Biodiversity Action Plan, and has been adopted as a species of Principal Importance in England under Section 41 of the NERC Act (2006).
- 4.20 The site offers suitable terrestrial habitat within the site boundary and there are two waterbodies within 500 m of the site boundary. Additional aquatic habitat is provided by the presence of a network of ditches surrounding the development site, which increases connectivity of the site to these waterbodies. Great crested newts have been recorded within 2 km of the site during the past 10 years.
- 4.21 If the semi-improved grassland and scrub are to be impacted by the future development, further survey effort will be required to determine the presence/likely absence of great crest newts on site.

Reptiles

- 4.22 Common species of reptile including common lizard, grass snake, slow worm and adder are protected under the Wildlife and Countryside Act 1981 (as amended) meaning they are protected against killing or injuring.
- 4.23 Slow worms have been recorded approximately 1.7 km from the site during the past 10 years. The semi-improved grassland, scrub, hedgerows and compost heap on site provide suitable habitats for common species of reptiles. There is also an area adjoining the site to the south that is considered to be highly suitable for reptiles. If these boundary habitats are to be impacted by the development works, further survey effort will be required to determine the presence or likely absence of reptiles on site.

Invertebrates

- 4.24 The semi-improved grassland and hedgerows along the site boundary provide a variety of foraging and nesting materials that have the potential to support a diverse community of invertebrates. Retention of these habitats in future plans will prevent the net loss of biodiversity on site.

Other Species

- 4.25 Although water voles have been recorded within 2 km of the site boundary, there are no suitable habitats on site to support water voles.
- 4.26 West European hedgehog have been recorded as close as 0.2 km from the site boundary and are likely to use the boundary habitats that the site presents. Any future development should aim to maintain the connectivity of the site for hedgehogs.

5 CONCLUSION

- 5.1 The site at Whitestone Farm is considered to have moderate ecological value within a local context as it comprises mainly arable farmland, with hedgerows, semi-improved grassland, scrub and trees along the site boundary.
- 5.2 The biodiversity value of the total site area is largely attributed to the following factors:
- The presence of two designated sites within 2 km of the site boundary, Chichester Harbour (AONB, SSSI) and Chichester and Langstone Harbours (SPA, Ramsar site).
 - The presence of valuable boundary habitats including semi-improved grassland, dense scrub, hedgerows and trees.
 - The potential of the habitats on site to support a range of protected species including badgers, bats, great crested newts, hazel dormice, reptiles and invertebrates.
- 5.3 Future development will seek to avoid the loss of high-quality habitats including hedgerows, semi-improved grassland, scrub, broadleaved treelines and scattered trees. Retention of boundary habitats will maintain connectivity of the site and contribute to a landscape-wide network of ecology.
- 5.4 If these habitats are to be impacted to facilitate any future development, for example to increase access to the site, further surveys will be required with relation to badgers, bats, great crested newts, hazel dormice, reptiles to determine presence/likely absence.
- 5.5 Design of the future development will include enhancements for biodiversity that achieve an overall net gain in biodiversity.
- 5.6 Additional lighting of the development is likely to have an impact on the wider landscape and differ from the current state and consequently an appropriate lighting scheme should be implemented to minimise the effects on native wildlife.

6 RECOMMENDATIONS

- 6.1 The more valuable boundary habitats including hedgerows, semi-improved grassland, dense scrub and trees should be retained as much as possible.
- 6.2 Additional protected species surveys will be required, including:
- Reptile surveys of the boundary habitats to determine the presence/likely absence of common species of reptiles.
 - Great crested newt Habitat Suitability Index (HSI) to be calculated for the two ponds within 500 m of the site that have connectivity to the habitats on site.
 - If hedgerows are to be impacted, bat transect surveys will be necessary to assess the use of the site by foraging and commuting bats.
 - If any hedgerow is to be removed, a precautionary approach with respect to hazel dormice will be necessary, which will involve a hand search by a suitably qualified ecologist immediately prior to removal.
 - If any trees on site are to be impacted, a bat tree assessment will be required to determine the suitability of the tree for roosting bats.
 - If one year elapses from the time of the PEA survey to the commencement of works, a site walkover must be conducted to determine the presence of sett building evidence by badgers on site.
- 6.3 The following biological enhancements should be included in the new development to prevent the loss of biodiversity and improve the overall biodiversity of the site. These enhancements for biodiversity will help to achieve an overall net gain in biodiversity:
- In-fill planting with species such as hazel *Corylus avellana*, hawthorn, blackthorn and native tree species to increase arboreal connectivity along hedgerows and thus improve the site for hazel dormice and breeding birds.
 - Enhancement of the field margin by seeding with native wildflower species to enhance the site for invertebrates and bird species. Wildflower corridors should be planted/seeded throughout the site.
 - Bat boxes and bird boxes should be installed upon existing or newly built structures and mature existing trees.
 - Hedgerows and treelines should be planted across the site to provide green corridors for numerous species including bats, breeding birds, hazel dormice and invertebrates.
 - Hibernacula should be constructed to create suitable opportunities for common species of reptiles and amphibians.
 - Deadwood should be provisioned on site to provide nesting material and a food source for invertebrates.
 - Where possible, green roofs and green walls could be incorporated into the design of any proposed buildings in the new development.

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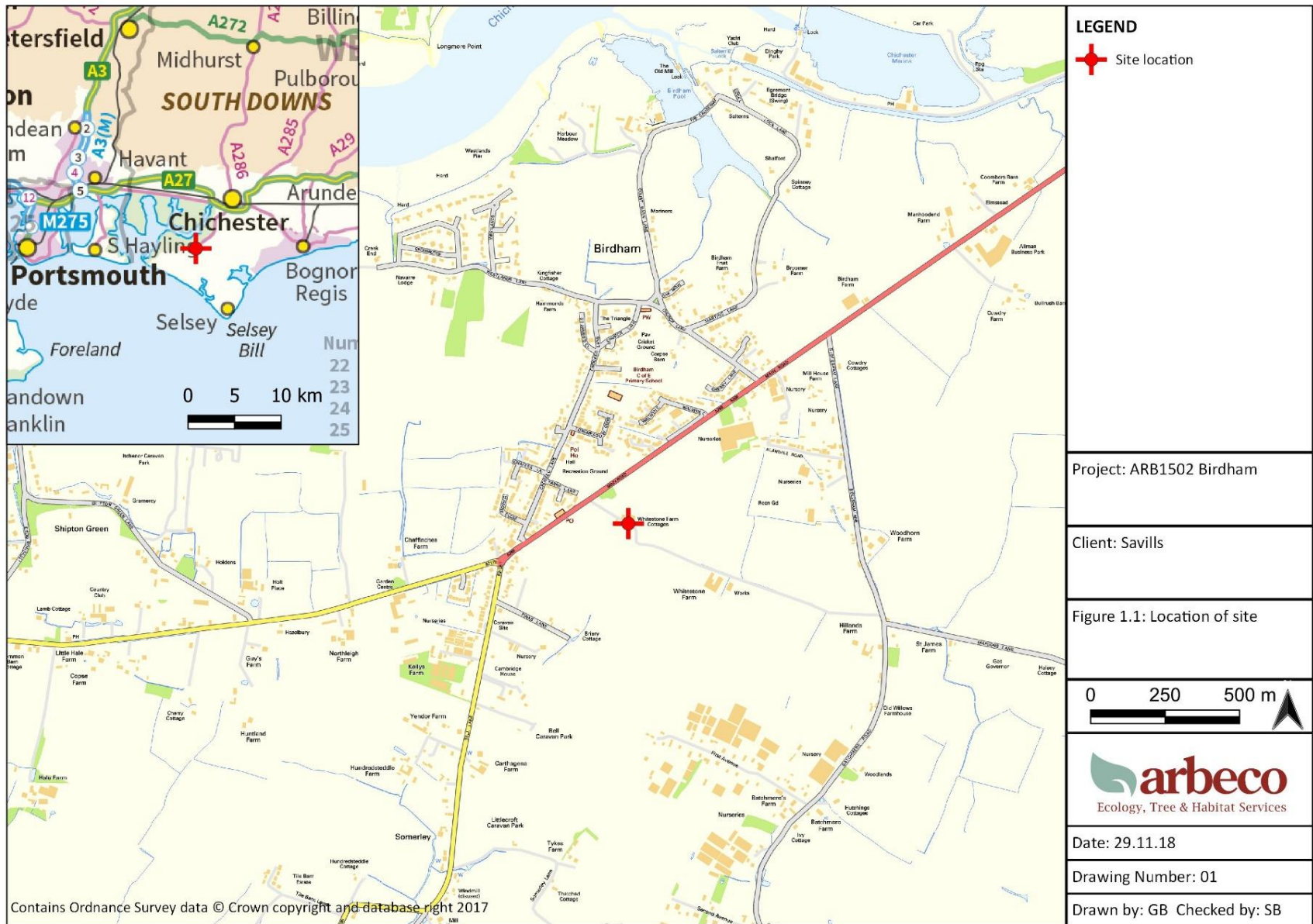
FIGURES

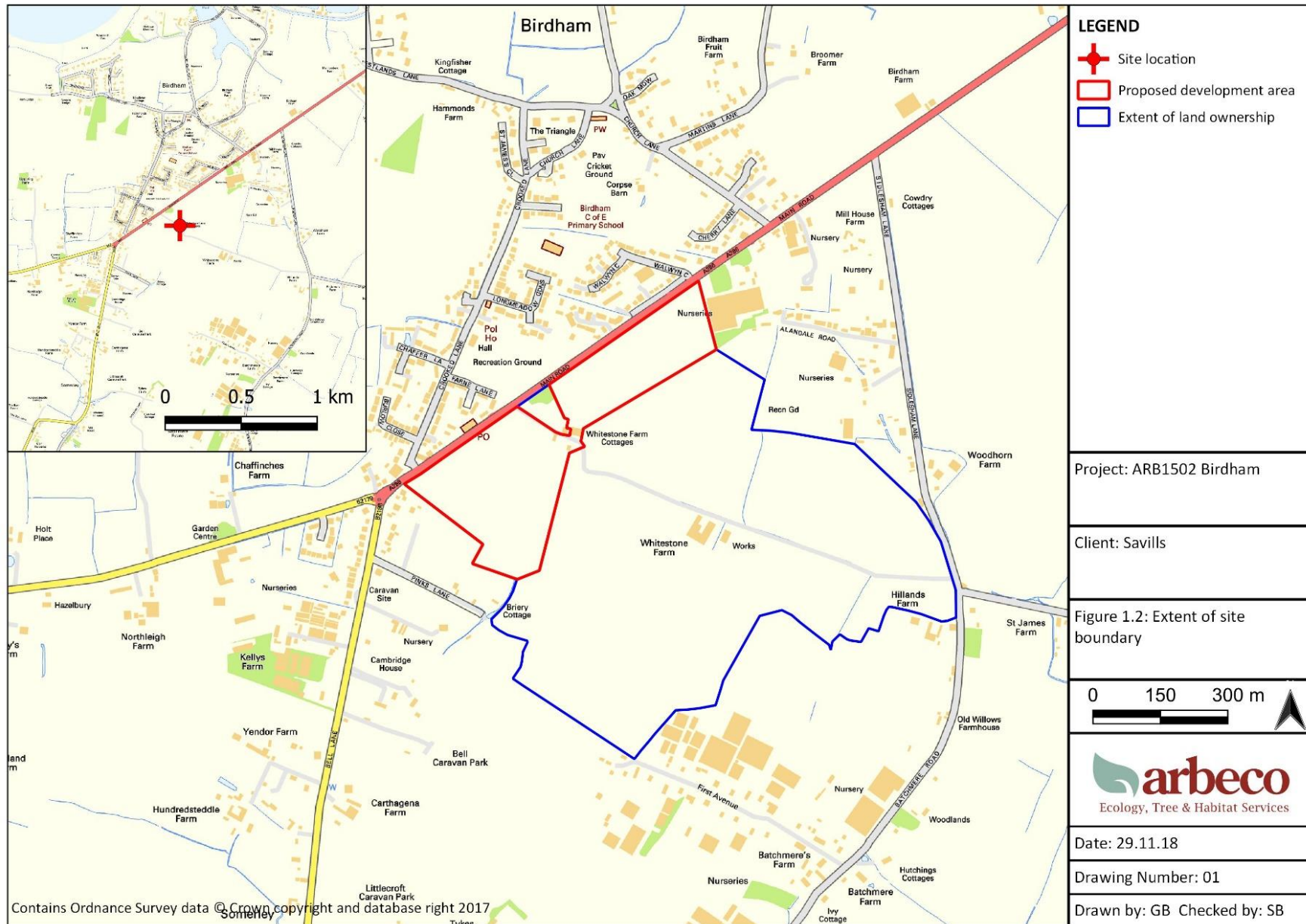
Figure 1.1 Location of site

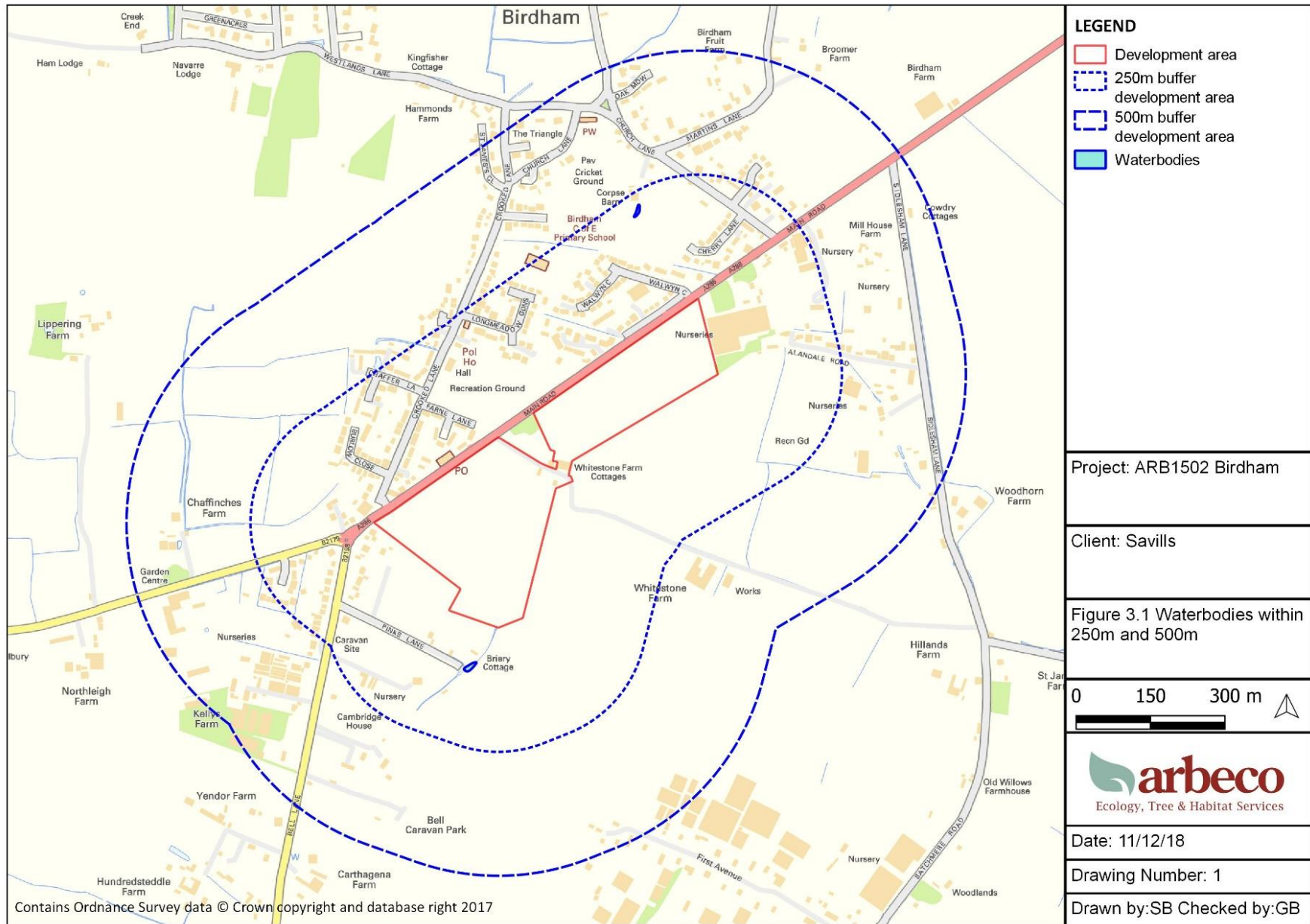
Figure 1.2 Extent of site boundary

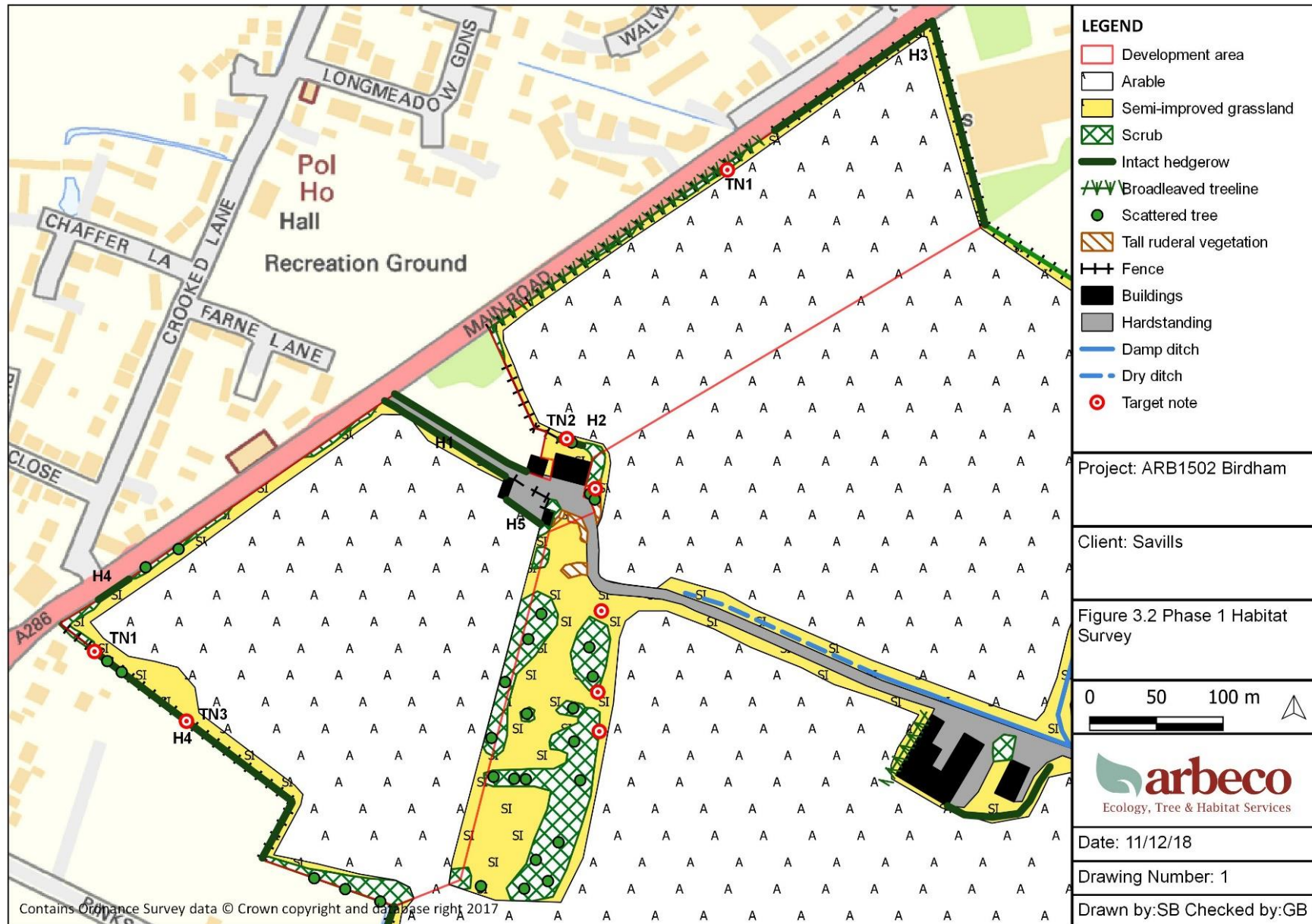
Figure 3.1 Waterbodies within 500 m of site boundary

Figure 3.2 Phase 1 habitat map









APPENDIX A Wildlife Legislation

The Wildlife and Countryside Act 1981 (as amended)

Schedule 1

Applies to all wild birds where it is an offence:

- to take, damage or destroy a nest whilst it is being built or in use
- to kill, injure or take any wild bird (subject to certain exceptions)
- to take or destroy the egg of any wild bird.

It is also an offence to disturb any wild bird listed on Schedule 1 of the Wildlife & Countryside Act 1981 (as amended)

- while it is nest building
- at a nest containing eggs or young
- to disturb the dependant young of any such bird.

Schedule 5

For animals fully protected under Schedule 5 which includes, the hazel dormouse, great crested newt and all bats. It is an offence:

- to intentionally kill or injure or take these species
- to intentionally or recklessly damage or destroy or obstruct access to any structure or place which a species uses for shelter or protection, at any time even if the animal is not present.
- to intentionally or recklessly disturb whilst it is occupying a place which it uses for shelter or protection.

Adder, grass snake, common lizard and slow worm are protected from being killed or injured.

Schedule 8

Specific species of plants listed in Schedule 8 are protected. It is an offence: to intentionally pick, uproot or destroy a wild plant listed in Schedule 8.

Schedule 9

Invasive non-native species are listed under Schedule 9. It is an offence:

- to plant or otherwise cause to grow in the wild.
- If soils are contaminated by invasive non-native plant species it becomes classified as '*controlled waste*' under the Environmental Protection Act 1990 (England, Wales & Scotland), and must be disposed of accordingly.

The Conservation of Habitat and Species Regulations 2017

Schedule 2 applies to all European Protected Species (EPS) which included all bat species, great crested newts and dormice. The protection afforded is overlapping but separate from the Wildlife and Countryside Act 1981 (as amended)

The Protection of Badgers Act 1992

Under this Act it is an offence to intentionally or recklessly interfere with a badger sett by:

- a) damaging a sett or any part of one
- b) destroying a sett
- c) obstructing access to any entrance of a sett
- d) disturbing a badger when occupying a sett

Where interference with a badger sett cannot be avoided during development, a licence from Natural England should be applied for.

APPENDIX B Target Notes

Target notes of important ecological features noted during the field survey and mapped in Figure 3.2.

Target Note	Description
1	Bird's nest
2	Compost heap
3	Fox sighting

APPENDIX C Site photographs



Photograph 1: Hardstanding parking area at centre of site.



Photograph 2: Hardstanding access road to centre of site.



Photograph 3: Scrub at centre of site, north of buildings.



Photograph 4: Hedgerow 2.



Photograph 5: Compost heap, target note 2.



Photograph 6: North section of site facing north-east.



Photograph 7: North-west site boundary of north section of site, treeline and semi-improved grassland.



Photograph 8: Mosaic habitat along eastern site boundary.