



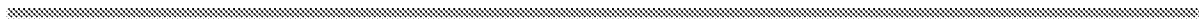
Preliminary Ecological Appraisal

Wings Nursery

Woodgate

West Sussex

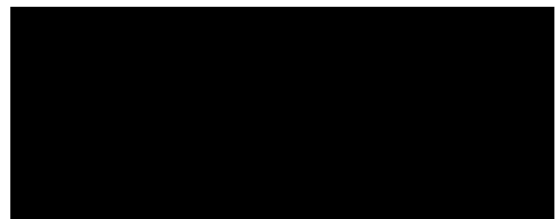
PO20 3SU



28th September 2017

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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 were commissioned by ADM Architects c/o Michael Bish to carry out a Preliminary Ecological Appraisal (PEA) at Wings Nursery, Woodgate, West Sussex, PO20 3SU to help inform the outline planning proposal for 50 new residential properties on site.
- 0.2 This report identifies the potential of the habitats within the site boundary 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 the proposed re-development of the site.
- 0.3 The habitats present within the proposed development footprint comprise poor semi-improved grassland, good semi-improved grassland, tall ruderal vegetation, scrub, species poor intact hedge, damp ditch, bare ground and two buildings.
- 0.4 The habitats present on site provide suitable habitat for the following protected species: foraging bats, badgers *Meles meles*, breeding birds, dormice *Muscardinus avellanarius*, great crested newts *Triturus cristatus* and reptiles.
- 0.5 The proposed development plan will result in the loss of approximately 1.6 ha poor semi-improved grassland, 0.3 ha good semi-improved grassland, 0.2 ha tall ruderal vegetation and 0.1 ha scrub habitat. The loss of these habitats may impact upon local populations of protected species.
- 0.6 No further surveys are considered necessary for the following species due to the lack of suitable habitats or lack of impacts upon suitable habitats: badgers, great crested newts and dormice.
- 0.7 Further surveys are recommended for bats and reptiles, to include three activity transect surveys for bats supplemented with static bat detectors and a reptile survey consisting of seven site visits to check artificial refugia..
- 0.8 To ensure that further surveys are carried out within the survey season for this year, the bat activity transect surveys have been undertaken on the 16th August 2017, the 4th September 2017 with the final survey scheduled for the 28th September 2017. The reptile surveys for the site were set up on the 1st September 2017 and will be completed before mid-October 2017. A separate report detailing the results of these surveys will be provided.
- 0.9 Biodiversity enhancements should be incorporated into the development proposals to maintain or increase the ecological value of the site post development. These are further described in Section 6 of this report but include the installation of bird and bat boxes on proposed buildings and / or mature native trees on site, creation of a wildlife pond on site, native species planting, an appropriate lighting scheme and the incorporation of gaps within proposed new fencing to allow for the dispersal species of principal importance including the European hedgehog *Erinaceus europaeus*, reptiles and amphibians.

1 INTRODUCTION

- 1.1 Arbeco Ltd. were commissioned by ADM Architects c/o Michael Bish to carry out a Preliminary Ecological Appraisal (PEA) at Wings Nursery, Woodgate, West Sussex, PO20 3SU to help inform the outline planning proposal for 50 new residential properties on site.
- 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 re-development 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 2010 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) 2012 protected sites and species are a material consideration in determining planning applications.

Site Description

- 1.8 The site is located within the hamlet of Woodgate in West Sussex, approximately 4.8 km due north of Bognor Regis and 5.9 km east of Chichester (Ordnance Survey Grid Reference for the centre of the site: SU 93718 04134). The site is approximately 2.4 ha in area and consists of areas of grassland, scrub and hardstanding with scattered trees on site and along the boundary as well as a large glasshouse building situated in the southeast section.
- 1.9 The location of the site is shown in Figure 1.1 and the extent of the site boundary is shown in Figure 1.2.
- 1.10 The site is bordered to the north by two small fields and a railway track, to the east by Lidsey Road with residential properties beyond, to the south by a small number of bungalow properties and to the west by a large plant nursery.
- 1.11 The habitats in the wider landscape are dominated by agricultural fields and grassland areas bordered by intact hedgerows and occasionally divided by water filled ditches with farm buildings occasionally scattered amongst the fields. A railway line is located approximately 90 m to the north of site runs from east to west through Woodgate. There are small areas of deciduous woodland within the wider landscape, the closest of which is approximately 0.46 km to the north east.

Development Proposals

- 1.12 The outline development proposals comprise the construction of 50 new residential properties on the site with associated recreational areas and hardstanding areas. The proposals will result in the loss of approximately 1.6 ha poor semi-improved grassland, 0.3 ha good semi-improved grassland, 0.2 ha tall ruderal vegetation and 0.1 ha scrub habitat to facilitate the proposed development.
- 1.13 The boundary habitats will not be affected by the proposed development and there is plans to include the construction of a waterbody in the centre 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, 2017) 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 Sussex Biodiversity Records Centre (SxBRC). 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, 2013).
- 2.5 A Preliminary Ecological Appraisal survey of the site was carried out by a suitably qualified ecologist, Georgina Baulcomb on 20th July 2017 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.

Bat Tree Assessment

- 2.10 A bat tree assessment was undertaken following standard survey guidelines as set out in the Bat Conservation Trust's Bat Surveys for Professional Ecologists Good Practice Guidelines (Collins, 2016).
- 2.11 The bat tree assessment involved recording any potential roost features that were considered suitable to support roosting bats. Examples of such features include:
- Woodpecker holes;
 - Rot holes;
 - Hazard beams;
 - Vertical or horizontal cracks and splits;
 - Partially detached bark;
 - Knot holes resulting from naturally shed branches; and
 - Partially detached ivy with stem diameters in excess of 50mm
- 2.12 Trees were then categorised for their suitability to support roosting bats using the system of categorisation outlined in the Bat Conservation Trust's Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016 (see Table 2.1 below)).

Table 2.1 Guidelines for assessing the potential suitability of trees (Collins, 2016)

Suitability	Description
Negligible	Negligible features likely to be used by roosting bats.
Low	A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.
Moderate	A tree with one or more potential roost site that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status.
High	A tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

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 July 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.
- 2.15 No site specific constraints were encountered during the survey.

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 There are no international/European designated sites within 2 km of the proposed site.
- 3.3 No statutory or non-statutory designated sites are located within 2 km of the proposed site.
- 3.4 Use of Ordnance Survey mapping revealed the presence of two waterbodies within 500 m of the site boundary. One waterbody is a small garden pond located approximately 260 m east of the site. The remaining waterbody is a reservoir located 470 m north west of the site boundary.
- 3.5 A narrow ditch approximately 0.75 m wide and 8 m long with a small amount of water in the bottom is located on the north-east boundary of the site.
- 3.6 The waterbodies found within 500 m of the site boundary are shown in Figure 3.1.

Biological Records

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

Bats

- 3.8 Six species of bat have been recorded within 2 km of the site within the last ten years including common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared *Plecotus auritus*, noctule *Nyctalus noctule*, serotine *Eptesicus serotinus* and barbastelle *Barbastella barbastellus*.

Badgers

- 3.9 Three records of badger activity have been made within 2 km of the site within the last ten years. The closest record is approximately 1.6 km north east of the site boundary.

Breeding birds

- 3.10 Records of 153 bird species have been recorded within 2 km of the site within the last ten years including species of conservation concern such as redwing *Turdus iliacus*, and protected species including the barn owl *Tyto alba* which may use the site.

Dormice

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

Great crested newts

- 3.12 Three records of great crested newts *Triturus cristatus*, have been recorded within 2 km of the site within the last ten years. The closest to the site boundary was approximately 470 m north west, within a small reservoir.

Reptiles

- 3.13 Slow worm *Anguis fragilis*, grass snake *Natrix natrix*, and common lizard *Zootoca vivipara* have been recorded within 2 km of the site within the last ten years. The closest records for all three species were approximately 1.5 km north east of site.

Invertebrates

- 3.14 Thirteen invertebrate species of conservation significance have been recorded within 2 km of the site within the last ten years including stag beetle approximately 2 km north of site.

Plants

- 3.15 No plants of conservation concern have been recorded within 2 km of the site within the last ten years.

Other species

- 3.16 European hedgehog *Erinaceus europaeus*, a UK BAP species, and water vole *Arvicola amphibius* have been recorded within 2 km of the site within the last ten years.

Field Study

Phase 1 Habitat Survey

- 3.17 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.
- 3.18 The habitats within the redline boundary comprise good and poor semi-improved grassland, tall ruderal vegetation, bare ground, scrub, building, ditch, species poor intact hedgerow and scattered trees.

Poor semi-improved grassland

- 3.19 The majority of the west area of the site consists of poor semi-improved grassland which is regularly mown (Photograph 1, Appendix C). The habitat is dominated by grasses including Yorkshire fog *Holcus lanatus*, creeping bent *Agrostis stolonifera*, *Fescue sp.*, and perennial ryegrass *Lolium perenne*. The habitat also has abundant buttercup *Ranunculus sp.*, and white clover *Trifolium repens*, with occasional creeping thistle *Cirsium arvense* and broadleaved dock *Rumex obtusifolius*.
- 3.20 On the east boundary of this habitat and near the margins of the west boundary there are tussocky areas containing tufted vetch *Vicia cracca* and bird's-foot trefoil *Lotus corniculatus*.

Good semi-improved grassland

- 3.21 Good semi-improved grassland is found within the south-east area of the site surrounding the glasshouse building and scrub habitat (Photograph 2 - 4, Appendix C). This habitat consists of abundant areas of cocksfoot *Dactylis glomerata*, cinquefoil *Potentilla sp.*, yarrow *Achillea millefolium*, broadleaved dock, speedwell *Veronica sp.*, with occasional field bindweed *Convolvulus arvensis*, dandelion *Taraxacum agg.*, creeping buttercup, lanceolate plantain *Plantago lanceolata*, black medick *Medicago lupulina* and white clover.
- 3.22 The grassland to the south of the glasshouse is more species rich than the area to the east and consists of abundant bird's-foot trefoil, black medick, tufted vetch, stitchwort *Stellaria sp.*, with occasional hawkbit *Leontodon sp.*, white clover, sorrel *Rumex acetosa*, selfheal *Prunella sp.*, knapweed *Centaurea nigra*, common mouse-ear *Cerastium fontanum*, and rarer examples of red clover *Trifolium pratense*, bramble *Rubus fruticosus*, scarlet pimpernel *Anagallis arvensis*, oxeye daisy *Leucanthemum vulgare* and common centuary *Centaureum erythraea*.
- 3.23 To the west of the glasshouse is a fenced off area of good semi-improved grassland dominated by grasses.

Tall ruderal

- 3.24 Tall ruderal habitat is located scattered in clumps across the poor semi-improved grassland in the west section of the site (Photograph 5-7, Appendix C). These areas are dominated by common nettle with abundant curled dock *Rumex crispus*, creeping thistle, buttercup, hedge bindweed *Calystegia sepium* and occasional tufted vetch and bird's-foot trefoil.
- 3.25 Tall ruderal vegetation is also found in the north-east area of the site (Photograph 8, Appendix C). This habitat is abundant in common nettle *Urtica dioica*, curled dock, bramble, common ivy *Hedera helix*, common ragwort *Jacobaea vulgaris*, with occasional rose *Rosa sp.*, great mullein *Verbascum thapsus*, St John's-wort *Hypericum perforatum*, woody nightshade *solanum dulcamara*, oxeye daisy, white deadnettle *Lamium album*, tufted vetch, common fleabane *Pulicaria dysenterica* and knapweed. Hawthorn *Crataegus monogyna* and hazel *Corylus avellana* saplings are found within this habitat as well as large areas of rubble piles and a line of tree stumps.

Bare ground

- 3.26 Areas of bare ground hard standing are found in the north east and south-east sections of the site (Photograph 9 and 10, Appendix C). These areas are used as access for vehicles coming onto site via gated entrances, and vegetation has been allowed to colonise the areas.
- 3.27 The bare ground consists of medium sized gravel grains within the north-east area of the site is less specious and consists of concrete areas broken up with occasional cock's-foot, common fleabane, yarrow, nettle, bramble and speedwell *sp.*
- 3.28 The bare ground in the south-east area is heavily interspersed with vegetative growth. The vegetation growing on the hard standing consists of abundant yarrow, common fleabane, ivy and dandelion with occasional common toadflax *Linaria vulgaris*, ragwort, greater plantain and bramble with some budleja *sp.* growth.

Dense Scrub

- 3.29 Scrub habitat is located along the north and east elevations of the glasshouse (Photographs 11-13, Appendix C) as well as growing within the structure itself (Photograph 14, Appendix C) which is further described below. This habitat consists of abundant common nettle, bramble and budleja *sp.* with some introduced plant species including *Geranium sp.*
- 3.30 Scrub habitat is located to the south of the glasshouse and consists of common nettle, bramble, with occasional cock's-foot, oxeye daisy, common fleabane and common toadflax.
- 3.31 The south east, south and west boundaries of the site are formed of scrub surrounding post and rail fence with mesh.

Building

- 3.32 Two buildings are found on site. The first is a large single storey, metal framed glasshouse located in the south-east section of the site (Photograph 4, Appendix C). There are many broken panes of glass and openings on the glasshouse whereby animals can gain access into the building. The internal area of the building is dominated by bramble scrub with areas of concrete slab lined floors and piles of waste materials including plant pots and ceramics.
- 3.33 The second building is a small wood panel shed located to the west of the first building (Photographs 15 and 16, Appendix C). This building is approximately 1 m² in area and has a flat, felt roof. The interior is unlined and uninsulated.

Ditch

- 3.34 On the north-east boundary of the site is a water filled ditch approximately 10 m in length and 1 m in width (Photograph 17, Appendix C). The water is heavily shaded by trees within the east boundary including oak *Quercus robur* and ash *Fraxinus excelsior*.

Species poor intact hedgerow

- 3.35 A species poor hedgerow is located in the east section of the site (Photograph 23, Appendix C). It is formed of *Leylandii* sp. trees in a uniform hedge structure.

Scattered trees

- 3.36 Two scattered oak trees are located on site. One is a mature English oak tree stands in the west section of the site surrounded by tall ruderal vegetation consisting of cock's-foot, common nettle and curled dock (Photographs 29 and 30, Appendix C). The second is an immature oak located in the centre of site next to the *Leylandii* sp. hedge (Photographs 31 and 32, Appendix C).
- 3.37 Two English oak trees are located within the north-east boundary of the site and were included in the bat tree assessment as they will potentially be impacted when the north entrance is widened (Photographs 33 and 346, Appendix C).
- 3.38 Occasional large mature trees are found within or just outside of the scrub boundaries of the site located along the east, south and west of the site. These trees consist of English oak, goat willow *Salix caprea*, ash and hawthorn.

Protected Species

- 3.39 The habitats present on site provide suitable habitats with the potential to support a range of protected species including bats, badgers, breeding birds, great crested newts, reptiles and invertebrates. These species are considered in greater detail below.

Bats

- 3.40 The scattered trees found on site were assessed for their suitability to support roosting bats. No features were observed on the trees; however, some were of an age and size to suggest some suitability for roosting bats. The results of the assessment are given below in Table 3.2 and the locations are depicted in Figure 3.2.

Table 3.2 Bat tree assessment results

Tree Number	Common name	Suitable roosting feature(s)	Aspect and height	Suitability to support roosting bats

1	English oak	None, but of a size and age suitable for roosting bats	N/A	Low
2	English oak	None	N/A	Negligible
3	English oak	None, but of a size and age suitable for roosting bats	N/A	Low
4	English oak	None, but of a size and age suitable for roosting bats	N/A	Low

- 3.41 The remaining trees within the site boundary were not individually assessed as they will not be impacted by the development.
- 3.42 The species-poor hedgerow in the east section of the site as well as trees found within the scrub boundaries provide suitable habitat for foraging and commuting bats. The good semi-improved grassland and areas of tall ruderal vegetation within the site boundary has the potential to support a range of flying insect species and therefore provides suitable habitat for foraging bats.

Badgers

- 3.43 The semi-improved grassland, tall ruderal vegetation, scrub and boundary vegetation provide suitable foraging habitat for badgers. The scattered tall ruderal vegetation and the boundary vegetation on the west boundary provides some suitable sett building habitat for badgers.
- 3.44 The site was checked for mammal trails and holes but no evidence of badger activity was recorded. There were no mammal trails leading on to or off the site.

Breeding birds

- 3.45 The site offers suitable habitats for bird species to nest and forage including scrub, tall ruderal vegetation and trees along the boundary habitats.
- 3.46 A number of birds were recorded using the site during the survey including green woodpecker *Picus viridis*, dunnock *Prunella modularis*, robin *Erithacus rubecula*, blackbird *Turdus merula*.

Dormice

- 3.47 The scrub habitat along the west and south boundaries provide suitable foraging and nesting habitat for dormice.

- 3.48 A hedgerow with trees extending to the west beyond the site boundary connects the site to habitats with very limited suitability to support dormice.

Great crested newts

- 3.49 The semi-improved grassland, tall ruderal vegetation, scrub and various rubble piles across site provide suitable terrestrial habitat for great crested newts.
- 3.50 Three waterbodies are located within 500 m of the site boundary, one of which is a small damp ditch is located in the north-east boundary of the site. The ditch was approximately 0.75 m wide and 8 m long with deciduous trees lining the west embankment.
- 3.51 A small garden pond is located approximately 260 m east of site and is separated from the site by residential house, small roads and amenity fields.
- 3.52 A reservoir is located approximately 460 m north-west of the site boundary and is separated from the site via residential housing and a railway line.

Reptiles

- 3.53 The semi-improved grassland, tall ruderal vegetation, scrub, boundary and scattered debris provide suitable shelter and foraging habitat for common species of reptiles including slow worm *Anguis fragilis*, grass snake *Natrix natrix* and common lizard *Zootoca vivipara*.

Invertebrates

- 3.54 The good semi-improved grassland, tall ruderal vegetation and scrub habitats as well as the mixed debris of rubble and wooden pallets found on site provide suitable habitat to support a plethora of invertebrate species.
- 3.55 Numerous invertebrate species were recorded during the survey including bumblebees *Bombus sp.*, red admiral butterfly *Vanessa atalanta* as well as a cinnabar moth larvae *Tyria jacobaeae*, which is a species of principal importance.

Plants

- 3.56 No protected or notable plants species were recorded during the survey.

Other species

- 3.57 A small mammal trail likely to be made by a European rabbit *Oryctolagus cuniculus* was recorded in the good semi-improved grassland.
- 3.58 A number of mole hills likely to have been created by the *Talpa europaea* were recorded in the poor semi-improved section of the site (Photograph 35, Appendix C).

4 EVALUATION

Habitats

- 4.1 The proposed development will result in the loss of approximately 1.6 ha poor semi-improved grassland, 0.3 ha good semi-improved grassland, 0.23 ha tall ruderal vegetation, and 0.1 ha scrub habitat. These habitats are locally uncommon in the area as the wider landscape is dominated by agricultural fields interspersed with residential housing. However, the habitats on site are not considered priority habitats or habitats of principal importance, therefore the proposed development will likely have minimal impact upon protected habitats.

Protected sites

- 4.2 No statutory or non-statutory designated sites are found within 2 km of the site boundary and therefore no protected sites will be affected by the development.

Species

Bats

- 4.3 All species of bat present in the UK receive full protection under The Conservation of Habitats and Species Regulations 2010, and the Wildlife and Countryside Act 1981 (as amended).
- 4.4 The scattered trees and trees within the scrub and hedgerow boundary have some suitability to support roosting bats. Only two of the trees (Tree 3 and Tree 4) will potentially be impacted by the development through the widening of the northern access route resulting in loss of potential roosting areas.
- 4.5 The semi-improved grassland, tall ruderal vegetation, scrub, trees and boundary vegetation provide suitable habitat for commuting routes as well as foraging bats by supporting flying invertebrates. The boundary habitats including a number of trees within scrub will not be affected by the development.
- 4.6 The semi-improved grassland, tall ruderal vegetation and scrub habitats totalling approximately 2.2 ha will be lost to facilitate the proposed development of residential housing with associated recreational areas and as such will result in a significant change of land use with increased noise, increased light and removal of habitats supporting bat prey. The loss of this habitat is likely to have an impact on the foraging success of the local bat population

Badgers

- 4.7 Badgers receive full protection under the Protection of Badgers Act 1992.
- 4.8 The semi-improved grassland, tall ruderal vegetation and scrub on site provide suitable foraging opportunities for badgers. The boundaries provide suitable sett building opportunities for badgers.

- 4.9 No evidence of badger activity including holes, latrines or boundary breaches were recorded during the survey. Due to the large distance of the nearest badger record from site, the proposed development is considered unlikely to impact the local badger population.

Breeding birds

- 4.10 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.
- 4.11 The semi-improved grassland, tall ruderal vegetation, scrub, trees and buildings on site provide suitable foraging and nesting opportunities for breeding birds.
- 4.12 Therefore, in the absence of mitigation, the loss of these habitats which total approximately 2.2 ha of vegetation has the potential to impact breeding birds using the site.

Dormice

- 4.13 Hazel dormice and their habitats 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).
- 4.14 No direct evidence of hazel dormice was recorded during the survey.
- 4.15 The scrub and tree habitat found on the south and west boundaries of the site provide suitable foraging and nesting habitat. The west boundary is connected to hedgerows with trees in the wider landscape.
- 4.16 These habitats will not be impacted by the proposed development and will be fully retained. The proposed development is therefore considered unlikely to impact local hazel dormouse populations.

Great crested newt

- 4.17 Great crested newts are fully protected by both the Wildlife and Countryside Act 1981 (as amended) and the Habitat Regulations, this 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).
- 4.18 A small damp ditch is located along the north-east boundary of the site. Two waterbodies lying 260 m east and 470 m north-west of the site were recorded. These waterbodies have limited connectivity to the site and are separated from the site by roads, residential houses and a railway line.

Reptiles

- 4.19 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.
- 4.20 The semi-improved grassland, tall ruderal vegetation, scrub, and boundary vegetation provide suitable shelter and foraging habitat for common species of reptiles.
- 4.21 Approximately 1.6 ha poor semi-improved grassland, 0.3 ha good semi-improved grassland, 0.2 ha tall ruderal vegetation and 0.1 ha scrub habitat will be lost to facilitate the proposed development. The loss of this amount of habitat is likely to have a negative impact on reptiles at local level due to the absence of other foraging and sheltering habitat within the surrounding landscape which will not be impacted.
- 4.22 Therefore, in the absence of mitigation, the proposed development has the potential to negatively impact the local reptile population.

Invertebrates

- 4.23 A cinnabar moth larva, which is a species of principal importance in the UK, was recorded within the good semi-improved grassland during the survey. The semi-improved grassland, tall ruderal vegetation and scrub habitat on site provide suitable foraging habitat for a range of invertebrate species.
- 4.24 The loss of the semi-improved grassland, tall ruderal vegetation scrub habitat on site has the potential to negatively impact upon the local invertebrate population due to the absence of such habitat in the wider landscape. Appropriate measures should be taken to enhance the site for invertebrates moving forward.

Plants

- 4.25 No protected or plants of principal importance were recorded during the survey.

5 CONCLUSION

- 5.1 The proposed development site is considered to have moderate ecological value within a local context as it comprises habitats which are uncommon in the local habitat including poor semi-improved grassland, good semi-improved grassland, tall ruderal vegetation and scrub habitat.
- 5.2 The biodiversity value of the total site area is largely attributed to the following factors:
- The lack of habitats of principal importance within the site boundary.
 - The lack of connectivity of the site to habitats suitable for protected species in the wider landscape.
 - The presence of habitats with the potential to support bats, badgers, breeding birds, great crested newts, hazel dormice, reptiles and invertebrates.
 - The presence of lower quality habitats in the wider landscape including arable farmland and residential housing.
- 5.3 The proposed development works involve the removal of habitats suitable to support protected species from site including 1.6 ha poor semi-improved grassland, 0.3 ha good semi-improved grassland, 0.2 ha tall ruderal vegetation and 0.1 ha scrub habitat.
- 5.4 Consequently, the proposed development is likely to impact upon commuting and foraging bats, breeding birds and reptiles. Recommendations for further works concerning these species is outlined in Section 6.
- 5.5 Due to the presence of suitable habitats on site, the proposed work has potential to also impact local badger, great crested newts and dormice populations and precautionary measures should be taken to safeguard against these impacts.

6 RECOMMENDATIONS

Bats

- 6.1 The proposed development includes a significant change of land use which will result increased noise and light production and removal of habitats which support bat prey. As such, further surveys are recommended for bats. This will include night time activity transect surveys to establish if and how the local bat population is using the site. Static bat detectors will also be used to increase the survey effort and give a clearer insight into how bats use the site.
- 6.2 These surveys have been scheduled in for the 16th August, the 4th September and the 28th September 2017.
- 6.3 The information gained from the further surveys will facilitate the preparation of any necessary bat mitigation required to ensure that bats are not detrimentally affected by the proposed development.

Badgers

- 6.4 No evidence of badgers was recorded during the survey and it is considered that further surveys for badgers are not required at this stage.
- 6.5 Should any badger activity be recorded prior to works commencing, a badger survey will need to be carried out by a suitably qualified ecologist as badgers are a highly mobile species and sett building can occur at any time of year.

Breeding birds

- 6.6 All clearance work on site involving the tall ruderal vegetation, scrub and buildings on site should be undertaken during the period October to February (inclusive) to avoid the bird-nesting season. If this is not possible then immediately prior to the commencement of works, an on-site check for nesting birds should be undertaken by a suitably experienced ecologist and any active nests will need to be identified and subsequently left *in situ* until the chicks have fledged.

Great crested newts

- 6.7 Due to the presence of suitable terrestrial habitat for great crested newts, a precautionary approach to works is recommended during any vegetation clearance. This will be further described in the reptile section.
- 6.8 In the unlikely event that a great crested newt is found during development works, all work should cease immediately and the advice of a suitably qualified ecologist, Arbeco Ltd or Natural England should be sought.

Reptiles

- 6.9 Due to the presence of suitable habitat for sheltering and foraging reptiles, further surveys are recommended to ascertain whether reptiles represent a constraint to the proposed development of the site.
- 6.10 Surveys for reptiles should preferably be carried out in April to June and/or September. These surveys involve the placement of artificial refugia in suitable habitat. Refugia are used by reptiles for basking and sheltering under and are checked by an ecologist seven times on different days in suitable weather conditions in order to establish if and how reptiles are using the site.
- 6.11 The surveys are scheduled to begin on the 1st September 2017 and will adequately ascertain whether the semi-improved grassland, tall ruderal vegetation and scrub habitats currently support reptiles. Should reptiles be found to be present on site, the results will provide an estimate of the population size. This information will facilitate the preparation of any necessary reptile mitigation strategy required to ensure that reptiles are not detrimentally affected by the proposed development including installation of reptile exclusion fencing and sensitive vegetation clearance.

Dormice

- 6.12 Dormice are not thought to be at risk from the development due to the boundary habitats not being affected by the development proposals and the lack of connectivity to suitable habitat in the wider landscape.
- 6.13 In the unlikely event that a hazel dormouse is found during the works then all work should cease immediately and the advice of Arbeco Ltd or Natural England should be sought.

Biodiversity enhancements

- 6.14 Under the National Planning Policy Guidance document, it is a requirement for the planning system to minimise impacts on and provide net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity. In order to conserve and enhance the natural environment the following provision could be included:
- Bird and bat boxes should be installed on proposed buildings and / or mature native trees on site.
 - The development proposals include incorporating a pond into the design. This should have a variety of depths to support different animal assemblages and be planted using native aquatic species such as water mint *Mentha citrate*, marsh marigold *Caltha palustris*, and greater spearwort *Ranunculus lingua*, which are all considered good receptor species for great crested newt egg laying.
 - The boundaries on the site could be improved through the planting of locally sourced, native berry bearing species including hawthorn, blackthorn *Prunus spinose* and rowan *Sorbus aucuparia*. These will provide additional foraging

and nesting opportunities for breeding birds as well as potentially support dormice and invertebrate populations.

- Should any fencing be installed on site it is recommended that gaps are incorporated in any boundary fencing to allow for the dispersal species of principal importance including the European hedgehog *Erinaceus europaeus*, reptiles and amphibians into the wider landscape.
- Any new external lighting on site should be kept to a reasonable minimum and should include downward facing lights so as not to disrupt foraging and commuting bats.

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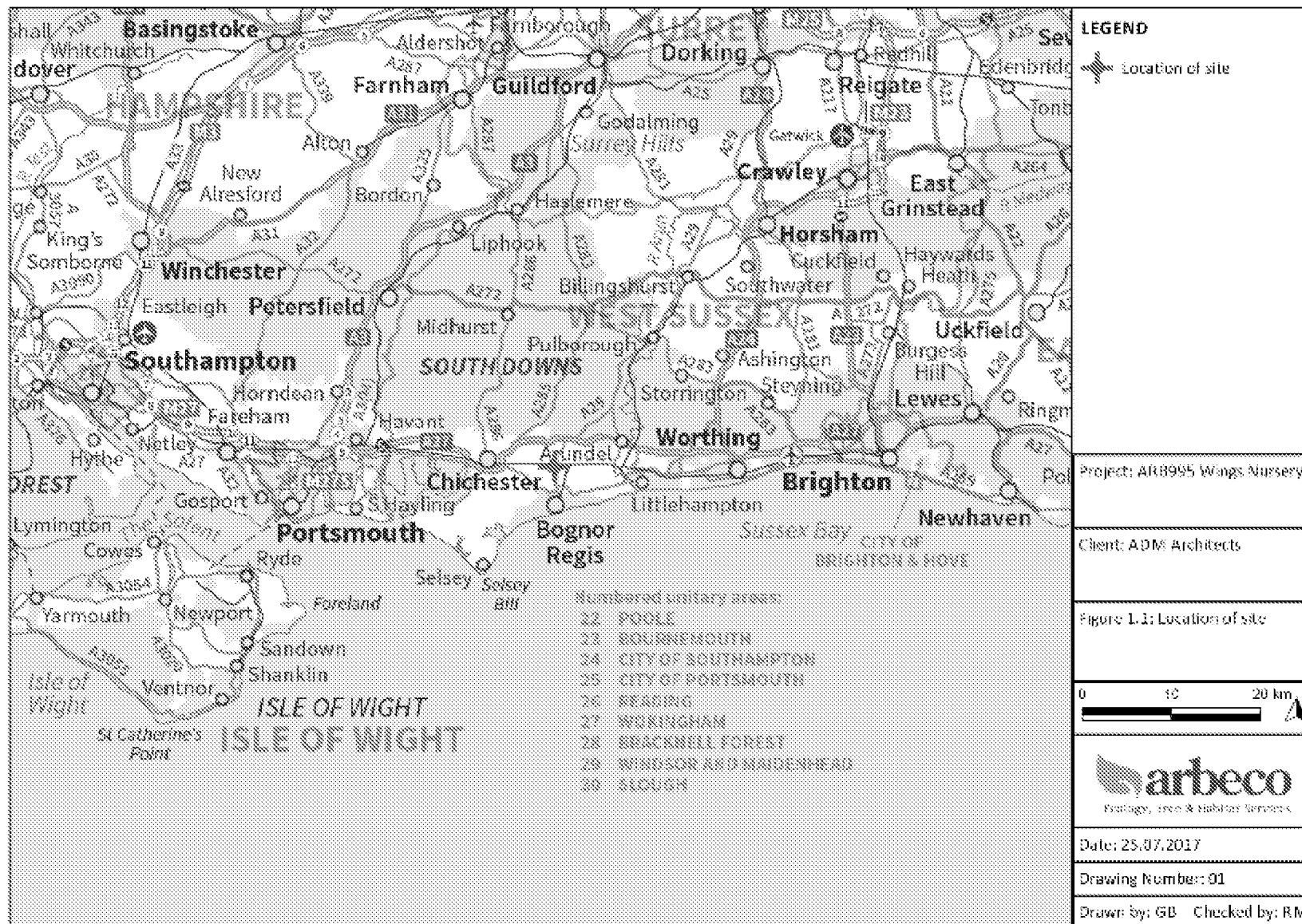
FIGURES

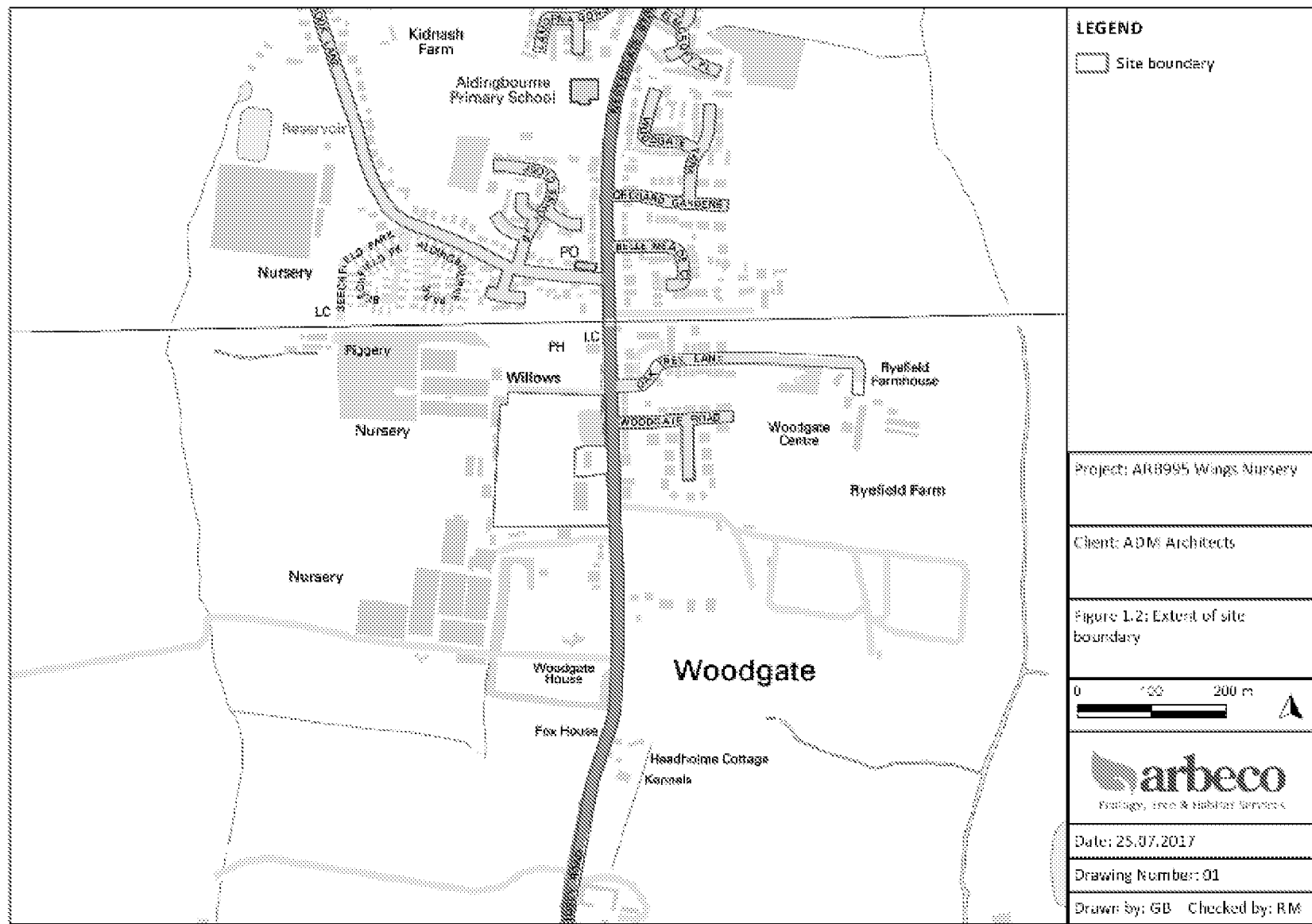
Figure 1.1 Location of site

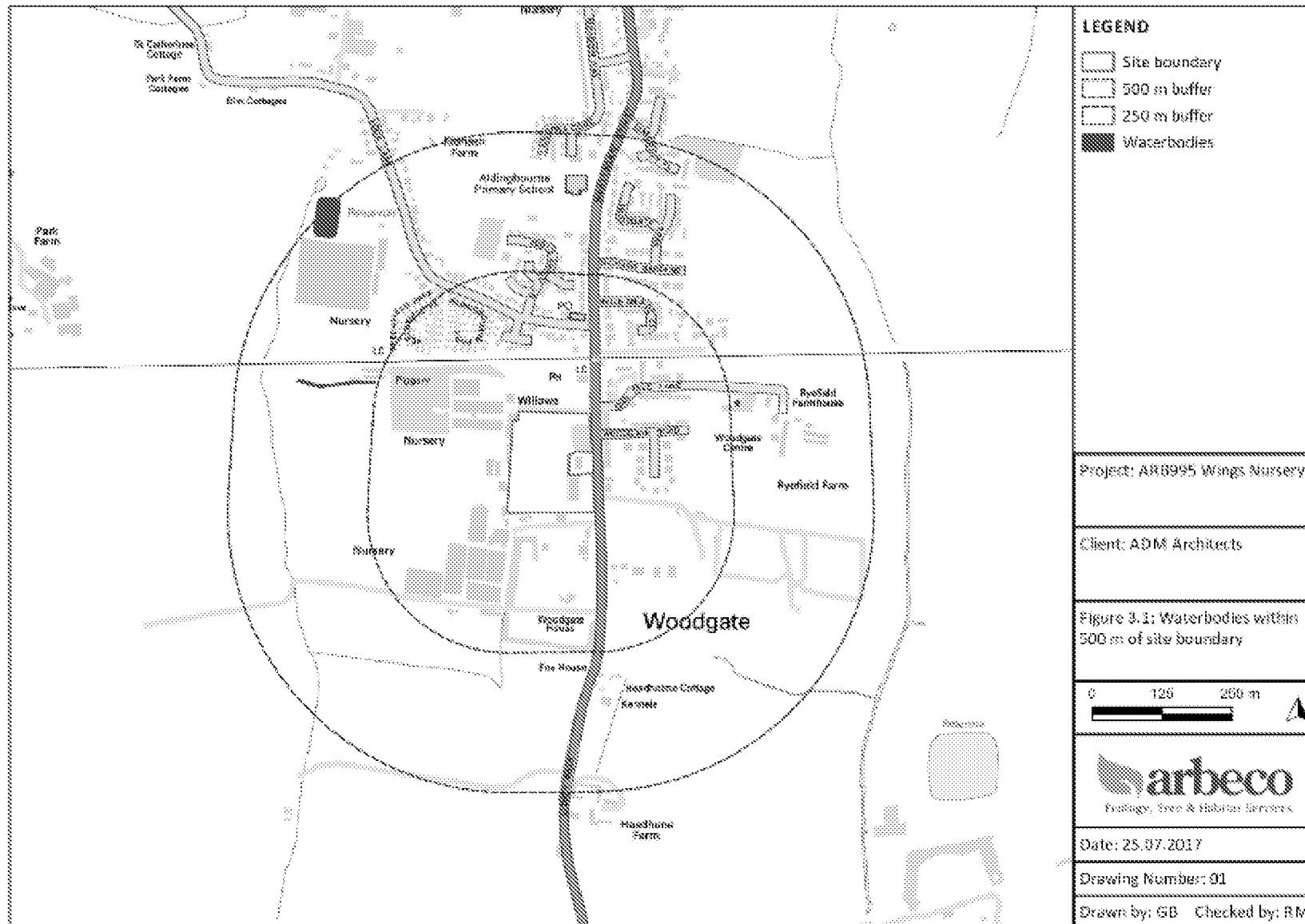
Figure 1.2 Extent of site boundary

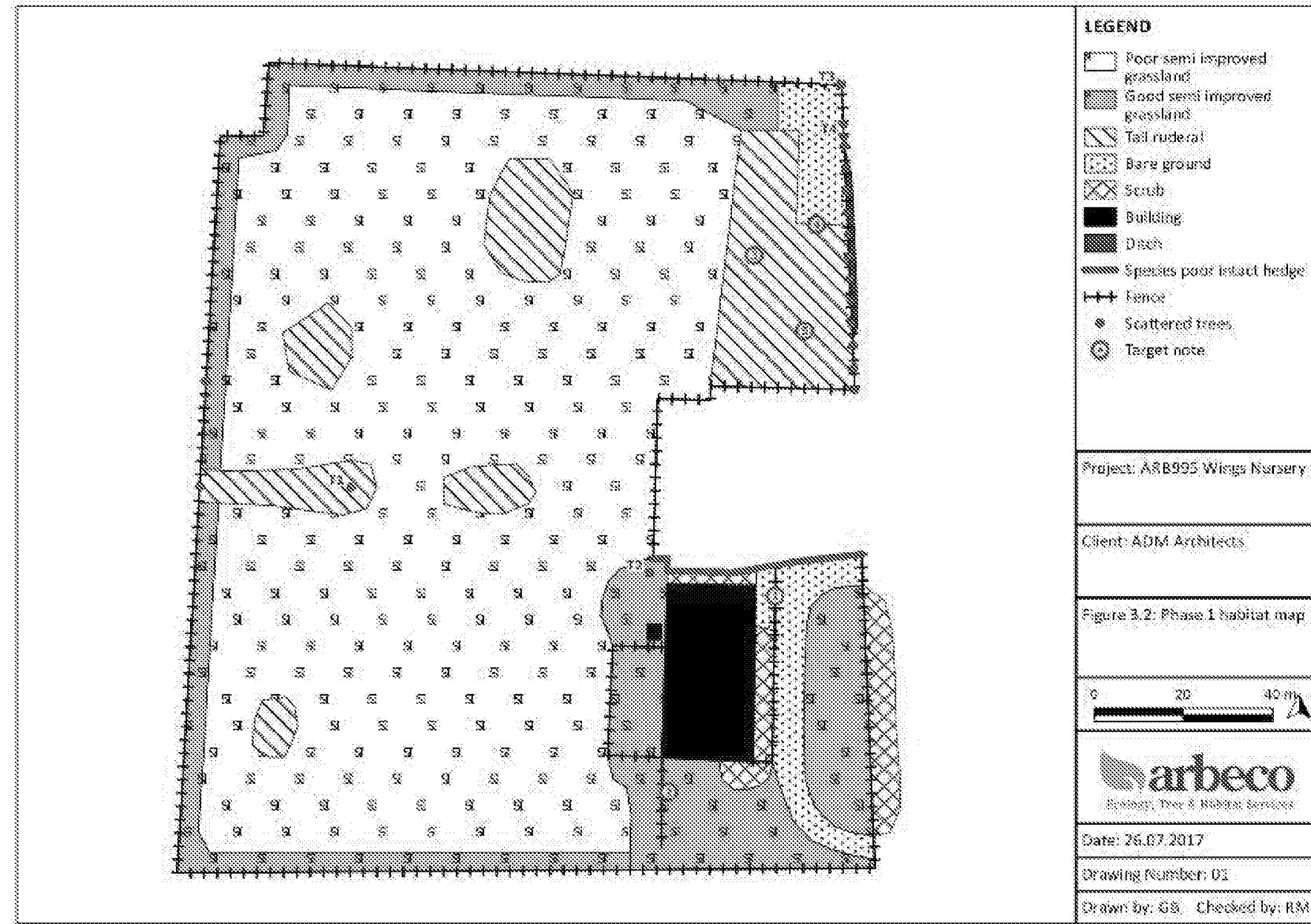
Figure 3.1 Waterbodies within 500 m of site boundary

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 2010

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	Wooden pallets to east of glasshouse. Photograph 24
2	Log pile within good semi-improved grassland. Photograph 25
3	Debris pile in tall ruderal vegetation. Photograph 26.
4	Tree stumps found within tall ruderal vegetation. Photograph 27.
5	Rubble and concrete slabs in tall ruderal vegetation. Photograph 28.

APPENDIX C Site photographs



Photograph 1: Poor semi-improved grassland



Photograph 2: Good semi-improved grassland east of glasshouse



Photograph 3: Good semi-improved grassland south of glasshouse



Photograph 4: Good semi-improved grassland west of glasshouse



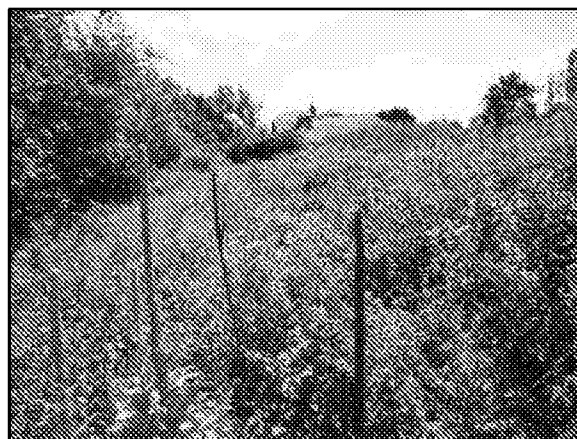
Photograph 5: Tall ruderal vegetation scattered within poor semi-improved grassland



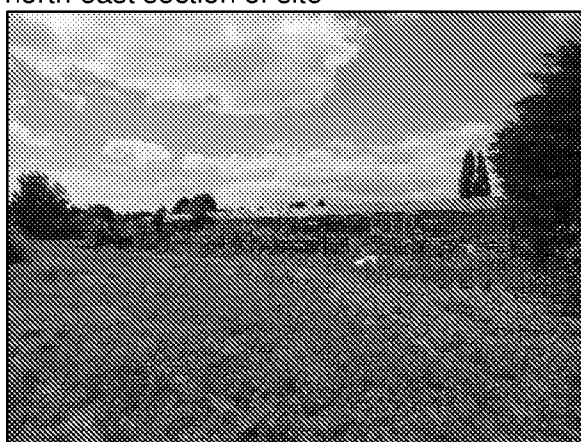
Photograph 6: Tall ruderal vegetation in centre of site



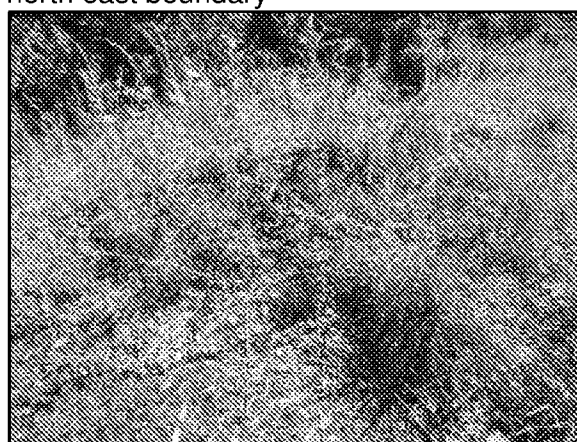
Photograph 7: Tall ruderal vegetation in north east section of site



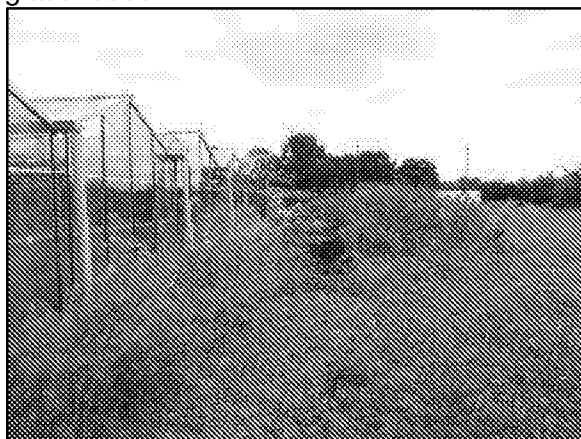
Photograph 8: Tall ruderal vegetation on north east boundary



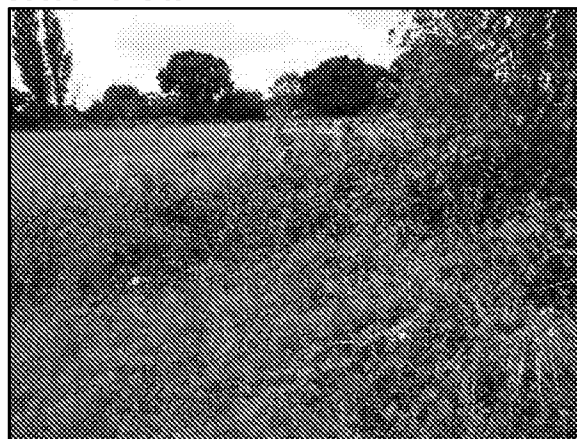
Photograph 9: Bare ground east of glasshouse



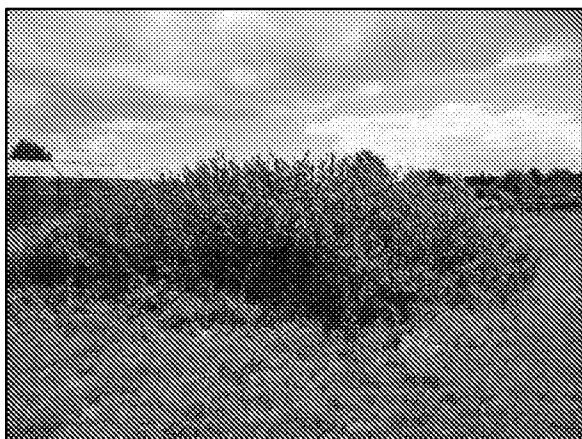
Photograph 10: Bare ground in north east section of site



Photograph 11: Scrub vegetation south of glasshouse



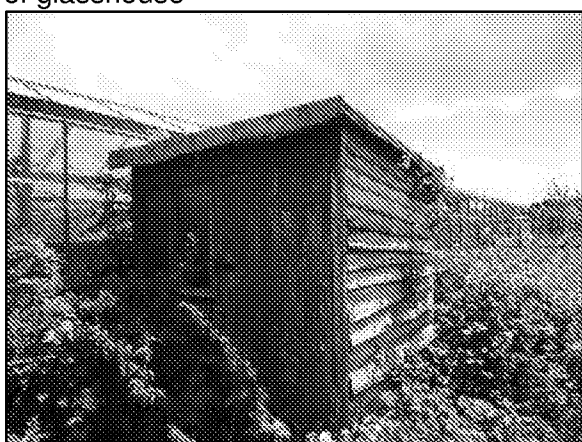
Photograph 12: Scrub vegetation south of glasshouse



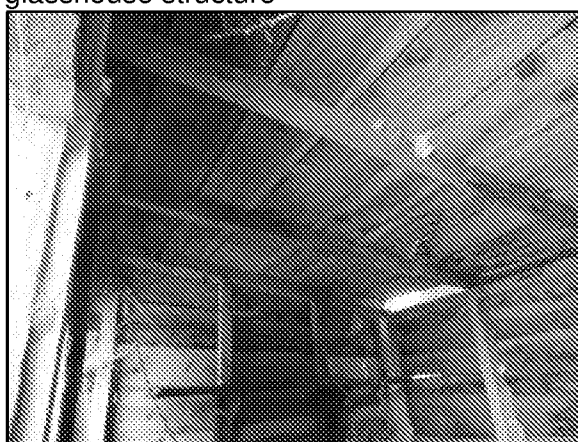
Photograph 13: Scrub vegetation to west of glasshouse



Photograph 14: Scrub within the glasshouse structure



Photograph 15: Wooden structure west of glasshouse



Photograph 16: Internal of wooden building



Photograph 17: Wet ditch on north east boundary



Photograph 18: South east boundary



Photograph 19: Scrub on south boundary



Photograph 20: Trees on west boundary



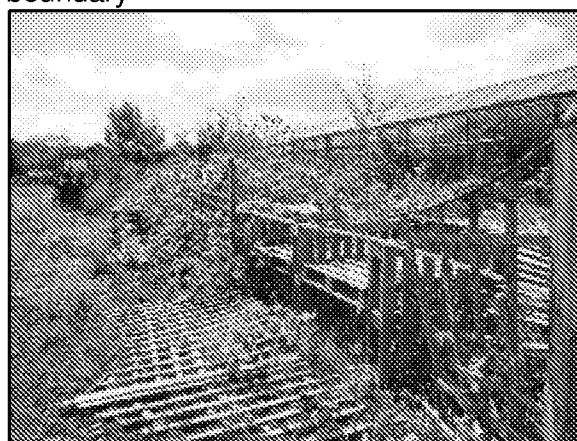
Photograph 21: Wire fence on north boundary



Photograph 22: Trees on north east boundary



Photograph 23: Leylandii hedge in centre of site



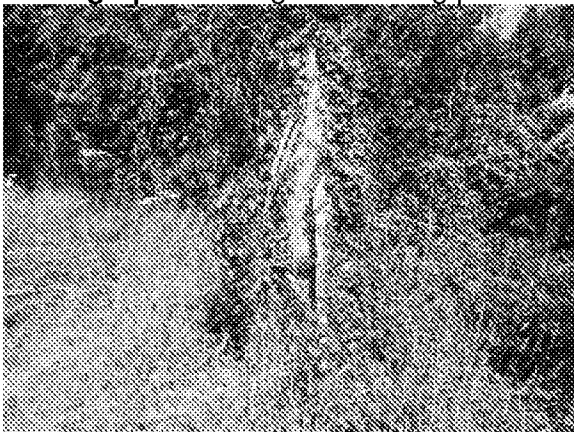
Photograph 24: Target note 1, wooden pallets on bare ground



Photograph 25: Target note 2 log pile



Photograph 26: Target note 3 debris pile



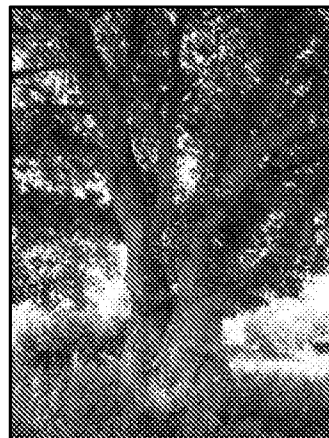
Photograph 27: Target note 4 Line of tree stumps in north east section



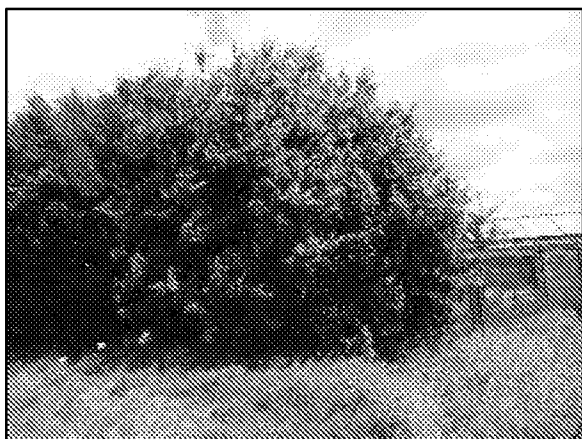
Photograph 28: Target note 5 rubble and concrete slabs



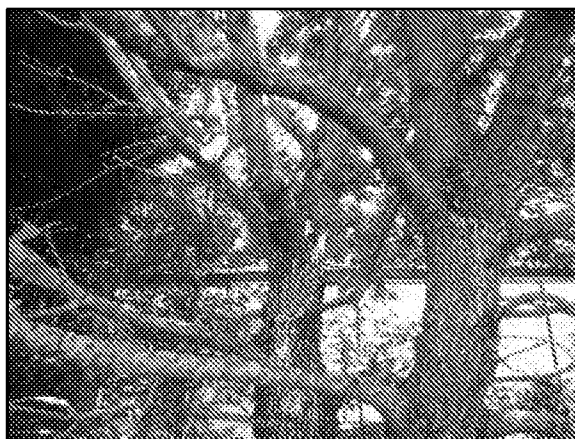
Photograph 29: Tree 1 Oak



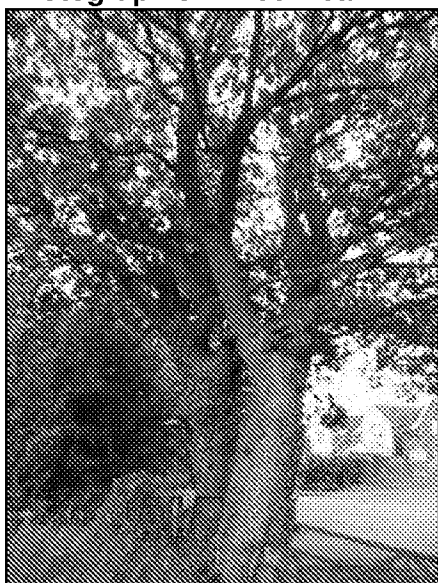
Photograph 30: Tree 1 Oak trunk and canopy



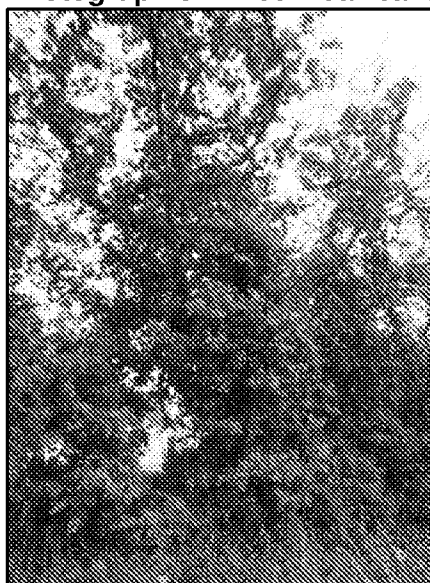
Photograph 31: Tree 2 oak



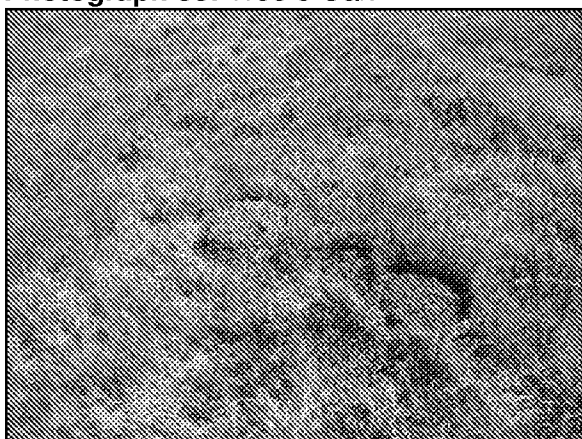
Photograph 32: Tree 2 oak canopy



Photograph 33: Tree 5 Oak



Photograph 34: Tree 6 Oak



Photograph 35: Mole hills in poor semi-improved grassland