

Ecological Appraisal

Land at Appleton
December 2014

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1.0 Introduction

LDA Design was appointed by planning consultants McLoughlin Planning to undertake an initial ecological survey and appraisal of approximately 4ha of land to the north west of Appleton to support representations to the Vale of White Horse Local Plan Part 1 Publication Version November 2014.

The site has been subject to previous representations by McLoughlin Planning on behalf of the landowner the Gow family (September 2014) which set out the planning case for release of the site from the Green Belt and the overall suitability of the site as a location of residential development meeting local housing needs.

1.1. Purpose of this report

This report considers the ecological status of the land at Appleton to determine if there are any significant ecological constraints which would preclude, or otherwise limit the suitability and potential of the site for development. In addition, the report assesses the potential of the site to support protected species and makes recommendation for further ecological survey and mitigation should the site be taken forward for development.

The report is informed by the following:

- Desk based studies of published data including ecological records obtained from the Thames Valley Environmental Record Centre (TVERC) (included in Appendix 4);
- Extended Phase 1 Habitat Survey of the site and adjacent areas;
- A Habitat Suitability Assessment of ponds within 500m of the site.

1.2. Site Description

The Site lies at the north western edge of the village of Appleton, within the district of the Vale of the White Horse). The majority of the Site is occupied by an arable field (approximately 3.3ha) with a smaller area of rough grassland along its northern boundary (0.7ha) which also includes a large rubble and spoil store (see Figure 1)

Further agricultural land and woodland plots are present to the west and north, with farm buildings adjoining the Site to the north. Eaton Road separates the Site from existing dwellings to the east, beyond which further agricultural land and woodland are present. To the south existing dwellings border the Site.

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2.0 Methodology

2.1. Identification of ecological receptors

2.1.1. Desk Study

A desk study was carried out in order to gather existing records and information on designated sites and protected and otherwise notable species within the local area (up to 1km from the Site boundary). This information was primarily sought by contacting Thames Valley Record Centre (TVERC) as well as online mapping resources, such as the Multi-Agency Geographic Information for the Countryside database (MAGIC) and aerial photography. The full findings of this are given in Appendix 2, though summaries for each taxa are given in the respective sections below.

A check was made for waterbodies within 250 m of the Site using the MAGIC website, OS mapping and publicly available aerial photographs to assist in determining the possible occurrence of mammals such as otter *Lutra lutra* and water vole *Arvicola amphibius* or amphibians such as great crested newts *Triturus cristatus* within the vicinity of the Site.

2.2. Field Survey

2.2.1. Extended Phase 1 Habitat Survey

A Phase 1 habitat survey was carried out in accordance with the standard methodology (JNCC 2010). This involved walking across the Site and mapping the habitats present using standard codes. The Phase 1 habitat map is presented on Figure 1. The survey was 'extended' to take note of any evidence of protected or otherwise notable species, or habitats that have the potential to support them. Target notes (TNs) were used to note features of interest. Site photographs are included in Appendix 1.

The survey was undertaken on 21 November 2014 and the weather conditions were overcast with constant drizzle, though no wind.

2.2.2. Ground level tree inspection

As part of the initial site survey, inspections of all trees within the northern part of the Site were carried out following current best practice survey guidance (Hundt, 2012). The aim was to search for (i) evidence of the presence of bats, such as droppings, urine staining, live or dead bats, and (ii) tree features with the potential to provide roosting space, or access to roosts, such as rot holes, woodpecker holes, splits in branches and the presence of dense ivy for trees. This survey was completed from the ground with binoculars and a high-powered torch used to facilitate the identification of features as required. The trees along the boundaries of the southern field were not inspected in detail given that access was not available.

The information thus gained was used to assess each tree for its potential to support roosting bats taking into consideration the features of the tree and the context of the surrounding habitats provided by the Site. The assessment criteria and categories are as follows:

- No/negligible potential - No cracks, splits, loose bark, hollow in trunk, holes or ivy;

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- Low potential - Light ivy or any of the below features but in an isolated situation without surrounding trees or hedges;
- Medium potential - Heavy ivy and or presence of downward developing holes in a wooded situation or close to hedges;
- High potential - Trees next to hedges or in a wooded situation with multiple features (holes, loose bark, splits, hollows, woodpecker holes) and upward developing holes; and
- Confirmed roost – evidence of or known presence.

2.2.3. Habitat Suitability Index

During the site visit, all ponds identified within 250m through aerial mapping and two further ponds located through information gained from the land owner were assessed for their suitability to support great crested newt. This was done through a Habitat Suitability Assessment of the ponds. Information on the physical features and characteristics of these water-bodies was collected in order to allow a Habitat Suitability Index (HSI) score to be derived (see Oldham *et al.*, 2000). A modification of evaluating terrestrial habitat based on Oldham's original methodology (as proposed by Lee Brady) is recognised as a valuable method for determining HSI value by Amphibian and Reptile Groups of the United Kingdom (ARG UK, 2010).

The HSI is calculated by allocating scores to features associated with a given pond such as size, quality of surrounding habitat and presence of fish. These scores are then used to calculate the overall HSI for each water-body as a number between 0 and 1, with 0 being the least suitable and 1 being the most suitable. The HSI score allows each water-body to be placed in one of five pre-defined categories defining its suitability for great crested newts as follows:

- <0.5 = poor
- 0.5 – 0.59 = below average
- 0.6 – 0.69 = average
- 0.7 – 0.79 = good
- >0.8 = excellent

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3.0 Results

3.1. Desk Study

3.1.1. Designated Sites

No Statutory Sites are located within the Site or within 1 km of its boundary.

Four non-statutory sites are however located within 1 km of the Site. This includes two Local Wildlife Sites (LWS) and two Conservation Target Areas (CTAs). A further proposed Local Wildlife Site is situated within 1 km of the site. The descriptions of these and distances from the Site are given in Table 1 below.

Table 1 Non-statutory sites located within 1 km of the Site boundary.

Site Name - Designation	Distance and direction from site	Description summary
Besselsleigh Common Wood - LWS	400m to the east of the Site	Besselsleigh Common Wood supports areas of lowland mixed deciduous (including ancient) woodland and an area of wet woodland.
Holt Copse - LWS	750m to the south of the Site.	Holt Copse consists of a strip of lowland mixed deciduous woodland. Several ancient woodland indicators have been recorded here also.
Field East of Appleton Churchyard – Proposed LWS	300m to the south of the Site.	This site supports a hay cut meadow with a very large population of pignut <i>Conopodium majus</i> .
Oxford Heights - CTA	240m to the south of the Site.	This CTA covers the Oxford Heights from west of Appleton and Frilford and includes Cumnor Hill, Boards Hill and the woodlands to the south of these. The habitats it supports includes fen, wet woodland, lowland mixed deciduous woodland, acid grassland, heathland, limestone grassland and lowland meadow.
Upper Thames - CTA	870m to the north-west of the Site.	This CTA includes habitats such as lowland meadows, wet grassland and floodplain grazing marsh. It has been

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		identified in the past as being very important for wading birds and curlew still nest in the area and there is an important area near Northmoor (to the north-west of the Appleton Site) for nesting lapwing.
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3.2. Field Survey

3.2.1. Habitats

The descriptions of each habitat are given below, as are the assessment of the potential presence of protected species in the relevant sections. The Target Notes (TNs) (referenced in Figure 1) are presented in Table 2.

Table 2 – Target Note details (in Figure 2).

Target Note Number	Description
1	Mammal run in grass with signs of badger foraging.
2	Mammal run. No fur or footprints noted
3	Badger <i>Meles meles</i> paw print on farm track.
4	Mammal run with badger hair trapped in fence and “snuffle marks” (i.e. the typical signs of feeding by this species).
5	Three hay bales stored on rough grassland.
6	Large pile of logs and soil. Entire pile measures approximately 2m high at highest point and 6m in diameter.
7	Mammal run leading through hedge and fence with badger hair noted on fence.
8	Area of snuffle marks in grass margin to field.
9	Mammal run with a single rabbit entrance to a burrow in base of hedge.
10	Mammal run with recent badger latrine (five dung pits).
11	Dead badger on road verge.
12	Extensive rubble pile with a mix of soils and rubble, mostly vegetated (see habitat descriptions).
13	Mature silver birch with features suitable to support roosting bats.
14	Mature silver birch with features suitable to support roosting bats.
15	Row of pollarded sycamores, of which 9 are dead and eight (including two live trees) support loose bark. One woodpecker hole developing downwards was also noted.

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16	Mature silver birch with features suitable to support roosting bats.
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Arable land

The majority of the Site consists of arable land. At the time of the survey the field supported cereal stubble. The margins of the field do not support discrete grass margins, though narrow (less than 1m) strips of natural vegetation occur at the bases of the eastern and western hedges. These areas are dominated by species such as common nettle *Urtica dioica* and cleavers *Galium aparine*.

Species-poor semi-improved grassland

An area (which from aerial photographs is known to have been previously grazed) exists along the northern Site boundary. It measures approximately 0.5ha and is currently rank grassland. The species recorded included cock's-foot *Dactylis glomerata*, Yorkshire fog *Holcus lanatus*, common bent *Agrostis capillaris*, daisy *Bellis perennis*, white clover *Trifolium repens*, spearthistle *Cirsium vulgare*, dandelion *Taraxacum* sp., broad-leaved dock *Rumex obtusifolium*, creeping buttercup *Ranunculus repens*, yarrow *Achillea millefolium*, ragwort *Senecio jacobaea* and ribwort plantain *Plantago lanceolata*. The sward structure is tall (up to 50cm) and forms tussocks. A mammal run crosses this area of grassland from east to west as does a farm access track which runs from the farm courtyard to the north across the field to a gate at the north-west corner of the Site. A large log pile (TN6) with rubble and spoil is present at the eastern end of the field. Several stacks of paving slabs and pallets are also present in the vicinity of the hedge in this area.

A further small area of unmanaged grassland is present along the southern margin of the field which is also rank, though recent disturbance, possibly due to the management of the hedge here, has resulted in a flattening of the sward.

Native species-poor hedge (with trees in places)

The western, southern and eastern edges of the site support native, species-poor hedges, although they are not single species hedges. They support hazel *Corylus avellana*, blackthorn *Prunus spinosa*, hawthorn *Crataegus monogyna*, dogwood *Cornus sanguinea* and field maple *Acer campestre*. The eastern and southern hedges support trees standing higher than the hedge, including field maple and silver birch *Betula pendula*.

The western hedge is relatively sparse, with the northern half being approximately 2-3m tall and 2m wide including the edge vegetation. The southern section of this hedge is also sparse but taller, with a maximum height of about 3.5m.

The western half of the southern hedge had been recently cut to a maximum height of 1.5m. The eastern half stands at about 3.5-4m.

The eastern hedge separates the field from a narrow grassland road verge and supports several mature trees, consisting mainly of silver birch. The structure of this hedge is relatively thick compared to the others on the site boundaries and supports extensive bramble *Rubus fruticosus*.

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Improved grassland

A small field exists within the Site adjacent to the northern field boundary which is currently short, improved grazed grassland. The species list of this field was not compiled due to the presence of cattle in this field at the time of the survey, though the floristic diversity of this field is likely to be low due to the high degree of grazing within it. It is likely that the floral community present is similar to those recorded in the species-poor grassland adjacent to it.

Amenity grassland

Beyond the hedge on the eastern boundary lies a strip of grassland along the verge of Eaton Road which has been heavily managed through mowing. This supported species such as Annual meadow-grass *Poa annua*, and false oat-grass *Arrhenatherum elatius*.

Tall ruderals and dense scrub

A rubble and spoil pile is present in the north-east corner of the Site which has largely vegetated over with a mix of tall ruderals and dense scrub. The scrub is dominated by bramble and the ruderal species included Russian comfrey *Symphytum officinale*, common nettle, hogweed *Heracleum sphondylium* and greater burdock *Arctium lappa*.

Standard trees

A line of standard trees is present along the northern Site boundary. These consist of sycamores *Acer pseudoplatanus* of which three are in good condition and alive at the eastern end of the line. A further 11 standards of this species are present in the line which have been heavily pollarded. All but two of these are dead. A further three fallen trunks presumed to be from this line of trees were noted here.

Southern field

Immediately outside the Site boundary to the south lies a further small field. This is dominated by amenity grassland under a regular mowing regime. The western edge is bordered by a hedge with large mature trees including oak *Quercus* spp.. A large cedar *Cedrus* sp. is also present in the northern part of this amenity grassland. The eastern edge of the field is likely to be bordered directly by existing gardens, though this could not be determined during the field survey due to lack of access.

3.2.2. Protected Species

The majority of the site is arable farmland and offers limited potential for protected species. There are no records of protected species within the site based on the desk based review and published environmental records. Areas of habitat suitable for use by protected species are however, present within the northern areas of the site and within the local landscape beyond the site. The potential for protected species being present within the site is considered below based on information available at this stage.

Great crested newts and other amphibians

Great crested newts and their habitat receive the highest level of protection under European and national legislation, as well as being a Species of Principal Importance for the conservation of biodiversity (SPI). Common toad *Bufo bufo* is also a SPI for nature

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conservation. Common frog *Rana temporaria*, smooth newt *Lissotriton vulgaris* and palmate newt *Lissotriton helveticus* are more common and, along with common toad, are only protected from sale and trade in England.

There are no ponds within the site. The record search carried out with TVERC returned five records of common frog and two of smooth newt for pond locations beyond the site. No records of great crested newt were returned.

During the desk study, three potential water bodies were identified within 250 of the site including a small well. This is within a garden in Appleton, surrounded by low stone wall and is not discussed further here as it is unlikely to support great crested newt. A further two ponds were located through information gained from the landowner as these were not shown on available OS mapping. A fifth pond outwith 250m from the site boundary was also visited due to its proximity to Pond 3. In total, five ponds were identified and are described below with the locations shown in Figure 2.

Pond 1 is located approximately 200m off site to the north, adjacent to Hengrove Wood. This is approximately 16x5m with a maximum depth of 1m. It is surrounded by a small plot of woodland with the banks supporting a sparse ground flora of common nettle, bramble, creeping bent *Agrostis stolonifera* and creeping buttercup. Hawthorn forms the understorey in this woodland which is dominated by large ash *Fraxinus excelsior*. No aquatic vegetation was noted, though duckweed is present covering approximately 40% of the water surface. It is likely that this pond is never entirely dry. The HSI score for this pond has been calculated as 0.46, meaning the pond is of **poor quality for great crested newts**.

Pond 2 is located 280m to the south of the site and is included in this assessment for completeness¹. This is a large pond (40x50m) within a wooded garden supporting large white willow *Salix alba* and introduced shrubs such as Rhododendron. The banks are mostly artificially reinforced with wooden vertical slats and little marginal vegetation was noted, with the exception of a small stand of Iris. The main residential area of Appleton borders the pond to the north, west and south with further dwellings to the east, including a large house immediately adjacent to its eastern bank. The presence of fish within this water body is uncertain, due to lack of access and information, but these have been presumed as being possibly present due to the size of the pond for the purpose of this assessment. It is likely that this pond is never entirely dry. The HSI score for this pond has been calculated as 0.74 and therefore the pond has **good suitability to support the great crested newt**.

Pond 3 is located approximately 235m from the site boundary in the southern part of Hengrove Wood and has been excavated to aid the drainage of the nearby farmland. It is fed by a ditch running down the centre of Hengrove Wood. It is roughly circular, with a diameter of 15m, though a small mound exists at its centre. The maximum depth at the time of the survey was approximately 10cm with a substrate of clay and leaf litter. It is likely that this pond would dry out occasionally. The margins support mainly sparse bramble with a small amount of hard rush *Juncus inflexus* on the central mound. The banks have a shallow profile and no fish or wildfowl were noted. This HSI score for this pond has been calculated as being 0.55 and therefore the pond is deemed to have **below average suitability to support great crested newts**.

¹ Though it lies outside the 250m buffer from the Site, it is within 200m of Site 7 as a whole.

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Pond 4 is located 200m from the site boundary in the north-eastern corner of Hengrove Wood. It is a shallow depression (60cm in depth) measuring 8x3m with approximately 2.5cm within this of standing water with leaf litter and no aquatic vegetation. The banks were largely devoid of vegetation with the exception of sparse bramble and common nettle. Hazel and ash overhang this pond. It is likely to dry out yearly and only hold water after rainfall. The HSI score for this pond has been calculated as 0.42 meaning the pond has **poor suitability to support great crested newt.**

A further pond (**pond 5**) is located in the western corner of Hengrove Wood, approximately 390m from the site boundary. Although pond 5 is located beyond 250m from the Site, it has been included in this assessment as it is located approximately 140m from pond 3. Any individuals present within pond 5 are likely to form a metapopulation with any that are utilising the cluster formed by ponds 1, 3 and 4. Pond 5 is relatively large (40x20m approximately) with a small island at the centre. The northern side is deep (possibly over a metre) and unlikely to fully dry out, while the southern part is shallow with recently profiled margins. Two mallard *Anas platyrhynchos* were noted within this pond, as was marginal vegetation including bulrush *Typha latifolia*. It is located in an area of scrub on the edge of the woodland, with agricultural land bordering this to the west and south. The HSI score for this pond has been calculated as 0.81 which meant the pond has **excellent suitability to support great crested newt.**

Based on the HSI assessment, ponds 1, 3 and 4 are considered to be of below average or low suitability for great crested newts and are all located between 200 and 220m from the site boundary. Pond 5 provides excellent habitat though it is over 390m from the site. All the above ponds are connected to the site by existing hedgerows and should newts be found in any of the ponds, there is potential they may be present within the margins of the site during their terrestrial phase. Further surveys are recommended to confirm the presence or absence of great crested newts within the surrounding ponds and to inform a mitigation strategy for the site to exclude newts from areas of development if required.

Pond 2 conversely is isolated from the site by existing dwellings within Appleton and the Netherton Road, which leads to Eaton Road. As this is not connected directly to the site by suitable habitats, it is unlikely that individuals from any breeding population in this pond would occur within the Site.

Reptiles

Two snake species and two species of native lizard are widely distributed across the UK. These are grass snake *Natrix natrix*, adder *Vipera berus*, slow worm *Anguis fragilis*, and common lizard *Zootoca vivipara*. These species are protected by the Wildlife and Countryside Act, 1981 (as amended) (WCA, 1981) against intentional killing and injuring (but not taking) and are all SPIs.

There are no records of reptiles within the site. The record search carried out with TVERC returned one record of a common lizard from Besselsleigh Common Wood, approximately 670m to the south-east.

The site has little potential to support reptiles although the northern field includes habitats suitable for widespread reptile species such as common lizard and slow worm, including the rough grassland with associated vegetated rubble pile and log pile offering both foraging and hibernation habitats. These species may also be present in low numbers along the hedge

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bases across the remainder of the Site. Further surveys are recommended to confirm if reptile species are present within the site.

Birds

The nests of all wild birds, whilst in use, and their eggs, are protected from damage and destruction under the WCA, 1981 (as amended). Birds listed on Schedule 1 to this Act receive additional protection from disturbance whilst nesting.

The record search carried out with TVERC returned 13 records of birds listed under Birds of Conservation Concern (BoCC) Red or Amber lists. This included kingfisher *Alcedo atthis*, hobby *Falco subbuteo*, green woodpecker *Picus viridis*, grey partridge *Perdix perdix*, red kite *Milvus milvus*, song thrush *Turdus philomelos* and yellow wagtail *Motacilla flava*. Of these, grey partridge, song thrush and yellow wagtail are also SPIs.

The habitats on site are considered typical of the surrounding area and the county and are likely to support farmland birds as well as more ubiquitous species. During the site visit, red kite (Schedule 1 species), dunnoek *Prunella modularis* (BoCC Amber list and SPI) and yellowhammer *Emberiza citrinella* (BoCC Red-list and SPI) were noted. The latter two species may nest within the marginal habitats (hedges and scrub) of the site. Red kite may nest within the woodland habitats further afield, including the small woodland copse immediately adjacent to the western Site boundary or Hengrove Wood to the north-west. Of the other species in the record search, grey partridge, green woodpecker song thrush and yellow wagtail may occur, though yellow wagtail typically nest in large open arable farmland. Given the small size of the site, the numbers present as nesting pairs is likely to be very low.

Badgers

Badgers *Meles meles* are common and widespread across England, and whilst found in urban habitats, tend to live at higher population densities in arable and semi-natural landscapes. Badgers and their setts are protected under the Protection of Badgers Act 1992.

The record search obtained from TVERC returned three records of badger, one from Holt Copse, (890m to the south) and two from Besselsleigh Common Woods (approximately 670m south-east).

During the site survey, numerous mammal runs were recorded with several (TN1, 3, 4, 7, 8 and 10) showing signs of being used by badger, either with fur caught of barbed-wire fencing, footprints, latrines or characteristic feeding signs (snuffle marks). A dead badger² was also found (TN11) on the western verge of Eaton Road.

A sett was also located within the area surveyed. Its location and details are given in Confidential Appendix 2 in order to protect this species, however, based on the evidence collected it is likely to be a partially used outlier sett.

² It could not be determined accurately how long this had been present, though bones and fur were all that was found.

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Bats

Bats and their roosts receive full protection under the Conservation of Habitats and Species Regulations 2010 (as amended) and under the Wildlife and Countryside Act (WCA) 1981 (as amended). Several species are also SPIs³.

The record search carried out with TVERC returned seven records of bats within 1km of the site. There were no records for bats within the site. The records did include three of injured bats in Appleton, with pipistrelles *Pipistrellus* spp. in 2004 and 2006 and a brown long-eared bat in 2003. Older records included a record from 1988 of a roost of three brown long-eared bats in the eastern part of Appleton.

The site offers suitable habitat for foraging bats, though the main habitat of arable farmland is likely to offer a poor foraging resource. However the northern rough grassland is likely to offer a better source of invertebrate prey. The northern edge of the site is located between the Lower England's Copse woodland along the track to the east of Eaton Road and Hengrove Wood in the west and may form part of a commuting route between these woods.

In terms of roosting opportunities, the habitat within the site offers limited features suitable for roosting bats. The eleven dead sycamores identified on the northern boundary support loose and rotting bark. The two live trees also feature some loose bark and crevices and a woodpecker nest hole developing downwards was noted in one of the dead trees at the east end of the row. Overall those which support loose bark and a woodpecker hole are likely to have low potential to support of roosting bats as these are relatively isolated. The trees (three in total) which have no remaining bark are likely to have negligible value for roosting bats.

Three mature silver birch are present in the eastern hedge adjoining the road. TN 13 on Figure 1 shows the location of the first which supports a light covering of ivy and two small rotten, up-turned limbs at a height of 5.5m. This tree is therefore likely to have low potential to support roosting bats.

The second (TN14) is located at the northern end of this hedge. This supports several features with the potential to support bats including: rotten limb-holes on the main trunk at 2m from ground level; rotten limbs at 4.5m with splits and rotting crevices and a split in the main limb at 6m from ground level, though this may not support a crevice. This tree is likely to have medium potential to support roosting bats. Immediately to the south of this tree a sycamore supports some a very light ivy cover, but as this does not have the thickness of tendrils which would create suitable crevices for roosting, this is likely to have negligible potential to support roosting bats.

The third silver birch(TN16) is located approximately mid-way along the eastern hedge. This features splits in side limbs at a height of 7m, and some loose bark on the highest part of the main trunk and side limbs which are dead. The main trunk also features light ivy cover. Overall this tree is likely to have low to medium potential to support roosting bats.

³ Bechstein's bat *Myotis bechsteinii*, Noctule *Nyctalus noctula*, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared bat *Plecotus auritus*, greater horseshoe bat *Rhinolophus ferrumequinum* and lesser horseshoe bat *Rhinolophus hipposideros*.

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Dormice

Dormice and their habitat receive full protection under the Conservation of Habitats and Species Regulations 2010 (as amended) and under the WCA, 1981 (as amended) and an SPI.

No dormice records were returned by TVERC.

The habitats on Site which may support dormouse are limited to the hedges and the scrub in the north-eastern corner. The hedges on the Site boundaries are generally well connected to the west and north to further hedges and woodland, which increases the likelihood of the species being present.

Invertebrates

The TVERC data search returned records for 10 invertebrate species. These consist mainly of Nationally Notable B⁴ species though one Nationally Notable A⁵ and two GB Red List Species⁶. All these records are from Besselsleigh Common Wood. One species which is on the Global Red list and is a SPI was also recorded: white-clawed crayfish *Austropotamobius pallipes*. This record is from 2001 and was located in Marcham Brook in Appleton, approximately 700m to the south.

The site supports mainly arable habitat, floristically poor semi-improved grassland and amenity grassland, which as a whole is unlikely to support a notable invertebrate community.

Other species

TVERC also returned records of otter and water vole. Six records of otter were returned, mainly located along the Thames, which lies a minimum of 800m to the west. Though smaller tributaries in the form of drains and ditches are present between this river and the Site, it is unlikely that this species would occur on the Site, given the absence of aquatic habitats within it. One water vole record was returned from south of Appleton. Again, due to the absence of aquatic habitat, this species will not be present within the site.

⁴ Taxa which don't fall within IUCN categories but are uncommon in Britain and occur in 31-100 10 km squares or for less well recorded groups between 8 and 20 vice counties.

⁵ Taxa which occur in <30 10 km (hectad) squares or for less well recorded groups within <7 vice counties.

⁶ Species included in the national red lists.

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4.0 Constraints and opportunities

4.1. Designated sites

The site is not covered by any statutory or non-statutory nature conservation designations. Four non-statutory designated sites (two LWSs and two CTAs) are present within 1km of the Site. Development within the site will have no direct impact on these sites.

Any potential indirect impacts for example through increased access and visitor pressure at these sites can be assessed at a future stage in the planning process if required. If residential development should come forward within the Site, an assessment will be necessary to determine whether any indirect impacts as a result of additional visitor pressure by residents are likely to arise and if so, whether they are likely to harm the interest of non-statutory designated sites within the vicinity of the site.

4.2. Habitats

The majority of the site is an arable field which is considered to be low value for biodiversity. The rough grassland to the north is of low floristic diversity and common in the wider area and nationally. The hedges support native woody species, but are generally sparse and therefore are considered to be of value in the local context only.

4.3. Protected Species

There are no records of protected species for the site and limited habitat is considered suitable for protected species with the majority being arable farmland.

The northern areas of the Site has the potential to support widespread and common **reptile** species within the rough grassland, rubble and log piles and bases of the hedges. These taxa are unlikely to occur within the arable land or amenity grassland areas that form the bulk of the land holding. Given the small extent of suitable habitat, it can reasonably be expected that the numbers of reptiles, if present, would be low. It is therefore recommended that a further survey for these species is carried out to inform any necessary mitigation, and if found to be present, mitigation measures can be put in place through either retention of suitable habitat within the northern margins of the site or the creation of suitable habitat off site as part of a reptile mitigation strategy.

There are no ponds offering habitat for **great crested newts** within the site. However, given the presence of suitable ponds within 250m of the site and habitat connectivity between these ponds and the site, there is some potential that great crested newts may be present on site. If this was the case, it is considered that most of the site is of low habitat quality for newts as it comprises ploughed arable farmland which is not considered high quality terrestrial for this species, although they are known to cross arable fields.

As a precautionary approach, it is recommended that great crested newt surveys are undertaken targeting ponds 1, 3, 4 and 5 to inform the need for any on-site mitigation. If the species is present within the ponds, a licence from Natural England may be required to allow development to progress once suitable mitigation has been designed and the newts have been excluded from the site.

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Given that the site supports habitats suitable to offer foraging habitat for **bats**, it is recommended, as per best practice guidelines (Hundt, 2012), that an activity survey is carried with the aim of ascertaining which species are utilising the site and the numbers present. Any flight-lines along the site boundary features (hedges) would also be identified in this way. This information would allow an assessment to be made for the site's value for foraging bats but the majority of the site is arable farmland and unlikely to be of value as a foraging route.

In terms of roosting opportunities, several trees on Site with low or medium potential for roosting bat are present on site. All trees which are to be removed would need to be subject to a further survey as per current best practice guidelines (Hundt, 2012) to ascertain what species may be using them as roosts and to determine the numbers present. These surveys would take the form of an emergence and dusk re-entry survey within the optimal period for this work (May to August) or tree climbing and endoscope surveys. Should these trees be retained, further surveys would not be necessary. However, a sensitive design to the lighting strategy in order to avoid further artificial light spill onto any trees identified as having the potential to support roosting bats is recommended.

With regards to **bird nests**, it is recommended that any vegetation removal works should be carried out outside the nesting bird season (March to September inclusive) to avoid the potential for damage or destruction of active bird nests during these works.

Furthermore, a Wildlife and Countryside Act 1981 Schedule 1 species, **red kite**, is likely to forage on site and may nest in its vicinity such as within the woodland stand immediately off site to the west or within Hengrove Wood to the north-west. Schedule 1 bird species are subject to additional protection compared to other wild birds in that they are protected from disturbance whilst rearing young. That means that there could be impacts on Schedule 1 birds arising from activities that do not directly affect nest sites. Any works within the site (including vegetation removal and construction activities) during the breeding bird season may therefore have the potential to cause disturbance to active nests of this species. Though this species may nest relatively close to active farm buildings and other human sites, a disturbance-free area of between 300 and 600m (Currie & Elliott, 1997 and Petty, 1998 in Ruddock and Whitfield, 2007) during the breeding bird season has previously been suggested for this species in order to avoid a disturbance.

Therefore, should construction activities (vegetation removal, construction of new building etc.) be scheduled for during the nesting season, it is recommended that surveys of suitable woodland habitats to at least 300m and up to 600m from the site be carried out to determine whether nests sites are present. As the species can either re-use previous nests or construct new ones at the start of the breeding season (Génsbøl, 2008), the survey must be carried out at the start of the breeding season during which any proposed works is to be carried out. The need for mitigation measures will be then assessed should nests or actively displaying pairs be detected. This will be informed by professional judgement and will take into account the stage of the nesting attempt, distance from the nest and degree of existing screening. This potential constraint can therefore be addressed by either timing of particular works or an adaptive mitigation strategy that responds to the particular survey results. In the long term, during the active phase of the development, it is likely that the species would habituate to the new dwellings or buildings on site.

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The Site is likely to support a small number of **breeding birds** which are BoCC and/or SPIs. The existing boundary hedgerows should be retained and any development within the site should include measures of value for breeding birds such as new hedge planting and the use of native trees and shrubs, in landscape designs, and by introducing hedge management regimes which benefit birds and other wildlife, thereby increasing the carrying capacity elsewhere.

There is the potential for **dormice** to occur within the hedges and scrub on Site. It is therefore recommended that further surveys be carried out to current best practice guidelines (Natural England, 2006) to ascertain whether this species is present in order to inform any necessary mitigation. Depending on the nature of the works, this may include supervised and licensed vegetation removal, off site compensation for any habitat loss or reinstating any connectivity which may be compromised by the final layout of any proposed developments. It is recommended that the existing boundary hedges should be retained as far as practical as part of any development proposal for the site.

A stand-off distance from the **badger** sett recorded will be necessary. However, as the closest entrance is located 11m from the Site boundary and was noted as extending away from the site, the stand-off from the Site boundary is likely to be minimal and may be limited to a further 10m (in order to maintain a total stand-off distance of 20m). An update of this badger survey is recommended given the levels of activity recorded within the Site, as the current baseline may change and new setts be excavated or current setts may become disused.

It is recommended that should the Site be taken forward for development, an update to this survey should be carried out to ensure the ecological baseline assessed is kept up to date. As per current best practice guidelines (BS42020, 2013) this baseline survey should be repeated if the data is used for any assessment after 2 years from the date of the survey. This also applies to all of the further surveys recommended.

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5.0 Conclusion

This report has considered the ecological context of the land at Appleton in order to inform consideration of the suitability of the site for residential development.

It has confirmed that the site is not affected by any statutory or non-statutory sites of nature conservation importance and is predominantly arable farmland of limited biodiversity value.

There are no records of protected species being present within the site. The area of grassland in the northern area of the site and the boundary hedgerows are potentially suitable for use by reptiles and may provide foraging areas for bats, mammals and breeding birds. Further surveys are required to establish if these species are present (a complete list of the indicative survey periods and effort required is included in Appendix 3).

There are no ponds within the site providing habitat for great crested newts. Further surveys are recommended of the ponds to the north and north-west of the site to establish if newts are present within the wider landscape and as part of a precautionary approach to any future development proposal for the site, but it is considered that if present the development, suitable mitigation can be implemented to as to ensure that there would not be a significant adverse impact on this species.

The outcome of further surveys will establish a more detailed ecological baseline for the site and its immediate context and inform the requirements for ecological mitigation and compensation if necessary. It is considered that any requirements can be successfully incorporated into a development strategy for the site along with new habitats as part of a landscape and biodiversity strategy.

Overall, and based on the information currently available, the appraisal has concluded that there are no significant or overriding ecological constraints which would preclude the principle of development within the Site or would significantly limit the potential of the Site for residential development.

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6.0 References

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7.0 Appendices

7.1. Appendix 1: Site Photographs

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7.2. CONFIDENTIAL Appendix 2 – Badger sett details

The location of the sett is shown in Confidential Figure 3. It is located within the small woodland on the western Site boundary, with the closest entrance approximately 11m from the edge of the field. Two distinct mounds of soil were found to support entrances. The eastern mound which was roughly circular with a diameter of 4m included two entrances of a size indicative of use by badger, both of which had fresh spoil indicating recent use. However one (the closest to the site) was also partially blocked by discarded stock fence, leaving an entrance which is likely to be too small for use by badger. A further four rabbit entrances were present in this mound. The western mound (located a further 2m from the site) featured a single badger-type entrance though this was partially filled with fallen leaf litter with no fresh spoil visible. A further five rabbit entrances were noted. In terms of field signs, mammal runs lead to these mounds from the site, but no footprints which could be positively identified were recorded and the only droppings were from rabbits. Therefore this is likely to consist of a partially used outlier sett.

7.3. Appendix 3 – Survey timings for protected species

- **Reptile Surveys** - Minimum on seven non-consecutive days between mid-March and September, with optimum periods between in April-May and September.
- **Great Crested Newt Surveys** - A minimum of four visits between mid-March and mid-June, with at least two of these between mid-April and mid-May. In order to obtain a population class assessment, should this species be detected, the survey should be extended to six visits with at least three between mid-April and mid-June (English Nature, 2001).
- **Bat - Activity Surveys** - One dusk visit per month between April and September with at least one survey comprising a dusk and pre-dawn survey in the same 24 hour period. A static detector should also be used one per month for a minimum of three nights between April and September (Hundt, 2012).
- **Bat – Emergence Surveys (Trees)** - Two dusk emergence surveys during the optimum period – May to September.
- **Red kite (Check for active nests if required)** - During the nesting season for the species (March to August). Any early visits to check for displaying and nest construction (March-mid April) should be carried out through watches from nearby areas and not by accessing woodlands directly (Hardey et al., 2006).
- **Dormouse Surveys** - Survey period between April and November. The survey duration is dictated by the amount of purpose-installed nest tubes which can be accommodated. At the Appleton site, a maximum number of 50 nest-tubes is likely (installed at 20m intervals in the eastern, southern and western hedges), therefore as per best practice guidelines (Natural England, 2006), the nest tubes should be installed and checked monthly typically between April and September. However as the survey effort aims to attain a minimum score of 20 based on the scoring system detailed in the Dormouse Conservation Handbook (Natural England, 2006), the survey can be carried out over different intervals and span two active periods in consecutive years, providing the minimum score is obtained.

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7.4. Appendix 4 – Biodiversity Report

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8.0 Figures

Figure 1: Phase 1 Habitat Map

Figure 2: Pond location and numbers

Figure 3: Location of badger sett (CONFIDENTIAL)