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Northstowe

Phase 1 Ecology Report

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TABLE OF CONTENTS

1. INTRODUCTION 4
1.1. Background 4
1.2. Proposed Development 4
1.3. Scope of Work 4
2. METHODOLOGY 4
2.1. Desk Study 4
2.2. Extended Phase 1 Habitat Survey 5
3. RESULTS 6
3.1. Desk Study 6
3.2. Extended Phase 1 Habitat Survey 9
4. RARE, NOTABLE AND PROTECTED SPECIES 20
4.1. Bats 20
4.2. Badger 20
4.3. Reptiles 20
4.4. Amphibians 20
4.5. Breeding Birds 20
4.5. Other Mammals 20
4.6 Invertebrates 21
4.7 Plants and Habitats 21
5. RECOMMENDATIONS FOR FURTHER SURVEYS 21
6. REFERENCES 22

1. INTRODUCTION

1.1. Background

The site comprises an area of approximately 740ha of land at Longstanton, Cambridgeshire and is centred on Ordnance Survey (OS) grid reference TL404651 (hereafter referred to as 'the site'). The site is a complex of green field and previously developed land, part which was formerly used as a military barracks and airfield at the former Oakington Barracks (see Figure 1 for site boundary); however, the majority of buildings associated with the barracks have been demolished. The remainder of the site comprises a large area of farmland, primarily used for arable crops. A range of buildings and structures are present in this area of the site.

1.2. Proposed Development

The Homes and Communities Agency intends to seek planning permission for Phase 2 of the new town of Northstowe. The application will comprise a residential led development (hereafter referred to as the proposed development) with associated employment areas, secondary and primary schools, town and local centres and sports and community facilities, associated infrastructure and landscaping.

1.3. Scope of Work

URS was appointed by Homes and Communities Agency to undertake a desk study and an extended Phase 1 habitat survey for the site, the findings of which are presented in this report. The report includes an assessment of the potential of the site to support protected and notable species which will allow the scope of further ecology work to be defined.

2. METHODOLOGY

2.1. Desk Study

In May 2012, a desk study was undertaken for the site and its immediate surrounds to a 2km radius and 5km for bats involving an ecological data search for information on statutory and non-statutory sites and notable and protected species records held by Cambridgeshire & Peterborough Environmental Records Centre (CPERC). The data search was centred at OS national grid reference TL410665. Only records of protected and notable species dated from within the last 10 years were considered in this report.

Bat records originating from the Cambridgeshire Bat Group, provided by CPERC, were provided at 1km square resolution and badger records originating from the Cambridgeshire Mammal Group were provided at 10km square resolution.

In August 2012 the Cambridgeshire Bat Group were provided more detailed records of bats within 2km of the site, including bat roost locations.

The Cambridge Bird Club was asked to supply their annual bird report and records of key winter waterbird roost sites within 1km.

The desk study also included a review of national, regional and local Biodiversity Action Plans.

A suite of ecology surveys have been undertaken at the site in recent years and the historic ecology reports listed below have been reviewed. However, it should be noted that the site boundary has changed between these surveys and the 2012 URS survey and some of the records in the historical reports are outside of the current site boundary.

- WSP Environmental (2007) Chapter 10 Ecology and Nature Conservation;

- Terence O'Rourke Ltd (2012) Environmental Statement. Northstowe Phase 1 ES Chapter 6: Natural Heritage; and
- WSP (2011) Oakington Barracks and Airfield: Environmental Support to Estates Management Plan.

2.2. Extended Phase 1 Habitat Survey

An extended Phase 1 habitat survey of the site was undertaken between April and July 2012 which is within the optimal period for habitat surveys. The survey followed the Joint Nature Conservation Committee (JNCC) Phase 1 Survey Guidelines (Ref. 1) and the habitats on the site were classified according to the Phase 1 habitat survey methodology. Furthermore, the dominant plant species were identified for each habitat type.

The survey was 'extended' to also assess the potential of the site to support protected and notable species and any signs of animals were recorded on a map of the site using Target Notes.

External, and where possible an internal, assessment of buildings was undertaken to determine their potential to support roosting bats. Each building was assigned to one of the following categories based on its potential to support roosting bats using the following criteria as defined by the Bat Conservation Trust (Ref. 2):

- **Negligible Potential** - No features that could be used by bats (for roosting, foraging or commuting).
- **Low Potential** - Small number of potential roosting features; isolated habitat that could be used by foraging bats e.g. a lone tree or patch of scrub but not parkland; isolated site not connected by prominent linear features (but if suitable foraging habitat is adjacent it may be valuable if it is all that is available).
- **Moderate Potential** - Several potential roosting features in the buildings, trees or other structures; habitat could be used by foraging bats e.g. trees, shrub, grassland or water; site is connected with the wider landscape by linear features that could be used by commuting bats e.g. lines of trees and scrub or linked back gardens.
- **High Potential** - Buildings, trees or other structures (such as mines, caves, tunnels, ice houses and cellars) with features of particular significance for roosting bats; habitat of high quality for foraging bats e.g. broadleaved woodland, tree-lined watercourses and grazed parkland; site is connected with the wider landscape by strong linear features that would be used by commuting bats e.g. river/stream valleys or hedgerows; site is close to known roosts.
- **Confirmed Roosting** - Evidence indicates a building, tree or other structure is used by bats e.g. bats seen roosting or observed flying from a roost or freely in the habitat; droppings, carcasses, feeding remains, etc. found; and/or bats heard 'chattering' inside on a warm day or at dusk; bats recorded/observed using an area for foraging or commuting.

3. RESULTS

3.1. Desk Study

3.1.1. Biodiversity Context

A key outcome of the Convention on Biological Diversity in 1992 was a commitment from the UK government to halt, and if possible reverse, the steady decline of species and natural habitats (Ref. 3). To this end, Biodiversity Action Plans (BAPs) have been produced at national and local levels. They contain plans to protect and enhance species and habitats. Relevant national and local BAPs are described below.

3.1.2. UK Biodiversity Action Plan

The UK BAP reviews the status of species and habitats on a national scale (Ref. 4). It sets out targets for a number of Priority Species and Habitats as well as for broad habitat types. The revised UK List of Priority Species and Habitats was published online in August 2007 and has been formally adopted. The list contains 1150 species and 65 habitats.

Habitat Action Plans (HAPs) relevant to the site include those for *Ponds and Arable Field Margins*, *Hedgerows, Wood Pasture and Parkland* and *Lowland Meadows*.

Priority Species that could be relevant to the site include the soprano pipistrelle (*Pipistrellus pygmaeus*), and bird species typically associated with farmland and parkland habitats such as skylark (*Alauda arvensis*), yellowhammer (*Emberiza citrinella*), reed bunting (*Emberiza schoeniclus*), spotted flycatcher (*Muscicapa striata*), grey partridge (*Perdix perdix*), European turtle dove (*Streptopelia turtur*), northern lapwing (*Vanellus vanellus*), dunnock (*Prunella modularis*), song thrush (*Turdus philomelos*), starling (*Sturnus vulgaris*) and linnet (*Carduelis cannabina*). The UK BAP is relevant in the context of Section 74 of the Countryside and Rights of Way Act 2006 (Ref. 5), meaning that Priority Species and Habitats are material considerations when deciding planning applications.

3.1.3. Cambridgeshire and Peterborough Biodiversity Action Plan

The Cambridgeshire and Peterborough Biodiversity Action Plan includes a number of HAPS (Ref. 6) for those habitats considered a priority for conservation within the region. HAPs of relevance to this site are those for *Arable Land, Arable Field Margins, Hedgerows, Neutral Grassland, Ponds, Lakes and Standing Water,* and *Woodland*.

Furthermore, a number of Species Action Plans (SAPs) have been produced for species of conservation priority for the region. SAPs of relevance to this site include those for brown hare (*Lepus capensis*), great crested newt (*Triturus cristatus*), grey partridge, pipistrelle bat, skylark, song thrush and water vole (*Arvicola amphibius*).

3.1.4. Designated Sites

The site does not fall within the boundaries of any designated sites and there are no designated sites within 2km.

3.1.5. Protected and Notable Species Records

Data records from CPERC revealed that a number of protected and notable species have been recorded within 2km of this site. Those considered to be of relevance to the site are identified below.

Six species of bat have been recorded within 5km of the site; these are common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle, brown long-eared bat (*Plecotus auritus*), whiskered bat (*Myotis mystacinus*), serotine (*Pipistrellus pygmaeus*) and noctule (*Nyctalus*

noctula). In addition, there are numerous records of unidentified bats within 5km including two roosting sites one approximately 2km to the east and the other approximately 4km to the south. All species of bat are European Protected Species (EPS), receiving full protection under the Wildlife and Countryside Act, 1981 (as amended) (WCA) (Ref. 7) and the Conservation of Habitats and Species Regulations 2010 (as amended) (Habitat and Species Regulations) (Ref. 8).

The Cambridgeshire Bat Group provided details of a pipistrelle roost close to the western site boundary. However, the roost was in a tree which has now been removed. Two other records of rescued pipistrelles were recorded close to the site boundary.

CPERC indicated that there are several records of badgers (*Meles meles*) within the 10km square that the site lies within. The Cambridge Mammal group were contacted for more detailed records of badger sett locations, but have not yet responded to the request. Badgers and their setts are fully protected under the Protection of Badgers Act, 1992. It is a criminal offence to wilfully kill, injure, take, possess or cruelly ill-treat a badger, or attempt to do so. It is also a criminal offence to interfere with a sett by damaging or destroying it; to obstruct access to, or any entrance of, a badger sett; and to disturb a badger when it is occupying a sett.

There are records of water vole within 2km. One record is approximately 2km to the east, near to Cuckoo Lane and a second record is close to the site boundary at Longstanton. Water voles and their resting places are fully protected in England, it is an offence to deliberately, capture, injure or kill them or to damage, destroy or obstruct their breeding or resting places. It is also an offence to disturb them in their breeding or resting places.

There are no records of otters within 2km.

Numerous birds have been recorded within 2km of the site. All birds, their nests and eggs are protected by the WCA. It is thus an offence to intentionally:

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

Several birds that are listed on the RSPBs Red or Amber lists of BoCC, Section 41, as well as on the UK and Local BAP, have been recorded within 2km. These include grasshopper warbler (*Locustella naevia*), turtle dove, grey partridge, house sparrow (*Passer domesticus*), lapwing, linnet, reed bunting, pink-footed goose (*Anser brachyrhynchus*), short-eared owl (*Asio flammeus*), skylark, song thrush, spotted fly-catcher and yellowhammer. These are species of principal importance in conserving biodiversity in England, as required under Schedule 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (Ref. 9).

The following species of birds, which are listed on Schedule 1 of the WCA, have also been recorded within 2km; barn owl (*Tyto alba*), kingfisher (*Alcedo atthis*), hobby (*Falco subbuteo*), fieldfare (*Turdus pilaris*), merlin (*Falco columbarius*), hen harrier (*Circus cyaneus*) and red kite (*Milvus milvus*), Birds listed on Schedule 1 have extra protection under the law which prohibits the intentional or reckless disturbance of a Schedule 1 species while it is nest building, or at a nest containing eggs or young, or disturb the dependent young of such a bird.

The Cambridge Bird Club provided their 2010 annual bird report and confirmed that there were no key winter waterbird roost sites within 1km of the site.

The reptiles grass snake (*Natrix natrix*) and adder (*Vipera berus*) were recorded within 2km. All British reptiles receive protection under the WCA. The four most common species of reptile (common lizard, grass snake, slow worm and adder) receive protection from Section 9(1) and

all of Section 9(5) of the WCA, which makes it an offence to intentionally kill or injure these animals.

CPERC returned no records of amphibians for the search area.

Grizzled skipper (*Pyrgus malvae*), white-letter hairstreak (*Satyrium w-album*) and wall (*Lasiommata megera*) butterflies have been recorded within 2km of the site. These species are listed on the UK BAP and are of principal importance in conserving biodiversity in England.

3.1.6. Historic Ecology Reports

Bat activity surveys undertaken in 2007 identified at least six species of bat using the site and its immediate surrounds, these were; common pipistrelle, noctule, serotine, brown long-eared, Myotis (*Myotis* sp.), soprano pipistrelle and possibly Leisler's (*Nyctalus leisleri*).

Several common pipistrelle and brown long-eared roosts were recorded within buildings on the site, the majority of these buildings have since been demolished. However, buildings at Brookfield Farm, which are still present, held roosting bats in 2007. The majority of the trees were not considered suitable to support roosting bats at the time of survey.

Ongoing monitoring of badgers, which started in 2003, has identified four social groups of badgers in the wider area, and two using the site itself. A survey of the Oakington Barrack Site in 2011, confirmed that badger activity was still high in the area.

Evidence of water voles was identified in Longstanton and Oakington Brooks in 2007. No otter holts were recorded and it is likely that otters only used the watercourses for commuting at the time of survey.

A breeding bird survey was undertaken in 2003. Sixty-five species of birds were recorded, including the farmland species corn bunting (*Emberiza calandra*), yellowhammer, skylark, grey partridge, linnet and turtle dove, all of which are of conservation concern. Furthermore, the Schedule 1 species barn owl was recorded breeding at Oakington Airfield. A further survey of the Oakington Barrack site in 2011, confirmed barn owl breeding activity in aircraft sheds which have since been demolished.

Common lizard (*Lacerta vivipara*) and grass snake were identified during both the 2003 and 2006 surveys.

During 2003 and 2006 smooth newt, common frog and common toad were recorded and a single great crested newt was recorded at Oakington Air field in 2006. Furthermore, great crested newts were recorded in 2007 near to Oakington Airfield Lake.

Fish surveys carried out in 2007 revealed that the UKBAP fish species, common eel (*Anguilla Anguilla*), was present in Longstanton Brook, to the west of the site.

Ponds surveyed in 2006 on land adjacent to the site recorded a range of Nationally Scarce beetles. The subsequent surveys reported in 2011 were undertaken during drought conditions, but still indicated that the ponds in the area were of high conservation value for aquatic macro-invertebrates.

The Lepidoptera surveys undertaken for both reports indicated that there was a moderate to high diversity of butterflies and day flying moths occurring in the area.

In addition to the above, there were incidental records of brown hare using rough grassland on the site.

3.2. Extended Phase 1 Habitat Survey

3.2.1. Habitats and Flora

The Phase 1 habitat types recorded within the site are listed in Table 1 below with their associated alphanumeric reference codes as detailed in the JNCC Phase 1 Habitat Survey Guidelines and approximate areas or lengths.

Table 1 Habitat Types

Habitat Type	Code	Area (ha) or Length (km)
Improved grassland	B4	157
Semi-improved grassland	B2	44
Arable	J1	412
Broad-leaved plantation	A1.1.2	38
Coniferous plantation	A1.2.2	1
Mixed plantation	A1.3.2	1
Semi-natural broad-leaved woodland	A1.1	1
Scattered trees	A3	2
Standing water	G1	4
Dense scrub	A2.1	5
Scattered scrub	A2.2	6
Tall ruderal	C3.1	10
Amenity grassland	J1.2	8
Marshy grassland	B2	1
Buildings	J3.6	1
Hardstanding	J3	36
Other habitats.		10
Running water	G2	12km
Intact species-poor hedge	J2.1.2	11km
Defunct species-poor hedge	J2.1.2	2km
Fence	J2.4	6km

The majority of the site is used for mixed farming. The main habitats were improved grassland and arable land which were interspersed with areas of scrub and plantation. There was a substantial amount of hardstanding on the site in the form of roads and the footprints of demolished buildings. A range of buildings and structures are present on the site. Several permanent and temporary waterbodies are also present on the site.

The locations and extents of habitats recorded within the site during the extended Phase 1 habitat survey are presented on Figure 1, and described in detail below.

3.2.2. Improved Grassland

A large proportion of the site was under improved grassland (Plate 1) and this habitat extended to approximately 1,573ha. The areas of improved grassland were low in plant species diversity and were dominated by perennial rye grass (*Lolium perenne)*, false-oat grass (*Arrhenatherum elatius*) cocksfoot (*Dactylis glomerata)*, Yorkshire fog (*Holcus lanatus)*, common bent (*Alopecurus pratensis)* and white clover (*Trifolium repens)*. Patches of spear thistle (*Cirsium vulgare*) and common nettle (*Urtica dioica*) were present in some fields. The management of these areas included grazing by sheep and cattle and cutting for hay and silage.

The grassland was punctuated by standard trees and blocks of scrub which increased the structural diversity and may provide refuge for animals that may otherwise find this habitat too exposed. The low plant species diversity of these grasslands reduces their value for

invertebrates, but they are likely to support a limited assemblage of common and widespread species.

Several brown hare were recorded using the improved grassland at TN1.

Plate 1. Improved Grassland

3.2.3. Semi-Improved Grassland

Several discrete areas of semi-improved grassland were present (Plate 2). The grassland has developed on parts of the old airfield as well as on the farmland. The fields in the southern part of the site are managed by grazing, whilst other areas are tall, ungrazed swards. The differences in substrate and management are reflected in the sward structure and diversity. The grassland which occurs on farmland contains high proportions of perennial ryegrass, cocksfoot and Yorkshire fog. Cow parsley (*Anthriscus sylvestris)*, barren brome (*Bromus sterilis*), false oat grass, ribwort plantain (*Plantago lanceolata*), hedge bedstraw (*Galium album*) and tall fescue (*Festuca arundinacea*) were also recorded in these areas.

The grassland which had developed on the old airfield was less dense and more species rich. Here meadow foxtail (*Alopecurus pratensis*), red fescue (*Festuca rubra*), smooth meadow grass (*Poa pratensis*), birdsfoot trefoil (*Lotus corniculatus*), germander speedwell (*Veronica chamaedrys*), creeping thistle (*Cirsium arvense*), common vetch and agrimony were also recorded.

This habitat is likely to provide foraging opportunities for a range of birds. Skylark and meadow pipit were recorded in the semi-improved grassland and may nest here. Brown hare and rabbit (*Oryctolagus cunniculus*) were also recorded using the semi-improved grassland and a badger latrine was recorded close to the northern site boundary (TN 2). This habitat is also likely to support reptiles and amphibians.

Semi-improved grassland has the potential to support a range of butterfly species, including some of conservation importance. Grasslands of this type may also support a range of other invertebrate species, but the majority are likely to be common and widespread species typical

of these habitats throughout the East Midlands. The semi-improved grasslands within the site do not display any distinctive characteristics which indicate they would support invertebrate assemblages of particular conservation value.

Plate 2. Semi-Improved Grassland

3.2.4. Arable

Approximately half of the site comprised arable land that had been sown with either cereals, legumes or potatoes at the time of survey. The crops were generally sown up to the field boundaries with few headlands or marginal features. Whilst arable land is a Local BAP habitat, few arable weeds were recorded and this limits the ecological value of this land.

A variety of birds were recorded using this habitat including skylark, quail, grey partridge and red-legged partridge. These birds are likely to use this habitat for nesting and foraging. Due to the presence of scrub and trees, which offer nest sites linnet and yellowhammer, these species also use this habitat for foraging. A stoat (*Mustela erminea*) was recorded in the arable fields.

3.2.5. Plantation, Woodland and Scattered Trees

Numerous blocks of broad-leaved, coniferous and mixed plantation occurred throughout the site (Plate 3). Furthermore, numerous scattered, standard trees occurred across the site. In general, the trees were semi-mature and comprise the following species; pedunculate oak (*Quercus robur*), Norway spruce (*Picea abies*), ash (*Fraxinus excelsior*), beech (*Fagus sylvatica*), field maple (*Acer campestre*), wild cherry (*Prunus avium*), apple (*Malus* sp.), crack willow (*Salix fragilis*), goat willow (*Salix caprea*), hybrid black poplar (*Poplus* x *canadensis*), common alder (*Alnus glutinosa*), sycamore (*Acer pseudoplatanus*), elm (*Ulmus procera*), hawthorn (*Crategus monogyna*), Scots pine (*Pinus sylvestris*), horse chestnut (*Aesculus hippocastanum*) and larch (*Larix decidua*).

Due to the dense planting, the ground flora was sparse and in most cases limited to grasses underneath the plantation. There were large areas of bare ground where cattle had accessed these areas and caused poaching. There are areas of dense bramble (*Rubus* sp.), cow parsley, cleavers (*gallium aparine*) and common nettle (*Urtica diocia*) around the some of the plantation margins.

Due to the young age of the plantation, deadwood habitats were largely absent. Furthermore, features suitable for roosting bats and hole-nesting birds were scarce in the plantation. However, some of the scattered trees did have holes that could support roosting bats. Furthermore, due to the age and density of the plantations, together with sparse dead wood, the woodlands are unlikely to support invertebrate assemblages of conservation value.

It was noted that a number of the scattered trees had features that could support roosting bats, including woodpecker holes, broken limbs and dense ivy. These largely occurred on the southern half of the site.

One small block of semi-natural, broad-leaved woodland occurred on the site. This area was dominated by sycamore with an under-storey of elder, hornbeam (*Carpinus betulus*), ivy, bramble and common nettle. Whist the under-storey was more structurally and botanically diverse than under the plantations, the small areas of these woodlands limits their value to wildlife; however, these area have the potential to support breeding birds, bats and badgers.

Scattered trees and those in the woodland and plantation would provide nesting habitat for a diverse range of bird species including spotted flycatcher, song thrush and kestrel, as well as foraging habitat for invertebrates and bats. Numerous holes attributable to rabbits and one badger sett (TN3) were recorded within the woodland, and it is likely that this habitat supports a diverse range of mammals.

Finally, several areas of farmland in the southern half of the site have been planted with broadleaved tree saplings. Due to the young age of the trees, these areas currently offer little value to wildlife; however, they would provide substantial areas of new woodland in future years.

Plate 3. Deciduous Plantation