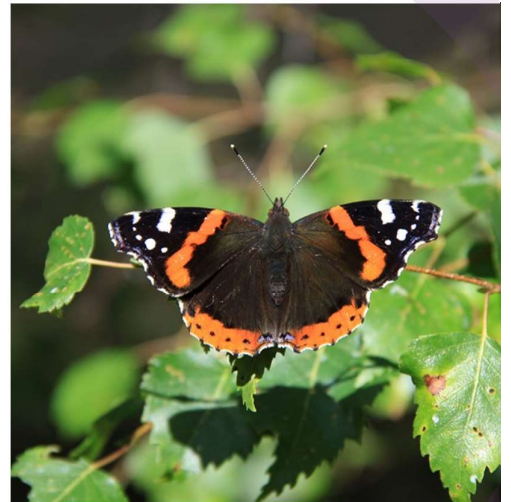




Defence Equipment and Support

RAF CAM Relocation to RAF Cranwell

Preliminary Ecological Appraisal



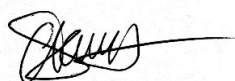
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Management systems

This document has been produced by Wood Environment & Infrastructure Solutions UK Limited in full compliance with our management systems, which have been certified to ISO 9001, ISO 14001 and OHSAS 18001 by LRQA.

Document revisions

No.	Details	Date
1	Draft	01/04/2020
2	Final	02/04/2020

Executive summary

Wood Environment and Infrastructure Solutions UK Ltd (Wood) was commissioned in February 2020 by the Defence Equipment and Support, to undertake a Preliminary Ecological Appraisal (PEA) of an area of land at RAF Cranwell (hereafter referred to as 'the Site'). The Site is located at National Grid Reference (NGR) TF014496 and measures approximately 6 hectares (ha). See Figure 1.1 for the location of the Site.

This PEA has been informed by the completion of a desk study and an extended Phase 1 habitat survey. The approach taken follows that detailed in the *Guidelines for Preliminary Ecological Appraisal*, with the standard Phase 1 habitat survey methodology being extended to identify the presence, or potential presence, of legally protected species, habitats and species that are of importance for biodiversity conservation, and legally controlled species as detailed in the *Guidelines for Baseline Ecological Assessment*.

The purpose of this report is to inform the relocation of the RAF Centre of Aviation Medicine (RAF CAM) from RAF Henlow comprising a large single building and areas of hardstanding. It is intended to enable the early identification of potential ecological constraints; inform additional survey or mitigation requirements; and to establish the ecological baseline of the Site.

The work identified the presence/potential presence of the following ecological receptors:

- one statutory biodiversity site within 5km;
- two non-statutory biodiversity sites within 2km;
- cumulative cover of mature standard trees;
- provision of a limited amount of potential foraging habitat for badger;
- potential bat roosting habitat (within two trees) and foraging habitat (albeit of low quality);
- a small amount of potential foraging habitat and refuge that could support a small number of reptiles; and
- an assemblage of nesting birds that are common to the local area.

It should be noted that there are no water bodies within 500m of the Site, such that the potential presence of species such as great crested newt, water vole, otter and white-clawed crayfish can be disregarded.

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Appendix A	Summary of relevant legislation
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1. Introduction

1.1 Background

Wood Environment & Infrastructure Solutions UK Ltd (Wood) was commissioned in February 2020 by the Defence Equipment and Support, to undertake a Preliminary Ecological Appraisal (PEA) for an area land that is within RAF Cranwell, located to the south of the village of Cranwell, Lincolnshire (hereafter referred to as 'the Site'). The Site measures approximately 6 hectares (ha) and is situated at National Grid Reference (NGR) TF014496. See Figure 1.1 for the location of the Site.

This PEA has been informed by the completion of a desk study and an extended Phase 1 habitat survey. The approach taken follows that detailed in the *Guidelines for Preliminary Ecological Appraisal*¹, with the standard Phase 1 habitat survey methodology being extended to identify the presence, or potential presence, of legally protected species, and habitats and species that are of importance for biodiversity conservation, as detailed in the *Guidelines for Baseline Ecological Assessment*².

1.2 Purpose of this report

The purpose of this report is to inform the relocation of the RAF Centre of Aviation Medicine (RAF CAM) from RAF Henlow to an area East of Trenchard Hall (EOTH) at RAF Cranwell.

This report is intended to enable the early identification of potential ecological constraints; inform additional survey or mitigation requirements; and to establish the ecological baseline of the Site.

This PEA provides the methodology for (Section 2) and results of (Section 3) a desk study and extended Phase 1 habitat survey of the Site undertaken in February 2020. Section 4 presents conclusions concerning potential biodiversity constraints (including designated biodiversity sites, legally-protected³ and/or otherwise important species⁴ and habitats that could be affected by the proposed development) and makes recommendations for further work, where required. The study was undertaken in accordance with industry-standard guidelines¹.

1.3 Scope of proposed development

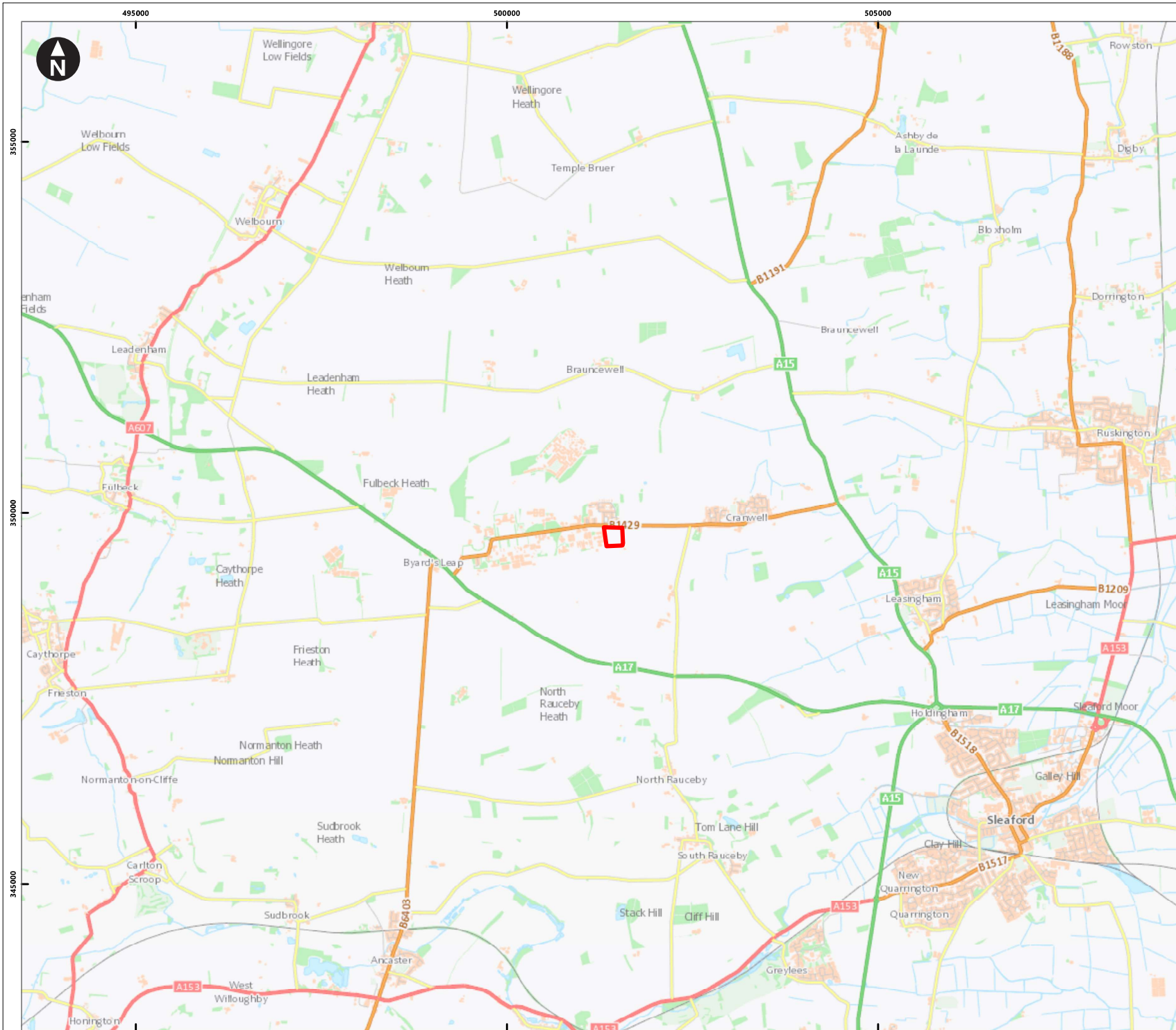
It is understood that the proposals include the construction of a new unit to base the CAM and areas of hardstanding to comprise access roads and car parking.

¹ Chartered Institute of Ecology and Environmental Management (CIEEM) (2017). *Guidelines for Preliminary Ecological Appraisal, 2nd edition*. Chartered Institute of Ecology and Environmental Management, Winchester.

² IEA (1995). *Guidelines for Baseline Ecological Assessment*. E & F Spon, London.

³ See Appendix A for summaries of the relevant legislation

⁴ Species or habitats of "principal importance for the conservation of biodiversity" are those listed by Natural England (NE) pursuant to Section 41 of the *Natural Environment and Rural Communities Act 2006* (as amended)



Key

Site boundary

0 500 1,000 1,500 2,000 2,500 3,000 m

Scale at A3: 1:50,000

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Client



RAF CAM Relocation to RAF Cranwell
Preliminary Ecological Appraisal

Figure 1.1
Site location

March 2020



wood.

2. Methodology

2.1 Desk study

A desk study was undertaken in February 2020 and included the following searches:

- statutory designated biodiversity sites of international importance within 10km of the Site.
- statutory designated biodiversity sites of national and local importance within 5km of the Site.
- non-statutory designated biodiversity sites within 2km of the Site.
- records of legally protected (see Box 2.2)/important (see Box 2.1) species within 1km of the Site.
- records of bat roosts within 5km of the Site.
- European Protected Species Mitigation Licences (EPSMLs) within 5km (bats) and 1km (great crested newts (GCN)) of the Site.
- water bodies within 500m of the Site.
- Ancient Woodland and other habitats that are regarded as being of Principal Importance in England (see Box 2.1) and/or a priority in the Local Biodiversity Action Plan (hereafter referred to as 'priority habitats'), within 1km of the Site.

Box 2.1 indicates the importance of habitats and species. Box 2.2 provides details of legally protected and legally controlled species. Information on statutory designated biodiversity sites, EPSMLs and priority habitats was obtained from the Magic website⁵. Information relating to non-statutory biodiversity sites and records of legally protected and/or priority species and legally controlled species from between 1970-2020, were obtained from Lincolnshire Ecological Records Centre (LERC)⁶.

Water bodies were identified from 1:25,000 scale Ordnance Survey mapping and online aerial photography⁷. In the absence of significant barriers to movement, 500m is generally accepted as the maximum distance that the majority of great crested newts (GCNs) move from their breeding ponds to occupy surrounding areas of suitable terrestrial habitat⁸. Natural England (NE) therefore recommends that, where a proposed development is located within 500m of a water body, consideration be given to the potential for that water body to support breeding GCNs.

⁵ Multi Agency Geographical Information for the Countryside (MAGIC). (2019). Magic Map: Interactive Map. [online] Available at: <http://www.natureonthemap.naturalengland.org.uk/> [Accessed February 2019].

⁶ <https://search.glnp.org.uk/>

⁷ <http://www.bing.com/maps>

⁸ English Nature (2001). *Great Crested Newt Mitigation Guidelines*.

Box 2.1 Designated biodiversity sites, and important habitats and species

Statutory biodiversity sites

Internationally important sites: Special Areas of Conservation (SACs) and candidate SACs (cSACs), Special Protection Areas (SPAs) and potential SPAs (pSPAs), Sites of Community Importance and Ramsar sites.

Nationally important sites: Sites of Special Scientific Interest (SSSIs) that are not subject to international designations and National Nature Reserves (NNRs).

Local Nature Reserves (LNRs): Statutory sites that are of importance for recreation and education as well as biodiversity. Their level of importance is defined by their other statutory or any non-statutory designation (e.g. if an LNR is also a SSSI but is not an internationally important site, it will be of national importance). If an LNR has no other statutory or non-statutory designation it is treated as being of borough/district level importance for biodiversity (although it may be of greater socio-economic value).

Non-statutory biodiversity sites

Non-statutory biodiversity sites in Lincolnshire are designated as Local Wildlife Sites (LWS's).

Important habitats or species

Species or habitats of “*principal importance for the conservation of biodiversity*” are those listed by Natural England (NE) pursuant to Section 41 of the *Natural Environment and Rural Communities Act (NERC) 2006* (as amended)⁹. These include those UK BAP priority habitats and species that occur in England. They are commonly referred to as ‘Section 41’ or ‘S.41’ habitats or species.

Other conservation-notable habitats and species would include:

- Species listed as being of conservation concern in the relevant UK Red Data Book (RDB) or the Birds of Conservation Concern Red List¹⁰;
- Ancient woodland inventory sites (AWIS; areas that have been under continuous woodland cover since at least 1600);
- Nationally Rare and Nationally Scarce species in the UK, which are species recorded from, respectively, 1-15 and 16-100 hectares (10x10km squares of the UK national grid);
- Populations of birds comprising at least 1% of the relevant British breeding/wintering population (where data are available);
- Habitats and species listed within the Local Action Plans;
- Other species or assemblages such as large populations of animals considered uncommon or threatened in a wider context; and
- Important hedgerows as defined using the habitat criteria in *The Hedgerows Regulations 1997*.

Box 2.2 Legally protected and controlled species

Legal protection

Many species of animal and plant receive some degree of legal protection. For the purposes of this preliminary ecological appraisal, legal protection refers to:

- Species included on Schedules 1, 5 and 8 of the *Wildlife and Countryside Act 1981* (as amended), excluding:
 - ▶ Species that are only protected in relation to their sale (see Section 9[5] and 13[2]), given that the proposed allocation does not include any proposals relating to the sale of species; and
 - ▶ Species that are listed on Schedule 1 that are not likely to breed on or near the site, given that this schedule is only applicable whilst birds are breeding.
- Species included on Schedules 2 and 5 of *The Conservation of Habitats and Species Regulations 2017*; and
- Badgers, which are protected under the *Protection of Badgers Act 1992*.

Legal control

Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended) lists species of animal that it is an offence to release or allow to escape into the wild and species of plant that it is an offence to plant or otherwise cause to grow in the wild.

⁹ <https://jncc.gov.uk/our-work/uk-bap/>

¹⁰ Eaton, M.A., Aebischer, N.J., Brown, A. F., Hearn, R.D., Lock, L., Musgrove, A.J., Noble, D.G., Stroud, D.A. and Gregory, R.D. (2015). *Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man*. British Birds **108**, 708–746.

2.2 Site survey

An extended Phase 1 habitat survey was carried out on 21 February 2020 by an ecologist¹¹ from Wood. The approach to the PEA is in accordance with good practice^{1,2}, with a survey combining the Phase 1 habitat survey method¹², which is a standardised system for classifying and mapping British habitats, with a survey to identify the presence or potential presence of species of importance for the conservation of biodiversity and/or species that are afforded legal protection. It must be noted that the use of these search methods alongside a Phase 1 habitat survey will not generally confirm that a species is absent, unless otherwise stated, and will not necessarily remove the need for additional species-specific surveys to determine the baseline or mitigation requirements.

The survey area included the entirety of the Site and adjoining areas of land up to 100m from the Site boundary where access was agreed. Beyond this, habitats were viewed from the Site boundary. The survey methods that were employed during the extended Phase 1 habitat survey to identify presence of legally protected/priority species are detailed below. Appendix A summarises relevant legislation relating to these species, and Appendix B lists scientific names for all species referred to in the main text.

Priority habitats and important plant species

The information gathered during the desk study enabled a general assessment of habitats on the Site regarding whether they represent national or local priority habitats¹³. Additionally, the desk study provided information regarding whether the Site has the potential to support important plant/fungus/lichen species (see Box 2.1).

Legally controlled species

The presence of any legally-controlled, non-native, invasive plant species (see Box 2.2), such as Japanese knotweed, giant hogweed and Himalayan balsam was recorded.

Badger

Badger is legally protected.

During the survey the Site was searched for evidence of badger activity. This involved looking for setts, badger trails, snuffle holes, latrines and badger hairs. Where well-used mammal tracks were found to be radiating beyond the search area, these were also followed (wherever access had been agreed) to identify badger setts that were located further afield. A general assessment of the provision of habitat suitable (grassland, ditches, hedgerow, ruderal and scrub) for badger foraging was also made to determine whether the Site is likely to provide an important foraging resource.

Bats

All species of British bats and their roosts are legally protected, and many are also priority species.

A general assessment was made as to whether trees and buildings on-site have the potential to contain features which could be used by bats to roost e.g. rot holes, woodpecker/squirrel holes or cavities; cracks or splits in the tree; loose bark; dense ivy/ thick ivy stems or other vegetative growth; dead wood; loose or missing roof and ridge tiles; missing mortar; cracks and/ or crevices around window frames and in soffit boxes, or bird or bat boxes etc. Furthermore, an assessment was made as to whether the Site is likely to provide an important foraging resource for a significant population of bats.

¹¹ Claire Dovey MSc ACIEEM Senior Consultant Ecologist

¹² JNCC (2010). *Handbook for Phase 1 habitat Survey: A Technique for Environmental Audit*. JNCC, Peterborough.

¹³ Descriptions of all the UK's Priority (NERC Act 2006, Section 41) habitats can be downloaded from <http://jncc.defra.gov.uk/page-5718>.

Dormouse

Dormouse is legally protected and is also a priority species.

The extent and the quality of the habitats within and adjacent to the Site were assessed for their potential to support dormouse, this involved looking for suitable areas of habitat that occur on-site e.g. hedgerows which are connected to surrounding areas of suitable habitat within the vicinity of the Site, such as areas of woodland¹⁴.

Otter

Otter is legally protected and is also a priority species.

The Site was assessed for its potential to provide habitat that could support otter. This involved considering the size and connectivity of any watercourse present on-site (or within the vicinity) in regard to providing suitable foraging resources, as well as the presence of areas of woodland and other dense vegetation suitable for the creation of holts, natal dens and/ or laying-up areas¹⁵.

Water vole

Water vole is a legally protected species and is also a priority species.

The Site was assessed for its potential to provide habitat that could support a population of water voles. This involved considering the size and connectivity of any watercourse present on-site (or within the vicinity), as well as the potential presence of suitable foraging resources and burrowing substrate along the banks¹⁶.

Great crested newt

Great crested newt (GCN) is legally protected and is also a priority species.

The Site was assessed for its potential to provide suitable aquatic and terrestrial habitat that could support a population of GCN. This involved considering the provision of potential breeding and foraging habitats, as well as the provision of potential refugia e.g. log piles, hedgerows, grassland, ruderal and scrub habitat etc ¹⁷.

Reptiles

All species of British reptile are legally protected and are also priority species.

The Site was assessed for its potential to support a population of reptiles. This involved considering the provision of potential foraging habitats, refugia and areas for basking¹⁸.

Birds

The Site was assessed for its potential to provide nesting habitat for breeding birds and/ or its potential to support important bird species or assemblages.

Terrestrial invertebrates

A number of terrestrial invertebrates are legally protected, and some are also important species.

¹⁴ Bright *et al.* (2006). *The Dormouse Conservation handbook*. English Nature, Peterborough.

¹⁵ Chanin, P. (2003). *Ecology of the European Otter. Conserving Natura 2000 Rivers Ecology Series No. 10*. English Nature, Peterborough.

¹⁶ Strachan, R. (2001). *The Water Vole Conservation handbook*. English Nature, Peterborough.

¹⁷ Froglife (2001). *Great Crested Newt Conservation handbook*. Froglife, Suffolk.

¹⁸ Froglife (1999). *Froglife Advice Sheet 10 Reptile Survey*. Froglife, Suffolk.

An assessment was made of the potential for habitats on-site to support an assemblage of important invertebrate species (see Box 2.1 and Box 2.2), by considering the provision of a mosaic of varied habitat and substrate types and nectar-rich flowering species.

Other important species

An assessment was also made of the Site's potential to support any other species that are considered to be of value for nature conservation (see Box 2.1) not already outlined above, and which had been identified as occurring within the study area during the desk study.

3. Results

3.1 Desk Study

Designated Sites

There are no statutory sites of international importance within 10km of the Site boundary.

There is a single statutory designated biodiversity site of national importance within 5km of the Site, namely High Dyke Site of Special Scientific Interest (SSSI) located 2.3km west of the Site (see Figure 3.1).

There are two non-statutory designated sites of local importance within 2km of the Site boundary, namely Cranwell Grassland Local Wildlife Site (LWS) and Lodge Paddock RAF Cranwell LWS, located 0.7km west and 1.8km north west of the Site respectively (see Figure 3.2).

Table 3.1 Statutory and non-statutory designated biodiversity sites within 5km (national) and 2km (local) of the Site

Name	Distance and direction from Site	Ecological interest
High Dyke SSSI	2.3km west	Designated due to comprising a substantial area of Eastern Jurassic Limestone grassland in south Lincolnshire.
Lodge Paddock LWS	0.6km west	Designated due to supporting calcareous grassland.
Cranwell Grassland LWS	1.7km west-northwest	Designated due to supporting unimproved calcareous grassland with tussocky vegetation and scrub.

Priority habitats

The MAGIC website shows nine parcels of previously recorded priority habitat within 2km of the Site, these include eight broad-leaved woodlands and one traditional orchard. There are no Ancient Woodlands within 2km of the Site.

Legally-protected/important species within 1km of the Site

Records of 36 legally protected/important species^{3,4} within 1km of the Site were provided, including:

- three species of bat: *Pipistrellus* spp., *Myotis* spp. and brown long-eared bat;
- birds:
 - ▶ thirteen bird species legally protected under Schedule 1 of the *Wildlife and Countryside Act 1981* (as amended), namely: barn owl, fieldfare, osprey, red kite, Mediterranean gull, brambling, hobby, merlin, quail, marsh harrier, Montagu's harrier, whooper swan and hen harrier; and,

- ▶ seventeen important bird species¹⁹ namely; ring ouzel, skylark, song thrush, tree sparrow, turtle dove, yellow wagtail, yellowhammer, corn bunting, curlew, grey partridge, house sparrow, lapwing, linnet, reed bunting, snipe, starling and swift.
- one priority amphibian; common toad; and
- two priority species of butterfly; small heath and wall.

Bat roosts within 5km of the Site

There are 18 records relating to bat roosts within 5km of the Site. One record of an unknown bat species located within the Cranwell RAF base however the record was provided with a four-figure grid reference, therefore the exact location cannot be determined. Details of the species that have been recorded as roosting within this search area, and the distance to the closest record, are summarised in Table 3.2. No EPSMLs for bats have been granted within 5km of the Site.

Table 3.2 Summary of records of bat roosts within 5km of the Site

Common name	Number of records of roosts within 5km of the Site	Approximate distance and direction of closest record of a roost from the Site
Unidentified bat	7	Within RAF Cranwell, exact location unknown
<i>Pipistrellus</i> spp.	5	1.5 km east-northeast, Cranwell
<i>Myotis</i> spp.	2	4 km east-southeast, Leasingham
Brown long-eared	4	3 km south-southwest, North Rauceby

Desk-based assessment of potential great crested newt habitat

There are no records of GCN on-site or within 1km of the Site boundary. No EPSMLs for GCN have been granted within 1km of the Site. Furthermore, no water bodies or water courses have been identified within 500m of the Site. Given the lack of records and absence of suitable breeding habitat, GCN are not considered a constraint and are therefore not considered further in this report.

3.2 Extended Phase 1 habitat survey

Context

The Site is located within the RAF base at Cranwell, being flanked by the B1429 and residential dwellings to the north and office buildings to the west. To the south and east lie intensively managed grassland around an active runway. Beyond these lie large arable fields with small parcels of woodland.

Habitats

The habitats recorded within the survey area are shown in Figure 3.3. The target notes (TN) are provided in Appendix C. The Site comprised a square of semi-improved grassland with a rank sward, towards the centre (TN1) whereas towards the edge, the grassland is more intensively mown. The Site also includes a hardstanding access road and a car parking area located in the north west corner. A number of semi-mature

¹⁹ Either listed as important under Section 41 (S41) of the *NERC Act 2006*⁴, are Locally Important within Lincolnshire, or are listed as Birds of Conservation Concern (Red List).

trees are scattered across the Site and in the surrounding grassland. A double line of semi-mature trees is also present along Cranwell Avenue to the north. Ornamental shrub, bramble scrub and tall ruderal species are present towards the buildings to the west and a recently flailed hawthorn hedgerow is present to the south east corner of the Survey area. A summary of the key habitats is presented in Table 3.3.

Table 3.3 Summary of habitats

Phase 1 habitat	Section 41 habitat/LBAP?	Discussion (see Figure 3.3)
On-site habitats		
Semi-improved grassland	No	Towards the centre of the Site (TN1) an area of semi-improved grassland with a rank sward c.15-20cm in height has been left unmanaged. This area comprise species such as Yorkshire fog, cocksfoot, false oat grass and <i>Festuca</i> sp., herbs present amongst the grasses include daisy, dandelion, yarrow, cats-ear, bristly ox-tongue, ribwort plantain, ragwort, white clover, red deadnettle, ground ivy and creeping thistle. The grassland has approximately 10% moss cover.
Scattered trees	No	There are a number of semi-mature trees present on-site. These include beech, Norway maple, sycamore, <i>Sorbus</i> sp., horse chestnut, sweet chestnut, scots pine, aspen, cherry and poplar.
Hardstanding	No	Tarmacked areas are present in the form of access roads surrounding the entirety of the Site, and a car parking area in the north west of the Site.
Off-site habitats		
Semi-improved grassland	No	The semi-improved grassland (TN2) adjacent to the Site supported fewer species than the semi-improved grassland and has been intensively managed to a height of <5cm.
Hedgerow	Yes	A recently flailed hawthorn hedgerow (TN3) is present outside of the Site. The hedgerow is isolated between intensively managed grassland and a car park, it measures approximately 1.5m in height and 1m in width with very little ground flora, comprising groundsel.
Buildings	No	A dilapidated brick shed (TN5) measuring approximately 2m ² is located in the south west corner of the Site. The flat bitumen felt roof has collapsed in and the wooden door has become rotten and collapsed inwards. A small structure (1m ²), potentially previous used as a guard house (TN7) is located adjacent to the eastern boundary of the Site.
Hardstanding	No	Tarmacked areas are present in the form of access roads surrounding the entirety of the Site, and a car parking area adjacent to the south east corner of the Site.
Tall ruderal	No	Towards the north of Trenchard Hall, ruderal species are present on an unmanaged bank (TN10) sloping towards the building and a service yard. Species comprise cow parsley, broad-leaved dock and creeping thistle.
Scattered scrub	No	On the unmanaged slope (TN10) is an area of scattered bramble scrub.
Ornamental shrubs	No	Areas of introduced shrub (TN11) include species such as cotoneaster and laurel and are largely non-native in their origins.

Species

Badger

There are no records of badgers on-site and no evidence of badger setts or activity was recorded on-site or within 30m of its boundary.

Furthermore, there is very little habitat that is suitable for sett digging, with much of the grassland habitat intensively managed and the survey area disturbed by RAF personnel. That said, the grassland could be used by badger to forage, albeit no evidence was identified on the day of the survey.

Bats – commuting / foraging

The Site provides only a small amount of potential foraging habitat for bats namely the scattered semi-mature trees and grassland. The road to the north of the Site is lined with semi-mature trees which are close (c.10m) to the on-site scattered trees forming a corridor that could be used by bats to disperse on to the Site to forage. The road, however, is also lined with streetlights which may reduce the suitability of the tree line for bats albeit more light tolerant species such as *Pipistrellus* spp. may still use the area.

Bats – roosting

Buildings

There are two structures located within the survey area, but off-site. One (TN5) is a small brick shed that was assessed as having negligible potential to support roosting bats due to its delapidated nature. Features such as wooden fascia boards and window/door frames have rotted completely so that they do not provide a crevice suitable for bats to roost. The roof has collapsed in and does not provide features for bats to roost. The second structure (TN 7) is a small, tightly sealed prefabricated guard house, with metal framed windows and door. This structure has negligible potential to support roosting bats.

To the north and west of the Site lie residential dwellings and office buildings respectively. The office buildings to the west (Trenchard Hall) were viewed from the Site and were considered to offer low potential for bats to roost. The residential dwellings to the north (viewed from the Site) comprise hipped tiled roof terraces with chimney stacks. These properties offer roosting potential for bats.

Trees

The trees within the Site and wider survey area are semi-mature and are in good condition with very few features that could be used by roosting bats. However, two trees (TN6 and TN8) were identified to have rot holes which have the potential to support roosting bats.

Otter and water vole

There are no water bodies or water courses present on or adjacent to Site and no records of water vole or otter occur within 1km. In view of this, there is no potential for the Site to support populations of these species and no further consideration is given to these species within this report.

Reptiles

There are no records of reptiles occurring within 1km of the Site boundary. That said, records for the wider area indicate presence for lizard, slow worm, grass snake and adder. The Site provides a small amount of suitable habitat for common reptile species in the form of semi-improved grassland.

Nesting birds

The Site provides suitable habitat for nesting birds (semi-mature trees, scrub and ornamental shrubs). The habitats provide a valuable foraging or nesting resource, and several nests were identified within one tree (TN9) along the roadside. Given the habitat present it is likely the Site would support a small assemblage of birds from local populations of common and widespread bird species but also important species such as skylark.

Other species

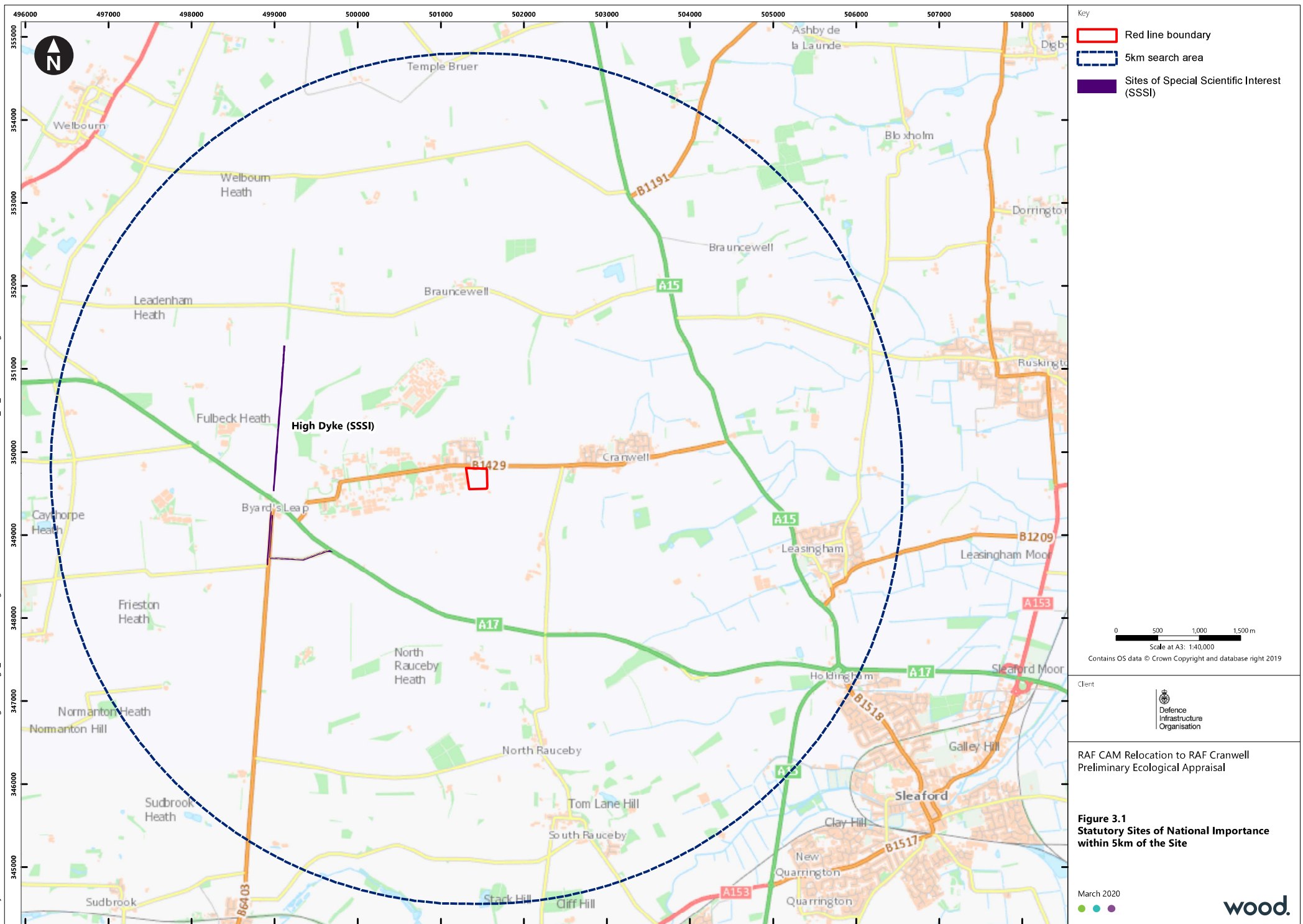
Records of the priority species brown hare and common toad have been identified within 1km of the Site. The survey area supports semi-improved grassland, a hedgerow and ornamental shrub beds which have the potential to support these species. However, the limited extent of the Site and the level of disturbance is likely to dissuade hare from using the survey area, albeit this does not rule out individuals or small numbers of common toad or other priority species such as hedgehog from using the Site or survey area.

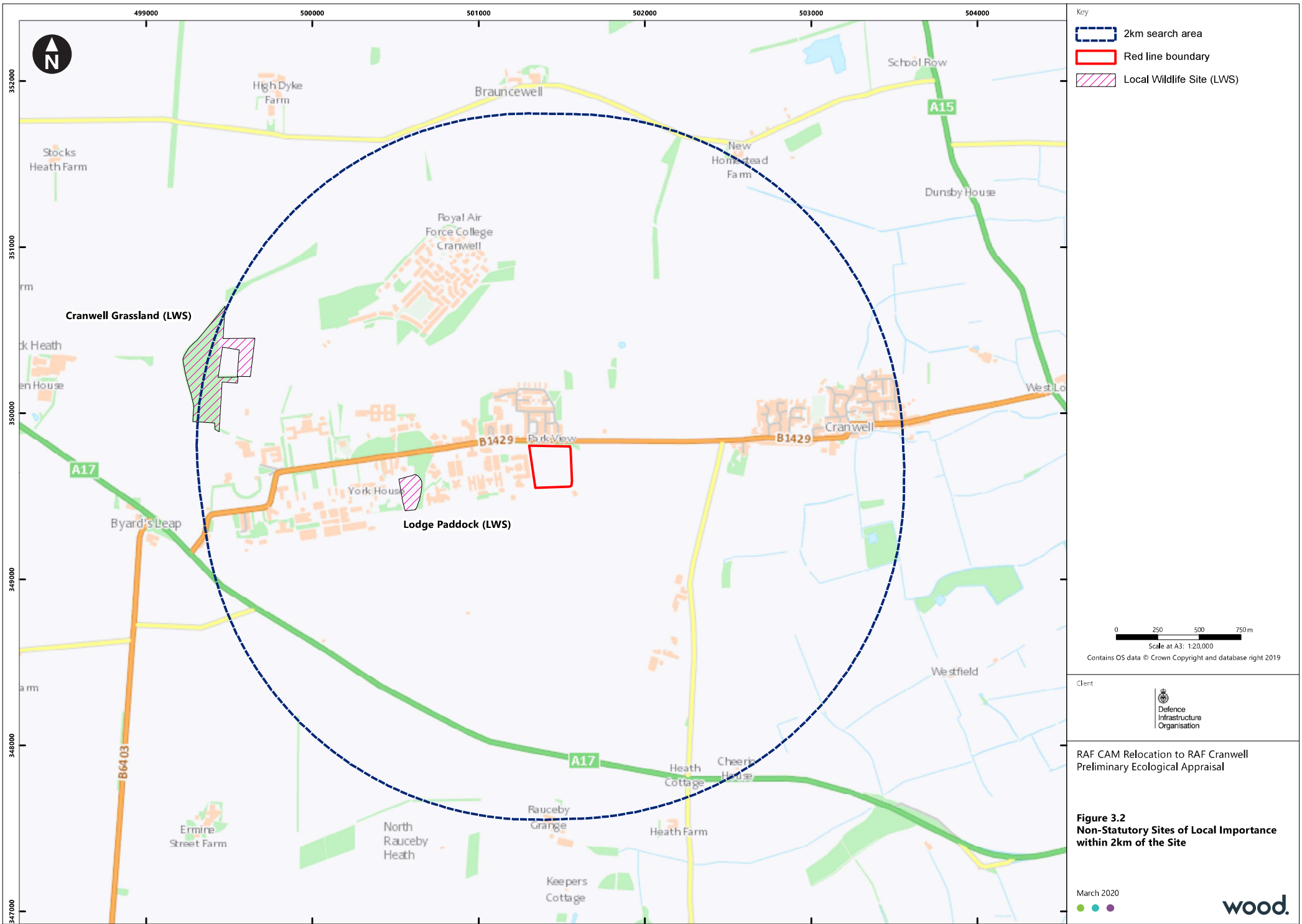
Invasive species / notifiable weeds

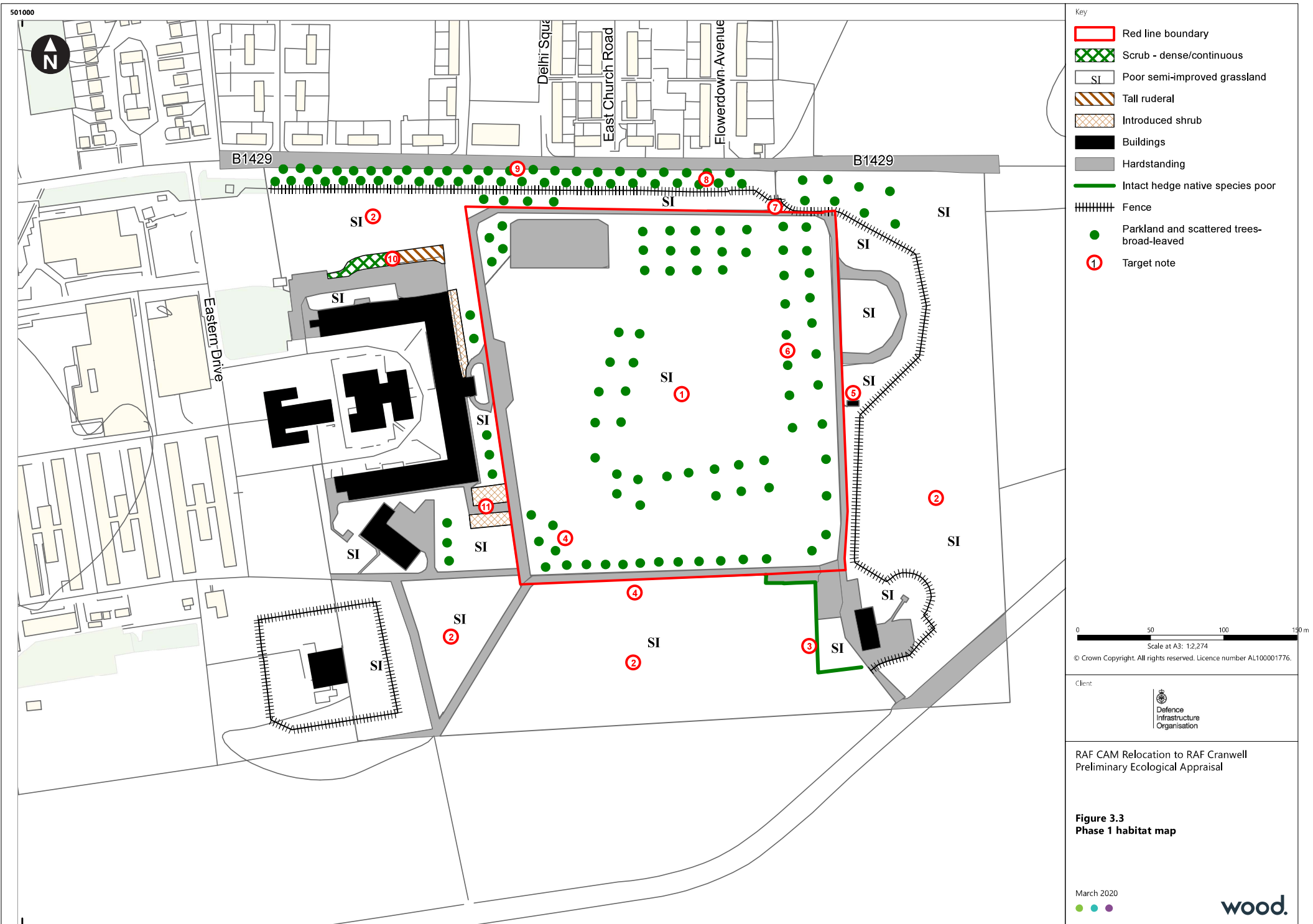
Cotoneaster was recorded within areas of introduced shrub adjacent to the Site. Cotoneaster is listed on Schedule 9 of the *Wildlife and Countryside Act* 1981. No other invasive species were identified on-site.

Previous survey review

The Assessment Study for RAF Centre of Aviation Medicine report (2019) summarised the results of a strategic ecological assessment carried out in June 2016. This identified several parcels of unimproved calcareous grassland, lowland deciduous woodland and semi-improved grassland within the RAF base at Cranwell. Species information suggests that RAF Cranwell is considered to have at least district level value in respect of its assemblage of farmland birds and its high potential to support notable invertebrate species and reptiles.







4. Conclusions and recommendations

4.1 Designated sites

There are no statutory biodiversity sites of international importance within 10km of the Site. There are however, one statutory biodiversity site of national importance within 5km (High Dyke SSSI, 1.8km west) and two non-statutory biodiversity sites of local importance within 2km of the Site. The closest of these is Lodge Paddock RAF Cranwell LWS, located 0.7km west of the Site. Due to the nature of the proposed development, and the distance from the designated sites it is unlikely that the development will result in any adverse effects on these designations and therefore the sites do not pose a constraint to the development.

Recommendation

The proposed development should incorporate standard pollution prevention measures²⁰ during both the construction and operational phases. The implementation of standard best practice construction measures to minimise dust pollution on the Site will further reduce any likelihood of adverse effects such that no further work is deemed to be necessary in respect of designated sites.

4.2 Habitats

The habitats present on-site are generally common and widespread both locally and nationally, and are of limited conservation value, albeit the collective cover of semi-mature trees and semi-improved grassland provide some habitat that is likely to be used by birds and other fauna. The hedgerow towards the south east of the survey area is isolated in nature, albeit hedgerows are a priority habitat at both national and local levels.

Recommendation

Where possible semi-mature trees should be retained within the scheme design and protected from damage during the construction works. Furthermore, the planting of trees and scrub comprising native species of local provenance, should be included within any landscape proposals. The hedgerow is unlikely to be impacted by the works as it is located off-site, such that no further measures are required.

4.3 Species

Badger

There was no evidence of badger on Site or within 30m of the Site.

Recommendations

Badgers are a mobile species and frequently dig new setts. In view of this, should a period of six months elapse between the time of the survey and the onset of construction work, a pre-development check of the Site and land within 30m its boundary for any new setts would be needed, carried out sufficiently far in advance of construction, mindful of the timing constraints associated with works which may disturb badgers or damage or destroy their setts.

²⁰ The Environment Agency and SEPA (Scottish Environment Protection Agency) Pollution Prevention Guidelines (PPG). Guidelines relevant to this work would include, PPG1 (general), PPG2 (on-site oil storage), and PPG6 (construction activities).

Bats - commuting / foraging

The Site provides a limited amount of habitat for bats, namely the semi-mature trees, shrubs and semi-improved grassland that offers foraging and commuting opportunities. The habitats are within an area that is lit by streetlights to the north and west which although may attract insect prey of bats, studies have shown even light tolerant bats species (such as *Pipistrellus* spp.) may avoid these areas. Thus, reducing the Sites suitability for foraging and/ or commuting bats²¹.

Furthermore, the habitat onsite is connected to intensively managed grassland (airfield) and the RAF base comprising residential and office buildings. The wider area however has small pockets of woodland and is very rural in nature such that bats roosting on or in the vicinity of the Site are likely to disperse to darker habitats to forage. The habitats present on-site do provide a limited foraging resource and the habitats onsite are connected to offsite areas via the trees along Cranwell Avenue. However, the trees are lit by streetlights thus reducing their suitability as a dispersal and/or foraging corridor. Therefore, the Site meets the criteria for 'Low' suitability for bats.

Recommendations

Best practice guidelines²² specify that activity surveys are required where development proposals are likely to impact on habitats suitable for commuting and foraging bats. Low suitability sites require further surveys comprising one activity survey for bats in each season (Spring, Summer and Autumn).

In addition to the above, it is recommended that lighting incorporated within the proposals should be designed to adhere to principles set out in *Bats and artificial lighting in the UK* (Bat Conservation Trust and Institution of Lighting Professionals, 2018)²¹ in order to minimise or prevent additional illumination of any retained habitat features (tree line to the north along Cranwell Avenue and semi-mature trees retained within the Site) that may be used by bats and other nocturnal wildlife.

Bats – roosting

Two structures are present within the survey area, but offsite, both of which offer negligible potential for bats to roost, and therefore no further survey is required. Additionally, surrounding buildings such as Trenchard Hall to the west and residential dwellings to the north of the Site are considered to offer low to moderate potential for bats to roost.

Two trees were identified as having rot holes, albeit these appeared to only extend back a few centimetres. One tree (TN6) supports a small (c.5cm) diameter rot hole on the northern aspect of the tree c.3m above ground level (AGL), the tree is located within the semi-improved grassland and is situated away from streetlights and is considered to have 'low' potential for bats to roost. The other tree (TN8) supports a larger (c.10cm) diameter hole on the southern aspect c.2m AGL albeit it is situated along Cranwell Avenue close to streetlights. The feature itself is considered to offer moderate potential for bats to roost, however, its location reduces the likelihood given the lighting surrounding this feature.

Recommendations

The surrounding buildings offer low to moderate potential for bats to roost. However, the development is limited in nature; restricted to the semi-improved grassland and will comprise a structure that will not encroach on the surrounding buildings, furthermore, the development will be located in an already lit area. Therefore, no further surveys of the surrounding buildings are recommended at this point, however if the

²¹ Institution of Lighting Professionals and Bat Conservation Trust (2018) *Bats and artificial lighting in the UK Bats and the Built Environment series* (Guidance Note 08/18) <https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/>.

²² Collins (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* 3rd Edition.

scheme design changes such that impacts are likely on the surrounding buildings this recommendation may need to be reviewed.

Best practice guidelines²² state that trees considered to only offer low potential for bats to roost are not required to have further surveys. However, moderate potential trees are required to have two further surveys. Therefore, it is recommended that the rot hole on the southern aspect of TN8 is inspected during the first activity survey to further investigate its potential for bats and to look for evidence of use by bats (i.e. droppings). The hole is c.2m AGL and could be reached by ladders to inspect the feature. If the feature is confirmed as being of moderate potential a second survey will be required which can be carried out concurrently with the activity surveys described above. The second inspection survey (if required) will also look for evidence of use by bats such that this inspection should constitute the second survey required by the guidelines. This method of thoroughly inspecting the features present will negate the need for further dusk emergence or dawn re-entry surveys, although this will need to be determined following the initial inspection.

Reptiles

The area of the Site to be developed comprises largely of semi-improved grassland which provides some suitable areas of reptile habitat that could support reptile species such as adder, grass snake, common lizard and slow worm. However, the Site is relatively isolated given the intensively managed grassland surrounding the Site and gardens associated with the residential dwelling to the north are separated by Cranwell Avenue. Therefore, although a few individuals may be present, the likelihood of the Site supporting an important population is deemed to be low enough to not warrant further survey work.

Recommendations

In view of the above, due to the low likelihood of reptiles being present, it would be possible to carry out the Site preparation works by adopting precautionary avoidance measures. The measures in this instance given the managed grassland present would be to have a suitably qualified ecologist carry out a fingertip search of the Site prior to clearance works. Once the Site is deemed free of reptiles, works can continue without further supervision.

Birds

The Site offers suitable habitats (semi-mature trees) to support individuals or breeding pairs of common and widespread bird species as well as some more important species such as skylark. Furthermore, several nests were identified within one of the roadside trees to the north. However, the Site comprises a limited area and type of habitat available for these species and therefore this reduces the likelihood that the Site would support more than very small numbers.

Recommendation

The nests and eggs of all wild birds (with certain exceptions²³) are protected and therefore any vegetation clearance (removal of trees) should avoid the nesting bird season (March – August inclusive). If this is not possible then a nesting bird check should be undertaken by a suitably qualified ecologist immediately in advance of vegetation removal. Should an active nest be found, this would need to be retained and safeguarded until the young have fledged.

Invasive / notifiable weeds

Cotoneaster is present within the areas of introduced shrub off-site.

²³ Some species, such as game birds, are exempt in certain circumstances.

Recommendation

The works are restricted to the semi-improved grassland and it is not anticipated that any of the introduced shrub beds will be impacted by the works. However, if the cotoneaster present needs to be disturbed during the proposed works, it should be either burned on-site or taken to a landfill that is able to accept Schedule 9 species in order to prevent its spread. If the plant is not going to be disturbed it can be left in situ and no further measures will be required.

Other species

The Site is suitable to support species listed under S41 of the *NERC Act 2006*, such as hedgehog and common toad, albeit neither of these species were recorded during the Site survey.

Recommendations

Although no further work is deemed to be necessary with regard to S41 species, where possible, consideration should be given to implementing biodiversity enhancement measures as detailed in section 4.4.

4.4 Biodiversity enhancement measures

The National Planning Policy Framework²⁴ states that planning policies and decisions should contribute to and enhance the natural and local environment by “minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures”. As such, it is recommended that a number of enhancement measures are incorporated within any future scheme design. Although the proposals are of a limited nature the following enhancement measures should be included where possible:

- improvement of the grassland surrounding the development to include an appropriate mowing regime to encourage the growth of calcareous grassland species;
- enhancement of the eastern boundary of the Site by planting shrubs or scrub in between retained trees. Plants should be fruiting and/ flowering species that are native and of local provenance. This will increase the nectar resource for invertebrates and will provide valuable foraging for bats and birds;
- five bat boxes should be installed on retained trees along the eastern boundary of the Site away from the streetlights along Cranwell Avenue to increase the provision of available roosting and nesting habitat; and
- log piles and artificial hibernacula could also be created and interspersed throughout any areas of retained habitat along the northern and eastern boundaries of the Site. The aim of this measure would be to increase the structural diversity of the habitat for invertebrates and other species. These log piles could be created using timber from any on-site felling or arboricultural work.

²⁴ <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

Appendix A

Summary of relevant legislation

All wild mammals (including rabbits and foxes)

Under the *Wild Mammals (Protection) Act 1996* it is an offence intentionally to cause unnecessary suffering to any wild mammal.

Badger

The *Protection of Badgers Act, 1992* makes it an offence to:

- wilfully kill, injure or take a badger;
- attempt to kill, injure or take a badger; or
- cruelly ill-treat a badger.

It is also an offence to interfere with a badger sett by:

- damaging a badger sett or any part of it
- destroying a badger sett;
- obstructing access to, or any entrance of, a badger sett;
- disturbing a badger when it is occupying a badger sett; or
- intending to do any of those things or being reckless as to whether their actions would have any of those consequences.

Bats (*Rhinolophidae* and *Vespertilionidae*)

All British bat species are listed in Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and Schedule 2 of the *Conservation of Habitats and Species Regulations 2017* (as amended). They are afforded full protection under Section 9(4) of the Act and Regulation 43 of the Regulations. These make it an offence, *inter alia*, to:

- deliberately capture, injure or kill a bat;
- deliberately disturb a bat (this applies anywhere, not just at its roost), in particular in such a way as to be likely to:
 - ▶ impair their ability to survive, breed or reproduce, or rear or nurture their young;
 - ▶ impair their ability to hibernate or migrate.
- affect significantly the local distribution or abundance of that bat species;
- damage or destroy a breeding site or resting place of any bat;
- intentionally or recklessly disturb a bat while it is occupying a structure or place that it uses for shelter or protection; or
- intentionally or recklessly obstruct access to any place that a bat uses for shelter or protection (this is taken to mean all bat roosts whether bats are present or not).

In addition, five British bat species are listed on Annex II of the Habitats Directive. These are:

- Greater horseshoe bat (*Rhinolophus ferrumequinum*);
- Lesser horseshoe bat (*Rhinolophus hipposideros*)
- Bechstein's bat (*Myotis bechsteini*);
- Barbastelle (*Barbastella barbastellus*); and
- Greater mouse-eared bat (*Myotis myotis*).

In certain circumstances where these species are found the Directive requires the designation of Special Areas of Conservation (SACs) by EC member states to ensure that their populations are maintained at a favourable conservation status. Outside SACs, the level of legal protection that these species receive is the same as for other bat species.

Birds

With certain exceptions²⁵, all wild birds, their nests and eggs are protected by section 1 of the *Wildlife and Countryside Act 1981* (as amended). Therefore, it is an offence, *inter alia*, to:

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

These offences do not apply to hunting of birds listed in Schedule 2 of the Act subject to various controls.

Bird species listed on Schedule 1 of the Act receive further protection, thus for these species it is also an offence to:

- intentionally or recklessly disturb any bird while it is nest building, or is at a nest containing eggs or young; or
- intentionally or recklessly disturb the dependent young of any such bird.

Dormouse (*Muscardinus avellanarius*)

Dormouse is listed in Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and Schedule 2 of the *Conservation of Habitats and Species Regulations 2017* (as amended). This species is afforded full protection under Section 9(4) of the Act and Regulation 43 of the Regulations. These make it an offence, *inter alia*, to:

- deliberately capture, injure or kill any such animal;
- deliberately disturb any such animal, in particular in such a way as to be likely to:
 - ▶ impair their ability to survive, breed or reproduce, or rear or nurture their young;
 - ▶ impair their ability to hibernate or migrate; and
 - ▶ affect significantly the local distribution or abundance of that species.
- damage or destroy a breeding site or resting place of any such animal;

²⁵ Some species, such as game birds, are exempt in certain circumstances.

- intentionally or recklessly disturb any of these animals while it is occupying a structure or place that it uses for shelter or protection; or
- intentionally or recklessly obstruct access to any place that any of these animals uses for shelter or protection.

Great crested newt (*Triturus cristatus*)

The great crested newt is listed in Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and Schedule 2 of the *Conservation of Habitats and Species Regulations 2017*. It is afforded protection under Section 9(4) of the Act and Regulation 43 of the Regulations. These make it an offence, *inter alia*, to:

- deliberately capture, injure or kill any such newt;
- deliberately disturb any such newt, in particular in such a way as to be likely to:
 - ▶ impair their ability to survive, breed or reproduce, or rear or nurture their young;
 - ▶ impair their ability to hibernate or migrate.
 - ▶ affect significantly the local distribution or abundance of that species;
- deliberately take or destroy the eggs of such a newt;
- damage or destroy a breeding site or resting place of any such newt;
- intentionally or recklessly disturb any such newt while it is occupying a structure or place that it uses for shelter or protection; or
- intentionally or recklessly obstruct access to any place that any such newt uses for shelter or protection.

This relates to both the aquatic and terrestrial habitat they occupy. The legislation applies to all life stages of this species.

Reptiles

The four widespread²⁶ species of reptile that are native to Britain, namely common or viviparous lizard (*Zootoca (Lacerta) vivipara*), slow worm (*Anguis fragilis*), adder (*Vipera berus*) and grass snake (*Natrix natrix (Natrix helvetica)*), are listed in Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and are afforded limited protection under Section 9 of this Act. This makes it an offence, *inter alia*, to:

- intentionally kill or injure any of these species.

Otter (*Lutra lutra*)

The otter is listed in Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and Schedule 2 of the *Conservation of Habitats and Species Regulations 2017*. This species is afforded full protection under Section 9(4) of the Act and Regulation 43 of the Regulations. These make it an offence, *inter alia*, to:

- deliberately capture, injure or kill any such animal;
- deliberately disturb any such animal, in particular in such a way as to be likely to:
 - ▶ impair their ability to survive, breed or reproduce, or rear or nurture their young;

²⁶ The other native species of British reptile (sand lizard and smooth snake) receive a higher level of protection in England and Wales under the *Conservation of Habitats and Species Regulations 2010* and the *Wildlife and Countryside Act 1981* (as amended). However, the distribution of these species is restricted to only a very few sites. All marine turtles (*Cheloniidae* and *Dermochelyidae*) are also protected.

- ▶ impair their ability to hibernate or migrate; and
- ▶ affect significantly the local distribution or abundance of that species.
- damage or destroy a breeding site or resting place of any such animal;
- intentionally or recklessly disturb any of these animals while it is occupying a structure or place that it uses for shelter or protection; or
- intentionally or recklessly obstruct access to any place that any of these animals uses for shelter or protection.

Water vole (*Arvicola amphibius*) (formerly *A. terrestris*)

The water vole is listed in Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and is afforded limited protection under Section 9 of this Act. This makes it an offence, *inter alia*, to:

- intentionally kill, injure, or take (handle) a water vole;
- intentionally or recklessly disturb water voles while they are using such a structure or place; or
- intentionally or recklessly damage or destroy or obstruct access to any structure or place which water voles use for shelter or protection.

White-clawed crayfish (*Austropotamobius pallipes*)

The white-clawed crayfish is listed in Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and is afforded limited protection under Section 9 of this Act. This makes it an offence, *inter alia*, to:

- intentionally take individuals of this species.

Insects

The insects listed in Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and afforded full protection under Section 9 of this Act are:

- the rainbow leaf beetle (*Chrysolina cerealis*), lesser silver water beetle (*Hydrochara craboides*) and violet click beetle (*Limoniscus violaceus*);
- the mire pill beetle (*Curimopsis nigrita*)*;
- the beetles *Graphoderus zonatus*, *Hypebaeus flavipes* and *Parcymus aeneus*;
- the large copper (*Lycaena dispar*), heath fritillary (*Mellicta athalia*), marsh fritillary (*Eurodryas aurinia*) and swallowtail (*Papilio machaon*) butterflies;
- the field (*Gryllus campestris*) and mole (*Gryllotalpa gryllotalpa*) crickets;
- the New Forest cicada (*Cicadetta montana*);
- the southern damselfly (*Coenagrion mercuriale*) and Norfolk aeshna dragonfly (*Aeshna isosceles*);
- the wart-biter grasshopper (*Decticus verrucivorus*); and
- the Barberry carpet (*Pareulype berberata*), black veined (*Siona lineata*), Essex emerald (*Thetida smaragdaria*), fiery clearwing (*Bembecia chrysidiformis*), Fisher's estuarine (*Gortyna borelii*), New Forest Burnet (*Zygaena viciae*), reddish buff (*Acosmetia caliginosa*) and Sussex emerald (*Thalera fimbrialis*) moths.

This makes it an offence, *inter alia*, to:

- intentionally kill, injure, or take (handle) any of these species (* except the mire pill beetle);
- intentionally or recklessly damage, destroy or obstruct access to any place that any of these species uses for shelter or protection; or
- intentionally or recklessly disturb any of these species while it is occupying a structure or place that it uses for shelter or protection.

Other terrestrial and freshwater invertebrates

In addition to crayfish, insects and spiders, the following terrestrial and freshwater invertebrates are listed in Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and afforded full protection under Section 9 of this Act:

- the medicinal leech (*Hirudo medicinalis*);
- a fairy shrimp (*Chirocephalus diaphanus*);
- the tadpole shrimp or apus (*Triops cancriformis*);
- the freshwater pearl mussel (*Margaritifera margaritifera*); and
- the glutinous (*Myxas glutinosa*), sandbowl (*Catinella arenaria*) and Roman (*Helix pomatia*) snails.

This makes it an offence, *inter alia*, to:

- intentionally kill, injure, or take (handle) any of these species;
- intentionally or recklessly damage, destroy or obstruct access to any structure or place that any of these species uses for shelter or protection; or
- intentionally or recklessly disturb any of these species while it is occupying a structure or place that it uses for shelter or protection.

Appendix B

Scientific names of species referred to in this report

Common name	Scientific name
Aspen	<i>Populus tremula</i>
Badger	<i>Meles meles</i>
Barn owl	<i>Tyto alba</i>
Beech	<i>Fagus sylvatica</i>
Bramble	<i>Rubus fruticosus</i> agg.
Brambling	<i>Fringilla montifringilla</i>
Broad-leaved dock	<i>Rumex obtusifolius</i>
Brown long-eared bat	<i>Plecotus auritus</i>
Cats-ear	<i>Hypochaeris radicata</i>
Cherry	<i>Prunus</i> sp.
Cock's-foot	<i>Dactylis glomerata</i>
Common toad	<i>Bufo bufo</i>
Corn bunting	<i>Emberiza calandra</i>
Cotoneaster	<i>Cotoneaster</i> sp.
Cow parsley	<i>Anthriscus sylvestris</i>
Creeping thistle	<i>Cirsium arvense</i>
Curlew	<i>Numenius arquata</i>
Daisy	<i>Bellis perennis</i>
Dandelion	<i>Taraxacum officinale</i> agg.
Dormouse	<i>Muscardinus avellanarius</i>
False oat grass	<i>Arrhenatherum elatius</i>
Fescue sp.	<i>Festuca</i> sp.
Fieldfare	<i>Turdus pilaris</i>
Giant hogweed	<i>Heracleum mantegazzianum</i>
Great crested newt	<i>Triturus cristatus</i>

Common name	Scientific name
Grey partridge	<i>Perdix perdix</i>
Ground ivy	<i>Glechoma hederacea</i>
Hawthorn	<i>Crataegus monogyna</i>
Hen harrier	<i>Circus cyaneus</i>
Himalayan balsam	<i>Impatiens glandulifera</i>
Hobby	<i>Falco subbuteo</i>
Horse chestnut	<i>Aesculus hippocastanum</i>
House sparrow	<i>Passer domesticus</i>
Japanese knotweed	<i>Fallopia japonica</i>
Lapwing	<i>Vanellus vanellus</i>
Laurel	<i>Prunus laurocerasus</i>
Linnet	<i>Linaria cannabina</i>
Marsh harrier	<i>Circus aeruginosus</i>
Mediterranean gull	<i>Larus melanocephalus</i>
Merlin	<i>Falco columbarius</i>
Montagu's harrier	<i>Circus pygargus</i>
Norway maple	<i>Acer platanoides</i>
Osprey	<i>Pandion haliaetus</i>
Otter	<i>Lutra lutra</i>
Poplar	<i>Populus</i> sp.
Bristly oxtongue	<i>Helminthotheca echioides</i>
Quail	<i>Coturnix coturnix</i>
Ragwort	<i>Jacobaea vulgaris</i>
Red dead nettle	<i>Lamium purpureum</i>
Red kite	<i>Milvus milvus</i>
Reed bunting	<i>Emberiza schoeniclus</i>
Ribwort plantain	<i>Plantago lanceolata</i>
Ring ouzel	<i>Turdus torquatus</i>
Scot's pine	<i>Pinus sylvestris</i>
Skylark	<i>Alauda arvensis</i>

Common name	Scientific name
Small heath	<i>Coenonympha pamphilus</i>
Snipe	<i>Gallinago gallinago</i>
Song thrush	<i>Turdus philomelos</i>
Sorbus species	<i>Sorbus</i> spp.
Starling	<i>Sturnus vulgaris</i>
Sweet chestnut	<i>Castanea sativa</i>
Sycamore	<i>Acer pseudoplatanus</i>
Tree sparrow	<i>Passer montanus</i>
Turtle dove	<i>Streptopelia turtur</i>
Wall	<i>Lasiommata megera</i>
Water vole	<i>Arvicola amphibius</i>
White clover	<i>Trifolium repens</i>
Whooper swan	<i>Cygnus cygnus</i>
Yarrow	<i>Achillea millefolium</i>
Yellow wagtail	<i>Motacilla flava</i>
Yellowhammer	<i>Emberiza citrinella</i>
Yorkshire fog	<i>Holcus lanatus</i>

Appendix C

Target Notes

Table C.1 Target Notes from the Phase 1 habitat survey

Target Note Reference	Habitat description
1	Semi-improved grassland with a longer sward (15-20cm), ruderal species have started to encroach including creeping thistle, spear thistle and ragwort.
2	Intensively managed semi-improved grassland areas, mown to a height of <5cm.
3	An intact hawthorn hedge which has been recently cut. Very little ground flora was noted, restricted to groundsel.
4	Air raid shelters were noted, comprising concrete and sealed metal entrances. There is no access for bats or other wildlife to gain entry into these shelters at these points.
5	A single storey dilapidated brick shed. Negligible potential for bats to roost.
6	Trees with small rot hole. Low potential for bats to roost.
7	A small flat roof structure, metal framed windows, all tightly sealed. Negligible potential for bats to roost.
8	Tree with rot hole on south aspect c. 2m height. Moderate potential for bats to roost.
9	Tree with several bird nests.
10	An unmanaged bank comprising scrub and tall ruderal species.
11	Ornamental shrubs such as cotoneaster and laurel and are largely non-native in their origins.

wood.

