Extended Phase 1 Habitat Survey of Land at Bicester Airfield

Final Report

November 2013

LEPUS CONSULTING
LANDSCAPE ECOLOGY, PLANNING AND URBAN SUSTAINABILITY

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Extended Phase 1 Habitat Survey RAF Bicester

Oxfordshire

	Document Control Box
Client	Bicester Heritage Ltd
Report Title	Extended Phase 1 Habitat Survey of land at RAF Bicester
Issue Ref	2
Status	Final
Filename	LC-0043_Bicester_Ecology_Phase_1_Survey_4_291113ND.docx
Date	29th November 2013
Author	NJD
Checked	AP

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Abbreviations

BAP	Biodiversity Action Plan
BRC	Biological Records Centre
EcIA	Ecological Impact Assessment
CIEEM	The Chartered Institute of Ecology & Environmental Management
JNCC	Joint Nature Conservation Committee
LNR	Local Nature Reserve
MAGIC	Multi-Agency Geographic Information for the Countryside
NBN	National Biodiversity Network
TVERC	Thames Valley Environmental Records Centre

Executive Summary

E1 An extended Phase 1 habitat survey was undertaken in May 2013 on behalf of Bicester Heritage Ltd to provide an inventory of biodiversity value and to identify any ecological constraints or opportunities for land at RAF Bicester, to the north east of Bicester, off the A4421 road.

E2 The survey has been prepared by Lepus Consulting to assess the ecological value of the site in relation to potential development proposals for a change of use at the site. The survey location is a parkland setting with mature trees, mown grass and various buildings mostly used for storage.

E3 Besides the parkland are other habitat types including hedgerows, scrub and the grassland of the airfield itself. The airfield is active and used mainly by Windrushers Gliding Club located on Skimmingdish Lane.

E4 A professionally qualified ecologist undertook the site survey on the 28th May 2013. Ecological records obtained from the Thames Valley Environmental Records Centre have informed the habitat survey. Ecological data from a 2km search identified five non-statutory Local Wildlife Sites and protected species in the wider area beyond the parkland of the application Site.

E5 The Site contains locally important ecological features which include suitable habitat for bats, breeding birds and potentially reptiles. In large part, the site forms part of a wider ecological landscape and the relationship between the parkland habitat and the wider landscape features is worth noting. Bats were recorded during a search of one of the buildings adjacent to the building shown on the redline map in **Figure 1.2**. **Appendix A** includes details of the bat survey.

E6 Much of the wider site and adjacent land is presently being managed positively for nature conservation. Features include hedgerows and the expansive grassland of the airfield. These features enhance the ecological setting of the proposed changes to buildings within the parkland as do aspects of the wider rural hinterland to the north and east of the site.

E7 Whilst the survey focuses on the former RAF buildings and the surrounding parkland, the ecological assessment concerns only the development proposal for change of use at the building shown in **Figure 1.2**. The proposed changes at this location, as described in section 2 of this report, will not adversely affect the nature conservation interests of the Site.

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1 Introduction

1.1 Scope of the ecology survey

1.1.1 Lepus Consulting was commissioned on behalf of Bicester Heritage Ltd to undertake an extended Phase 1 habitat survey to ascertain an ecological inventory of the land in and around the buildings at Bicester Airfield, identify the main habitats and plant communities present. The habitat survey provides an ecological assessment of land surrounding the redline development site which is the subject of the planning application (see **Figure 1.2**).

1.1.2 The assessment utilised the Joint Nature Conservation Committee (JNCC) Phase 1 Habitat Survey Methodology (JNCC, 2010). This established survey methodology was "extended" to include a more detailed approach in regards to the potential suitability of the site and its features to support protected and/or notable species.

1.1.3 This report sets out the results of the extended Phase 1 habitat survey for the site. Ecological constraints have been considered with the planned changes to the site in mind. The survey findings are interpreted by way of an assessment of ecological significance. Recommendations for additional surveys for protected species are suggested where appropriate.

1.2 Purpose of this Report

1.2.1 The purpose of this report is to provide a habitat inventory for the site, identify important features, and consider its value to any species (protected and/or notable for some other reason as identified by the local biological records centre, Thames Valley Environmental Records Centre, TVERC) that may use the site. The report provides contextual ecological information about the site.

1.3 Site Description

1.3.1 The site lies off the A4421 road, and at the junction with Skimmingdish Lane to the north east of Bicester, national grid reference SP593244 (see **Figure 1.1**).

1.3.2 The site lies within the northern part of the Thames and Avon Vales Natural Area. A natural area is an area of England characterised by distinctive natural features. They can assist in the interpretation of the ecological features of different areas due to specific differences between each natural area.

1.3.3 The Thames and Avon Vales[1] make up the central section of a huge belt of low-lying land running through south central England from Somerset to Lincolnshire. It is made up of the Vale of Aylesbury in the east and the Vale of White Horse in south Oxfordshire and north Wiltshire reaching Trowbridge in the south west.

[1] English Nature (1993) Natural Area 63: Thames and Avon Vales. Profile prepared by English Nature, Foxhold House, Thatcham.

1.3.4 The area is situated between the chalk and limestone plateaus of the Cotswolds to the north and the Marlborough Downs, Berkshire Downs and Chilterns to the south and east.

1.3.5 Although the landscape is generally lacking in prominent features it forms an important element of the essentially English lowland scene with its gently rolling vistas with a mixture of arable and grass fields surrounded by thick hedgerows and interspersed with small woods. This is a very rural area with Oxford, Aylesbury and Swindon the only large built-up areas; other settlements are generally small and widely scattered.

1.3.6 The farming scene is a mixture of pasture and arable farming with dairy cattle, beef and sheep. Most of the area lies within the catchment of the Thames.

1.3.7 The RAF Bicester site (see **Figure 1.1**) is comprised of a parkland area with many tall trees and buildings. The diversity of trees includes several ornamental species as well as British native species. The grassland is mown regularly and sward height kept short in most parts of the redline area. The buildings, which number more than 50 in number, range in size and design. Some are large and have previously served as hangars. These buildings have corrugated roofs and brick walls. Smaller buildings used for storing equipment of different types are also brick with varying roof types.

1.3.8 There is no public access to the site. Access to private vehicles is from the A4421.

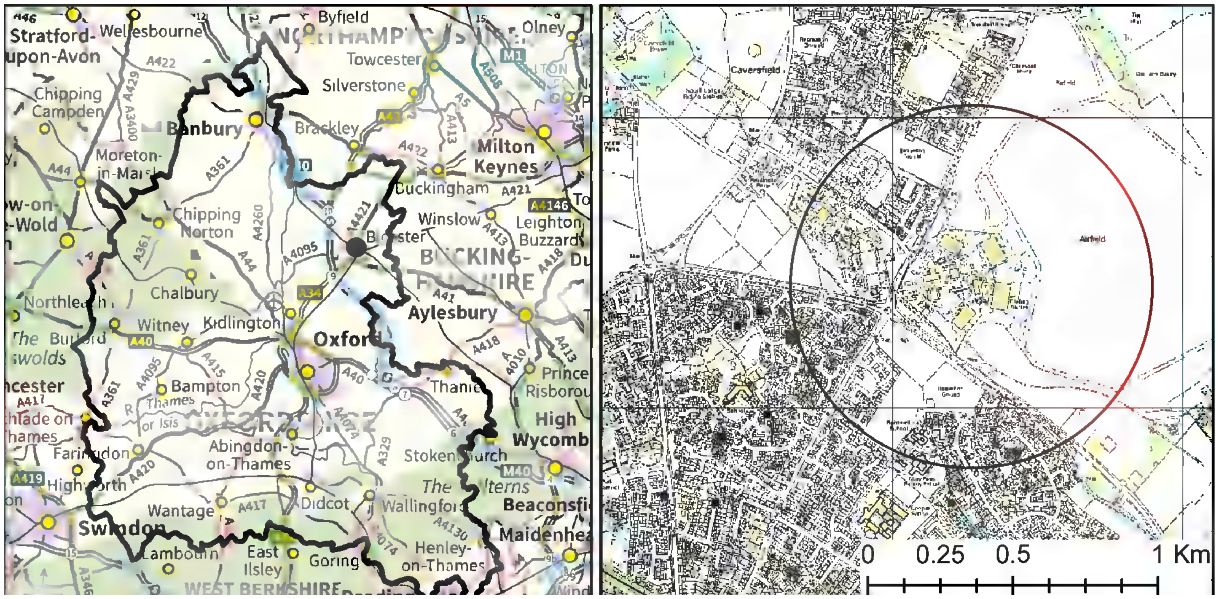

Figure 1.1: Location map

1.4 Development Description

1.4.1 The proposed change of use at the site concerns building number 87. This is shown in **Figure 1.2**.

1.5 Adjacent Habitats and Adjoining Land

1.5.1 Besides the parkland are other habitat types including hedgerows, scrub and the grassland of the airfield itself. The airfield is active and used mainly by Windrushers Gliding Club located on Skimmingdish Lane.

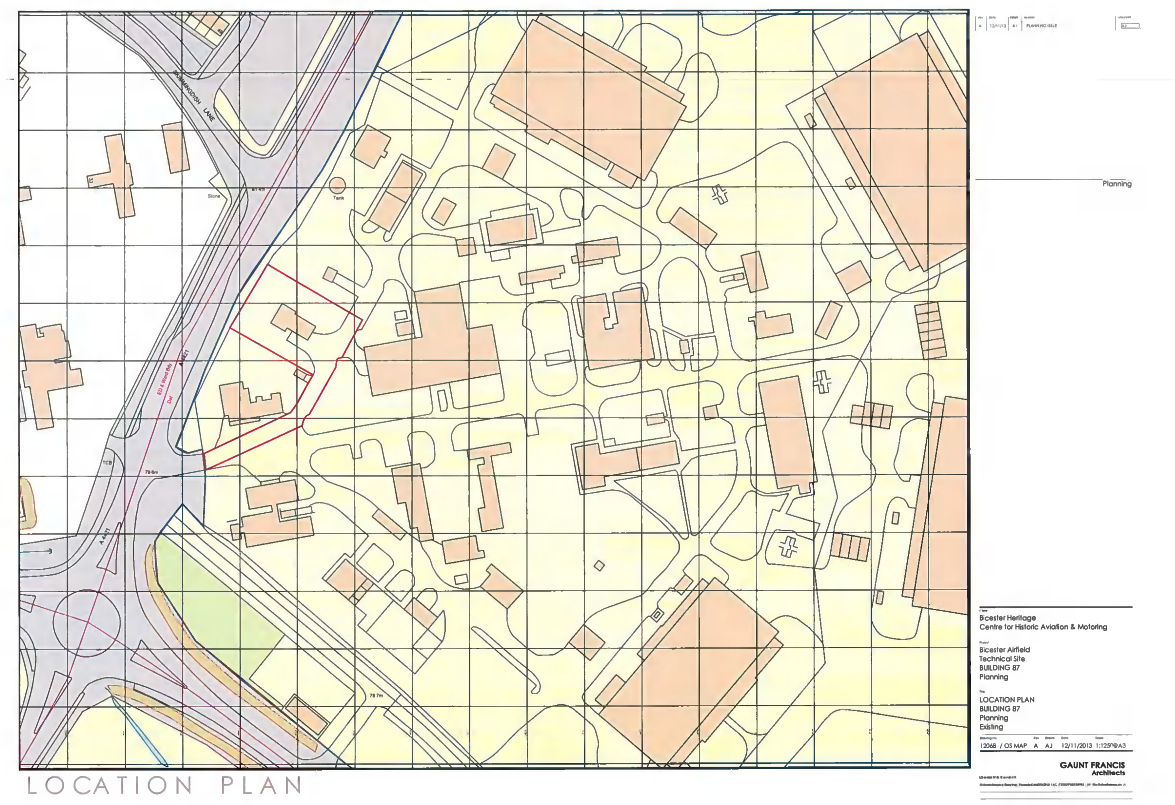

Figure 1.2: Redline drawing

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2 Methodology

2.1 Approach to the Survey

2.1.1 The survey methodology has followed the procedures to prepare a desk study and field survey in accordance with the JNCC Handbook for Phase 1 Habitat Survey (JNCC, 2010).

2.1.2 This report documents the results of the extended Phase 1 habitat survey. The consideration of constraints has been prepared in accordance with best practice for ecological surveys and assessment, following the Institute of Ecology and Environmental Management (IEEM, 2006).

2.2 Extended Phase 1 Habitat Survey

2.2.1 A Phase 1 habitat survey provides a basic inventory of habitats and was developed by the then Nature Conservancy Council (now the Joint Nature Conservation Committee or JNCC) in the 1970s as a method of rapid survey of semi-natural vegetation over large areas of countryside. The method is widely used for the initial ecological assessment of sites. Full details of the method are provided in JNCC's (2010; reprint) Handbook for Phase 1 habitat survey – a technique for environmental audit.

2.2.2 Habitats are assigned using a hierarchical classification based primarily on vegetation, but augmented by reference to topography and soil characteristics. The method describes approximately 90 specific habitat types, supplemented by descriptive target notes, which record anything of particular interest in a given habitat.

2.2.3 An extended Phase 1 survey adds to this basic habitat inventory by including a representative species list (not required in the standard survey) and more detailed target notes on areas of interest that may need further study (e.g. specific species surveys or more detailed habitat survey). It is normal to prepare more descriptive details of habitats as part of an extended survey than would be the case in a Phase 1 survey; habitat descriptions are included as part of this report.

2.3 Desktop Study

2.3.1 The desktop study involved a review of publically available information on protected habitats and species. A 2km search zone was selected to place the proposed development site in context within the ecology of the surrounding environment, centred on grid reference SP 593 244.

2.3.2 Ecological data was compiled from the Thames Valley Environmental Records Centre, and supported by additional information freely obtained via Nature on the Map, Multi-Agency Geographic Information for the Countryside (MAGIC), National Biodiversity Network (NBN) and any other relevant published information such as the Oxfordshire Biodiversity Action Plan (BAP[2]). The results of the data search are summarised and discussed in **Section 3**.

2.4 Field Survey

2.4.1 The field survey was undertaken using extended Phase 1 habitat survey methodology (see **section 2.2**). The purpose of the survey was to record the habitats present, the dominant plant species, conspicuous faunal activity and any evidence in relation to the presence, or potential presence of protected species. The output from this survey is a habitat map (see **Figure 3.1**) and associated target notes to highlight features of note in the adjacent area. The potential for protected/notable species was assessed on the basis of habitats present onsite and on their suitability to support those species of conservation concern.

2.4.2 The baseline survey was undertaken during the optimum season for vegetation survey (optimum season April-September). However, some ephemeral annual plant species may have not been recorded due to the time of year or may only be recorded to genus level. This is not considered to affect the validity of the assessment for the potential of protected/notable species nor, the accuracy of the description of the associated habitats that were recorded onsite.

2.4.3 The field survey was undertaken on 28th May 2013 by professionally qualified ecologist Neil Davidson (MCIEEM). Prevailing weather conditions were warm and sunny.

2.4.4 It should be noted that the survey is not intended to provide a comprehensive list of floral and faunal species, rather it is to characterise the habitats present and determine the potential to support protected/notable species that might be present on the site. Additionally, data obtained from TVERC is derived from information that has been submitted to, and subsequently held by, the records centre. It does not claim to be comprehensive and may be out of date in some cases but can provide helpful contextual information. To this end, data obtained from TVERC should not be used in isolation or as a means of indicating species absence.

2.4.5 During the survey the following ecological assessments were undertaken on the site:

- Habitat description and species list;
- Identification and location of invasive plant species;
- Identification of suitable habitat potential for, and presence of protected species including: reptiles, amphibians, bats, badger, dormouse, breeding and wintering birds.

[2] http://www.oxfordshire.gov.uk/cms/sites/default/files/folders/documents/environmentandplanning/countryside/naturalenvironment/BAPnewsletterFINAL2.pdf

3 Survey Results

3.1 Results of Desk Study

3.1.1 Data regarding designated sites and records of protected/notable species was supplied by TVERC. Additionally, freely available web based resources[3] have been used to inform the survey. The following sections summarise the data.

3.1.2 TVERC was contacted to obtain any records for either protected or notable species as well as habitats and designated sites. A report for a 2km area of search was issued by the Records Centre on 25th June 2013.

3.1.3 Specific information requested included:

- Statutory and non-statutory designated sites;
- Notable and protected species;
- Non-notable species;
- Habitats and BAP priority habitats;
- Invasive species and;
- Local surveys and reports.

3.1.4 Records included the following information.

3.2 Statutory designated nature conservation sites

3.2.1 There is a statutory designated nature conservation site located at approximately 900m from the Site. It is called Stratton Audley Quarries site of special scientific interest (SSSI). It has been designated due to its geological importance. The latest condition surveys for the two SSSI units at the site in 2008 and 2009 indicate that the geological interest has been lost due to infilling of the sites.

3.2.2 Another statutory site, a local nature reserve (LNR) called Bure Park, is located approximately 1.4km from the Site. This is located on the other side of an extensive residential area and is unlikely to have strong ecological links with the Site. Habitats there include grass meadow, young broad-leaved woodland, hedges and scrub. A small river (the Bure) runs through the site, feeding a small pond which is inhabited by Great Crested Newts (*Triturus cristatus*). A balancing pond at one end of the reserve is fed by run-off from the area.

3.3 Non-statutory sites

3.3.1 The desk study identified a wildlife site and proposed wildlife site in close proximity to the red line. For details of these and all other nature conservation sites in the area, please see **Appendix B** which includes a TVERC map. A summary of the surrounding sites is presented in **Table 3.1**.

[3] www.magic.gov.uk; www.nbn.org.uk

Table 3.1: Local Wildlife Sites adjacent to and in the wider area surrounding the Site

Name	Designation	Distance from the Site
Gavray Drive Meadows	LWS	180m
Jarvis Lane	Proposed LWS	650m
Bicester Airfield	Proposed LWS	0m
Skimmingdish Lane Fields	Proposed LWS	1100m
Stratton Audley Quarry	LWS	830m

3.4 Protected / Notable Species

3.4.1 Data supplied by the TVERC in conjunction with freely available data from Nature on the Map found records of rare or protected species comprising various species within or at 2km of the site. The records span a date range from 1981-2009. **Table 3.2** summarises the findings BRC records with regard to protected and notable species. Whilst a 2km data search has been prepared, this report is interested in identifying reasonable geographic links for ecological interests. The 2km search enables appreciation of metapopulations and supporting habitats. The inclusion of a 2km limit on the listed species in **Table 3.2** is associated with appreciating the likelihood or otherwise of the species being associated with the site.

Table 3.2: TVERC data for protected or notable species recorded within 2 km of the development site.

Common Name	Latin Name	Date of latest record	Approx distance from development site (m)	Grid reference
Great Crested Newt	*Triturus cristatus*	2009	1000m	SP598252
Grass Snake	*Natrix natrix*	1991	1000m	SP602251
Badger	*Meles meles*	1982	150m	

3.4.2 Other information has been derived from two bat surveys conducted on behalf of the MOD in 2005 and 2006. These found that some of the buildings on site were being used by bats.

3.5 Bats

3.5.1 In 2006[4], a licensed bat worker undertook a daytime survey of the Site on the 27 May 2005 (with assistant), 7 June 2005 and 3 October 2005 (with assistant). All the surveys were carried out in good weather (e.g. nil rain and light or calm winds).

[4] Defence Estates Environmental Support Team (2006) Bat Survey of Buildings at RAF Bicester by Ian Davidson-Watts (November, 2006)

3.5.2 The survey of all the buildings on the technical site and bunkers searched for signs of bats, such as droppings, scratch marks, signs of wear and tear, staining and the bats themselves. Potential bat roosting areas or access points in each building were also noted. An inspection both internally and externally was carried out using ladders, powerful lamps (eg 2M candlepower) and a fibrescope. Night time bat activity surveys and emergence surveys were conducted on the evenings of 7 June and 3 October 2005.

3.5.3 Five species of bat were recorded in low numbers. Seven buildings were confirmed as positively being used by bats. None of the roost sites appeared to support female breeding colonies. The low level of droppings identified and the single bats observed emerging would indicate that these roost sites are most likely to support roosts of males or non-breeding females. This assumption is also supported by the catch data.

3.6 Great Crested Newts

3.6.1 A survey of Great Crested Newts was undertaken during 2008[5] at six locations in the wider area and found no evidence of newts.

3.7 Field Survey Findings

3.7.1 Habitats identified are based on the habitat classification used within the JNCC (2010) Handbook for Phase 1 habitat surveys.

3.8 Habitats

3.8.1 Each habitat recorded at the site has been recorded below. Species lists of plants and causal faunal observations were made during the survey.

3.8.2 A botanical species list is presented in **Table 3.4** and includes details of abundance using the DAFOR scale. This is a traditional ecological scale used to measure species abundance where D = Dominant, A = Abundant, F = Frequent, O = Occasional, and R = Rare. Surveyor's professional experience is used to judge which abundance type is appropriate.

3.8.3 Target notes have been used to identify features of nature conservation interest within and adjacent to the site. Target notes are summarised in **Table 3.3**.

Table 3.3: Target Note Summary

Target Note	Brief description
1	Bat survey location
2	Bluebells and other flowers along the western perimeter fence
3	Scrub by the Buckingham Road
4	Cowslips and other flora
5	Bare ground and Leylandii
6	Mature Elm

[5] Entec (2008) Great Crested Newt Survey.

7	Dry pond
8	Potential reptile habitat
9	Fenced off area

3.9 Target Note 1: Buildings surveyed for bats

3.9.1 The buildings around the entrance to the Site were the subject to a bat survey during which a single Brown Long Eared Bat (*Plecotus auritus*) was discovered. See **Appendix B** for further details.

3.10 Target Note 2: Bluebells on the perimeter fence

3.10.1 Bluebells (*Hyacynthoides non-scripta*) and other flora were recorded at this location.

3.11 Target Note 3: Scrub by the Buckingham Road

3.11.1 The scrub here was dense in parts and is likely to support common bird species. Robin (*Erithacus rubecula*) and Chaffinch (*Fringilla coelebs*) were both recorded here.

3.12 Target Note 4 Cowslips and other flora

3.12.1 There is a low lying structure possibly used for storing fuel. This is approximately 20 feet long by five feet wide. It has Primroses (*Primula vulgaris*) growing on it. Other species include Dandelion (*Taraxacum* sp.), Ivy (*Hedera helix*), Lady's Bedstraw (*Galium verum*), and occasional Ox -eye Daisy (*Leucanthemum vulgare*).

3.12.2 This was being mown at that time of survey. The maintenance man believed it was used for rifle shooting hence the small holes into the small building structure near the bottom.

3.13 Target Note 5: Bare ground and Lleylandii trees

3.13.1 Area of hardstanding outside hangar 108. Very few plants grow amongst the cracks on this hard surface. These include Sedum (*Sedum* sp), Creeping Thistle (*Cirsium arvense*), Spear Thistle (*C. vulgare*), Thyme Leaved Speedwell (*Veronica serpyllifolia*), Cow Parsley (*Anthryscus sylvestris*), a small patch of tall Lleyllandii trees. These may well be used by nesting birds. Occasional grasses grow amongst the cracks. Occasional Yarrow (*Achillea millefolium*) grows here. Grass species were mostly Fescues (*Festuca* sp.)

3.14 Target Note: 6 Mature Elm tree

3.14.1 A single mature Elm (*Ulmus sp.*) tree was found at this location.

3.15 Target Note 7: Dry Pond

3.15.1 There is a dry pond just outside the area of the buildings and parkland at this location (see **Figure 3.1**). There is little evidence of aquatic vegetation and it appears to have been dry for a very long time.

3.16 Target Note 8: Potential reptile habitat

3.16.1 This area is suitable for reptiles. With piles of words and scrub cuttings in the this could support reptiles. Plenty of hedge garlic (*Alliaria petiolata*) and white dead nettle (*Lamium album*) is growing here. Dark mullein (*Verbascum nigrum*) grows here in the form of two single plants. A single foraging wasp was seen here.

3.17 Target Note 9: Fenced off area

3.17.1 This area is characterised by Cherry (*Prunus* sp) and Hawthorn (*Crataegus monogyna*) that are very young. Grass grows in clumps underneath. It was not possible to identify it seeing as there is no access to this area. Other plants observed growing include Herb Robert (*Geranium robertianum*), Cow Parsley, Dandelion, Ivy, Hornbeam (*Carpinus betula*), Bramble (*Rubus fruticosus* agg.) and Ragwort (*Senecio jacobaea*). There is also some Laurel (*Laurus* sp) growing here.

3.18 Species recorded during the survey

3.18.1 Species recorded are listed in **Table 3.4**.

Table 3.4: Species list of grasses, flowers and trees noted on Site during survey 18th May 2013

Species recorded at the parkland adjacent to Bicester Airfield. Survey conditions were warm and sunny.		
Grasses and flowers		
Red Fescue	*Festuca rubra*	O
Cow Parsley	*Anthriscus sylvestris*	A
A speedwell	*Veronica sp.*	A
A sedge	*Carex sp.*	R
Thyme leaved-speedwell	*Veronica serpyllifolia*	
Ivy	*Hedera helix*	F
Bluebell	*Endymion non-scripta*	O
Ground Ivy	*Glechoma hederacea*	F
Dandelion	*Taraxacum officinale agg.*	F
Herb Robert	*Geranium robertianum*	O
Bramble	*Rubus fruticosus agg.*	O
Wood Avens	*Geum urbanum*	O
Daisy	*Bellis perennis*	D
Cleavers	*Galium aparine*	F

Creeping Cinquefoil	*Potentilla repens*	O
Creeping Buttercup	*Ranunculus repens*	O
Clover	*Trifolium sp.*	A
Yarrow	*Achillea millefolium*	F
Ribwort Plantain	*Plantago lanceolata*	F
Nettle	*Urtica dioica*	O
Lady's Bedstraw	*Galium verum*	O
Sedum	*Sedum sp.*	R
Cowslip	*Primula veris*	R
Primrose	*Primula vulgaris*	R
Ragwort	*Senecio jacobaea*	O
Creeping Thistle	*Cirsium arvense*	O
Spear Thistle	*Cirsium vulgare*	R
Rosebay Willowheb	*Chamerion angustifolium*	O
Dock sp	*Rumex sp.*	R
Smooth Sow Thistle	*Sonchus oleraceus*	R
Common Mouse-ear	*Cerastium fontanum*	R
Lords and Ladies	*Arum maculatum*	O
Ground Elder	*Aegopodium podagraria*	R
Hedge Garlic	*Alliaria petiolata*	
Lesser Celandine	*Ranunculus ficaria*	O
Bird's Foot Trefoil	*Lotus corniculatus*	R
Dark mullein	*Verbascum nigrum*	R
Trees		
Sycamore	*Acer pseudoplatanus*	A
Elm	*Ulmus sp.*	R
Hawthorn	*Crataegus monogyna*	R
Leylandii	*Leylandii sp.*	O
Elder	*Sambucus nigra*	R
Lombardy Poplar	*Populus nigra var Italica*	R
Hornbeam	*Carpinus betula*	F
Large Leaved-Lime	*Tilia platyphyllos*	O
Black Poplar	*Populus nigra*	O
Rowan	*Sorbus aucuparia*	R
Silver Birch	*Betula pendula*	O
Whitebeam	*Sorbus aria*	O
Goat Willow	*Salix caprea*	

3.19 Off-site: Other Habitats

3.19.1 Surrounding the site were various habitats. This included extensive open grassland to the east and dense blackthorn scrub to the south. Neither area was surveyed as part of the Phase 1 survey.

3.20 Potential for Protected/Notable Species

3.20.1 The following section provides the results of the extended Phase 1 habitat survey for protected species.

3.21 Amphibians

3.21.1 No evidence of amphibian species was recorded at the time of survey. The dry pond at Target Note 7 lacked aquatic vegetation. It was not clear whether or not it holds water for any long term part of the year.

3.22 Reptiles

3.22.1 No evidence of reptile species was recorded at the time of survey. Parts of the site could support reptiles. But not the area being subject to the development proposal in **Figure 1.2**.

3.23 Badgers

3.23.1 No signs of badger activity, setts or evidence of badgers were identified on site throughout the survey.

3.24 Dormice

3.24.1 No evidence of dormice was recorded during the field survey. None of the habitats onsite provides suitable potential to support dormice.

3.25 Breeding & Wintering Birds

3.25.1 A number of different bird species were noted on a casual basis during the Phase 1 survey. This does not represent a full breeding bird survey. The improved grassland may provide foraging areas for a variety of breeding birds including Rooks (*Corvus frugilegus*) and Jackdaws (*Corvus monedula*). The mature trees will provide good nesting and foraging opportunities too. Birds are also likely to breed in the nearby scrub and hedgerows and use the parkland for foraging.

3.26 Invertebrates

3.26.1 Records indicate that off-site habitats support breeding butterflies of county and national importance.

3.27 Bats

3.27.1 No bats were recorded during the bat survey of the building in **Figure 1.2**. Bats have been recorded from other parts of the site (see **Appendix A** and **Appendix B**).

3.28 Invasive Species

3.28.1 No evidence of invasive plant species as listed under Schedule 9 of the Wildlife and Countryside Act 1981 were recorded on site throughout the field survey.

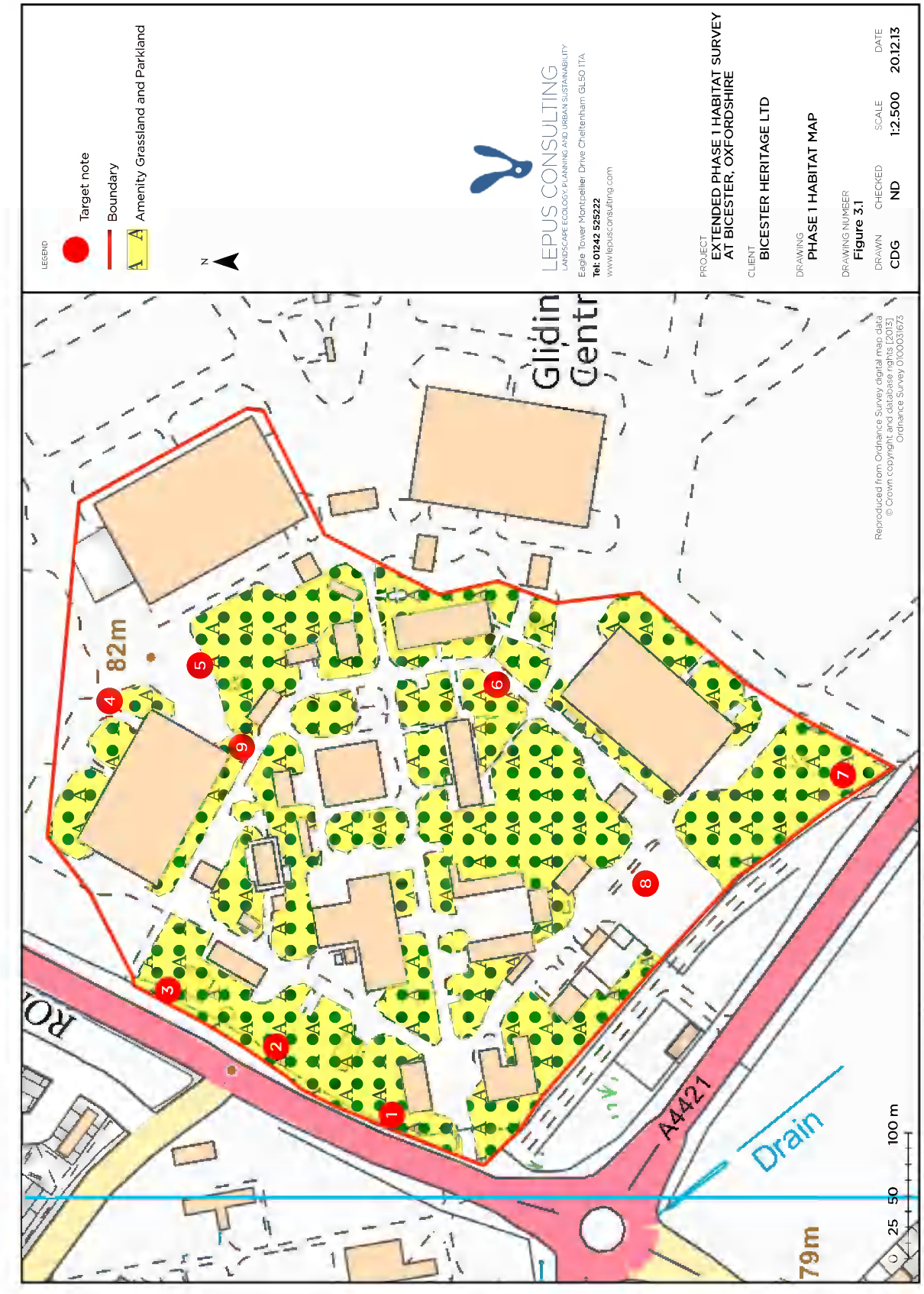

Figure 3.1: Habitat map and target notes

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4 Evaluation: Constraints and Opportunities

4.1 Ecological Constraints

4.1.1 The BRC data search identified one County Wildlife Site and various records for protected or notable species in a 1km search zone around the development site.

4.1.2 The redline site in **Figure 1.2** is of negligible conservation value and the development will not impact on the aforementioned sites as all works will be confined within the site boundary.

4.2 Habitats

4.2.1 Various habitats can be found in close proximity to the application site. These will not be affected by the development proposals.

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5 Conclusions

5.1 Conclusion

5.1.1 The redline area shown in **Figure 1.2** and the nature of the proposed development will have no adverse effects on ecology. The wider site surrounding the redline area is of interest for nature conservation however the proposed development will not adversely affect these features.

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Appendix A: Conclusions from a bat survey undertaken in 2006

The following information is an extract from the Defence Estates Report. For full details please refer to the report (Defence Estates Environmental Support Team (2006) Bat Survey of Buildings at RAF Bicester by Ian Davidson-Watts (November, 2006).)

Table A1 summarises the results of the day time surveys and emergence surveys undertaken on 7 June and 3 October 2005 all buildings on site were checked using either internal/external inspections or emergence checks. This table also refers to another report (No.SW 03) that identifies the probability of bats being present, but lists only those buildings with evidence of bats use. Potential bat sites identified in SW 03 still may apply.

Table A1

Building No.	SW 03 potential assessment	Method	Date	Evidence of bats
146	Moderate	Internal	27 May 05	10-20 droppings from small bat species
133	Low	Internal	27 May 05	<5 droppings from small bat
94	Low	Internal	27 May 05	<5 droppings from small bat
137	Moderate-high	Emergence	7 June 05	Single pipistrelle bat at dusk
130	High	Internal	7 June 05	10-20 droppings from medium sized bat
123	High	Emergence	3 October 05	Single long-eared bat
129	High	Internal	3 October 05	<5 droppings from small bat

Table 2a and b summarise the bat activity results on the fixed automatic and roaming bat detector surveys.

Table 2a. - 7 June 2005

Auto 1		Auto 2		Auto 3		Roaming	
Time	Species	Time	Species	Time	Species	Time	Species
21:34	Ppip	21:59	Nn	21:48	Ppip	21:20	Ppip
21:45	Ppip[	22:15	Ppyg	22:46	Ppip	21:22	Ppip
21:56	Ppip	22:39	Ppip	22:55	Ppip	21:49	Ppip
22:39	Myotis	00:05	Ppip	23:10	Myotis	22:12	Myotis
23:04	Ppip	00:23	Pa	23:14	Myotis	22:25	Pa
23:31	Myotis			23:24	Myotis	22:54	Pa
				23:47	Pa	23:34	Ppip

Table 2b. - 3 October 2005

Roaming	
Time	Species
20:35	Ppip
21:12	Ppip
21:45	Pa
22:00	Ppip
22:14	Ppip
22:55	Ppip

23:13	Pa

Table 3 summarises the results of the bats caught using mist nets. Figure 1 shows the locations of the nets (Red square).

Table 3.

Date	Time	Species	Sex: Male-m Female- f	Breeding status
07-Jun-05	21:55	Pa	m	
	22:00	Mn	m	
	22:10	Pa	m	
	22:20	Pa	f	non preg
	22:28	Nn	f	non preg
	23:30	Ppip	m	
	23:45	Ppip	m	
03-Oct-05	19:10	Pa	f	
	19:10	Pa	m	Juvenile
	21:10	Pa	m	
	21:10	Pa	f	
	21:10	Pa	f	
	21:25	Pa	m	
	21:25	Pa	m	
	21:25	Pa	m	

Legend:

Ppip	-	Common pipistrelle bat
Ppyg	-	Soprano pipistrelle bat
Nn	-	Noctule bat
Myotis	-	One of five possible species belonging to the genus Myotis
Pa	-	Brown long-eared bat
Mn	-	Natterer's bat

Interpretation and Recommendations

Table A1 positively identifies seven buildings being used as roosts by bats.

These buildings therefore have protection and any works likely to disturb bats or damage or destroy their breeding or resting places will require licences from Defra. None of the roosts sites appeared to support female breeding colonies. The low level of droppings identified and the single bats observed emerging would indicate that these roost sites are most likely to support roosts of males or non-breeding females. This assumption is also supported by the catch data (Table A3).

Due to the difficulties associated with finding such roosts it is likely that other buildings with potential to support bats (SW 03) could support small roosts such as these. However it is considered that the methods employed were of sufficient effort to identify significant roosts and that reasonable survey effort has been undertaken. The exception is that the bunkers identified in SW 03 should ideally be checked in January or February for any hibernating bats where access is possible.

Five bat species were positively recorded on site (Table A2a/b and A3). Only one of the possible five Myotis bats were captured (a Natterer's bat), therefore other Myotis species, detected acoustically (Tables A2a and A2b), could be present on the site. The bat detector data shows that the most frequently recorded bat was the common pipistrelle bat. However the catch data contradicts this, showing that brown long-eared bats were the most frequently caught species. This converse set of results is likely to be due to the bias associated with methods e.g. pipistrelle bat echolocation calls are louder and more detectable than brown long-eared calls, highlighting the importance of using a variety of methods to assess the presence of bats. Interestingly the only species caught during October were brown long-eared bats, the majority being males, suggesting the site's importance as a mating site.

All bat detector systems suggest the general flying activity of bats across the site was relatively low. Most 'contacts' with bats were brief and no regular feeding areas were identified. Some of this activity is likely to be non-feeding behaviour such as mating and other social interaction. This is particularly relevant to male bats without the energetic demands of breeding females.

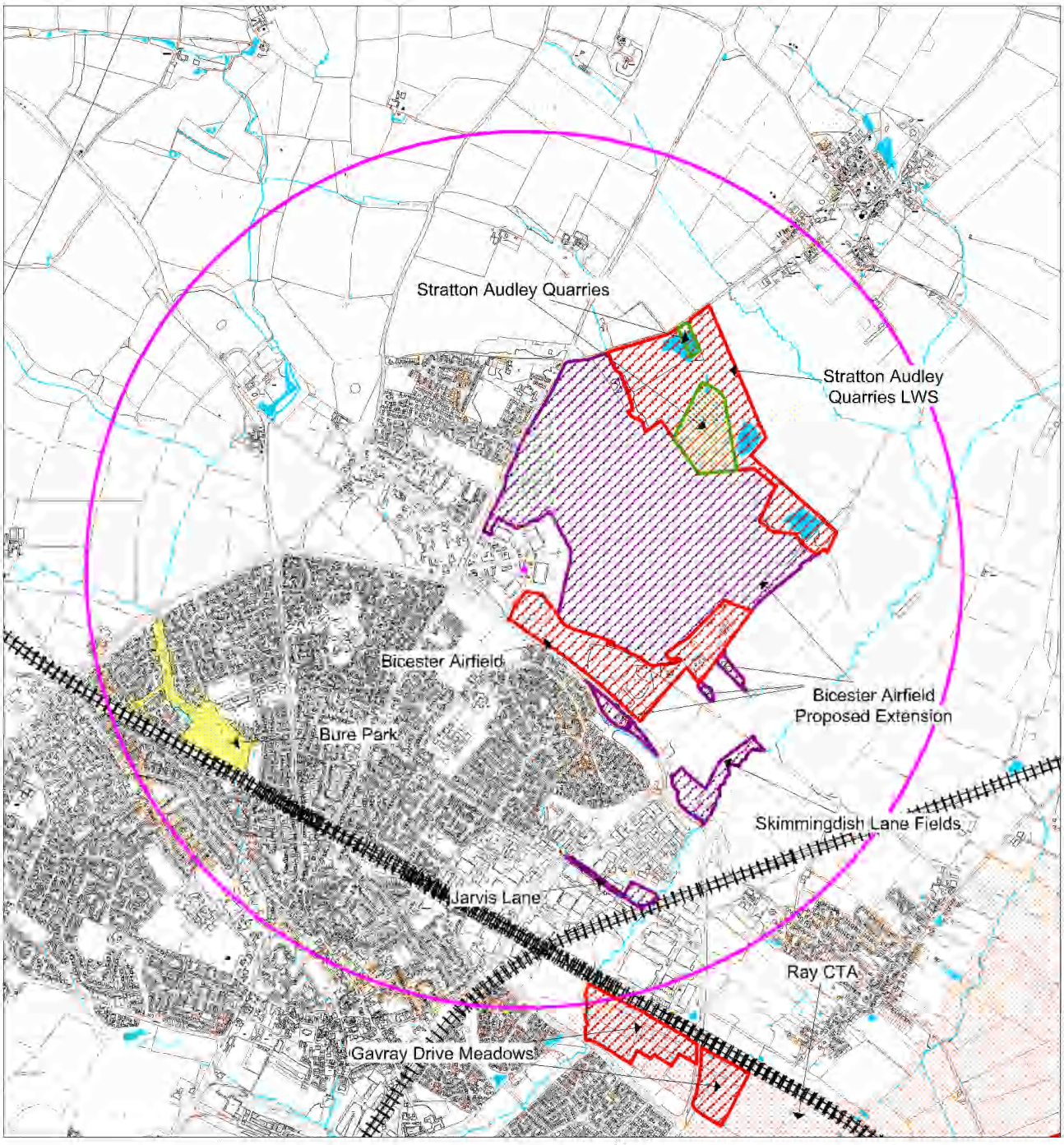
In summary the results of this survey suggest that a small resident population of bats from at least 5 species is present on the site and is likely to be all year round given the potential of the buildings for roosting. There appears to be no breeding (rearing of young) roost or major feeding areas for large numbers of bats, however the results do suggest that the site is important as a mating area for at least one species. Any management plan will need to consider the possible impacts of removing vegetation from the site and the potential impact of any lighting proposals, as artificial lighting can have a detrimental effect on some bat species.

Any future management of buildings will need to take account of the bats interest and legal constraints. If planned appropriately in respect of timing (e.g. avoid winter) and maintaining key features that support bats such as roof voids, tiled roofs and access points for bats to these areas, then licences should be able to be obtained with a good chance of success. No trees were examined in this survey

and tree climbing surveys of trees identified with bat potential should be carried out.

Further regular surveys for bats in buildings and other structures should be undertaken as part of any management planning process to update this information on a three yearly basis.

Former RAF Bicester Designated Sites



- Sites of Special Scientific Interest
- Local Nature Reserves
- Local Wildlife Sites
- Proposed Local Wildlife Sites and Extensions
- Conservation Target Areas
- Search Area

Scale 1:25000

Appendix B: Bat survey 2012

James Johnston Ecology
BSc MSc MIEEM CEnv
VAT 928 3295 00

BUILDINGS 81-89 AND 146-147, BICESTER AERODROME, BICESTER, OXON

INITIAL BAT SURVEY

4th November 2013

Bicknor Court, English Bicknor, Coleford, Glos. GL16 7PD
jamesjohnston.ecology@virgin.net
01594 862605 / 07734 171738

CONTENTS

1.0 INTRODUCTION AND BACKGROUND

This report has been prepared by *James Johnston Ecology,* as an addendum to the Lepus Consulting Ecology Appraisal, on behalf of Bicester Heritage (the site owner). It provides the results of an 'Initial Bat Survey' and buildings inspections undertaken at Buildings 81-89 and 146-147 at Bicester Aerodrome (the former RAF Bicester site), where there are proposals for change of use and renovation works as part of a re-development scheme. A Planning Application for the development work is required to be submitted to the Local Planning Authority (Cherwell District Council), and this report supports the planning application.

The survey was deemed necessary and would be expected by the LPA since such sites and buildings can support roosting bats, and potential impacts to protected species are a 'material consideration' in the planning decision. All British bats and their 'places of shelter' are fully protected from 'intentional' and 'reckless' harm and disturbance, under the Wildlife and Countryside Act 1981 (as amended 1985 and 2000), and the Conservation of Species and Habitats Regulations 2010. If found to be using such buildings, a mitigation strategy should be agreed with the LPA and Natural England, as part of the planning application process (avoiding harm and adverse impacts to the protected fauna).

If a bat roost will be damaged by the development works, or bats are likely to be disturbed, then a Natural England derogation licence is required.

The remainder of this report presents the survey method, the findings, the assessment, precautionary method statement, and the conclusions. Photographs are interspersed in the text to help set the context and show the features. A plan at the rear of this report shows the 'Buildings and Bat Roost Evidence'.

2.0 METHODOLOGY

Data Trawl

Background bat records for the site were considered as part of this appraisal by viewing a previous (November 2006) bat survey report for the site, undertaken by Ian Davidson-Watts, which included buildings inspections, bat call sampling, and a mist-netting exercise (undertaken in June and October 2005 for this application site plus the wider aerodrome site).

2013 Initial Bat Survey

The 2013 initial bat survey and inspection of buildings was conducted during daylight hours on 4th October 2013 by James Johnston (MCIEEM / CEnv), an experienced protected species ecologist who holds Natural England bat roost disturbance/survey licence 20130232, and who has 20 years bat and fauna survey experience. This survey was limited to buildings 81-89 and 146-147, which are within the proposed planning application site.

A preliminary bat roost appraisal was conducted as part of the survey. The survey method followed the published survey guidelines within the BCT good practice guidelines 2012, for a 'preliminary bat survey' - comprising a records search, and daylight inspection for roost evidence in and around the buildings (and especially around beams and internal crevices, attics, and around any external architectural crevices). A ladder, torches and an endoscope were used where necessary for close inspection of potential roost features. Evidence looked for includes crevices or roof areas swept free of cobwebs, 'polishing' of crevice edges from oils being rubbed off the fur of bats, stains and scratch marks, bat droppings, bats themselves, and piles of discarded moth wings. If bat droppings are found they are usually collected and sent for DNA analysis to confirm the species identification (unless the species id is obvious from the droppings, or the bat was seen.).

Weather

The weather during the survey was acceptable – it being a warm day of mixed sunshine and light showers and max/min (day/night) temperatures of 20-15^{0}C. This followed an unusually warm and dry summer.

Further Survey

Where the initial bat survey finds evidence of bats but it is not entirely clear what species or type of roost is present, and that location would be impacted by the proposed development scheme, then further detailed bat emergence surveys are 'marked forward' to the next bat activity season.

3.0 FINDINGS

Surroundings

The site is centred in the aerial photo below (courtesy of Bing maps). This shows that it is located on the northern edge of Bicester town, with housing development to the immediate south and west. The land to the immediate north and east of the development site comprises the former airfield and so is dominated by low grassland devoid of trees, which is likely to be of little value to bats. However, there are a number of mature trees scattered between the hangar buildings, creating a mature parkland landscape in this area which likely provides moderate foraging opportunity for a range of the more common bat species.

Site-centred aerial photo courtesy of Bing maps

Records

The 2005 site surveys conducted by Ian Davidson-Watts concluded that five bat species are active across the wider aerodrome site in low numbers, at least foraging and possibly roosting (common pipistrelle, soprano pipistrelle, noctule, brown long-eared, and natterers). In addition, a few bat droppings (10-20) from a small bat species were found within building 146. This small number of droppings would very likely relate to a lone-roosting male bat.

The Buildings

A summary description of each building is provided here, including the build materials, condition, potential for supporting bat roosts, and any evidence of bats. The locations of the buildings are shown on the plan at the rear of this report. Building ref numbers below refer to that plan.

81. Water Tank – Large sealed water tank, above ground. Rendered brick walls. Flat concrete roof. No potential bat access opportunities. Young ivy climbing wall at northern end, unlikely to provide any bat roost opportunity (no thick ivy stems and no ivy at height). No roost evidence and negligible roost opportunity.

81. Water tank

82. Warehouse – Large tall open warehouse type building, open from ground up to ridge. Brick walls. Gable roof supported by metal frames. Sarking boards beneath slates and asbestos tiles. No roost evidence but slight roost potential for crevice-dwelling species such as pipistrelles under tiles.

82. Warehouse

83. Small Building – Building outside planning application boundary. Not surveyed.

84. Tall Water Tank – Metal water tank high up on metal stilt supports. Not surveyed closely due to lack of safe access, but build materials give negligible bat roost opportunity.

86. Small Store Room – Small brick single-storey store room in good condition. Corrugated asbestos roof (with gables). No roof membrane or sarking. No bat roost evidence, no crevice roost opportunities and negligible chance of roosting bats without leaving evidence. Negligible roost opportunity.

87. Brick Building – T-shaped single storey brick building, with hipped roof of slates and sarking boards beneath. There is a ceiling creating a 1.9m tall attic space, which is strewn with dense cobwebs around the ridge area. No bat roost evidence. No potential for internal bat roosts without leaving evidence. Slight potential for a roost for crevice-dwelling bats such as pipistrelles under ridge tiles, since some are loose. Building in reasonably good condition.

87. Brick Building

88. No building - Former very small shed building (no longer present).

89. Entrance Building – Brick single storey building with hipped roof of artificial slates and sarking boards beneath. Flat concrete roof extension on northern side. Main building recently renovated. No bat roost evidence found. Slight opportunity for future roosting in attic, but development scheme does not impact upon the roof.

146. Large Single Storey Building – Brick walls. Hipped roof of artificial slates and sarking beneath, all in poor condition with holes through roof allowing rainwater in. Large attic space (2.5m tall) with good potential bat access through holes in roof. Some attic areas remain dry and provide potential bat shelter. No evidence of bat day-roosting, but a pile of moth wings under the hip apex at the eastern ends confirms use as a bat night-roost / feeding roost, most likely involving a brown long-eared bat (BLB). Some loose ridge tiles also create potential for pipistrelle bat roosting.

146. Large Single Storey Building

147. Large 2-storey Brick Building – Brick walls. Hipped roof of artificial slates over sarking boards. Three small attic spaces of between 1.2 – 1.7m tall. A single BLB was found roosting within the western-most attic space at the ridge / hip apex. This was seen to be male. Around 30-40 fresh droppings beneath this bat (of the size and shape of those from a BLB) confirm no larger roost or any maternity roosting. No other roost evidence found at this building. Some potential for pipistrelles under ridge tiles.

147. Large 2-Storey Brick Building

Evaluation

The initial survey confirms minor bat roosting within the attic spaces of buildings 146 and 147, involving lone or low numbers of brown long-eared bats (a night-roost / feeding perch within the building 146 attic, and day-roost for a lone male BLB in the building 147 attic). No evidence of any other bat roost was found around the site, and no other building was found to have any potential for internal roosts without evidence having been left. Buildings 146, 147, 87, and 82, additionally have some potential for roosting pipistrelles beneath some ridge tiles.

Using the published Natural England guidance on evaluating roost conservation value (with Bat Mitigation Guidelines 2004), these roosts are all of Low Conservation Significance as they relate to low numbers of male bats of common species.

There is considered no risk of any maternity roosts (eg – roosts of higher conservation significance) being present, since those types of roosts would involve much larger numbers of bats, and thousands of droppings (none of which were found).

4.0 ASSESSMENT

The Scheme - The proposed scheme involves the following:
Buildings 87 and 89 – External redecoration and minor repairs. Internal works will involve redecoration plus new electrics and heating. Building 82 – External repair and redecoration, new roof, plus internal fit-out works to the large commercial part, and conversion of smaller rear extension to two residential units. Buildings 146 and 147 are not proposed for any alterations or renovations at this stage, but in the longer run would require re-roofing and full internal renovation if they are to serve any useful purpose. Other buildings are not altered / renovated.

Potential Impacts – As the development scheme does not involve any renovations or alterations to buildings 146 or 147 (where minor bat roosts were found), it is concluded there is no evidence that a bat roost will be affected by the development and so there is no requirement for any detailed bat mitigation strategy or for a Natural England bat derogation licence. However, the appraisal highlights one area where there is a slight chance of a bat impact / legal infringement, as follows:

- At Building 82 there is slight potential for a pipistrelle to have roosted in the past under a loose ridge tile without leaving evidence, and/or a chance that a new roost of that type could form in future, causing a slight risk of unlawful bat disturbance and roost destruction during the proposed re-roofing.

However, this potential impact can readily be avoided / mitigated, via the precautionary method statement (MS) laid out at Section 5 of this report. This ensures no bat disturbance and/or roost destruction.

This overall bat assessment would need to be reviewed if the development scheme changes in future and it is decided that buildings 146 and 147 are to be renovated / re-roofed, since minor bat roosts are present there.

5.0 PRECAUTIONARY METHOD STATEMENT

The precautionary bat method statement is as follows:

- A copy of this report should be kept available on site for contractors to review throughout the build programme;

- A Project Ecologist should be retained to be 'on call' during the build programme, to respond to any bat-related queries, or if a bat (or possible bat evidence) is found anywhere on site by contractors;

- The re-roofing of Building 82 should be undertaken during the period November to mid-April, when bats would be away hibernating elsewhere (the few loose ridge tiles of this tall building do not provide suitable hibernation opportunities). This removes the potential for a bat to be disturbed;

- The re-roofing of Building 82 should involve the re-creation of the same potential pipistrelle roost crevices beneath ridge tiles, even if those tiles are to be cemented down. This is achieved by laying the tiles on cement 'patties' at each end of the tile, but with cement missing from the central 10cm section of the ridge tiles. The ridge tiles are then pushed down on the cement 'patties' leaving a 12mm tall and 100mm wide gap under the centre of the bottom edges, leading up to the same gap at the top underside of the tile. This re-creates the same potential roost crevices that are currently present at Building 82, and so there is no risk of roost loss or damage;

- Ideally the re-roofing of Building 82 should retain or re-lay the wooden sarking boards that are beneath the current tiles and ridge tiles. However, if there is a preference for adding insulation to the roof undersides and adding any breathable membrane, then it becomes very important to only use breathable membrane up the roof slopes as far as 30cm below the ridge line, where it is then replaced with traditional bitumen felt laid along the ridge and 50cm down the top of the roof slopes. This is because breathable membranes must not be laid along ridge lines where bats can access crevices beneath the ridge tiles,

since bats' claws readily become trapped in breathable membranes, leading to death;

- With all re-roofing works on any building, contractors should always 'proceed with caution' and look for bats under tiles and ridge tiles, and under barge boards and soffit boards, because lone-roosting male pipistrelle bats can use many roof crevices or many buildings simultaneously (using a different one on different nights without leaving evidence), and this can include roofs which are considered to have low potential for bats. As a precaution, ridge tile removal should always involve roof contractors looking at the 'seat' of the tile when it is lifted; using a lever that stops the tile falling back down onto its seat; and looking at the underside of the lifted ridge tile before it is stacked (as bats can cling to the underside);

- If a bat is seen at any time, it must be left in situ and works in that area must be temporarily stopped whilst the Project Ecologist is contacted, to review the evidence and advise on the way forward (in liaison with Natural England);

- If the scheme changes in future and Buildings 146 and 147 become proposed for renovations / re-roofing, then a detailed bat mitigation strategy will need to be devised and agreed with the authorities, based on more detailed summer bat emergence surveys. A bat derogation licence would also likely be required for any Building 146 and 147 renovations (if the work will disturb the minor bat roosts that are present, or alter the roosts or the bat access points).

6.0 CONCLUSIONS

The buildings affected by the proposed site renovations and alterations were subject to detailed bat surveys in June and October 2005, plus a daylight re-inspection for roost evidence and/or roost potential in October 2013. The 2005 surveys found a few small bat droppings in Building 146, but no bats emerged at that time, and low numbers of five bat species were recorded flying around the wider site, indicating some minor roosts likely to be present around the wider site.

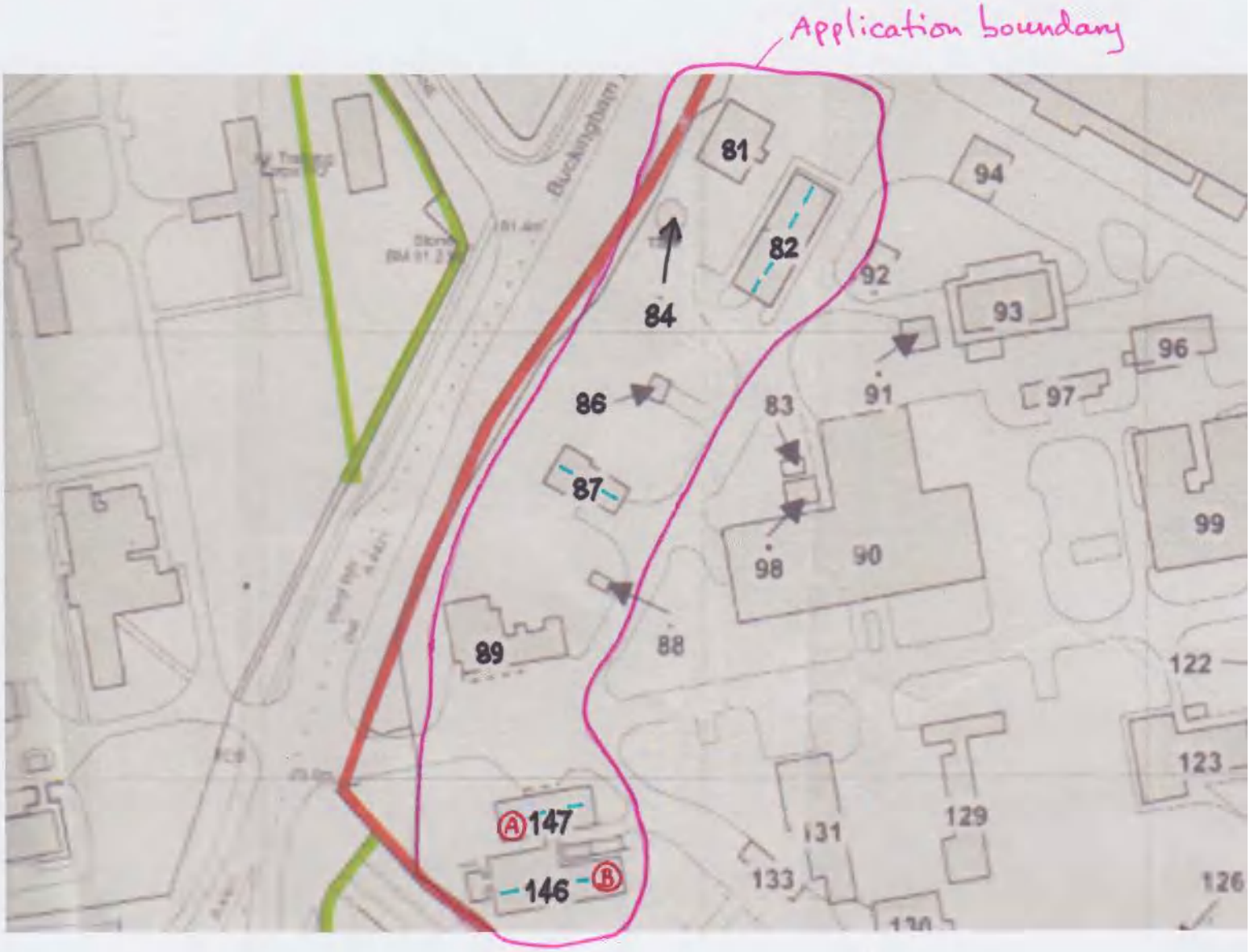
The 2013 survey found minor brown long-eared bat roosting activity in Buildings 146 and 147 (a day roost for a single bat and a night roost). Those buildings are not proposed for renovations or alterations under this development scheme, and so there is no risk of bat impacts there. However, if the scheme changes in future and Buildings 146 and 147 become scheduled for renovation / re-roofing, then it will be important for those works to proceed under a detailed bat mitigation strategy (based on summer bat emergence surveys), which confirms how the work will be undertaken without harming or disturbing bats, and without loss of roosts. If bats will likely be disturbed or the minor roosts altered, then that work would need to proceed under a Natural England bat licence, to avoid offences under the Habs Regs 2010.

Of the proposed renovation works at the other buildings, there is only one area with any slight potential for disturbance to a bat or roost. This is the proposed re-roofing of Building 82, which did not show any evidence of bat roosting, but was found to support some ridge tiles with crevices under them allowing slight potential for a roosting pipistrelle. Therefore, this report includes a precautionary method statement, outlining how that re-roofing can be achieved without any potential for unlawful bat disturbance, harm, or roost damage. Therefore, no further bat survey is required for this planning application.

A Planning Condition linked to this report can be used to guarantee the precautionary MS. It can therefore be concluded that that the scheme will not contravene bat-protection legislation, and so there should be no bat-related ‘reasons for refusal’ of the planning application.

PLAN

- Buildings and Bat Roost Evidence (JJ493 05/11/13) *Hand-coloured*



81 - Building Ref. number

(A) - Single BLB day-roosting in attic

(B) - Evidence of BLB night-roost / feeding perch in attic

– – - slight potential for a Pipistrelle to roost under ridge tiles

- Buildings 81-89 and 146-147, Bicester Aerodrome, Oxon
- Buildings and Bat Roost Evidence

(JJ 493 5/11/13)

Lepus Consulting Ltd 206 Eagle Tower Montpellier Drive Cheltenham GL50 1TA
Tel: 01242 525222 www.lepusconsulting.com enquiries@lepusconsulting.com