



LINDSAY CARRINGTON
ECOLOGICAL SERVICES

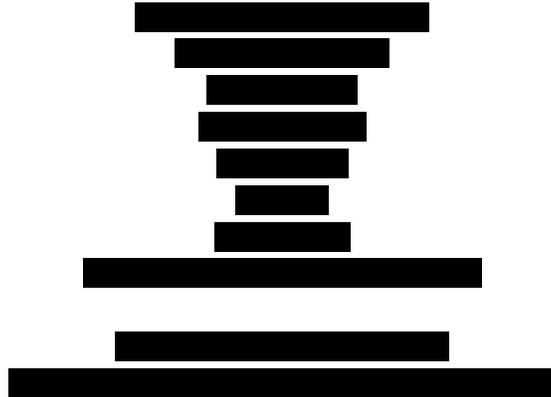
ECOLOGICAL APPRAISAL
LAND TO THE NORTH OF THE ANTELOPE INN
PIDNEY
HAZELBURY BRYAN
STURMINSTER NEWTON
DORSET
DT10 2EB

APRIL 2017
UPDATED AUGUST 2017
UPDATED NOVEMBER 2017

ON BEHALF OF MORGAN CAREY ARCHITECTS



LINDSAY CARRINGTON ECOLOGICAL SERVICES



Authorisation

	Name	Date	Signature
Report prepared by:	Andrew Heideman	07.04.17	
Report reviewed by:	Sophie Smith	10.04.17	
Report updated by:	Andrew Heideman	04.08.17	
Report reviewed by:	Jenny Sutch	07.08.17	
Report updated by:	Andrew Heideman	16.11.17	
Report reviewed by:	Jenny Sutch	16.11.17	

The contents of this report were correct at the time of the last survey visit. The report is provided for the sole use of the named client and is confidential.

All rights in this report are reserved. No part of it may be reproduced or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, or stored in any retrieval system of any nature, without our written permission. Its content and format are for the exclusive use of the addressee in dealing with this. It may not be sold, lent, hired out or divulged to any third party not directly involved in this situation without our written consent. It is company policy to share species records collected during our surveys with local biological records centres unless instructed otherwise by the client.

CONTENTS

SUMMARY	1
1.0 INTRODUCTION	3
2.0 LEGISLATION AND POLICY	4
2.1 Legislation.....	4
2.2 Policy	6
3.0 METHODOLOGY	7
3.1 Desk study.....	7
3.2 Field study.....	7
3.2.1 Vegetation	7
3.2.2 Protected species assessment	7
4.0 RESULTS	11
4.1 Desk study.....	11
4.2 Field survey.....	15
4.2.1 Vegetation	15
4.2.2 Protected species assessment	21
5.0 CONCLUSIONS AND RECOMMENDATIONS	26
5.1 Designated sites	26
5.2 Hedgerows	27
5.2.1 Summary of findings.....	27
5.2.2 Mitigation.....	27
5.3 Bats	28
5.3.1 Summary of findings.....	28
5.3.2 Phase 2 surveys.....	28
5.3.3 Mitigation.....	29
5.4 Dormice.....	30
5.4.1 Summary of findings.....	30
5.4.2 Further recommendations	30
5.5 Great crested newts	30
5.5.1 Summary of findings.....	30
5.5.2 Further recommendations	31
5.6 Invertebrates.....	31
5.6.1 Summary of findings.....	31
5.6.2 Further recommendations	31
5.7 Nesting birds	32
5.7.1 Summary of findings.....	32
5.7.2 Mitigation.....	32
5.8 Reptiles	32
5.8.1 Summary of findings.....	32
5.8.2 Further recommendations	32
5.9 Ecological enhancement	33
6.0 REFERENCES	35
APPENDIX I: Phase 1 habitat map	37
APPENDIX II: Proposed development plans	41

SUMMARY

1. Lindsay Carrington Ecological Services Limited were commissioned by Morgan Carey Architects to conduct an ecological appraisal of the land to the north of the Antelope Inn, Hazelbury Bryan, Dorset DT10 2EB (Grid Ref: ST 7455 0905).
2. This survey was undertaken in support of a planning application for a small development comprising 47 residential units, two commercial buildings, landscaping and areas of open greenspace. The proposals include both a main and a secondary vehicle access point at the western boundary of the site with visibility splays, The Causeway road will also be widened slightly. There will also be an access driveway for two of the residential units at the southern boundary of the site. There will be a small pedestrian access point at the north-western corner of the site and a section of the existing central hedgerow will be removed to accommodate vehicle and pedestrian access within the development area. All of the existing mature trees and the majority of the existing hedgerows will be retained.
3. An ecological appraisal is essentially a multi-disciplinary walk-over survey and was conducted with the objective of identifying any ecological constraints associated with the proposals such as the site's potential to support any legally protected species or habitats of high nature conservation value.
4. The majority of the site comprises two fields of improved grazing pasture. This was bordered to the east, north and west by species-rich native hedgerows, with one section of fencing along the north-western boundary. The southern boundary of the site is mostly marked by fencing with one section of non-native hedgerow at the south-western corner. There is an additional species-rich native hedgerow with a wet ditch within the western half of the site, separating the two fields. There is a wet ditch running along the eastern boundary of the site, adjacent to the hedgerow and a dry ditch situated between two parallel species-rich native hedgerows along the western site boundary. There are scattered trees within the hedge lines along the eastern and northern boundaries. There are also numerous stands of dense and scattered scrub, mostly adjacent to the site boundaries. To the south of the site there are areas of tall ruderal vegetation and amenity grassland.
5. The site lies 1.6 kilometres from the Rooksmoor SAC and 0.8 kilometres from the closest unit of the Blackmoor Vale Commons and Moors SSSI. These sites are discussed in further detail in section 5.1.
6. The species-rich native hedgerows on site (H1, H2 & H3) and the small section of native hedgerow on the southern boundary of the site (T2) may qualify as 'Important' under the Hedgerow Regulations 1997. A further hedgerow assessment is recommended in section 5.2.2.

7. The hedgerows, scrub, scattered trees, improved grassland and tall ruderal vegetation on site provide suitable habitat for nesting birds. The UK BAP priority species bullfinch, house sparrow and dunnock were recorded on site during the field survey. Further recommendations regarding birds are provided in section 5.7.
8. No evidence of bats was recorded during the survey. Three of the scattered trees were noted to have low potential to support roosting bats, however the current proposals include the retention of all the scattered trees and therefore no further surveys in regards to roosting bats are advised.
9. The species-rich native hedgerows, scattered trees and scrub on site have been assessed as moderate quality foraging/commuting habitat for bats, in accordance with the guidelines published in 'Collins, 2016'. These habitats also connect with further hedgerows, woodlands, farmland and water courses within the wider surrounding area. Further recommendations for bat surveys and mitigation measures relating to bats are outlined in sections 5.3.2 and 5.3.3 respectively.
10. No records of dormice were returned by DERC for the vicinity, however the hedgerows and scrub on site provide suitable habitat for dormice, with suitable nesting material and food plants. These habitats are also connected to further suitable habitat, in the form of hedgerows and woodland, within the wider surrounding area. Further surveys for dormice are recommended in section 5.4.2.
11. 17 water bodies were recorded within a 500 metre radius of the site which may hold potential to support great crested newts. The hedgerows, scrub, improved grassland, tall ruderal vegetation and ditches on site provide suitable terrestrial habitat for great crested newts; these habitats are also connected to further potentially suitable habitat within the surrounding area. Further assessments are advised in section 5.5.2.
12. The hedgerows and scrub on site could potentially support the protected species of butterfly brown hairstreak and white-letter hairstreak. The desk study returned 78 records of brown hairstreak and 45 records of white-letter hairstreak within the vicinity of the development site and the statutory designated sites Rooksmoor SAC and Blackmoor Vale Commons and Moors SSSI also support populations of these species. Further surveys for butterflies are advised in section 5.6.2.
13. The hedgerows, scrub, ditches, improved grassland and tall ruderal vegetation on site provide suitable habitat for common reptile species such as grass snake and slow-worm. Further surveys for reptiles are recommended in section 5.8.2.
14. Recommendations to enhance the ecological value of the site are outlined in section 5.9. This includes the creation of wildflower meadow habitat and the provision of bird and bat roost boxes.

1.0 INTRODUCTION

Lindsay Carrington Ecological Services Limited were commissioned by Morgan Carey Architects to conduct an ecological appraisal of the land to the north of the Antelope Inn, Hazelbury Bryan, Sturminster Newton, Dorset DT10 2EB (Grid Ref: ST 7455 0905).

This survey was undertaken in support of a planning application for a small development comprising 47 residential units, two commercial buildings, landscaping and areas of open greenspace. The proposals include both a main and a secondary vehicle access point at the western boundary of the site with visibility splays, The Causeway road will also be widened slightly. There will also be an access driveway for two of the residential units at the southern boundary of the site. There will be a small pedestrian access point at the north-western corner of the site and a section of the existing central hedgerow will be removed to accommodate vehicle and pedestrian access within the development area. All of the existing mature trees and the majority of the existing hedgerows will be retained. The current site proposals are included within appendix II.

An ecological appraisal is essentially a multi-disciplinary walk-over survey and was conducted with the objective of identifying any ecological constraints associated with the proposals such as the site's potential to support any legally protected species or habitats of high nature conservation value.

Section 2 of the report provides some background information on legislative requirements and relevant policy. Section 3 details the methodologies adopted for the ecological surveys that were conducted and section 4 provides an account of the survey results. Section 5 provides information on the relevance of the results to the proposed development and makes recommendations for measures to mitigate and compensate for the effects on a particular habitat or species.

2.0 LEGISLATION AND POLICY

2.1 Legislation

The following legislation may be of relevance to the proposed works. Full details of statutory obligations with respect to biodiversity and the planning system can be found in DCLG Circular 06/2005.

- **The Conservation of Habitats and Species Regulations 2010:**
This transposes the EU Habitats Directive (Council Directive 92/43/EEC) into domestic law. The Regulations provide protection for a number of species including:
 - All species of bat;
 - Dormouse;
 - Otter; and
 - Great crested newt.

This legislation makes it an offence to deliberately capture, kill or injure individuals of these species listed on Schedule 2 and damage or destroy their breeding site or place of shelter. It is also illegal to deliberately disturb these species in such a way as to be likely to significantly affect: (i) the ability of any significant group of the species to survive, breed or rear or nurture their young; or (ii) the local distribution or abundance of the species¹;

This legal protection means that where development has the potential to impact on bats, or other European protected species, the results of a protected species survey must be submitted with a planning application.

Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) are also protected under this legislation. These are a network of sites designated for supporting habitats or species of high nature conservation importance in the European context. Any activity that has a detrimental effect on these European sites is made an offence under the Regulations. Where a development is likely to have a significant impact on a European site, the Regulations require a rigorous assessment of the impacts, known as an Appropriate Assessment.

¹ Note that the amendment to the Habitats Regulations in August 2007 and January 2009 has resulted in an increase in the threshold of illegal levels of disturbance to European Protected Species (EPS). An offence is only committed if the deliberate disturbance would result in significant impacts to the EPS population. However, it should be noted that activities that cause low levels of disturbance to these species continue to constitute an offence under Section 9 of the Wildlife and Countryside Act (see below).

- **The Wildlife and Countryside Act 1981 (and amendments):** Protected fauna and flora are listed under Schedules 1, 5 & 8 of the Act. Species likely to be of relevance include:
 - All species of **bat**. It is an offence to intentionally or recklessly disturb any bat whilst it is occupying a roost or to intentionally or recklessly obstruct access to a bat roost;
 - All species of British **reptile** (in particular grass snake, common lizard, adder and slow-worm). It is illegal to kill or injure these species; and
 - **Great crested newt**. It is illegal to obstruct access to any structure or place which great crested newts use for shelter or protection or to disturb any great crested newt while it is using such a place.
 - **Water vole**. It is an offence to intentionally kill, injure or take water vole, intentionally or recklessly damage, destroy, obstruct access to water vole burrows or disturb them whilst in a burrow.

This Act also makes it an offence to intentionally kill, injure or take any wild bird or to take, damage or destroy their eggs and nests (whilst in use or being built). In addition, it is an offence to disturb any nesting bird listed on Schedule 1 or their young.

Schedule 9 of the Act lists those species for which it is an offence to cause their spread. Schedule 9 species that are most likely to be encountered are Japanese knotweed (*Fallopia japonica*) and New Zealand pigmyweed (*Crassula helmsii*).

Sites of Special Scientific Interest (SSSIs) are also protected under the Wildlife and Countryside Act 1981. These are a network of sites identified as being of national nature conservation importance and hence afforded legal protection.

- **The Countryside and Rights of Way Act 2000:** This Act strengthens nature conservation and wildlife protection. It places a duty on Government Ministers and Departments to conserve biological diversity, provides police with stronger powers relating to wildlife crimes, and improves protection and management of SSSIs.
- **The Protection of Badgers Act 1992:** This Act makes it an offence to wilfully take, injure or kill a badger (*Meles meles*); cruelly mistreat a badger; interfere with badger setts. A licence is required for work which may damage or disturb a sett.
- **Wild Mammals (Protection) Act 1996:** This Act provides protection for all wild animals from intentional acts of cruelty.
- **Hedgerow Regulations 1997:** These Regulations establish a set of criteria for assessing the importance of hedgerows. Where a hedgerow is deemed to be

‘important’ its removal is prohibited without consent from the local Planning Authority

2.2 Policy

The following policy is of relevance to the proposed works:

- **National Planning Policy Framework (NPPF):** This sets out the Government’s vision for biodiversity in England with the broad aim that planning, construction, development and regeneration should maintain and enhance, restore or add to biodiversity and geological conservation interests. NPPF includes sections on legally protected species and sites (see Section 2.1).
- **Local Sites (including Sites of Nature Conservation Interest (SNCIs), Local Nature Reserves (LNR), and Biological Notification Sites (BNSs)/County Wildlife Sites (CWSs):** These are a network of sites designated for their nature conservation importance in a local context. Although they are not afforded legal protection they contribute towards local and national biodiversity. Where such development is permitted, the local planning authority will use conditions and/or planning obligations to minimise the damage and to provide compensatory and site management measures where appropriate.
- **Biodiversity Action Plans (BAPs):** BAPs set out policy for protecting and restoring priority species and habitats as part of the UK’s response as signatories to the Convention on Biological Diversity. BAPs operate at both a national and local level with priority species and habitats identified at a national level and a series of Local BAPs that identify ecological features of particular importance to a particular area of the country. The requirement to consider and contribute towards BAP targets was strengthened through the Countryside and Rights of Way Act 2000. Habitat and Species Action Plans that are likely to be of relevance include:
 - Reptiles (UK BAP)
 - Brown long-eared bat (UK BAP)
 - Soprano pipistrelle (UK BAP)

3.0 METHODOLOGY

3.1 Desk study

Dorset Ecological Records Centre (DERC) and Lindsay Carrington Ecological Services (LCES) in-house database provided protected species records within 2 km of the site and details of any non-statutory designated sites. The Multi-Agency Geographical Information for the Countryside (MAGIC) website was used to provide information on any statutory designated sites within 5 km of the proposed development.

3.2 Field study

3.2.1 Vegetation

The standard phase 1 habitat survey methodology (JNCC, 2010) was adopted whereby habitats are mapped using colour codes (appendix I). A detailed walkover survey of the site was undertaken on the 24th March 2017 by Andrew Heideman, directly searching for legally protected and invasive species of flora and fauna, and categorising any habitats of ecological value that were encountered. A general description of the vegetation on site was also recorded, listing species encountered and scoring their abundance using the DAFOR scale:

- D Dominant;
- A Abundant;
- F Frequent;
- O Occasional;
- R Rare;
- L Local (used as a prefix to any of the above).

3.2.2 Protected species assessment

Badgers

A direct search was undertaken for signs of badger. Signs of badger may include setts, dung pits, latrines, paths or hairs on fences and vegetation. Any setts encountered were classified according to the number of entrances and the extent of their use.

Bats

Potential for the site to support roosting, foraging and commuting bats was assessed by Andrew Heideman on the 24th March 2017 in accordance with the Bat Conservation Trust (BCT) *Bat Surveys for Professional Ecologists Good Practice Guidelines* (Collins *et al.*, 2016).

Buildings

Bats may roost in various places within buildings e.g. in cracks, crevices, brickwork, under tiles and within timber beam joints.

There were no buildings present within the surveyed area.

Trees

All bats use trees as they provide foraging areas, and connectivity between different habitats, however the most significant use is as a roost. Features such as old woodpecker holes, splits, cavities, rot holes, loose or flaking bark and ivy stems will be exploited by bats for roosting. Any trees present on site were therefore assessed for their potential to support roosting bats by carrying out a search for such features. The presence of roosting bats can be spotted through signs such as accumulations of moth or butterfly wings, urine staining, bat droppings, or bats themselves. The absence of these signs cannot, however, be taken as conclusive evidence that bats are not present. An assessment was made of the potential of the trees to support bats based on the scale presented below in table 1, adapted from the *Good Practice Guidelines* (Collins, 2016):

Table 1: Criteria for assessing bat roosting potential of trees

High Roosting Potential	Trees with multiple, highly suitable features capable of supporting larger roosts or features with evidence of bat occupation found.
Moderate Roosting Potential	Trees with definite bat potential, supporting fewer suitable features than high roosting potential trees or features with potential for use by single bats only.
Low or Negligible Roosting Potential	Trees with no obvious potential, although the tree is of a size and age that elevated surveys may result in cracks or crevices being found or the tree supports some features which may have limited potential to support bats. Trees with no identified potential to support bats.

Foraging/commuting habitat

The site was assessed for its suitability to support foraging/commuting bats. Bats will forage on sites that support linear landscape features (e.g. hedgerows, tree lines and rivers) with good habitat connectivity and within proximity to suitable roosting sites. Sites that support a range of semi-natural habitats with varied vegetation structure are considered to provide more suitable foraging habitat for bats as they support an abundance and diversity of insect prey.

Dormice

The habitat on the site was assessed for the potential to support dormice (*Muscardinus avellanarius*), which are found in habitats such as woodlands, scrub and hedgerows with good connectivity and suitable food plants. A visual inspection for their distinctive nests was undertaken. Where fruiting hazel (*Corylus avellana*) is present nuts are checked for dormice distinctive opening holes. Satellite images were used to assess the connectivity of any suitable habitat present on the site to other areas of woodland and hedgerow networks.

Great crested newts

Suitable breeding ponds are essential to support populations of great crested newt (*Triturus cristatus*) although they actually only spend a relatively short period of the year in the ponds during the spring for breeding. The remainder of the year is spent in suitable 'foraging' terrestrial habitat such as tall grassland and woodland. During the winter the great crested newt hibernates, often amongst the roots of trees and scrub or in other places such as rubble piles, amongst the foundations of buildings or under fallen trees and logs.

Great crested newts are known to forage up to at least five hundred metres from their breeding pond and suitable habitats that fall within two hundred and fifty metres must be considered even in situations where the breeding pond itself will not be affected. The site and surrounding area was assessed during the phase 1 habitat survey for the presence of ponds that may provide suitable breeding habitat for great crested newts. Suitable terrestrial habitat was also assessed.

Reptiles

Common reptile species such as slow-worm (*Anguis fragilis*) and grass snake (*Natrix natrix*) are widespread in habitats that provide both cover, in the form of scrub or tall vegetation, and basking areas such as hard standing or short grassland communities. Piles of debris or rubble also provide excellent refuge and hibernation sites for reptiles. The site was assessed for any suitable habitat that could potentially support reptile species during the phase 1 habitat survey.

Water voles

Water voles (*Arvicola amphibius*) occur mainly along well vegetated banks of slow flowing rivers, ditches, dykes and lakes with little shading. Water voles excavate extensive burrow systems into the banks of waterways. They forage on grasses, reeds, rushes and bark, and steep earth banks are preferred for burrowing. Suitable waterbodies within 5 metres of the site are visually assessed for suitability to support water voles. Any field signs such as burrows, latrines and feeding stations are noted. Further specialist surveys will be recommended where appropriate.

Otters

Otters (*Lutra lutra*) are secretive and generally confined to watercourses, wetlands and coastal areas. They can have territories extending up to 20km and will use a variety of habitats such as cavities in tree root systems, dense bramble patches and reedbeds for the establishment of holts (breeding sites) and resting areas. They forage on fish, crayfish, birds and amphibians. Further specialist surveys will be recommended for proposals that are considered likely to lead to disturbance of otters or damage to an otter's place of shelter.

White-clawed crayfish

Crayfish (*Austropotamobius* sp.) occur in areas with relatively hard, mineral rich waters on calcareous and rapidly weathering rocks. The white-clawed crayfish (*Austropotamobius pallipes*) is typically found in rivers, streams, lakes, ponds and ditches, particularly watercourses of 0.75 metre to 1.25 metres deep, with moderate flow. Tree roots and rocks in the banks provide shelter for adults. Juveniles shelter in vegetation such as watercress (*Apium nodiflorum*) and grass mats growing out of the bank.

A major threat to the native white-clawed crayfish is posed by non-native species crayfish and crayfish plague (a virulent disease caused by the fungus *Aphanomyces astaci*). The river abutting the western site boundary will be assessed for its suitability to support crayfish and further specialist survey will be recommended where appropriate.

4.0 RESULTS

4.1 Desk study

Designated sites

Table 2 below lists sites designated for nature conservation located within 5 kilometres of the development site.

Table 2: Statutory designated sites within a 5 kilometres radius and non-statutory sites within a 2 kilometres radius of the land to the north of the Antelope Inn, Pidney

Site name	Conservation status	Distance and direction from site (km)	Size (Ha)	Habitat description
Rooksmoor	SAC ²	1.6km north-west	62.2	The site comprises a range of semi-natural habitats including bogs, marshes, heathland, scrub, grasslands and broadleaved deciduous woodland. The site is designated for the presence of the Annex I habitat - <i>Molinia</i> meadows and for populations of the Annex II species of butterfly - marsh fritillary (<i>Euphydryas aurinia</i>).
Blackmoor Vale Commons and Moors	SSSI ³	0.8km north	296.28	The SSSI area supports a diverse mosaic of semi-natural habitats, including unimproved grasslands, ancient semi-natural woodland and wood pasture, scrub, and an extensive network of hedges, with small wetlands, ponds and waterways. It is of special interest for its species-rich neutral grasslands, fen-meadows, rush-pasture and ash (<i>Fraxinus excelsior</i>) and oak (<i>Quercus robur</i>) woodland communities. Notable species present within the site include

² SAC: Special Area of Conservation

³ SSSI: Site of Special Scientific Interest

Site name	Conservation status	Distance and direction from site (km)	Size (Ha)	Habitat description
				populations of the marsh fritillary and brown hairstreak (<i>Thecla betulae</i>) butterflies, and the dingy mocha moth <i>Cyclophora pendularia</i> .
Cockrow Copse	SNCI ⁴	1.2km north-east	6.4	A typical oak (<i>Quercus petraea</i>) /hazel (<i>Corylus avellana</i>) woodland on a clay soil.
Zoar Lane	MCV ⁵	1.3km east	-	Designated for the presence of elecampane (<i>Inula helenium</i>).

Rooksmoor SAC is situated 1.6 kilometres to the north-west of the site, while the closest unit of the Blackmoor Vale Commons and Moors SSSI is located 0.8 kilometres to the north. Statutory sites are discussed further in section 5.1.

Protected species records

Table 3 below lists records of protected and notable species within 2 kilometres of the site provided by DERC.

Table 3: Protected and notable species within 2 kilometres of the land to the north of the Antelope Inn, Pidney

Common Name	Scientific name	Status	Dates
Amphibians and Reptiles			
Adder	<i>Vipera berus</i>	Schedule 5 WCA ⁶ , UKBAP ⁷	2 records in 2006.
Birds			
Common (Mealy) redpoll	<i>Acanthis flammea</i>	Amber list BoCC ⁸	2 records dated in 2006 and 2007.
Skylark	<i>Alauda arvensis</i>	UK BAP, Red list BoCC	1 record in 2007.
Kingfisher	<i>Alcedo atthis</i>	Schedule 1 WCA, Annex 1 ⁹ , Amber list BoCC	1 record in 2007.

⁴ SNCI: Site of Nature Conservation Interest

⁵ MCV: Monitored Conservation Verge

⁶ WCA: The Wildlife and Countryside Act 1981 (as amended)

⁷ UKBAP: UK Biodiversity Action Plan

⁸ BoCC: Birds of Conservation Concern

Common Name	Scientific name	Status	Dates
Tree pipit	<i>Anthus trivialis</i>	UK BAP, Red list BoCC	2 records in 2007.
Cuckoo	<i>Cuculus canorus</i>	Red list BoCC, UK BAP	7 records dated in 2007 and 2008.
Reed bunting	<i>Emberiza schoeniclus</i>	Amber list BoCC, UK BAP	2 records dated in 2006 and 2008.
Merlin	<i>Falco columbarius</i>	Schedule 1 WCA, Annex 1, Red list BoCC	1 record in 2008.
Kestrel	<i>Falco tinnunculus</i>	Amber list BoCC	1 record in 2007.
Hobby	<i>Falco subbuteo</i>	Schedule 1 WCA	2 records dated in 2007 and 2008.
Nightingale	<i>Luscinia megarhynchos</i>	Red list BoCC	8 records dated in 2005, 2006, 2007 and 2008.
Red kite	<i>Milvus milvus</i>	Schedule 1 WCA, Annex 1, RDB -NT ¹⁰	2 records in 2006.
Spotted flycatcher	<i>Muscicapa striata</i>	Red list BoCC, UK BAP	1 record in 2007.
Black redstart	<i>Phoenicurus ochruros</i>	Schedule 1 WCA, Red list BoCC	1 record in 2005.
Willow warbler	<i>Phylloscopus trochilus</i>	Amber list BoCC	5 records dated in 2006, 2007 and 2008.
Marsh tit	<i>Poecile palustris</i>	Red list BoCC, UK BAP	1 record in 2006.
Dunnock	<i>Prunella modularis</i>	UK BAP, Amber list BoCC	6 records dated in 2007 and 2008.
Bullfinch	<i>Pyrrhula pyrrhula</i>	Amber list BoCC, UK BAP	10 records dated in 2006, 2007 and 2008.
Woodcock	<i>Scolopax rusticola</i>	Red list BoCC	1 record in 2007.
Tawny owl	<i>Strix aluco</i>	Amber list BoCC	2 records in 2008.
Starling	<i>Sturnus vulgaris</i>	Red list BoCC, UK BAP	4 records dated in 2006 and 2007.
Redwing	<i>Turdus iliacus</i>	Schedule 1 WCA, Red list BoCC	8 records dated in 2006, 2007 and 2008.
Song thrush	<i>Turdus philomelos</i>	Red list BoCC, UK BAP	7 records dated in 2006, 2007 and 2008.
Fieldfare	<i>Turdus pilaris</i>	Schedule 1 WCA, Red list BoCC	2 records dated in 2007 and 2008.
Barn owl	<i>Tyto alba</i>	Schedule 1 WCA	4 records dated in 2006, 2007 and 2008.
Mammals – bats			

⁹ Annex 1 of the Birds Directive¹⁰ Red Data Book - Near threatened

Common Name	Scientific name	Status	Dates
Serotine	<i>Eptesicus serotinus</i>	Schedule 2 Habs Regs ¹¹ , Schedule 5 WCA	4 records dated in 2006, 2008 and 2011.
Pipistrelle bat species	<i>Pipistrellus sp</i>	Schedule 2 Habs Regs, Schedule 5 WCA	7 records dated in 2006, 2008, 2009 and 2012.
Nathusius's pipistrelle	<i>Pipistrellus nathusii</i>	Schedule 2 Habs Regs, Schedule 5 WCA	2 records in 2013.
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	Schedule 2 Habs Regs, Schedule 5 WCA	1 record in 2010.
Long-eared bat species	<i>Plecotus sp.</i>	Schedule 2 Habs Regs, Schedule 5 WCA	5 records dated in 2008, 2009 and 2012.
Brown long-eared bat	<i>Plecotus auritus</i>	Schedule 2 Habs Regs, Schedule 5 WCA, UK BAP	5 records dated in 2005, 2008, 2009 and 2011.
Mammals – Terrestrial (non-bats)			
European water vole	<i>Arvicola amphibius</i>	Schedule 5 WCA, UK BAP	1 record in 2011.
West european hedgehog	<i>Erinaceus europaeus</i>	UK BAP	13 records dated in 2005, 2006, 2007, 2008, 2009, 2014 and 2015.
European otter	<i>Lutra lutra</i>	Schedule 2 Habs Regs, Schedule 5 WCA, UK BAP	1 record in 2006.
Harvest mouse	<i>Micromys minutus</i>	UK BAP	2 records dated in 2008 and 2009.
Eurasian badger	<i>Meles meles</i>	PBA ¹²	9 records dated in 2007, 2008, 2009, 2011 and 2014.
Higher plants - flowering plants			
Bluebell	<i>Hyacinthoides non-scripta</i>	Schedule 8 WCA	10 records dated in 2007 and 2010.
Tubular water-dropwort	<i>Oenanthe fistulosa</i>	UK BAP	1 record dated in 2007.
Invertebrates			
Purple emperor	<i>Apatura iris</i>	Schedule 5 WCA	1 record in 2008.
Small blue	<i>Cupido minimus</i>	Schedule 5 WCA, UK BAP	1 record in 2009.
Marsh fritillary	<i>Euphydryas aurinia</i>	Schedule 5 WCA, Annex 2 ¹³ , UK BAP	25 records dating from 2005 to 2014.

¹¹ Habs Regs: Conservation of Habitats and Species Regulations 2010

¹² PBA: Protection of Badgers Act 1992

¹³ Annex 2 of the Habitats Directive

Common Name	Scientific name	Status	Dates
White-letter hairstreak	<i>Satyrium w-album</i>	Schedule 5 WCA, UK BAP	45 records dating from 2005 to 2014.
Brown hairstreak	<i>Thecla betulae</i>	Schedule 5 WCA, UK BAP	78 records dating from 2005 to 2014.

These records of protected and notable species in the vicinity of the site increase the likelihood of them being present where suitable habitat is identified in the field survey.

4.2 Field survey

The field survey was conducted by Andrew Heideman on the 24th March 2017.

4.2.1 Vegetation

The accompanying phase 1 habitat map provided as appendix I depicts the habitats encountered and highlights areas of particular interest with target notes.

The majority of the site comprises two fields of improved grazing pasture (improved grassland). This was bordered to the east, north and west by species-rich native hedgerows, with one section of fencing along the north-western boundary. The southern boundary of the site is mostly marked by fencing with one section of non-native hedgerow at the south-western corner. There is an additional species-rich native hedgerow with a wet ditch within the western half of the site, separating the two fields. There is a wet ditch running along the eastern boundary of the site, adjacent to the hedgerow and a dry ditch situated between two parallel species-rich native hedgerows along the western site boundary. There are scattered trees within the hedge lines along the eastern and northern boundaries. There were also numerous stands of dense and scattered scrub, mostly adjacent to the site boundaries. To the south of the site there are areas of tall ruderal vegetation and amenity grassland.

Descriptions of these habitats are provided below:

Hedgerows (Target notes T1, T2 & T3)

Species-rich native hedgerows (Target note T1)

There are species-rich native hedgerows along the eastern, northern and western boundaries of the site (H1 & H2); there is also a section of species-rich native hedgerow within the western half of the site (H3). The species-rich native hedgerows on site are approximately 2.5 - 3.5 metres in height; they comprise a good variety of woody species, although blackthorn (*Prunus spinosa*) tends to be the dominant constituent; they also

have a diverse field layer which includes a number of ancient woodland indicator species such as bluebell (*Hyacinthoides non-scripta*), moschatel (*Adoxa moschatel*), dog's mercury (*Mercurialis perennis*) and soft shield-fern (*Polystichum setiferum*). These hedgerows comprise more than 80% cover of native woody species and therefore qualify as UK BAP priority habitat. Table 4 below provides a summary of the species-rich native hedgerows on site and full species lists.

Native hedgerow (Target note T2)

There is a small section of native hedgerow on the southern boundary of the site (T2). This small section formed part of a more substantial hedgerow situated adjacent to Water Knap Road. This section of hedgerow consisted entirely of English elm (*Ulmus procera*), with bramble (*Rubus fruticosus agg.*), ivy (*Hedera helix*), lords and ladies (*Arum maculatum*), cow parsley (*Anthriscus sylvestris*) and lesser celandine (*Ficaria verna*) comprising the field layer. This hedgerow comprises more than 80% cover of native woody species and therefore qualifies as a UK BAP priority habitat.

Non-native hedgerow (Target note T3)

There was a small section of non-native hedgerow along part of the south-eastern boundary of the site (T3). This section of hedgerow was mostly composed of privet (*Ligustrum sp*) and wilson's honeysuckle (*Lonicera nitidia*), with occasional holly (*Ilex aquifolium*) and ivy.

Table 4: Species-rich native hedgerows recorded on site

Key (see Phase 1 map)	Woody species	Ground flora	BAP status (80% native woody species)	General description
H1	Hazel (<i>Corylus avellana</i>) Hawthorn (<i>Crataegus monogyna</i>) Blackthorn (<i>Prunus spinosa</i>) English elm (<i>Ulmus procera</i>) Pedunculate oak standards (<i>Quercus robur</i>)	Moschatel (<i>Adoxa moschatellina</i>) Cow parsley (<i>Anthriscus sylvestris</i>) Lord's and ladies (<i>Arum maculatum</i>) Wood avens (<i>Geum urbanum</i>) Ivy (<i>Hedera helix</i>) Hogweed (<i>Heracleum sphondylium</i>) Bluebell (<i>Hyacinthoides non-scripta</i>) Honeysuckle (<i>Lonicera periclymenum</i>) Dog's mercury (<i>Mercurialis perennis</i>) Polypody (<i>Polypodium sp</i>) Soft shield-fern (<i>Polystichum setiferum</i>) Primrose (<i>Primula vulgaris</i>) Gooseberry (<i>Ribes uva-crispa</i>) Rose (<i>Rosa sp.</i>) Bramble (<i>Rubus fruticosus agg.</i>) Red campion (<i>Silene dioica</i>) Betony (<i>Stachys officinalis</i>) Greater stitchwort (<i>Stellaria holostea</i>) Bush vetch (<i>Vicia sepium</i>)	Yes	Intact, species-rich hedgerow with a number of mature standard oak trees and a wet ditch.
H2	Hazel Hawthorn Blackthorn English elm	Moschatel Lords and ladies Hart's-tongue fern (<i>Asplenium scolopendrium</i>) Lesser celandine (<i>Ficaria verna</i>) Cleavers (<i>Galium aparine</i>) Ivy	Yes	Two parallel sections of intact, species-rich hedgerow with a dry ditch between.

		Bluebell Honeysuckle Dog's mercury Soft shield-fern Primrose Rose Bramble Wood dock (<i>Rumex sanguineus</i>) Red campion		
H3	Holly (<i>Ilex aquifolium</i>) Blackthorn English elm	Lords and ladies Cleavers Wood avens Ground-ivy (<i>Glechoma hederacea</i>) Ivy Bramble Wood dock Red campion Hedge woundwort (<i>Stachys sylvatica</i>) Nettle (<i>Urtica dioica</i>)	Yes	Intact, species-rich hedgerow with wet ditch.

The species-rich native hedgerows on site and the small section of native hedgerow may qualify as 'Important' under the Hedgerow Regulations 1997. These hedgerows will be impacted by the proposals and therefore recommendations for a further hedgerow assessment are outlined in section 5.2.

*The hedgerows on site could potential support nesting birds, foraging/commuting bats, dormice, great crested newts, brown hairstreak (*Thecla betulae*) and white-letter hairstreak (*Satyrrium w-album*) butterflies and reptiles. These species are discussed further in section 4.2.2.*

Scattered trees (Target note 4)

There are a number of mature and semi-mature trees within the hedgerow along the eastern and northern site boundaries (H1); this includes some veteran specimens of pedunculate oak (*Quercus robur*). Other tree species recorded on site include crack willow (*Salix fragilis*), ash (*Fraxinus excelsior*), field maple (*Acer campestre*) and English elm (*Ulmus procera*).

The scattered trees on site have potential to support nesting birds and roosting and foraging bats, these species are discussed further in section 4.2.2. Given that all of the existing trees on site will be retained, no further recommendations are made.

Scrub (Target note 5)

There are numerous stands of dense and scattered scrub which are mostly situated adjacent or close to the site boundaries. Scrub species recorded on site include bramble, blackthorn, English elm, grey willow (*Salix cinerea*), hazel (*Corylus avellana*), holly, ivy, hawthorn (*Crataegus monogyna*) and elder (*Sambucus nigra*).

The scrub on site is limited in extent, comprises common/widespread species and is therefore not considered to be an ecological important habitat; nevertheless it could potentially support nesting birds, foraging bats, brown hairstreak butterfly, dormice, great crested newts and reptiles, these species are discussed further in section 4.2.2.

Improved grassland (Target note 6)

The vast majority of the site comprises two fields of improved grassland covering an area of approximately 2.4 ha. This grassland appears to have been managed via grazing, though at the time of the survey it was noted that the sward was becoming rank/overgrown, with a sward height ranging from 6 to 16 cm. Dominant and abundant species within the sward included Yorkshire fog (*Holcus lanatus*), common bent (*Agrostis capillaris*), cock's-foot (*Dactylis glomerata*), broad-leaved dock (*Rumex obtusifolius*), white clover (*Trifolium repens*) and ribwort plantain (*Plantago lanceolata*). A full species list is provided in table 5 below.

Table 5: Improved grassland plant species recorded on site

Common name	Latin name	Abundance	Status
Grasses, ferns and mosses			
Common bent	<i>Agrostis capillaris</i>	D	Common & widespread
Cock's-foot	<i>Dactylis glomerata</i>	A	Common & widespread
Red fescue	<i>Festuca rubra</i>	F	Common & widespread
Yorkshire fog	<i>Holcus lanatus</i>	D	Common & widespread
Perennial rye-grass	<i>Lolium perenne</i>	A	Common & widespread
Herbaceous plants			
Common mouse-	<i>Cerastium fontanum</i>	F	Common & widespread

Common name	Latin name	Abundance	Status
ear			
Creeping thistle	<i>Cirsium arvensis</i>	F	Common & widespread
Soft rush	<i>Juncus effusus</i>	R	Common in damp habitats on both rich and poor soils
Ribwort plantain	<i>Plantago lanceolata</i>	A	Common & widespread
Knotgrass	<i>Polygonum aviculare</i>	O	Common on wasteland, arable & seashores
Meadow buttercup	<i>Ranunculus acris</i>	A-O	Common & widespread
Common sorrel	<i>Rumex acetosa</i>	O	Common in grasslands & open woodlands
Broad-leaved dock	<i>Rumex obtusifolius</i>	A-O	Common & widespread
Dandelion	<i>Taraxacum agg.</i>	F	Common & widespread
White clover	<i>Trifolium repens</i>	A	Common & widespread
Common nettle	<i>Urtica dioica</i>	O	Common & widespread

The improved grassland on site comprises common/widespread species and is not considered to be an ecological important habitat; nevertheless it could potentially support great crested newts and common species of reptile, these species are discussed further in section 4.2.2.

Tall ruderal (Target notes 7 & 8)

There are two small areas of tall ruderal vegetation adjacent to the southern boundary of the site, situated to the east and west of the Antelope Inn. The area of tall ruderal to the east of the Antelope Inn (T7) comprised what appeared to be a neglected small holding/allotment garden with an old poultry house; species recorded within this area included common nettle (*Urtica dioica*), broad-leaved dock, cleavers (*Galium aparine*), hogweed (*Heracleum sphodylium*), white dead-nettle (*Lamium album*), hedge woundwort (*Stachys sylvatica*) and a willowherb (*Epilobium sp.*). The area of tall ruderal to the west of the Antelope Inn (T8) comprised common nettle, wild teasel (*Dipsacus fullonum*), cleavers, daffodil (*Narcissus sp.*) cow parsley, a willowherb (*Epilobium sp.*), cock's-foot and hogweed. There was also a bonfire site, piles of grass cuttings and some discarded wooden pallets within this area.

The tall ruderal vegetation on site comprises common and widespread species and is considered to be of negligible ecological value, nevertheless it does have potential to support great crested newts and common species of reptile, these species are discussed further in section 4.2.2.

Wet ditches (Target notes T9 & T10)

There are drainage ditches with shallow, slow-flowing water adjacent to the eastern site boundary and hedgerow H1 (T9) and adjacent to hedgerow H3 (T10). These ditches are

notably shaded as they are situated next to hedgerows and the banks largely comprise the same assemblages of species recorded within the field layer of hedgerows H1 and H3.

The wet ditches on site could potentially provide suitable habitat for great crested newt, water vole, otter and white-clawed crayfish. This species is discussed further within section 4.2.2.

Amenity grassland (Target note 11)

There was a small area of amenity grassland at the south-western corner of the site, to the west of the Antelope Inn. The sward was short and appeared to be regularly managed by mowing. Species recorded within the sward included common bent, red fescue (*Festuca rubra*), germander speedwell (*Veronica chamaedrys*), creeping buttercup (*Ranunculus repens*), cat's-ear (*Hypochaeris radicata*), common mouse-ear (*Cerastium fontanum*) and white clover.

The amenity grassland on site comprises common and widespread species and is considered to be of negligible ecological value. No further actions are advised.

4.2.2 Protected species assessment

Badgers

No evidence of badgers, including setts, dung pits, latrines, paths or fur, was identified during the field survey and therefore it is concluded that badgers are not currently using the site.

No further action has been recommended; although it should be taken into account that badgers can potentially move into a site at any time.

Bats

Trees

Three trees were assessed as holding low potential to support roosting bats, with suitable roosting features including dense ivy growth and rotting limbs with splits and cavities.

Given that all of the existing trees on site will be retained, no further surveys relating to roosting bats are advised. Recommendations relating to lighting and bats on site have been provided in section 5.3.1.

Foraging habitat

The species-rich native hedgerows, scattered trees and scrub on site have been assessed as moderate quality foraging/commuting habitat for bats, in accordance with the guidelines published in 'Collins 2016'. These habitats also connect with further hedgerows, woodlands and farmland within the surrounding area.

The wider surrounding area comprises hedgerows, pockets of woodland, arable and pasture fields, water courses and small villages and hamlets with residential properties and associated gardens, all of which could provide suitable foraging and commuting habitat for bats.

Further recommendations regarding foraging/commuting bats have been provided in section 5.3.2.

Dormice

No records of dormice were returned by DERC for the vicinity. The hedgerows and scrub on site provided suitable habitat for dormice, with suitable nesting material and food plants. These habitats are also connected to further suitable habitat, in the form of hedgerows and woodland, within the wider surrounding area.

Further surveys relating to dormice are recommended within section 5.4.2.

Great crested newts

No suitable water bodies that could be used by great crested newts for breeding purposes were identified within the proposed development site. The wet ditches on site are considered to be unsuitable as breeding habitat for great crested newts because the water is too shallow and is flowing; nevertheless the ditches could potentially provide an ecological corridor for great crested newt dispersal/commuting. The desk study returned no records of great crested newt within 2 kilometres of the development site, however a review of online mapping identified the presence of up to 17 potentially suitable water bodies within a 500 metre radius of the site.

The hedgerows, scrub, improved grassland, tall ruderal vegetation and ditch banks on site provide suitable terrestrial habitat for great crested newts; these habitats are also connected to further suitable terrestrial habitat, in the form of hedgerows, woodland and grasslands, within the surrounding area.

Further surveys relating to great crested newts are recommended within section 5.5.2.

Invertebrates

The hedgerows and scrub on site could potentially support the protected species of butterfly brown hairstreak and white-letter hairstreak. The hedgerows and scrub on site comprised a significant amount of blackthorn which is the key larval food plant for brown hairstreak; this species is also known to favour hedgerows and scrub where blackthorn is prominent. The desk study also returned 78 records of brown hairstreak within 2 kilometres of the development site. The hedgerows and scrub on site also comprise a relatively high proportion of English elm re-growth and elm species are the key larval food plant of white-letter hairstreak. White-letter hairstreak are known to occur within sheltered hedgerows comprising species of elm. The desk study returned 45 records of white-letter hairstreak within 2 kilometres of the development site.

Further surveys relating to these butterfly species are recommended within section 5.6.2.

Nesting birds

The following bird species were recorded on site during the field survey: dunnock (*Prunella modularis*), house sparrow (*Passer domesticus*), long-tailed tit (*Aegithalos caudatus*), robin (*Erithacus rubecula*), bullfinch (*Pyrrhula pyrrhula*) and wren (*Troglodytes troglodytes*); dunnock, bullfinch and house sparrow are UK Biodiversity Action Plan priority species, the other bird species are common/widespread and not of conservation concern.

The hedgerows, scrub, scattered trees, improved grassland and tall ruderal vegetation on site, provide suitable habitat for nesting birds.

Further recommendations have been made in section 5.7.

Reptiles

The hedgerows, scrub, ditches, improved grassland and tall ruderal vegetation on site provide suitable habitat for common reptile species such as grass snake and slow-worm. In addition to this the desk study returned two records of adder (*Vipera berus*) within 2 kilometres of the development site.

Further surveys relating to reptiles are recommended within section 5.8.2.

Otter

Otters are rarely seen and therefore the survey technique is based on searching for characteristic evidence or signs on, or close to, the banks of the watercourse which includes:

- **Footprints:** Otters have distinctive footprints with five webbed toes, however in practice the fifth toe and webbing is only visible in very soft sediment.
- **Spraints:** Otter spraints vary in colour and texture but have a characteristic smell and are often found in conspicuous places to advertise an individual's presence or to act as territorial markers.
- **Runs, trails or slides:** Otters create well worn runs and slides due to their habitual use of routes and their close proximity to ground level.
- **Holts and resting sites:** In general resting sites are temporary 'lie-ups' that are used by otters on foraging sprees. Otters will use many types of resting site for example under overhanging roots, in drain pipes or within stands of dense vegetation. Holts tend to be more permanent subterranean dens which are generally associated with breeding activity and are usually set well back from the flooding level of the associated river system.

No evidence of otters was recorded on site. Due to the lack of suitable habitat on site and lack of connectivity with suitable water courses within the surrounding area, it is therefore considered that otters are highly unlikely to be using the site and no further action has been recommended.

Water vole

This survey technique is very similar to that of the otter survey as water voles are also rarely seen. Characteristic evidence or signs of water voles include the following:

- **Faeces:** These are between eight and twelve millimetres long and four to five millimetres wide and are cylindrical with blunt ends.
- **Latrines:** The majority of droppings are deposited at latrine sites, used to mark range boundaries or favoured spots close to burrows. Latrines often comprise a flattened mass of old droppings topped with fresh ones.
- **Feeding stations:** Water voles often bring cut pieces of vegetation to favoured feeding sites close to the water's edge where they leave neat piles of feeding remains.
- **Burrows:** Water vole burrows are typically wider than high with a diameter of between four and eight centimetres. Around these holes, well-grazed lawns can often be found where the water voles have chewed the vegetation short.
- **Footprints:** Water voles have distinctive footprints with a small hind foot (twenty five to forty two millimetres) and a star-shaped front foot, however, in practice,

their footprints are easily confused with rat footprints. Consequently, footprints cannot be relied on as conclusive evidence of water voles.

- **Runs:** Water voles create paths under cover of the bankside vegetation between their burrows.

No evidence of water voles was recorded during the field survey and there was no suitable habitat present on site. The wet ditches are considered unsuitable for supporting water voles because they are too shaded, the water is too shallow, and they lack suitable bank-side vegetation. The site is not connected with suitable water vole habitat in the surrounding area. No further actions are recommended.

White-clawed crayfish

The ditches on site are considered too shallow and slow flowing to support white-clawed crayfish. In addition no records of white clawed crayfish were returned on the data search obtained from DERC.

Given the lack of suitable habitat, lack of connectivity with suitable habitat in the wider environment and absence of white clawed crayfish records in the area, it is therefore considered that they are highly unlikely to be present on site. No further action has been recommended.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Designated sites

The Conservation of Habitats and Species Regulations 2010 imparts duty on Local Planning Authorities (competent authorities) to carefully consider whether any proposals may have a significant effect on a European site, either alone or in combination with other plans or projects.

The site lies 1.6 kilometres from the Rooksmoor SAC and 0.8 kilometres from the closest unit of the Blackmoor Vale Commons and Moors SSSI.

The Rooksmoor SAC comprises a range of semi-natural habitats including bogs, marshes, heathland, scrub, grasslands and broad-leaved deciduous woodland; its qualifying features on the SAC citation include the Annex I habitat - *Molinia* meadows and populations of the Annex II species of butterfly - marsh fritillary (*Euphydryas aurinia*). The development site is not considered to support any of the qualifying features of the Rooksmoor SAC and given the considerable intervening distance between the two sites and the small-scale nature of the proposals it is not considered that there will be any detrimental impacts upon the SAC.

The Blackmoor Vale Commons and Moors SSSI area supports a diverse mosaic of semi-natural habitats, including unimproved grasslands, ancient semi-natural woodland, wood pasture, scrub, hedgerows, small wetlands, ponds and waterways. Designation features of the SSSI area include species-rich neutral grasslands, fen-meadows, rush-pasture, ash and oak woodland communities and populations of the marsh fritillary and brown hairstreak butterflies, and the dingy mocha moth (*Cyclophora pendularia*). The development site supports species-rich native hedgerows which have potential to support the brown hairstreak butterfly which is an important feature of the SSSI and the nearest unit of the SSSI 'Silly Hill Meadow', situated 0.8km from the development site, also has supporting hedgerows for brown hairstreak.

It is considered that the species-rich native hedgerows on site may potentially form part of an important ecological network of suitable habitat for brown hairstreak, a schedule 5 protected species of the Wildlife and Countryside Act (1981). Further recommendations regarding this species are outlined within section 5.6.2.

Given the intervening distances no impacts are anticipated on any of the other designated sites within the area, including Cockrow Copse SSSI and Zoar Lane MCV.

5.2 Hedgerows

5.2.1 Summary of findings

The species-rich native hedgerows on site (H1, H2 & H3) and the small section of native hedgerow on the southern boundary of the site (T2) may qualify as 'Important' under the Hedgerow Regulations 1997.

5.2.2 Mitigation

Given that the proposals require the removal of small sections from hedgerows H1, H2, H3 and the native hedgerow on the southern boundary, it is therefore recommended that a further assessment of these hedgerows is carried out in order to determine whether they qualify as 'Important' under the Hedgerow Regulations 1997. If found to be 'Important' then written permission will need to be obtained from North Dorset District Council in order to carry out the works. The mitigation outlined below will also be required.

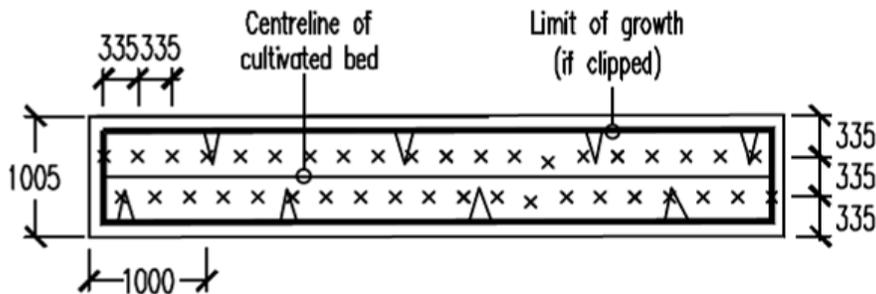
- Retain and protect the hedgerows in accordance with the British Standards Institute (2012) *Trees in Relation to Design, Demolition and Construction – Recommendations BS5837:2012* by installing Heras fencing along the root protection zones before works.
- Mitigate any hedgerow loss using native tree planting that is equivalent to the length of habitat lost. It is recommended that a native hedgerow with standard trees is planted within the area of open greenspace at the north-east of the development site. The new hedgerow could potentially be sited along the western and southern boundaries of the green space area. This would provide suitable mitigation for the hedgerow loss resulting from the proposals as well as an additional habitat feature suitable for a range of fauna including birds, invertebrates, dormice, reptiles and amphibians. New hedgerow planting would also enhance the aesthetic appeal of the site and provide natural screening of the development.
- An example of the species that will be used within new hedgerow planting on site are outlined in table 13 below and following the planting pattern illustrated in diagram 1.

Table 13: Species to be included in hedgerow/shrub planting

Species	Proportion within hedgerow
Spindle (<i>Euonymus europaea</i>)	10%
Hawthorn (<i>Crataegus monogyna</i>)	15%
Blackthorn (<i>Prunus spinosa</i>)	15%
Field maple (<i>Acer campestre</i>)	15%
Dog rose (<i>Rosa canina</i>)	5%

Hazel (<i>Corylus avellana</i>)	20%
Elder (<i>Sambucus nigra</i>)	10%
Crab apple (<i>Malus sylvestris</i>)	5%
Guelder-rose (<i>Viburnum opulus</i>)	5%
Pedunculate oak (<i>Quercus robur</i>) will be used for standard tree planting within the hedgerow.	

Diagram 1: Planting Pattern



5.3 Bats

5.3.1 Summary of findings

Although no evidence of bats was recorded during the survey, three of the trees were noted to have low potential to support roosting bats. The current proposals include the retention of all the scattered trees recorded on site and therefore no further surveys in regards to roosting bats are advised, however it is recommended that these trees are not subjected to excessive illumination associated with the development, see section 5.3.3.

The species-rich native hedgerows, scattered trees and scrub on site have been assessed as moderate quality foraging/commuting habitat for bats. Given that some sections of hedgerow and areas of scrub will be cleared as part of the proposals, it is therefore recommended that phase 2 bat activity surveys for moderate quality foraging/commuting habitat (Collins *et al*, 2016) are undertaken on site.

5.3.2 Phase 2 surveys

The site has been assessed as **moderate quality** foraging/commuting habitat for bats and therefore one bat activity transect survey per month, together with the deployment of static bat detectors at two locations on site, during appropriate weather conditions within the bat activity season between April and October, will be required. These surveys will determine the level of foraging/commuting activity on site (numbers of bats using the site), which species are using the site and how bats are using the site (identifying areas

that are particularly favoured by bats). This information will then be used to inform any further mitigation and/or compensation measures for bats as necessary.

Where significant activity or Annex II bat species are recorded using the site additional survey effort and/or advanced survey techniques such as trapping may be required.

5.3.3 Mitigation

The mitigation plan outlined below will be updated if significant levels of foraging/commuting activity and/or rare bat species are recorded during the phase 2 surveys.

The main objectives of the mitigation for bats on site are to retain the existing hedgerows, scattered trees and scrub as far as possible, and to minimise the impacts of any external lighting systems.

Lighting

The impact of additional lighting as a result of the proposed development will be minimised through:

- directing lighting only to areas where it is needed and away from the hedgerows, scattered trees and scrub;
- through the design of the lighting systems and by using accessories such as cowls or hoods to minimise light spill;
- Light sources should emit minimal ultra-violet light, peak higher than 550nm and be of a warm/neutral colour <4,200 kelvin.
- using low pressure sodium lighting with light levels kept as low as practically possible (between 1 and 3 lux); and
- Security lighting will be on a timer and only triggered at waist height.

Foraging/Commuting habitat

The existing hedgerows, scattered trees and scrub on site are mostly being retained alongside the development, however the proposals will require the removal of scrub and small sections from hedgerows H1, H2, H3 and the native hedgerow on the southern boundary. These changes could potentially sever important commuting routes and/or degrade the quality of existing foraging habitat. Once the bat activity surveys have been completed, the mitigation strategy will then be reviewed and adjusted to take account of the findings and provide appropriate/targeted measures to reduce the impact of the development on foraging/commuting bats. It is considered that the hedgerow planting recommended in section 5.2 will largely mitigate the impacts on foraging/commuting bats resulting from loss of existing habitat.

5.4 Dormice

5.4.1 Summary of findings

The hedgerows and scrub on site provide suitable habitat for dormice. The site proposals will require the removal of scrub and small sections from hedgerows H1, H2, H3 and the native hedgerow on the southern boundary. These changes could potentially destroy dormouse habitat, sever an ecological corridor used by dormice for dispersal/commuting, and disturb/injure/kill dormice, therefore further surveys for dormice are advised.

5.4.2 Further recommendations

In accordance with good practice guidelines published by English Nature (Bright *et al.*, 2006), a targeted dormouse survey of the hedgerows and scrub on site is required in order to determine the presence or absence of dormice. This involves the siting of artificial nest tubes within areas of suitable habitat and then checking them on a monthly basis between April and November inclusive. The survey effort works on a points system with a minimum score of 20 points needed for presumed absence of dormice. Points are gained for the number of nest tubes sited, then length of time they are left in situ and the number of times they are checked. The months of May, August and September hold the greatest probability of finding dormice during surveys and therefore a greater number of points are achieved if nest tubes are checked during these months.

If dormice are recorded, development would likely need to proceed under a European protected species development licence. This may involve the following: retention of hedgerows and scrub, sensitive timing of vegetation works, ecological supervision during clearance works, adequate replacement of any habitat loss and habitat enhancements.

With the above mitigation in place and assuming most of the existing hedgerows and scrub are retained, overall residual impacts to any dormouse population present would likely be negligible.

5.5 Great crested newts

5.5.1 Summary of findings

Up to 17 potentially suitable water bodies have been noted within a 500 metre radius of the development site.

The hedgerows, scrub, improved grassland, tall ruderal vegetation and ditches on site provide suitable terrestrial habitat for great crested newts, these habitats are also connected to further potentially suitable habitat within the surrounding area, including hedgerows, woodland, grasslands and water bodies.

Further assessments regarding great crested newts are outlined below.

5.5.2 Further recommendations

Further survey work is required to determine whether great crested newts are currently present within the area surrounding the development site. This will be achieved by gaining access to the waterbodies identified within the surrounding area and undertaking Habitat Suitability Index (HSI) assessments (Oldham et al., 2000 & 2008). Where HSI scores are average, good or excellent, then further aquatic and/or eDNA surveys will be required.

In the event that great crested newts are present in the area then a mitigation strategy will need to be devised and a licence obtained from Natural England.

Ecological enhancement measures that could potentially benefit great crested newts on site are provided in section 5.9.

5.6 Invertebrates

5.6.1 Summary of findings

The hedgerows and scrub on site could potentially support the protected species of butterfly brown hairstreak and white-letter hairstreak.

5.6.2 Further recommendations

Further survey work is required to determine whether brown hairstreak and white-letter hairstreak are currently present on the site. This will involve carrying out butterfly transect surveys on the site during the adult emergence periods for these species, which for brown hairstreak is late July to mid September, and for white-letter hairstreak is late June to mid August (Tolman and Lewington, 2009). It is also possible to carry out a survey of the blackthorn on site during the winter months, in order to search for the distinctive eggs of brown hairstreak.

Ecological enhancement measures that could potentially benefit these invertebrate species on site are provided in section 5.9.

5.7 Nesting birds

5.7.1 Summary of findings

The hedgerows, scattered trees, scrub, improved grassland and tall ruderal vegetation on site provide potential nesting habitat for birds. The UK BAP priority species bullfinch, house sparrow and dunnock were recorded on site during the field survey.

5.7.2 Mitigation

The following precautions should negate the risk of harming, injuring or contributing to the demise of these species:

- The clearance of any scattered trees, scrub, hedgerows, improved grassland and/or tall ruderal vegetation should where possible be undertaken outside of the bird nesting season, this is considered to extend from the 1st March to the 31st August, or if this is not possible, must be done under the supervision of an ecologist to ensure that nesting birds are not harmed. Where nesting birds are encountered, clearance and/or demolition must be postponed until the nestlings have fledged.
- Ecological enhancement measures suggested in section 5.9 will provide foraging and nesting opportunities for many species of bird, including the UK BAP priority species mentioned above. The hedgerow planting recommended in section 5.2 will provide a valuable habitat resource on site for a range of bird species and will largely mitigate any impacts resulting from loss of existing habitat.

5.8 Reptiles

5.8.1 Summary of findings

The hedgerows, scrub, ditches, improved grassland and tall ruderal vegetation on site provide apparently suitable habitat for common reptile species such as grass snake and slow-worm.

5.8.2 Further recommendations

A targeted reptile survey is required in order to determine the presence or absence of reptiles within the site. This involves placing artificial refuges such as pieces of roofing felt or carpet tiles in suitable areas. These provide ideal shelter for reptiles and the heat saturation of these refuges means that reptiles are encouraged to shelter underneath them during the early morning and early evening when they are warmer than the surrounding ground. These refugia are then checked for reptiles a total of seven times during these

times of the day in suitable weather conditions and at suitable times of the year (between March and October).

If reptiles are confirmed on the site, then further mitigation measures will need to be implemented. This may include the following:

- Retention of key habitats and preservation of suitable habitat connectivity alongside the development.
- Creation of additional compensatory habitat on site for reptiles.
- Exclusion of reptiles from small areas via supervised progressive strimming.
- A small-scale reptile translocation exercise using herpetile fencing to exclude and separate reptiles from the construction zone.
- If a high population of reptiles is recorded on site during the further surveys, then a more intensive programme of reptile capture and translocation to a suitable external receptor site would be required. Habitat management and enhancement of a receptor site might also be necessary.

5.9 Ecological enhancement

A few suggestions for ecological enhancements across the site are outlined below.

- It is recommended that a wildflower meadow is created within the north-western area of the site where no development works are currently proposed. This meadow should be sown with a native wildflower seed mix suitable for neutral soils, such as Emorsgate EM4. The meadow should then be managed appropriately via annual hay cutting with removal of arisings in order to maintain plant diversity. The wildflower meadow would provide a valuable ecological resource for a range of fauna including reptiles, invertebrates and small mammals, as well as adding aesthetic value to the site generally.
- Provision of log and brushwood piles within suitable locations along the site boundaries and adjacent to hedgerows in order to provide refugia and hibernacula for reptiles, amphibians and other fauna such as hedgehog (*Erinaceus europaeus*).
- Provision of bat boxes and nest boxes for bird species such as swift (*Apus apus*), house martin (*Delichon urbica*) and house sparrow on the walls of the buildings or on trees. Bird boxes can be purchased from websites such as Jacobi Jayne www.jacobijayne.co.uk, and their provision on site would enhance the habitat for the local bird population.
- Flowering grassland seed mixes from a supplier of seeds of local provenance can be used to seed new lawns and other areas of grass within the design of the development (such as Emorsgate EL1). Such grassland has greater plant diversity,

provides more nectar sources for invertebrates and hence is of greater value for foraging birds, reptiles and amphibians.

6.0 REFERENCES

Bright, P., Morris, P. and Mitchell-Jones, T. (2006). *The Dormouse Conservation Handbook*, 2nd Ed. English Nature.

Collins, J., Charleston, P., Davidson-Watts, I., Markham, S. and Kerslake, L. (2016). *Bat Surveys for Professional Ecologists Good Practice Guidelines*. Bat Conservation Trust, London.

Department for Communities and Local Government (2005). *Circular 06/2005: Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System*.

Department for Communities and Local Government (2012). *National Planning Policy Framework*.

Dorset Environmental Records Centre (2017). *Data search reference – Pidney, Hazelbury Bryan*.

Joint Nature Conservation Committee (2010). *Handbook for Phase I Habitat Survey*. JNCC.

Mitchell-Jones A.J. & McLeish A.P. (2004). *The Bat Workers' Manual (3rd Edition)* Joint Nature Conservation Committee.

Multi-Agency Geographical Information for the Countryside (MAGIC) Website at www.magic.gov.uk.

Stone L, Jones G and Harris S (2009). *Street Lighting Disturbs Commuting Bats*, current biology, Vol 19, Issue 13, p1123-1127.

Tolman, T. and Lewington, R. (2009). *Collins Butterfly Guide*, Harper Collins, London.

Oldham, R.S., Brady, L.D., Sewell, D.L. & Baker J.M.R. (2008). *ARG UK Advice Note 4: Great Crested Newt Habitat Suitability Index*. Amphibian and Reptile Groups of the United Kingdom.

Oldham, R.S., Keeble, J., Swan, M.J.S. & Jeffcote, M. (2000). *Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus)*. Herpetological Journal 10 (4), 143-155.

Peay, S. (2003). *Monitoring the White-clawed Crayfish Austropotamobius pallipes*. Conserving Natura 2000 Rivers Monitoring Series No. 1, English Nature, Peterborough.

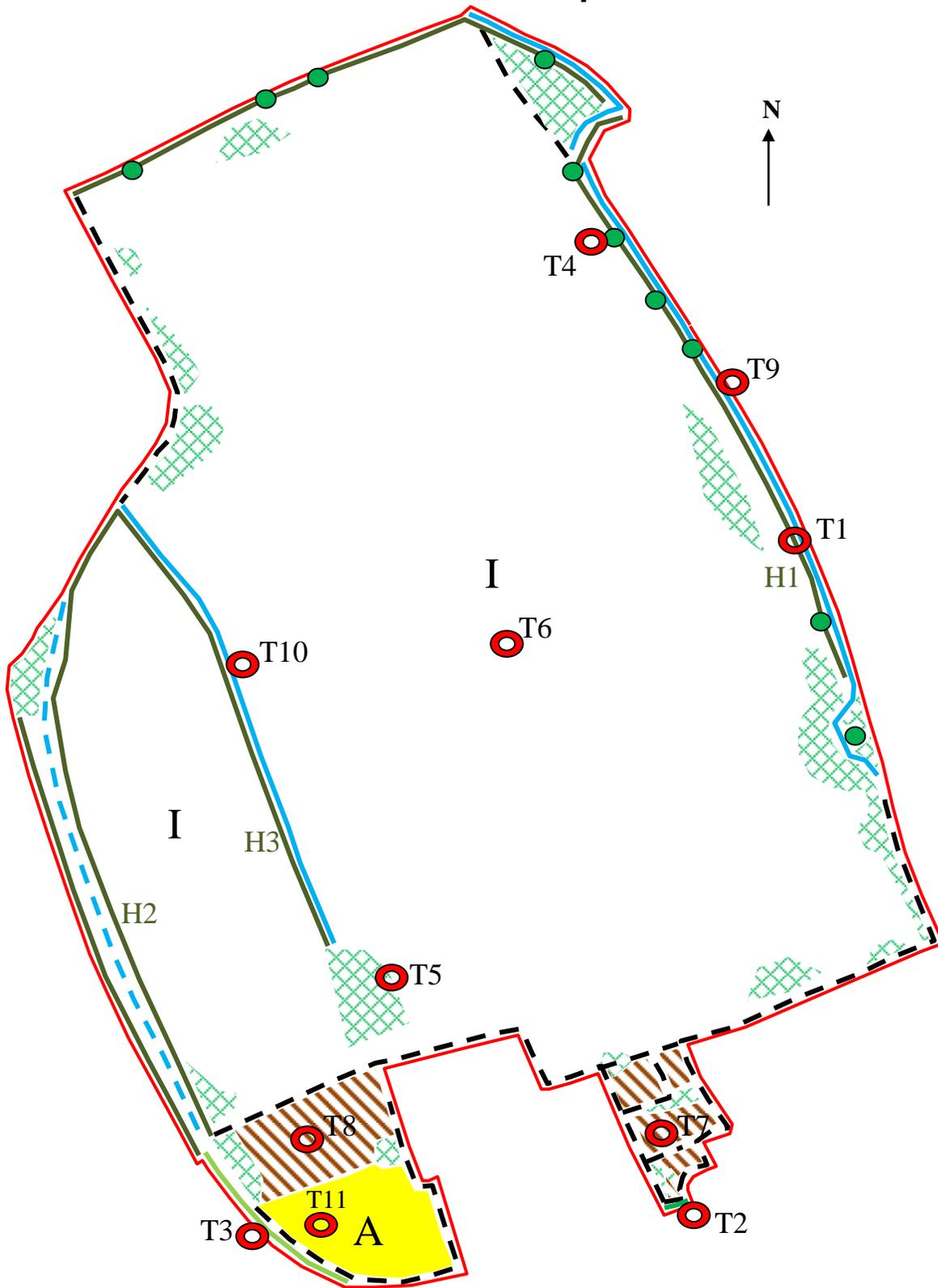
Morgan Carey Architects

Ecological appraisal, land to the north of the Antelope Inn, Hazlebury Bryan

Froglife (1999). *Reptile surveys: An introduction to planning, conducting and interpreting surveys for snake and lizard conservation. (Advice Sheet 10).*

Dean, M., Strachan, R., Gow, D., Andrews, R. (2016). *The water vole mitigation handbook (The Mammal Society Mitigation Guidance Series).* The Mammal Society, London.

APPENDIX I: Phase 1 habitat map



Phase 1 habitat key

	Improved grassland
	Amenity grassland
	Tall ruderal
	Scrub
	Tree
 H	Species-rich native hedgerow
	Native hedgerow
	Non-native hedgerow
	Wet ditch
	Dry ditch
	Fence line
	Survey boundary
	Target Notes

Target notes to accompany phase 1 habitat map

Target Note	Description
T1	Species-rich native hedgerows along the eastern, northern and western boundaries of the site (H1 & H2); there is also a section of species-rich native hedgerow within the western half of the site (H3). These hedgerows are approximately 2.5 - 3.5 metres in height. Woody species include: hazel (<i>Corylus avellana</i>), hawthorn (<i>Crataegus monogyna</i>), blackthorn (<i>Prunus spinosa</i>), English elm (<i>Ulmus procera</i>) and holly (<i>Ilex aquifolium</i>). The field layers are species-rich and include bluebell (<i>Hyacinthoides non-scripta</i>), moschatel (<i>Adoxa moschatel</i>), dog's mercury (<i>Mercurialis perennis</i>), soft shield-fern (<i>Polystichum setiferum</i>), cow parsley (<i>Anthriscus sylvestris</i>), lord's and ladies (<i>Arum maculatum</i>), betony (<i>Stachys officinalis</i>), wood avens (<i>Geum urbanum</i>), ivy (<i>Hedera helix</i>), hogweed (<i>Heracleum sphondylium</i>), honeysuckle (<i>Lonicera periclymenum</i>), dog's mercury (<i>Mercurialis perennis</i>), polypody fern (<i>Polypodium sp</i>), primrose (<i>Primula vulgaris</i>), gooseberry (<i>Ribes uva-crispa</i>), rose (<i>Rosa sp.</i>), bramble (<i>Rubus fruticosus agg.</i>), red campion (<i>Silene dioica</i>), greater stitchwort (<i>Stellaria holostea</i>), bush vetch (<i>Vicia sepium</i>), ground-ivy (<i>Glechoma hederacea</i>), lesser celandine (<i>Ficaria verna</i>), cleavers (<i>Galium aparine</i>), hedge woundwort (<i>Stachys sylvatica</i>), nettle (<i>Urtica dioica</i>) and wood dock (<i>Rumex sanguineus</i>).
T2	A small section of native hedgerow on the southern boundary of the site. This small section formed part of a more substantial hedgerow situated adjacent to Water Knap Road. This section of hedgerow consisted entirely of English elm, with bramble, ivy, lords and ladies, cow parsley and lesser celandine comprising the field layer.
T3	A small section of non-native hedgerow along part of the south-eastern boundary of the site. This section of hedgerow was mostly composed of privet (<i>Ligustrum sp</i>) and Wilson's honeysuckle (<i>Lonicera nitida</i>), with occasional holly and ivy.
T4	Mature and semi-mature trees within the hedgerow along the eastern and northern site boundaries (H1); this includes some veteran specimens of pedunculate oak (<i>Quercus robur</i>). Other tree species recorded on site include crack willow (<i>Salix fragilis</i>), ash (<i>Fraxinus excelsior</i>), field maple (<i>Acer campestre</i>) and English elm.
T5	Numerous stands of dense and scattered scrub which are mostly situated adjacent or close to the site boundaries. Scrub species recorded on site include bramble, blackthorn, English elm, grey willow (<i>Salix cinerea</i>), hazel, holly, ivy, hawthorn and elder (<i>Sambucus nigra</i>).
T6	Two fields of improved grassland covering an area of approximately 2.4 hectares. This grassland appears to have been managed via grazing, though at the time of the survey it was noted that the sward was becoming rank/overgrown, with a sward height ranging from 6 to 16 cm. Species recorded within the sward include Yorkshire fog (<i>Holcus lanatus</i>),

Target Note	Description
	common bent (<i>Agrostis capillaris</i>), cock's-foot (<i>Dactylis glomerata</i>), red fescue (<i>Festuca rubra</i>), perennial rye-grass (<i>Lolium perenne</i>), broad-leaved dock (<i>Rumex obtusifolius</i>), white clover (<i>Trifolium repens</i>), ribwort plantain (<i>Plantago lanceolata</i>), creeping thistle (<i>Cirsium arvense</i>), common mouse-ear (<i>Cerastium fontanum</i>), soft rush (<i>Juncus effusus</i>), knotgrass (<i>Polygonum aviculare</i>), meadow buttercup (<i>Ranunculus acris</i>), common sorrel (<i>Rumex acetosa</i>), dandelion (<i>Taraxacum agg.</i>) and common nettle.
T7	An area of tall ruderal vegetation to the east of the Antelope Inn comprising what appeared to be a neglected small holding/allotment garden with an old poultry house. Species recorded within this area included common nettle, broad-leaved dock, cleavers, hogweed, white dead-nettle (<i>Lamium album</i>), hedge woundwort and a willowherb (<i>Epilobium sp.</i>).
T8	An area of tall ruderal vegetation to the west of the Antelope Inn. Species recorded within this area included common nettle, wild teasel (<i>Dipsacus fullonum</i>), cleavers, daffodil (<i>Narcissus sp.</i>), cow parsley, a willowherb (<i>Epilobium sp.</i>), cock's-foot and hogweed. There was also a bonfire site, piles of grass cuttings and some discarded wooden pallets within this area.
T9	A drainage ditch with shallow, slow-flowing water adjacent to the eastern site boundary and hedgerow H1. This ditch is notably shaded as it is situated next to a hedgerow and the banks largely comprise the same assemblages of species recorded within the hedgerow field layer.
T10	A drainage ditch with shallow, slow-flowing water adjacent to hedgerow H3. This ditch is notably shaded as it is situated next to a hedgerow and the banks largely comprise the same assemblages of species recorded within the hedgerow field layer.
T11	A small area of amenity grassland at the south-western corner of the site, to the west of the Antelope Inn. The sward was short and appeared to be regularly managed by mowing. Species recorded within the sward included common bent, red fescue, germander speedwell (<i>Veronica chamaedrys</i>), creeping buttercup (<i>Ranunculus repens</i>), cat's-ear (<i>Hypochaeris radicata</i>), common mouse-ear and white clover.

APPENDIX II: Proposed development plans

