

A428 Black Cat to Caxton Gibbet improvements

TR010044

Volume 6

6.3 Environmental Statement

Appendix 8.8: Other Mammals

Planning Act 2008

Regulation 5(2)(a)

Infrastructure Planning (Applications: Prescribed Forms and
Procedure) Regulations 2009

26 February 2021

Infrastructure Planning

Planning Act 2008

**The Infrastructure Planning
(Applications: Prescribed Forms
and Procedure) Regulations 2009**

**A428 Black Cat to Caxton Gibbet
improvements
Development Consent Order 202[]**

Appendix 8.8 – Other Mammals

Regulation Number	Regulation 5(2)(a)
Planning Inspectorate Scheme Reference	TR010044
Application Document Reference	TR010044/APP/6.3
Author	A428 Black Cat to Caxton Gibbet improvements Project Team, Highways England

Version	Date	Status of Version
Rev 1	26 February 2021	DCO Application

Table of contents

Chapter	Pages
1 Introduction	1
1.2 Background and scope of works	1
2 Legislation and policy	3
2.1 Legislation	3
2.2 Policy framework	4
3 Methods	5
3.1 Study Area	5
3.2 Desk study	5
3.3 Biodiversity value	6
3.4 Limitations	6
4 Results	7
4.1 Review of mammal species and habitat assessment	7
4.2 Mammal species of principal importance	13
5 Summary and conclusions	15
6 References	16

Table of Tables

Table 4.1: Hedgehog records	8
Table 4.2: Summary of surveys of deer species in Bedfordshire and Cambridgeshire.....	12

1 Introduction

1.1.1 As part of the A428 Black Cat to Caxton Gibbet improvements (the Scheme), a mammal species desk studies were undertaken to inform the biodiversity assessment reported in **Chapter 8, Biodiversity** of the Environmental Statement [TR010044/APP/6.1].

1.2 Background and scope of works

1.2.1 The Jacobs 'Extended Phase 1 Habitat Survey Report' can be found in **Appendix 8.20** of the Environmental Statement [TR010044/APP/6.3].

1.2.2 A desk study was undertaken in 2018 and a further exercise was undertaken to identify:

- a. Mammal species of principal importance (i.e. European protected species, and those species listed under Section 41 of the *Natural Environment and Rural Communities (NERC) Act 2006*) that could be potential constraints to the Scheme or influence its design and implementation.
- b. Any mammal species that could pose a risk to the Scheme through vehicle accident collisions, for example deer.
- c. Any mammals which could be otherwise problematic to the scheme, e.g. Rabbit (*Oryctolagus cuniculus*).

1.2.3 Species of principal importance included in this appendix are:

- a. Hazel Dormouse (*Muscardinus avellanarius*)
- b. Hedgehog (*Erinaceus europaeus*)
- c. Brown Hare (*Lepus europaeus*)
- d. Harvest Mouse (*Micromys minutus*)
- e. Polecat (*Mustela putorius*)

1.2.4 This appendix includes:

- a. Relevant legislation
- b. Methods for desk-based assessments
- c. Limitations to the desk-based surveys undertaken and any assumptions made as a result of incomplete data
- d. Survey results
- e. The approach for determining the nature conservation importance of species

1.2.5

[REDACTED]

1.2.6 **Chapter 2, The Scheme** of the Environmental Statement [TR010044/APP/6.1] provides the background and a description of the Scheme.

- 1.2.7 The information set out in this appendix provides a sound basis to inform the Environmental Impact Assessment (EIA) for the Scheme.

Mammal species scoped out

- 1.2.8 Mountain Hare (*Lepus timidus*), Pine Marten (*Martes martes*) and Red Squirrel (*Sciurus vulgaris*) were scoped out of this assessment at an early stage. Mountain Hare is a species found in upland areas of the north of England and Scotland, which has never been recorded in the study area. Pine Marten is found in Wales, northern England and Scotland and was recorded only once in Cambridgeshire at Caxton where one was killed in 1844, and, according to the same author [Jenyns] it “used formerly to occur in Madingley Woods” (Ref 1-1). There is no record of the species for Bedfordshire or Huntingdonshire. Nau *et al.* (1987) (Ref 1-1) describe Red Squirrel as an extinct species in Bedfordshire, noting that there were just a few in 1945-47 but not recorded since. Shorten (1954) (Ref 1-2) notes that there were very few records in Cambridgeshire in the early 1950s, with some in the parish of Over, and at Hildersham as well as an unconfirmed report of one having been seen in Cambridge. There is no entry for Red Squirrel in the recent mammal atlas for the county (Hows *et al.* (2016) (Ref 1-3).

2 Legislation and policy

2.1 Legislation

- 2.1.1 Apart from Hazel Dormouse, the mammal species of principal importance covered by this appendix receive only limited protection. UK Biodiversity Action Plan (BAP) priority species are identified by the Joint Nature Conservation Committee (JNCC) and are included under Section 41 of the *Natural Environment and Rural Communities (NERC) Act 2006* (Ref 1-4).
- 2.1.2 Section 6 of the *Wildlife and Countryside Act 1981* (as amended) (Ref 1-5) makes it a criminal offence to kill or take certain mammals including Hedgehog and Polecat by certain methods (i.e. self-locking snares, bows, crossbows, explosives (other than ammunition for a firearm), or via live decoys).
- 2.1.3 Schedule 4 of *The Conservation of Habitats and Species Regulations 2017* (Ref 1-6) enacts a duty to monitor any records of incidental killing and capture of mammals to ensure conservation targets are met, but no species specific protection is given.

Hazel Dormouse

- 2.1.4 Hazel Dormouse is legally protected under *The Conservation of Habitats and Species Regulations 2017* (as amended) (Ref 1-6) and the *Wildlife and Countryside Act 1981* (as amended) (Ref 1-5) and is a European Protected Species (EPS).
- 2.1.5 Under this legislation any person who:
- Damages or destroys a breeding or resting place of Hazel Dormice (this is sometimes referred to as the strict liability or absolute offence).
 - Deliberately captures, injures or kills a Hazel Dormouse/Dormice.
 - Deliberately disturbs Hazel Dormice, and in particular disturbance likely to impair the animal's ability to survive, breed or nurture young, their ability to hibernate and migrate and disturbance likely to have a significant effect on local distribution and abundance.
 - Intentionally or recklessly disturbs a Hazel Dormouse/Dormice while occupying a structure or place used for shelter and/or protection (the *Wildlife and Countryside Act 1981* (as amended) (Ref 1-5)).
 - Intentionally or recklessly obstructs access to any structure or place that a Hazel Dormouse/Dormice use for shelter or protection (the *Wildlife and Countryside Act 1981* (as amended) (Ref 1-5)).
- is guilty of a criminal offence.
- 2.1.6 Hazel Dormouse is included in the Bedfordshire and Luton BAP which includes a Species Action Plan to manage hedgerows and woodlands known to support or be close to Dormouse populations sympathetically with Dormice in mind and “*where Dormice are known to be present, link habitats with other actual or suitable Dormouse sites to facilitate range expansion*” (Ref 1-7).

Rabbit

- 2.1.7 Under Section 1 of the *Pests Act 1954* (Ref 1-8), the whole of England, apart from the City of London and Isles of Scilly, has been declared a rabbit clearance area. Under Section 1(2) of the Act, all occupiers of land in a rabbit clearance area have a continuing obligation to kill or take any wild rabbits living on, or resorting to, their land, unless they can establish that it is not reasonably practicable to do so. If it is not practicable to destroy the rabbits, occupiers have an obligation to prevent the rabbits from causing damage elsewhere by, for example, fencing them in with rabbit-proof fencing. The obligation to control rabbits is irrespective of the use being made of the occupier's land or that of their neighbours.
- 2.1.8 Under Section 98 of the *Agriculture Act 1947* (Ref 1-9), the Secretary of State has powers, to serve a notice on an occupier requiring them to take specified action against the rabbits. If an occupier fails to take the specified action, they would be liable for prosecution. In addition, the Secretary of State can also arrange for a third party to carry out the necessary control work on the occupier's land and then recover the cost of this work from the occupier.
- 2.1.9 As with mammals of principal importance, animal welfare legislation also applies to Rabbit.

Deer

- 2.1.10 Chinese Water Deer (*Hydropotes inermis*), Muntjac Deer (*Muntiacus reevesi*) and Sika Deer (*Cervus nippon*) and listed on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended) (Ref 1-5). Section 14(1) of the Act makes it illegal to release or allow to escape into the wild any animal which is not ordinarily resident in Great Britain and is not a regular visitor to Great Britain in a wild state or is listed in Schedule 9 to the Act.
- 2.1.11 As with mammals of principal importance, animal welfare legislation also applies to deer.
- 2.1.12 Other legislation that relates specifically to deer is usefully summarised by the Deer Initiative (Ref 1-10).

2.2 Policy framework

- 2.2.1 National and local planning policies relevant to biodiversity are evaluated in **Chapter 8, Biodiversity** of the Environmental Statement [TR010044/APP/6.1].
- 2.2.2 Habitat Action Plans have been established and are part of the different Biodiversity Action Plans (BAPs) related to the Scheme for Cambridgeshire and Peterborough, South Cambridgeshire District Council and Bedfordshire and Luton).
- 2.2.3 Habitat Action Plans aim to ensure the recovery of habitats, their biodiversity value and to protect species and sites by encouraging planners and developers to incorporate habitat management into their land management.

3 Methods

3.1 Study Area

- 3.1.1 A desk study was undertaken based on the likely zone of influence (Zol) of the Scheme on mammals of principal importance and an understanding of the maximum distances typically considered by statutory consultees. The Study Area was established as comprising the area within, and 1 kilometre (0.6 miles) beyond the Order Limits.

3.2 Desk study

Review of existing information

- 3.2.2 A desk-based search was made of a wide range of published material that included reference to the mammals of the counties of Bedfordshire, Cambridgeshire and Huntingdonshire including:
- Bedfordshire Naturalist (1946-2017)
 - Cambridgeshire Mammal Atlas (2016) (Ref 1-3)
 - Nature in Cambridgeshire (1958-2017)
 - Cambridgeshire Red Data Book (1997) (Ref 1-11)
 - Annual Reports of the Huntingdonshire Fauna and Flora Society.
- 3.2.3 These publications are referenced accordingly within this appendix.
- 3.2.4 In March 2018, Cambridgeshire and Peterborough Environmental Record Centre and Bedfordshire and Luton Biodiversity Recording and Monitoring Centre were contacted for any records of these mammals within the Study Area. The records used were all collected within the last 10 years.
- 3.2.5 For Rabbit, ecologists undertaking surveys for various species and species groups for the Scheme from 2018-2020 made a record of the occurrence of Rabbit during their main surveys. The results are provided within Section 4 of this appendix.

Habitat assessment

- 3.2.6 A review was made of the habitats present in the Study Area based on the Extended Phase 1 Habitat Survey undertaken by Jacobs in 2016 (refer to **Appendix 8.20** of the Environmental Statement [TR010044/APP/6.3]) and the habitat surveys carried out in **Appendix 8.3** of the Environmental Statement [TR010044/APP/6.3]. This baseline informed a preliminary evaluation of the potential for habitats present to support any of the mammal species referred to in this appendix.
- 3.2.7 The habitats present within the Study Area include:
- Arable: the majority of the land area, with maize and wheat being the most common crops.

- b. Hedgerows: the majority of fields are bounded by hedgerows although the length of hedgerows in the landscape has decreased since the 1960s.
- c. Woodland: in the form of broadleaved deciduous woodland and conifer plantations.
- d. Brooks and ditches: field boundaries for some fields.

Appendix 8.3 of the Environmental Statement [TR010044/APP/6.3] provides more detail of the habitats within the Survey Area.

3.3 Biodiversity value

- 1.1.1 An essential prerequisite step to allow ecological impact assessment of the Scheme is an evaluation of the relative biodiversity importance of the identified ecological features (encompassing nature conservation designations, ecosystems, habitat and species). This is necessary to set the terms of reference for the subsequent ecological impact assessment.
- 1.1.2 The method of evaluation used has been developed with reference to the Chartered Institute of Ecology and Environmental Management (CIEEM) (Ref 1-12) This gives guidance on scoping and carrying out environmental assessments and places appraisal in the context of relevant policies. Data received through consultation and desk-based studies are used to allow ecological features of biodiversity importance or potential importance to be identified, and the main factors contributing to their importance described and related to available guidance.
- 3.3.1 Chapter 8, Biodiversity of the Environmental Statement [TR010044/APP/6.1] provides more information in relation to biodiversity value.

3.4 Limitations

- 3.4.1 The assessment carried out in this appendix is based on desk study information collected from the background record search. This represents only those records submitted to records centres and is therefore are not considered to be a definitive list of mammal occurrence within the Study Area. If records have not been provided, this does not confirm absence of a given species from within the Study Area.
- 3.4.2 Information obtained during the course of the desk study was dependent upon people and organisations having made and submitted records for the area of interest. As such, a lack of records does not necessarily mean that a given species does not occur in the Study Area. Similarly, the presence of records for a species does not necessarily mean that it still occurred within a particular location or area.

4 Results

4.1 Review of mammal species and habitat assessment

Hazel Dormouse

Review of existing information

- 4.1.2 Hazel Dormouse surveys have been undertaken in both Bedfordshire and Cambridgeshire over many decades (refer to **Appendix 8.1** of the Environmental Statement [TR010044/APP/6.3]). The latest situation is summarised below.
- 4.1.3 The Bedfordshire Dormouse Group undertook monitoring of Hazel Dormouse boxes in 46 sites across Bedfordshire from at least 1994 up to 2016 when the Group became part of the Bedfordshire Mammal Group.
- 4.1.4 The nearest survey area to the Study Area is Potton Wood, about 8 kilometres (5 miles) from the Order Limits. This site has been surveyed since 2010 but with no records or evidence of Hazel Dormouse (Ref 1-13; Ref 1-14; Ref 1-15; Ref 1-16).
- 4.1.5 Cambridgeshire lies at the northern extent of the Hazel Dormouse's range. There is only one known record, which lies 26 kilometres (16.2 miles) west of the Scheme (Cambridgeshire Mammal Atlas) (Ref 1-3).
- 4.1.6 There were no records from either of Cambridgeshire and Peterborough Environmental Record Centre and Bedfordshire and Bedfordshire and Luton Biodiversity Recording and Monitoring Centre of Hazel Dormouse from within 1 kilometre (0.6 miles) of the Order Limits for the past 10 years.

Habitat assessment

- 4.1.7 **Appendix 8.3** of the Environmental Statement [TR010044/APP/6.3] provides information about woodlands and hedgerows within 100 metres of the Order Limits, which have been assessed for their potential to support Hazel Dormouse.
- 4.1.8 The majority of the woodlands found do not contain habitat suitable for Hazel Dormouse, which is due to:
- Disturbance: the woodlands are highly disturbed through frequent over managed including coppicing or removing the understorey and Pheasant (*Phasianus colchicus*) shooting.
 - Lack of understorey: the woodlands lack suitable flowers and fruiting shrub layer species that provide suitable food source for Hazel Dormice, including Hazel (*Corylus avellana*), Sweet-Chestnut (*Castanea sativa*), Hawthorn (*Crataegus monogyna*) and Bramble (*Rubus fruticosus*).
 - Lack of suitable nesting sites: Hazel Dormouse nests within Bramble, Honeysuckle (*Lonicera periclymenum*) and other understorey species which provide sheltered nesting places.
 - Lack of suitable hibernation sites: Hazel Dormouse hibernates on the ground, or within a depression, often beneath coppiced stools, such as Hazel which are not present within these woodlands.

- e. Connection to suitable habitat: there is a lack of connectivity between woodlands because habitat features that may be used by Hazel Dormouse are generally not well connected which would limit the dispersal or colonisation of the species should it be present.

Hedgehog

Review of existing information

- 4.1.9 Annual accounts based on incidental records submitted to the mammal recorders of both Bedfordshire and Cambridgeshire indicate that Hedgehog is widespread and common in Bedfordshire and Cambridgeshire (Ref 1-15 and Ref 1-3 respectively).
- 4.1.10 Records of Hedgehog from Cambridgeshire and Peterborough Environmental Record Centre and Bedfordshire and Bedfordshire and Luton Biodiversity Recording and Monitoring Centre are, apart from one, all of road casualties from within 1 kilometre (0,6 miles) of the Order Limits for the past 10 years (refer to **Table 4.1**) and support the conclusion that the species widespread. Five of the records are from the existing A428.

Table 4.1: Hedgehog records

Grid reference	Over 1km	Within 1km	Within 500m	Within 250m	Within 100m	Comments
Bedfordshire						
TL153550					✓	Juvenile road casualty by Roxton turn before Garden Centre on old A421.
TL150550					✓	Road casualty on A421, Roxton.
TL186582		✓				Near the roundabout to Little Barford, on the existing A428 at St Neots. Dead on road.
TL160556					✓	A1 at Chawston, dead adult on road near Central Reservation.
TL153562					✓	Chawston, dead adult on road.
TL152564		✓				Chawston, dead adult on road.
TL163539		✓				Barford Road Tempsford, dead adult on road.
Cambridgeshire						
TL230599					✓	Dead on existing A428, near old people's home, Croxton.
TL299606					✓	

Grid reference	Over 1km	Within 1km	Within 500m	Within 250m	Within 100m	Comments
TL185582		✓				Dead on existing A428, near roundabout, Eynesbury.
TL187582		✓				Dead on existing A428, near Eynesbury.
TL191582					✓	Dead on existing A428, near Eynesbury.
TL272595			✓			Eltisley.

Habitat assessment

- 4.1.11 From the information in **Appendix 8.3** of the Environmental Statement **[TR010044/APP/6.3]**, Hedgehog would be restricted to woodland edges and hedgerows as arable fields are unsuitable for foraging due to a lack of invertebrate prey.
- 4.1.12 It would be expected that Hedgehog would use gardens in settlements and the suburbs of St Neots.
- 4.1.13 Sheltering and hibernation habitat is found on the edge of and within woodlands, beneath hedgerows and in gardens. The species uses log, leaf and brash piles.

Brown Hare

Review of existing information

- 4.1.14 In a comparison between the distribution of mammals in Bedfordshire undertaken over 1971-1989 and 1995-1999, Brown Hare was found to be common in 1971-1985 (64% of tetrads) remaining common in the 1995-1999 survey (72%) (Ref 1-15).
- 4.1.15 The Cambridgeshire Mammal Atlas of 2016 shows Brown Hare to be common in all habitats except the fens where they are less common (Ref 1-3).
- 4.1.16 Bedfordshire and Luton Biodiversity Recording and Monitoring Centre and Cambridgeshire Biodiversity Recording and Monitoring Centre provided only three records of Brown Hare within the Study Area within the last 10 years.

Habitat Assessment

- 4.1.17 From the information in **Appendix 8.3** of the Environmental Statement **[TR010044/APP/6.3]**, the following habitats provide foraging, sheltering and breeding for Brown Hare:
- Field margins provide sheltering and breeding habitat.
 - Hedgerows and ditches provide additional shelter for this species and routes through which Brown Hare move through the landscape.
 - Woodland and scrub provide foraging habitat in the form of the bark of young trees and shrubs.

Harvest Mouse

Review of existing information

- 4.1.18 In a comparison between the distribution of mammals in Bedfordshire undertaken over 1971-1989 and 1995-1999, Harvest Mouse was found to be common in 1971-1985 (present in 74% of tetrads) but was vulnerable in the 1995-1999 survey (4% of tetrads) (Ref 1-15).
- 4.1.19 The Cambridgeshire Mammal Atlas of 2016 shows Harvest Mouse distribution as being thinly scattered throughout Cambridgeshire. Records are quite sparse mainly due to the difficulty in finding harvest mice (Ref 1-3). There are a number of Harvest Mouse records from the Study Area.
- 4.1.20 Bedfordshire and Luton Biodiversity Recording and Monitoring Centre provided only record of Harvest Mouse within the Study Area at Begwary Brook within the last 10 years. There were no records from Cambridgeshire Biodiversity Recording and Monitoring Centre.

Habitat Assessment

- 4.1.21 From the information in **Appendix 8.3** of the Environmental Statement **[TR010044/APP/6.3]**, the following habitats are present within the Study Area that could provide nesting, foraging and sheltering habitat for Harvest Mouse:
- Field margins with grassy tussocks that could provide nesting habitat for this species and foraging habitat.
 - Wetland including waterbodies with appropriate margins of tussocky grass, sedges or rushes suitable for nesting of which there are only a few such locations within the Study Area.
 - Woodland edge providing suitable habitat in the form of tussocky grassland edges that provide nesting habitat for this species.
- 4.1.22 Arable fields with cereal crops, are sub-optimal habitat due to the intensive management and the use of insecticides and herbicides in modern farming practices.

Polecat

Review of existing information

- 4.1.23 A mammal distribution survey in Bedfordshire, undertaken over 1995-1999, found Polecat to be vulnerable (recorded in only 1% of tetrads) (Ref 1-15).
- 4.1.24 The Cambridgeshire Mammal Atlas of 2016 shows that Polecat has occurred increasingly in the county over recent years but probably from unauthorised releases of captive-bred specimens rather than natural spread from the west (Ref 1-3). There are no records from the Study Area.

4.1.25 Bedfordshire and Luton Biodiversity Recording and Monitoring Centre provided four records of Polecat within the Study Area within the last 10 years, two of which were not confirmed. All four records were from around Little Barford and Tempsford. There were no records from Cambridgeshire Biodiversity Recording and Monitoring Centre.

Habitat Assessment

4.1.26 From the information in **Appendix 8.3** of the Environmental Statement **[TR010044/APP/6.3]**, the following habitats are present within the Study Area that could provide nesting, foraging and sheltering habitat for:

- a. Hedgerows providing habitat for rabbits, which often burrow beneath them, an important prey species for Polecat.
- b. Woodlands providing sheltering and breeding habitat.
- c. Ditches provide additional foraging habitat due to the presence of small mammals.

Rabbit

Review of existing information

4.1.27 In 1998, Rabbit was “still the most widely distributed mammal in Bedfordshire with records from 90% of the county, despite, as in previous years, myxomatosis having decimated numbers in the latter part of 1998 (Ref 1-16). The situation appeared similar in 2013 and 2014 when Rabbit, although very under-recorded, was reported from throughout Bedfordshire (Ref 1-17).

4.1.28 The distribution and abundance of Rabbit in Cambridgeshire has been increasing since 1953 and the heavy mortality caused by the myxoma virus such that in 2016, Rabbit was very common in Cambridgeshire in all habitats (Ref 1-3). The distribution map for Rabbit in the county shows the presence of this species throughout most of the Study Area (Ref 1-3).

4.1.29 The high frequency of Rabbit in this area is confirmed by records of Rabbit collected by ecologists working in the Study Area between 2018 and 2020.

4.1.30 Bedfordshire and Luton Biodiversity Recording and Monitoring Centre and Cambridgeshire Biodiversity Recording and Monitoring Centre were not asked to provide records for Rabbit.

Habitat Assessment

4.1.31 From the information in **Appendix 8.3** of the Environmental Statement **[TR010044/APP/6.3]**, habitats present within the Study Area providing nesting, foraging and shelter for Rabbit include:

- a. Field margins
- b. Hedgerows providing habitat for Rabbits to burrow beneath
- c. Edges of woodlands providing sheltering and breeding habitat
- d. Ditches providing additional foraging habitat

Deer

Review of existing information

- 4.1.32 In Bedfordshire, the only deer species with a significant presence in the Study Area is Reeve’s Muntjac (refer to **Table 4.2** and Ref 1-15), a species which it is considered to still be spreading. Chinese Water-deer was described as “scarce” between 1995-1999 and found only in the western half of the county (Ref 1-15). None of the other deer species known from the county were recorded from less than 10 kilometres (6.2 miles) from the western end of the Scheme (Ref 1-15).
- 4.1.33 In 1980-82, there were five species of deer recorded in Cambridgeshire (refer to **Table 4.2** and Ref 1-18) increasing to five by 2016. Reeve’s Muntjac was found from four to five 1 kilometre (0.6 mile) grid squares in the Study Area in 1980-82, increasing to about nine 1 kilometre (0.6 mile) grid squares by 2016 (Ref 1-3). Although Fallow Deer was primarily known from certain established sites, the closest to the Scheme being Hayley Wood, 7 kilometres (4.3 miles) to the south, a group of five does and fawns was seen on the Croxton estate for a few weeks in 1980 and tracks believed to be of a fallow buck were seen in 1982 (Ref 1-18). There have been no records since.
- 4.1.34 Sika is only rarely encountered in Bedfordshire. It was considered vulnerable in 1995-1999 being found in only one tetrad (2 kilometres x 2 kilometres (1.2 miles)) square and three tetrads in 1971-1985. There have been no records of Sika reported in the Bedfordshire Naturalist since 2012. No records of Sika in Cambridgeshire were found in the 1980-82 survey (Ref 1-18), although by 2016 there had been sightings from four locations. These were not in the Study Area.

Table 4.2: Summary of surveys of deer species in Bedfordshire and Cambridgeshire

Deer species	Bedfordshire		Cambridgeshire	
	1971-1985 (% of tetrads*)	1995-1999 (% of tetrads*)	1980-1982 (not including Huntingdonshire) (no. 1km squares)	2016 (including Huntingdonshire)
Fallow Deer	Vulnerable (4%)	Rare (9%)	48	Fairly widespread in the county
Chinese Water-deer	Rare (6%)	Scarce (15%)	5	Very thinly distributed - found in very few locations but increasing in number
Reeve’s Muntjac	Frequent (36%)	Common (71%)	98	Very common in all habitat types and very widespread
Red Deer	Vulnerable (2%)	Vulnerable (4%)	12	Very scarce, with very few records mainly in east of the county

Deer species	Bedfordshire		Cambridgeshire	
	1971-1985 (% of tetrads*)	1995-1999 (% of tetrads*)	1980-1982 (not including Huntingdonshire) (no. 1km squares)	2016 (including Huntingdonshire)
Roe Deer	Not reported	Vulnerable (1%)	40	Very common in most of the county
Sika Deer	Vulnerable (<1%)	Vulnerable (<1%)	Not recorded	Very rare, records coming from the south and east of the county

4.1.35 Bedfordshire and Luton Biodiversity Recording and Monitoring Centre and Cambridgeshire Biodiversity Recording and Monitoring Centre were not asked to provide records for Rabbit.

Habitat Assessment

4.1.36 From the information in **Appendix 8.3** of the Environmental Statement [TR010044/APP/6.3], the following habitats are present within the Study Area and provide shelter and feeding for deer such as Reeve's Muntjac and Roe Deer:

- a. Woodlands providing shelter and feeding habitat
- b. arable land with crops for feeding
- c. Hedgerows and ditches along which deer can move through the landscape

4.2 Mammal species of principal importance

4.2.1 Of the mammal species of principal importance reviewed in this appendix, it is concluded that Hazel Dormouse is likely to be absent from the Study Area due to the low suitability of the habitat. There is no need to consider this species further.

4.2.2 Hedgehog, Brown Hare, Harvest Mouse and Polecat are known within the Study Area. Hedgehog and Brown Hare are common and widespread within both counties and Harvest Mouse and Polecat which are scarce in both counties with the latter expanding its range in Cambridgeshire. Hedgehog, Brown Hare and Harvest Mouse are all recorded from the Study Area and their distribution is likely to follow the pattern in the county, i.e. Hedgehog and Brown Hare are common and widespread, whilst Harvest Mouse is scarce and widespread. These three species are assessed as being of Local importance. The assessment for Polecat is more difficult. Although there are no records of Polecat from the Study Area, a precautionary approach should be taken, especially given that the species is regarded as spreading in Cambridgeshire although this is probably from unauthorised releases of captive-bred specimens rather than natural spread from the west (Ref 1-3) where the species is only known from 1% of tetrads in Bedfordshire and these in the southern half of the county (Ref 1-15) indicating that the species is of no more than Local importance.

Rabbit

- 4.2.3 Rabbit has been observed to be widespread across the Study Area with suitable habitat throughout and it can be expected that Rabbit will have an impact on the vegetation of the Scheme post-construction due to grazing.

Deer

- 4.2.4 Muntjac Deer and Roe Deer are known to be present in the Study Area, the former being frequent and likely to become more so (Ref 1-3). Although there are no Chinese Water-deer in the Study Area, they may expand into this area. These deer pose a hazard to vehicles when they cross highways and potentially to drivers too although these are the smaller species of deer in the UK weighing 12-27 kilogrammes.
- 4.2.5 In comparison Sika and Fallow Deer weigh 40-80 kilogrammes and Red Deer weigh about 225 kilogrammes increasing the severity of the hazard in the case of vehicle collisions. However, apart from an apparently one-off occurrence of Fallow Deer at Croxton Park, these larger deer are absent from the Study Area (Ref 1-3) and rare in both Bedfordshire and Cambridgeshire.
- 4.2.6 During operation of the Scheme, the smaller species of deer pose a risk of vehicle collisions for the Scheme and could be a factor in establishing vegetation within the Scheme due to grazing.

5 Summary and conclusions

- 5.1.1 A review was undertaken of certain species of mammals within a Study Area of 1 kilometre (0.6 miles) from the Order Limits, including species of principal importance (Hazel Dormouse, Hedgehog, Brown Hare, Harvest Mouse and Polecat which are not dealt with in any of the other appendices), and Rabbit and deer which could pose risks to the Scheme.
- 5.1.2 The review consisted of a search for exiting information including records of the various species for the Study Area and consideration of the habitat availability for these mammals based on surveys that had been undertaken of habitats in the Study Area.
- 5.1.3 Hazel Dormouse is likely to be absent within the Study Area, and habitat suitable for the species is restricted with low connectivity. There is no need to consider this species further.
- 5.1.4 Hedgehog, Brown Hare and Harvest Mouse are all recorded from the Study Area and their distribution is likely to follow the pattern in the county, i.e. Hedgehog and Brown Hare are common and widespread, whilst Harvest Mouse is scarce and widespread. These three species are assessed as being of Local importance. Although absent from the Study Area, it is predicted that Polecat will expand its distribution and a precautionary approach has been in assessing this species as of Local importance, although this expansion is likely due to unauthorised releases of captive-bred specimens rather than natural spread.
- 5.1.5 Muntjac Deer and Roe Deer common within the Study Area pose a hazard to vehicles when they cross highways and potentially to drivers too although these are the smaller species of deer in the UK weighing 12-27 kilogrammes. The larger species of deer, Sika and Fallow Deer (40-80 kilogrammes) and Red Deer (225 kilogrammes) are almost completely absent from the Study Area and rare in both Bedfordshire and Cambridgeshire.
- 5.1.6 During operation of the Scheme, the smaller species of deer pose a risk of vehicle collisions for the Scheme and could be a factor in establishing vegetation within the Scheme due to grazing.
- 5.1.7 The mitigation in place during construction and operation of the Scheme is reported in **Chapter 8, Biodiversity** of the Environmental Statement [TR010044/APP/6.1] and **Figure 2.4** of the Environmental Statement [TR010044/APP/6.2])

6 References

- Ref 1-1. Nau, B.S., Boon, C.R. and Knowles, J.P. (editors). 1987. Bedfordshire Wildlife. Bedfordshire Natural History Society.
- Ref 1-2. Shorten, M. (1954). Squirrels. New Naturalist, Collins.
- Ref 1-3. Hows, M., Pilbeam, P., Conlan, H. and Featherstone, R. (2016). Cambridgeshire Mammal Atlas. Cambridgeshire Mammal Group.
- Ref 1-4. Natural Environment and Rural Communities Act 2006. HMSO (2006). <https://www.legislation.gov.uk/ukpga/2006/16/contents>
- Ref 1-5. Wildlife and Countryside Act 1981. HMSO (1981) <https://www.legislation.gov.uk/ukpga/1981/69>
- Ref 1-6. The Conservation of Habitats and Species Regulations 2017. HMSO (2017) <https://www.legislation.gov.uk/uksi/2017/1012/contents/made>
- Ref 1-7. Biodiversity Recording and Monitoring Centre. (2020). Bedfordshire and Luton Species Action Plan: Hazel Dormouse, July 2010. https://www.bedscape.org.uk/BRMC/newsite/index.php?c=bedslife_bap
- Ref 1-8. Pests Act 1954. HMSO (1954). <https://www.legislation.gov.uk/ukpga/Eliz2/2-3/68/contents>
- Ref 1-9. Agriculture Act 1947. HMSO (1947) <https://www.legislation.gov.uk/ukpga/Geo6/10-11/48/contents>
- Ref 1-10. Deer Initiative. (2017) Deer Legislation. England and Wales Best Practice Guide. The Stationery Office (2007). <https://www.thedeerinitiative.co.uk/uploads/guides/89.pdf>
- Ref 1-11. Colston, A., Gerrard, C. and Parslow, R. (1997). Cambridgeshire's Red Data Book including Huntingdonshire, Old Cambridgeshire and the Soke of Peterborough. The Wildlife Trust for Cambridgeshire, Cambridge.
- Ref 1-12. Chartered Institute of Ecology and Environmental Management (CIEEM), Guidelines for Ecological Impact Assessment in the United Kingdom: Terrestrial, Freshwater, Coastal and Marine, 2018.
- Ref 1-13. Proud, A., Lawrence, R. and Raven, S. (2015). Dormice 2014. Bedfordshire Naturalist, 69, (1), 39-42.
- Ref 1-14. Tack, C. 1993. Mammal Report, Bedfordshire Naturalist, 48, 19-22.
- Ref 1-15. Tack, C. 2000. Distribution of Bedfordshire mammal species 1995-1999, Bedfordshire Naturalist, 54, (1), 20-23.

- Ref 1-16. Tack, C. (1999). Mammals. Bedfordshire Naturalist, 53 (1), 12-19.
- Ref 1-17. Raven, S., Cormes, R., McCarrick, M. and Lawrence, R. (2015) Mammals 2013 & 2014. Bedfordshire Naturalist, 69, (1), 16-21.
- Ref 1-18. Symonds, R.J. 1983. A survey of the distribution of deer in Cambridgeshire (vice-county 29). Nature in Cambridgeshire, 26, 52-60.
- Ref 1-19. Cambridgeshire and Peterborough Biodiversity Partnership. (2019). Local Priority Species.
<http://www.cpbiodiversity.org.uk/downloads>
- Ref 1-20. Bonhote, J.L. 1904. Mammals. In: Marr, J.E. and Shipley, A.E. (editors). Handbook to the Natural History of Cambridgeshire. Cambridge University Press, Cambridge, pp 71-74.