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## **Cogges Link Road Dormouse Survey**

B0834600/Doc/CLR/17      April 2008

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## Executive Summary

- This report summarises the results of dormouse surveys carried out in the Cogges Link Road study area between 2003 and 2005.
- One dormouse was found on an embankment of the A40 in 2003, therefore further studies were carried out in 2004-5.
- No dormice were detected as a result of the further surveys, although wood mice and their nests were found.
- Results suggest that there is only a small population of dormice in the area; however, the fact that one individual was found during 2003 means that a licence and appropriate mitigation will be required.

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Appendix 1: 2004 Carter Ecological Dormice Nest Tube Survey

Figure 1: Nest Tube Locations

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# 1 Introduction

- 1.1.1 Oxfordshire County Council has plans to build the Cogges Link Road (CLR) between Witney and Cogges in Oxfordshire.
- 1.1.2 A survey by Carter Ecological in 2003 (Appendix 1) recorded one dormouse on the A40 road verge immediately adjacent to the scheme. An update dormouse survey of the CLR site was commissioned in 2004 to provide further information on the current situation.
- 1.2 **Dormouse Ecology**
- 1.2.1 The common or hazel dormouse (*Muscardinus avellanarius*) is usually found in habitats which provide a diverse supply of fruit and seeds and which have a dense structure such as woodland with a rich understorey, species rich shrub or hedgerows. They were thought to be reliant on woodlands with hazel but have now found to be much more flexible in their habitat requirements and are increasingly being found in unexpected areas such as scrub, gorse and reed beds (Chanin & Woods, 2003 and English Nature, 2003.)
- 1.2.2 Dormice are an elusive mammal as while they are active, from April to October, they are nocturnal. They sleep during the day in nests up in the vegetation, woven of honeysuckle bark, grass, moss and leaves. During the night they spend most of their time in the canopy feeding on seeds, flowers, fruits and insects. Nuts, including chestnuts, acorns and hazelnuts, are important food sources prior to hibernation. While active, their main predator is owls and their defence is to freeze if disturbed.
- 1.2.3 Dormice can spend up to one quarter of their lives asleep. They enter a torpid state (similar to hibernating) when food is scarce during the winter months. Hibernation usually begins when the first frosts arrive in October or November and lasts until April or May. Although almost strictly arboreal while active, they hibernate on the ground in a tightly woven nest under moss or leaf litter. This is necessary to keep a high enough humidity as they do not drink during hibernation. The dormouse's heart and breathing rates are reduced by 90% and their body temperature falls to match their surroundings (Bright & Morris, 2005). Although they wake now and then, they do not leave the nest unless conditions become unsuitable. They do not have a noticeable smell which allows them to remain undetected by potential predators.
- 1.2.4 Due to their long hibernation, most litters are not born until mid June; the peak of births occur in late July to early August with some as late as October. There is always a danger that young born late in the year will not reach a sufficient weight to survive hibernation.
- 1.2.5 Dormice usually only rear one successful litter a year as the female stays with the young much longer than most mammals – six to eight weeks as opposed to 17 days with wood mice and bank voles. Their survival strategy is to breed slowly and maintain a low population density, approximately 3-5 per hectare with

8-10 adults in the best habitats (Bright & Morris, 2005). Unfortunately this strategy makes them vulnerable to habitat fragmentation and disturbance.

### 1.3 **Legal protection of the Dormouse**

1.3.1 The dormouse (*Muscardinus avellanarius*) is protected on a national level under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). The Countryside and Rights of Way Act 2000 increases the protection to include *reckless* as well as intentional harm. This means ignorance resulting in injury to a protected species is no longer a defence.

1.3.2 The European Council Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna 1992 is implemented in the UK by the Conservation (Natural Habitats & c.) Regulations 1994 (as amended) (Regulation 38) on which dormice are listed in schedule 2. This adds another tier of protection to dormice as a European protected species.

1.3.3 When the Regulations and the Acts are followed together, it is illegal to:

- Intentionally kill or injure dormice;
- Possess a live or dead dormouse, or any part of it, unless acquired lawfully;
- Deliberately disturb dormice, or intentionally or recklessly disturb them in a place used for shelter or protection;
- Damage or destroy dormouse a breeding site;
- Intentionally or recklessly damage, destroy or obstruct access to a place used for shelter or protection;
- Sell, barter, exchange, transport or offer for sale a dormouse or parts of one.

1.3.4 The dormouse is also a priority species in the UK Biodiversity Action Plan (BAP).

1.3.5 Planning Policy Statement 9 (PPS9) on Biodiversity and Geological Conservation (ODPM, 2005) lists principles the regional planning bodies and local planning authorities should adhere to. One of these is to “promote opportunities for the incorporation of beneficial biodiversity and geological features within the design of development”.

### 1.4 **Survey History**

1.4.1 Ecological surveying of the area to be developed and its immediate surroundings began in June 2002 with a Phase 1 Habitat Survey and ecological walkover, which noted the presence of suitable habitats for dormice. A specific dormouse habitat quality survey was undertaken in 2002 by sub-contractors Carter Ecological. Individual hedges in the study area were appraised for dormouse suitability. The vast majority of hedgerows were classed as fair, with only 4 being classed as good and one being classed as poor in terms of habitat quality for dormouse.

1.4.2 Subsequent to this, a nest tube survey was carried out by Carter Ecological in

autumn 2003 to help determine the presence of dormice. This found one individual on the north side of the A40 road embankment. The dormouse was found to be in daytime torpor in a tightly woven nest. It was identified in the hand, however the age and sex of the dormouse was not recorded so the breeding potential of the animal is unknown.

1.4.3 The report detailing the results of the surveys carried out by Carter Ecological can be found in Appendix 1.

## 1.5 **Survey Objectives**

1.5.1 This update survey commenced in October 2004, and has the following objectives:

- To continue the studies carried out by the Carter Ecological;
- To build further evidence as to the presence or likely absence of dormice in the study area; and
- If present, to gain an understanding of their contribution and use of the area.

## 2 Methodology

### 2.1 Study Area

2.1.1 The study area consists of a 50 metre buffer around the proposed route of the CLR (Figure 1). It is a rural area with abundant hedgerow habitat consisting predominantly of hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa* and field maple *Acer campestre*, with more scattered sycamore *Acer pseudoplatanus*, hazel *Corylus avellana*, oak *Quercus robur* and ash *Fraxinus excelsior*.

### 2.2 Survey Method

2.2.1 This update survey covered the period from October 2004 to October 2005.

2.2.2 The dormouse nest tubes were set up on October 13th 2004. They consist of a length of tubing, square in section, made from light weight corrugated plastic approx 250mm long and 65mm square in section. A wooden tray is placed inside which also forms one closed end to the tube.

2.2.3 Approximately 100 tubes were placed in the hedgerows within the 50 metre buffer around the proposed route (hedgerows A to I, see figure 1 and Plates 1-9). They were placed at a distance of approximately 20 metres apart, and for practical reasons they were placed at about head height, usually fastened to horizontal branches with cable ties.

2.2.4 On December 23rd 2004 the nest tubes were initially checked for any signs of dormouse use since being installed. On 25 February 2005 the nest tubes were check and cleaned out and further tubes were installed ensuring that the whole 20 metre radius survey corridor was covered, bringing the total number of tubes to 127. Regular checks were then made on the following dates:

- 20 May 2005;
- 17 June 2005;
- 22 July 2005;
- 26 August 2005;
- 23 September 2005;
- 28 September 2005.

2.2.5 The content of each nest tube was recorded as well as the shrub species they were tied into and those adjacent to them to help with future identification of nest tube location.

### 3 Results

3.1.1 No dormice were detected as part of this 2004-5 survey, however, in several of the tubes, wood mice and/or their nests were found (Table 1)

**Table 1: Results Summary Table**

Hedge (See Figure 1 for Locations)	Tube Findings Summary
A	No longer included in the survey, habitat considered unsuitable
B	20 empty
C	14 empty
D	15 empty, 2 different tubes containing woodmice and nests, 5 different tubes containing woodmice nests only, 1 tube containing a woodmouse
E	5 empty, 1 tube containing a woodmouse nest
F	6 empty, 3 different tubes containing woodmice, 2 different tubes containing woodmice nests
G	14 empty, 1 tube containing nest and 2 woodmice (Plate 10)
H	11 empty, 5 different tubes containing only woodmice, 3 tubes containing only woodmice nests, 4 tubes containing woodmice and woodmice nests (Plate 11)
I	2 empty, 1 tube containing a woodmouse, 1 tube containing a nest
J	13 empty (1 could not be found)

3.1.2 However, the area to be affected by the proposed CLR does comprise potential dormouse habitat as it connects with the A40 road verge on which the dormouse was recorded in 2003. Therefore a licence will be required for the development with regard to dormice.

## 4 Evaluation

- 4.1.1 Dormice are declining in the UK and are previously recorded in the area. Consequently, this population is of increased importance locally and must be protected by ensuring adequate mitigation is implemented. Habitat enhancement may also be required by the planning authority in line with guidance in PPS9. Linking fragmented habitats is of key importance for dormice and is recommended in Highways Agency guidance (HA, 2001).

## 5 Mitigation and Recommendations

5.1.1 This survey was comprehensive and was carried out through the whole year. However, further monitoring is recommended as no dormice signs were recorded and the more data that is available on the population and distribution, the better informed the licence application and mitigation plan can be.

### 5.2 Licence in Respect of a European Protected Species

5.2.1 Work Affecting a European protected species requires a licence to effectively break the protection granted by the Conservation (Natural Habitats & c.) Regulations 1994. The following information comes from a Guidance Note on species licensing WFL 11 (Defra, 2005).

5.2.2 Licenses can be granted under:

- Regulation 44(2)(e), for the purpose of preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment for the environment; or
- Regulation 44(2)(f) for the purpose of preventing the spread of disease; or
- Regulation 44(2)(g) for the purpose of preventing serious damage to livestock, foodstuffs for livestock, crops, vegetables, fruit, growing timber or any other forms of property or to fisheries.

5.2.3 Subject to the application additionally meeting:

- Regulation 44(3)(a) that there is no satisfactory alternative; and
- Regulation 44(3)(b) that the action authorised will not be detrimental to the maintenance of the species concerned at a favourable conservation status in their natural range.

5.2.4 For activities, requiring planning permission, to gauge whether an application meets Regulations 55 (3) (a) and (b), the development requires full planning permission to be granted prior to issuing a licence.

5.2.5 As well as the application form, two documents showing the development meets these regulations have to be prepared:

- Annex 1 is a detailed method statement for approval by Natural England, formerly English Nature, describing how the works are to be carried out without disturbing any individual dormice using the structures and how the population is to be maintained at the current status, i.e. no loss of habitat overall.
- Annex 2 is known as the 'reasoned statement of application' and has to show there is no reasonable alternative to the development.
- The licensing authority take a least six weeks to consider a licence from the time the acknowledge receipt of the application – this includes time for them to consult both Natural England and the local planning authority. Full

planning permission (if required for a development) has to be in place before a licence can be granted. Time also has to be allowed to write the application.

### 5.3 **Mitigation**

#### 5.3.1 In outline, mitigation may include:

- Coppicing the hedgerows over the winter, using only hand held tools (this is also appropriate when work must be carried out in order to avoid disturbing nesting birds);
- Clearing the stumps in spring (when any dormice will not be hibernating so are less vulnerable);
- Planting should be carried out along the new embankments using native species suitable for dormice nesting and foraging resources. This must cover at least twice the total hedgerow area lost as it will take time for the planting to mature and become a true replacement of habitat lost. It will, once mature, help to connect the hedgerows on a single side of the new road to each other;
- Ideally, planting along the edges of the scheme would be in place as soon as possible so that it can begin to mature and provide new links for dormice before any habitat is lost;
- Long term management of hedgerows by periodic coppicing;
- The possibility of creating better continuity along the A40 road verge by placing a brush cover under the road crossing should also be considered;
- The possibility of dormouse bridges and tunnels.

#### 5.3.2 Detailed methods of working and mitigation plans will be drawn up when the licence application is written. The objective will be the long term viability of the population and mitigation measures should follow the general advice provided the Dormouse Conservation Handbook (English Nature 2006).

## 6 References

Babtie (2004b) Cogges Link: Dormice Nest Tube Survey

Bright, P and Morris, P (2005) The Dormouse 2<sup>nd</sup> Edition. The Mammal Society, London

Chanin, P and Woods, M (2003) Surveying dormice using nest tubes. Results and experience from the South West Dormouse Project. English Nature Research Report 524. English Nature, Peterborough

Defra (2005) WLF 11 European Protected Species: Guidance Note (rev 5/05). Defra, Bristol.

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English Nature (2003) Research report number 524: Surveying Dormice using nest tubes: results and experiences from the south-west dormouse project. English Nature, Peterborough.

Office of the Deputy Prime Minister (2005) Planning Policy Statement 9 – Biodiversity and Geological Conservation. Her Majesty's Stationary Office, London

The Dormouse Conservation Handbook (2006) English Nature, Peterborough

The Highways Agency (2001) Design Manual for Roads and Bridges Volume 10: Nature Conservation and Management Advice, Section 4 Part 5. Nature Conservation Advice in Relation to Dormice.

## Appendix 1: 2004 Carter Ecological Dormice Nest Tube Survey

Oxfordshire County Council

# **Cogges Link Dormice Nest Tube Survey**

July 2004

Document No:0009432/ES/2/15



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# Cogges Link Dormice Nest Tube Survey

July 2004

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The following figures are included in the report:

*Figure 1* - Site location and survey area.

*Figure 2* - Location of tubes

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## **1 INTRODUCTION**

### **1.1 Purpose of the Report**

This report presents the results of detailed surveys for Dormouse (*Muscardinus avellanarius*), carried out in connection with a proposed Witney to Cogges link-road development in Oxfordshire.

The proposed link-road route runs southwards from the eastern side of the village of Cogges, through open countryside to meet the A40, and then north-west across the River Windrush to the centre of Witney.

The surveys were carried out in autumn 2003, following preliminary surveys carried out in autumn 2002 that identified potentially suitable habitat for the Dormouse.

This report contains details of the preliminary habitat assessment carried out in 2002, and the detailed surveys using nest tubes carried out in 2003.

*Figure 1* gives the site location and survey area.

### **1.2 Ecological Background**

The proposed route crosses open farmland (arable and pasture), with hedges, patches of scrub, amenity plantings of native woody species on road embankments, and well-established plantation. Hedges vary from single-species *Crataegus monogyna* (Hawthorn) hedges that are sub-optimal habitat for Dormice, to species-rich hedges with many potential food sources for Dormice.

### **1.3 Legal Protection**

The Dormouse is listed on *Schedule 5* of the *Wildlife and Countryside Act 1981* (as amended), and receives full protection under *Section 9*. It is also a 'European Protected Species', listed on *Schedule 2* of the *Conservation (Natural Habitats & c.) Regulations 1994* which gives the species full protection under *Regulation 39*. Protection is extended by the *Countryside and Rights of Way Act 2000*.

The above pieces of legislation have slightly different wording but essentially make it an offence to:

- intentionally or recklessly kill, injure or take an individual of such a species;
- possess any part of such species either alive or dead;



- damage, destroy or obstruct access to any place or structure used by such species for shelter, rest, protection or breeding;
- disturb such a species whilst using any place of shelter or protection; and
- sell or attempt to sell any such species.

Under certain circumstances, where it is necessary to carry out an action which could result in an offence, it is possible to apply for a licence from the Department of Environment, Farming and Rural Affairs (DEFRA). However, such licences are only issued where DEFRA are satisfied that works are unavoidable and that all necessary steps have been taken to ensure that effects on Dormice are minimised.

The Dormouse is also protected under *Schedule 6* of the *Wildlife and Countryside Act 1981* (extended by the *Countryside and Rights of Way Act 2000*). This protection relates specifically to trapping and direct pursuit of the species. The normal scope of development works do not involve such activities, mention of this is made only in order to ensure completeness.



## 2 ***SURVEY METHODOLOGY***

### 2.1 ***Habitat Assessment***

Habitat assessment was made during a preliminary survey in 2003, and is included for the sake of completeness. The assessment involved grading the quality of distinct habitat parcels (such as hedges and other features) with regard to their suitability for Dormice. In total, 21 hedges were surveyed and graded as Good, Fair or Poor habitat for Dormice. The assessment was objective, using observer experience. Factors taken into consideration include habitat complexity, key food species, botanical species-richness, habitat age, overall size of the habitat parcel and connectivity to other suitable areas of habitat.

### 2.2 ***Nest Tube Survey***

Detailed surveys were carried out using 'nest tubes'. This technique has been recently developed and is regarded as the most appropriate on grounds of cost, efficacy and disturbance (Mammal Society, 2002). It uses tubes of square cross-section, open at one end, and made of corrugated plastic with a wooden base-plate. They provide a weatherproof site for Dormice to build summer nests, which are distinctive structures comprising a neatly woven ball of leaves (or grass) lined with finer material, often shredded honeysuckle bark and fine grass (Corbet & Harris, 1991). Other less distinctive assemblages of leaves are likely to be the work of Wood Mice (*Apodemus sylvaticus*), as are caches of food including nuts and berries (Dormice are not known to store food in this way). Signs of Wood Mice were recorded in case of confusion with Dormice.

115 tubes were placed in hedges and on trees on September 9<sup>th</sup> 2003, in groups of between three and ten. Where possible, each group represented a distinct unit of habitat, with tubes placed at approximately 20 m intervals. They were checked on September 23<sup>rd</sup>, October 9<sup>th</sup>, and November 12<sup>th</sup>.

The tubes were removed during the November check, as by this time Dormice should be in hibernation. The tubes are not suitable for use by hibernating Dormice and therefore their removal at this date will have a limited impact on Dormice.

Autumn is the period when Dormice are most likely to use nest tubes. As weather becomes increasingly inclement, nests built in the tubes provide more protection from the elements than typical Dormouse summer nests, which are frequently built in dense vegetation.



Locations of tubes are given in *Figure 2*.



### 3 **RESULTS**

#### 3.1 **General Habitat Suitability**

Habitat suitability recorded during the preliminary survey is summarised in *Table 1 – Section 3.1.1.*

3.1.1 *Table 1. Suitability of Habitat Parcels for Dormice*

<b>Hedge number</b>	<b>Habitat type</b>	<b>Habitat quality</b>	<b>Approximate length</b>
H1	Hedge	Fair	90m
H2	Hedge	Fair	100m
H3	Scrub	Fair	100m
H4	Hedge	Poor	200m
H5	Hedge	Fair	200m
H6	Hedge	Fair	200m
H7	Hedge	Fair	110m
H8	Hedge	Fair	220m
H9	Hedge	Fair	280m
H10	Woodland strip	Fair	120m
H11	Embankment plantings	Fair	300m
H12	Embankment plantings	Fair	300m
H13	Embankment plantings	Fair	150m
H14	Embankment plantings	Fair	100m
H15	Hedge	Good	220m
H16	Woodland strip	Good	100m
H17	Woodland strip and plantation	Good	150x50m
H18	Woodland strip	Good	120m
H19	Hedge	Fair	130m
H20	Hedge	Fair	300m
H21	Amenity plantings and scrub	Fair	120m

#### 3.2 **Nest Tube Survey**

##### 3.2.1 *Summary*

Nest tubes attract a number of species including Dormouse, Wood Mouse and small birds. The survey identified all of these animals using the tubes.



Occupancy of tubes was as follows:

- 11 tubes were used by birds
- 10 tubes were used by Wood Mice
- One tube was used by a Dormouse

Only one tube (*Hedge 11 Tube 6*) was used by a Dormouse. It was identified in the hand, where it slowly awoke from daytime torpor. It was in a well-made nest, mostly of grasses woven into a tight ball. The tube was situated amongst planted native shrubs and trees on the northern side of the A40 road embankment. The habitat contains a good diversity of woody species, with large amounts of *Rubus fruticosus* agg. (Bramble), and represents fair Dormouse habitat.

Evidence of Wood Mouse in other tubes was identified by untidy nests and food caches (such as rosehips and blackberry seeds).

Evidence of birds included droppings and feathers.

Details of the results are given in *Table 2 – Section 3.2.2*. The locations of tubes are shown in *Figure 2*, where a red dot indicates use by Dormouse, and a yellow dot indicates use by Wood Mouse. Tubes marked with a green dot indicate that the tube was not used.



## 3.2.2

Table 2. Results of Dormouse Nest Tube Surveys

The final column indicates the species thought to have been present in each tube; W represents Wood Mouse, D represents Dormouse and B represents occupancy by birds. An X in the visit column indicates that the tube was subsequently not found and may have been lost or stolen.

Hedge number	Tube number	23rd of September 2003	9 <sup>th</sup> of October 2003	12 <sup>th</sup> of November 2003	Species
1	1	-	-	-	-
1	2	-	-	-	-
1	3	-	-	-	-
2	1	-	Feeding remains, seeds and berries	Feeding remains, seeds and berries	W
2	2	-	-	-	-
2	3	-	-	-	-
3	1	-	-	-	-
3	2	-	-	Bird droppings	B
3	3	-	-	-	-
4	1	-	-	-	-
4	2	-	-	-	-
4	3	-	-	-	-
4	4	Feeding remains, seeds and berries	Feeding remains, seeds and berries	Feeding remains, seeds and berries	W
4	5	-	-	-	-
4	6	-	-	-	-
5	1	-	-	-	-
5	2	-	-	-	-
5	3	-	A few hawthorn berries	Much decayed feeding remains	W
5	4	Feathers and bird droppings	Feathers and bird droppings	Feathers and bird droppings	B
5	5	-	-	-	-
5	6	-	-	-	-
5	7	-	-	-	-
5	8	-	-	-	-
5	9	-	-	-	-
6	1	-	-	-	-
6	2	-	-	-	-
6	3	-	Wood Mouse present, with feeding remains	Feeding remains, berries and seeds	W
6	4	-	-	-	-
6	5	-	-	-	-
6	6	-	Wood Mouse present, with feeding remains	Much decayed feeding remains	W
6	7	-	-	-	-
6	8	-	-	-	-
7	1	-	-	-	-
7	2	A few seeds and feeding remains	Feeding remains, berries and seeds	Feeding remains, berries and seeds	W
7	3	-	-	-	-



7	4	-	-	-	-
8	1	-	-	-	-
8	2	-	-	-	-
8	3	-	-	-	-
8	4	A few bird droppings	Bird droppings	Bird droppings	B
8	5	-	-	-	-
8	6	-	-	-	-
8	7	-	-	-	-
9	1	-	-	-	-
9	2	-	-	-	-
9	3	Bird droppings	Bird droppings	Bird droppings	B
9	4	-	-	-	-
9	5	-	-	-	-
9	6	Chewed blackberry pips	Seeds and rosehips	Large pile of feeding remains	W
9	7	-	-	-	-
9	8	-	-	-	-
9	9	-	-	-	-
10	1	A few bird droppings	Bird droppings	Bird droppings	B
10	2	-	-	-	-
10	3	-	-	-	-
10	4	-	-	-	-
11	1	-	-	-	-
11	2	-	-	-	-
11	3	-	-	-	-
11	4	-	-	-	-
11	5	-	-	-	-
11	6	-	Dormouse found in daytime torpor, inside a grassy nest	Grassy nest	D
11	7	-	-	-	-
12	1	-	-	-	-
12	2	-	-	-	-
12	3	-	-	-	-
12	4	-	-	-	-
12	5	A small amount of feeding remains	A Wood Mouse and a pile of feeding remains	A large pile of feeding remains	W
12	6	-	-	-	-
12	7	-	-	-	-
12	8	-	Bird droppings	Bird droppings	B
12	9	-	-	-	-
13	1	-	-	-	-
13	2	-	-	-	-
13	3	-	-	-	-
13	4	-	-	-	-
14	1	-	-	-	-
14	2	-	-	-	-
14	3	-	-	-	-
15	1	-	-	-	-
15	2	Bird droppings	Bird droppings	Bird droppings	B



15	3	-	-	-	-
15	4	-	-	-	-
15	5	-	-	-	-
15	6	-	-	-	-
15	7	-	-	-	-
15	8	-	-	-	-
15	9	-	-	-	-
15	10	-	-	-	-
16	1	-	-	-	-
16	2	Bird droppings	Bird droppings	Bird droppings	B
16	3	-	A few hawthorn berries	Feeding remains	W
17	1	-	-	-	-
17	2	-	-	-	-
17	3	Bird droppings	Bird droppings	Bird droppings	B
17	4	-	-	-	-
17	5	-	-	-	-
17	6	Bird droppings	Bird droppings	Bird droppings	B
17	7	-	-	-	-
17	8	-	-	-	-
18	1	-	-	-	-
18	2	Bird droppings	Bird droppings	Bird droppings	B
18	3	A few hawthorn berries	Feeding remains	Feeding remains	W
18	4	-	-	-	-
19	1	-	-	-	-
19	2	-	-	-	-
19	3	-	-	-	-
19	4	-	-	X	-
20	1	Bird droppings	Bird droppings	Bird droppings	B
20	2	-	-	-	-
20	3	-	-	-	-
20	4	-	-	-	-
20	5	-	-	-	-
20	6	-	Bird droppings	Bird droppings	B
20	7	-	-	-	-
21	1	-	-	-	-
21	2	-	-	-	-
21	3	-	-	-	-



## **4** *IMPLICATIONS*

### **4.1** *Population Density*

Only one of 115 tubes showed any signs of use by Dormice. The species is generally solitary and individuals have relatively large home ranges, therefore populations do have a naturally low density. Levels of nest tube occupancy can be used to give a very rough estimate of population, and the results appear to indicate a particularly low density population of the species. However, it is inappropriate to rely on the accuracy of this estimate. If the population is low, it might be explained by several factors such as mediocre habitat quality, fragmentation of habitat or by the species being at the edge of its natural geographical range.

### **4.2** *Location of Dormouse Record*

The habitat where the Dormouse was recorded was classed as Fair Dormouse habitat by the 2002 assessment (*Figure 2*). The hedge is well-connected with good foraging, but is not ideal habitat. However, a low density, fragmented population will not necessarily always be found in the best areas of habitat.

It is entirely possible that there is a low density population throughout the entire area, and Dormice are present in small numbers even in hedges where they have not been recorded. It is also possible that the tube in *Hedge 11* was used because the habitat is not mature and therefore does not have tree holes or other shelter for nesting Dormice.

### **4.3** *Potential Implications*

Dormice are almost entirely restricted to hedges, scrub and areas of woodland and are extremely reluctant to cross open areas. This means that they are sensitive both to direct impacts such as the removal of hedgerow, scrub and woodland, and indirect impacts such as habitat fragmentation. The potential impact or works can be broadly summarised as:

- possible harm to Dormice during removal of hedges, scrub and trees and adjacent areas;
- loss of available food;
- loss of nesting sites, hibernating sites and other habitat refugia; and
- loss of habitat connectivity.

Proposals would constitute an offence if carried out without an appropriate licence, because Dormice are protected under both *The Wildlife and Countryside Act 1981* and the *Conservation (Natural Habitats & c.) Regulations 1994*.



Licences are issued by the Department of the Environment, Farming and Rural Affairs (DEFRA), under the provisions of the *Conservation (Natural Habitats & c.) Regulations 1994*. A licence application must include mitigation to minimise potential impacts. In order to make a full assessment of the impacts, it is necessary to estimate the size and extent of the population of Dormice, and it may therefore be necessary to carry out further surveys to provide this information.

Mitigation plans need to consider minimising both the direct impacts to individual dormice (on a hedge-by-hedge basis), and the potential indirect impacts such as habitat fragmentation on a project-wide basis.

**REFERENCES**

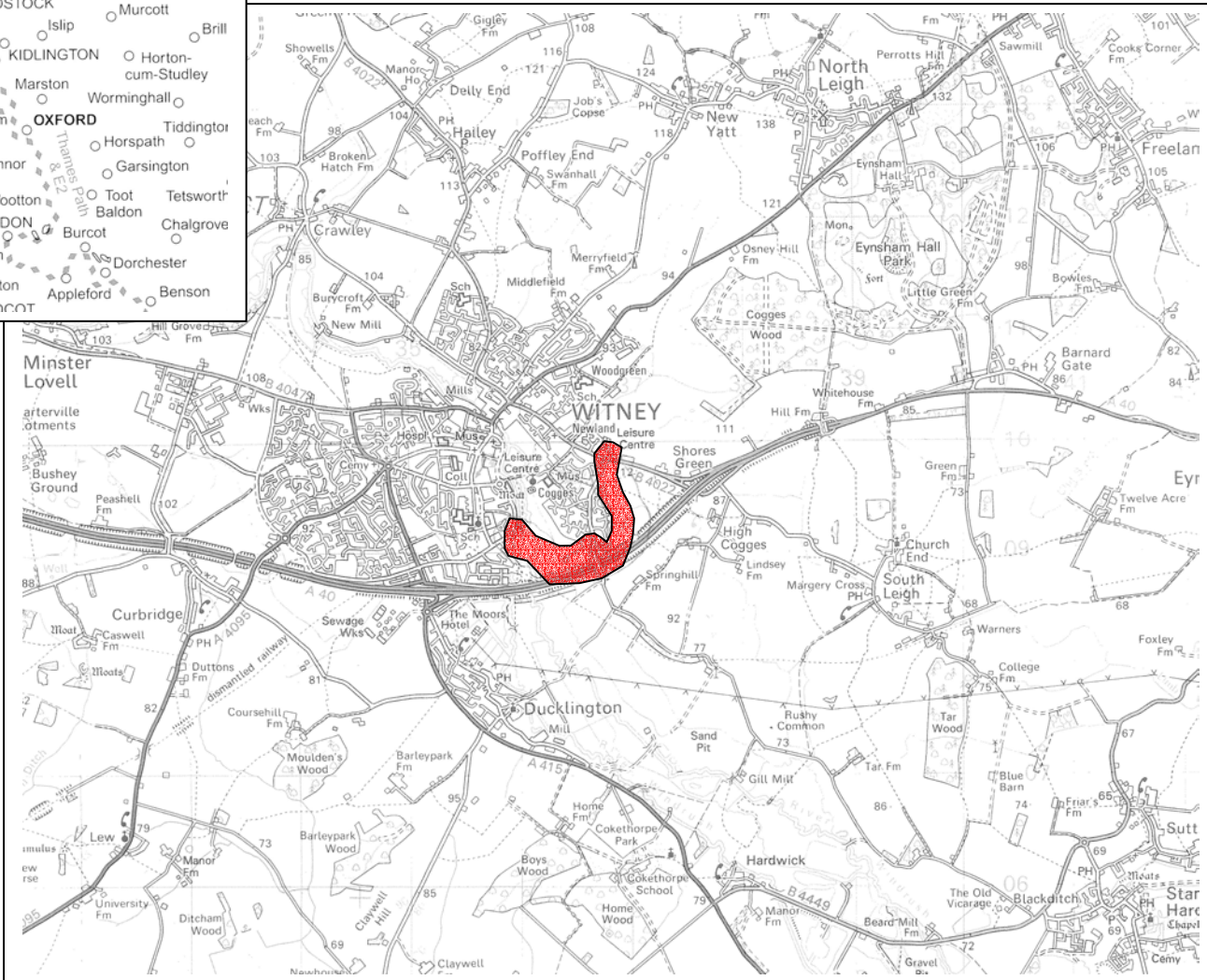
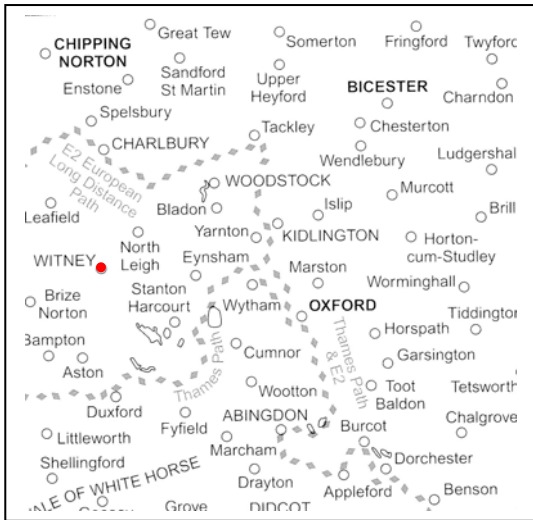
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Corbet G., and Harris S, (1991) (eds.) *The Handbook of British Mammals* Third Edition. Blackwell Scientific Publications, Oxford.

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**Figure 1**


**Project Title:**  
**Witney Cogges Link**

**Figure Title:**  
**Location plan**

**Contract No.:** C191

**Key:**

 Site location

Scale  1km

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Figure 2

Project Title:

Witney Cogges Link

Figure Title:

Badger and Dormouse Habitat Survey

Contract No.: C191

Key:

Dormouse Habitat:

-  Poor
-  Fair
-  Good

Badger Notes:

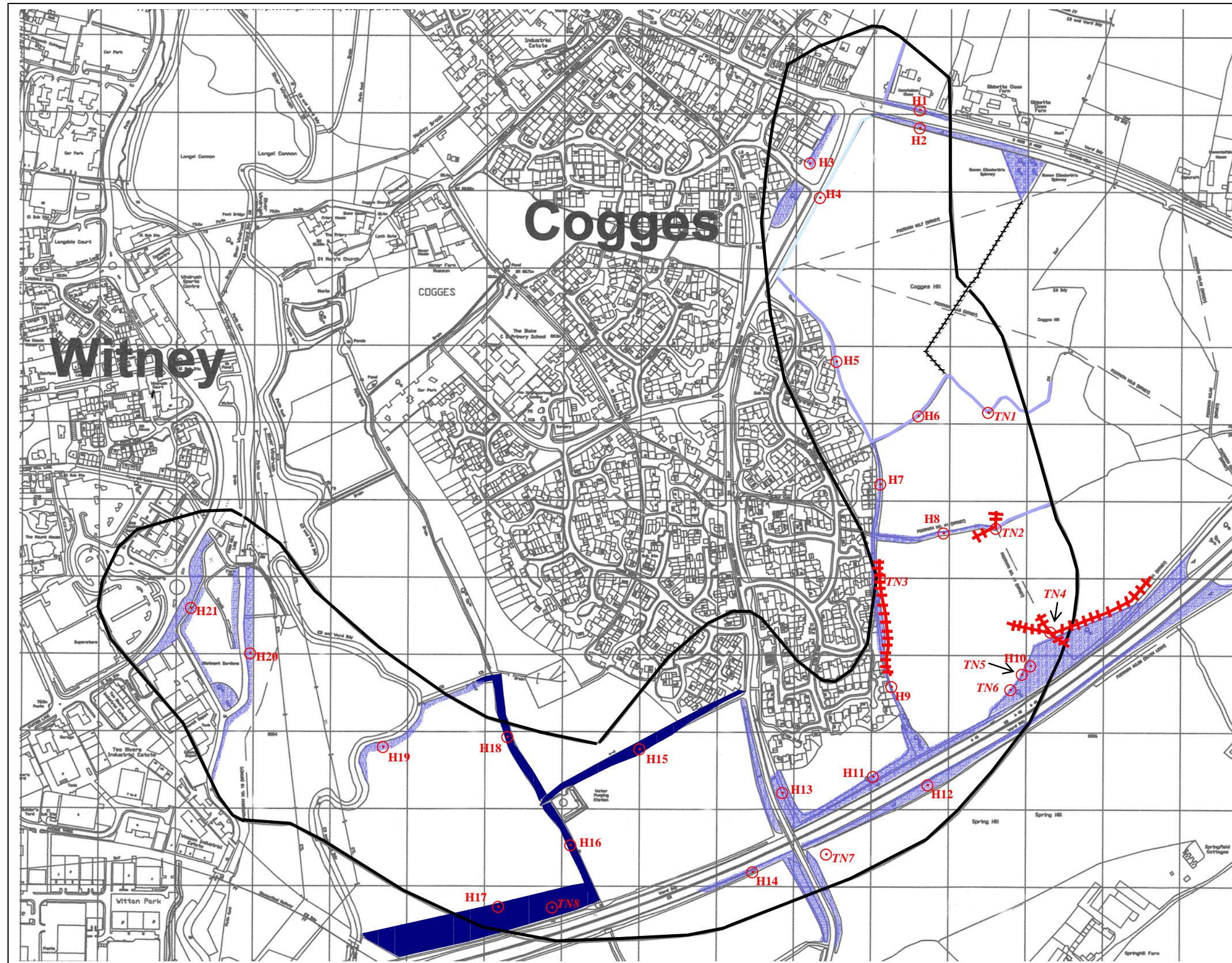
 Badger path

Other:

 Target Note

 Hedge Number

 Survey Boundary

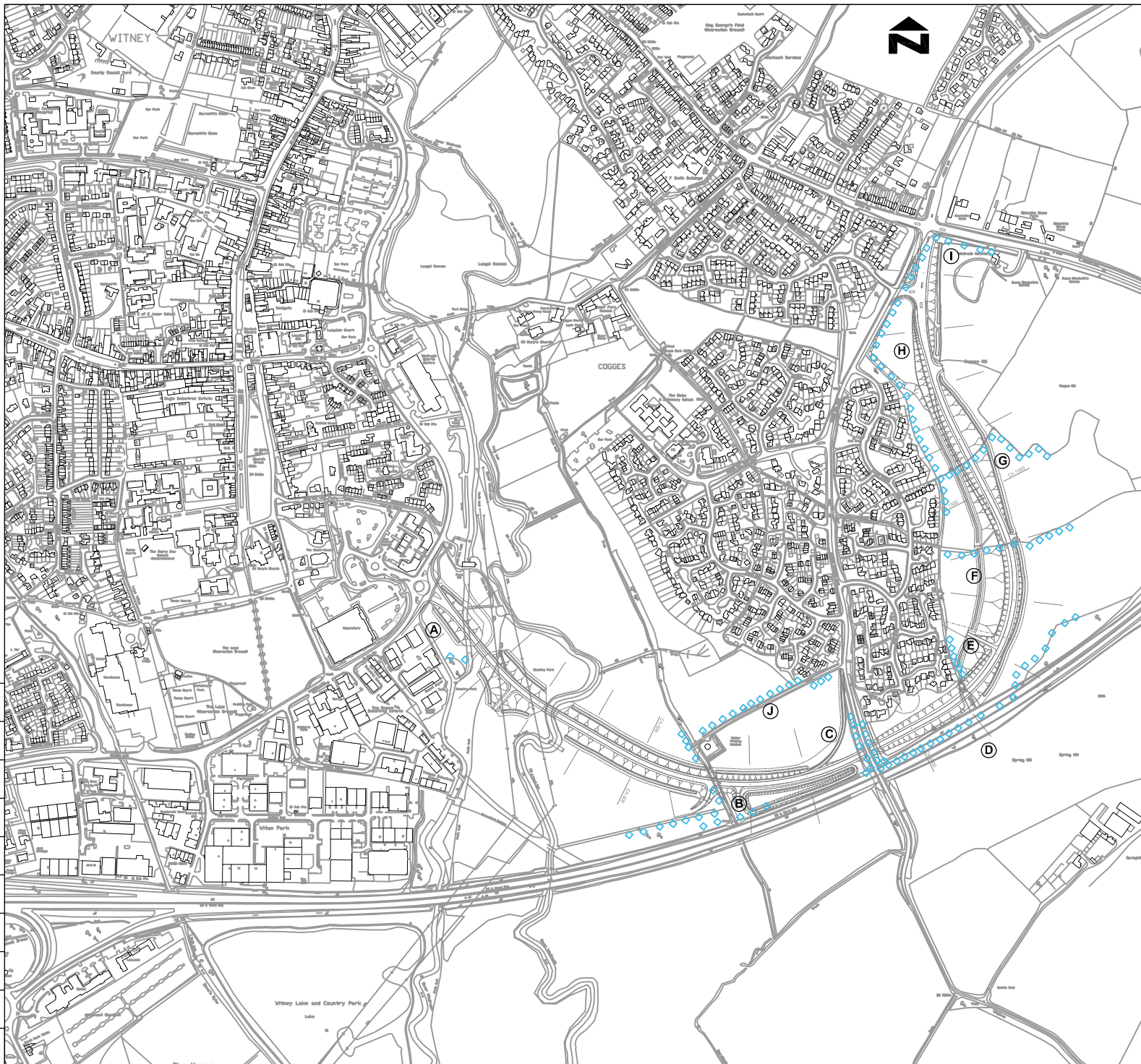


*This figure contains potentially sensitive information relating to the location of species protected by law, in particular badgers. Therefore it should be regarded as confidential and not circulated beyond that which is strictly necessary.*

Scale:  100m

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## Figure 1



**KEY:**

- ◆ Dormouse tube
- Ⓐ Hedgerow

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Rev	Description	By	Date	Chk'd	Apprd
Purpose of issue		Rev	Date	Apprd	

10cm

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 **Oxfordshire Highways**  
www.oxfordshirehighways.org

Project  
**COGGES LINK ROAD**

Title  
**DORMICE TUBES**

Scale N.T.S.	Drawn By ALB Date 02.11.07	Checked By MJ Date 05.11.07	Approved By JM Date 05.11.07
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Clients Ref

Drawing Number  
**B0834600/CLR/17/Fig 1**

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**Cogges Link Road**  
Dormouse Surveys

## Plates

## Examples of dormice nests

