

A12 Chelmsford to A120 widening scheme

TR010060

9.2 Dormouse Survey Report

Section 51 advise response

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Dormouse Survey Report

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Acronyms and Abbreviations

| | |
|-------|--|
| DCO | Development Consent Order |
| EFC | Essex Field Club |
| EIA | Environmental Impact Assessment |
| EPS | European Protected Species |
| ES | Environmental Statement |
| EWTRC | Essex Wildlife Trust Record Centre |
| NERC | Natural Environment and Rural Communities Act 2006 |
| NNNPS | National Networks National Policy Statement |
| NSIP | Nationally Significant Infrastructure Project |

1 Executive Summary

- 1.1.1 This is a supplementary report of the A12 Chelmsford to A120 widening scheme Development Consent Order Application. This report presents the results of additional hazel dormice (*Muscardinus avellanarius*) surveys and assessment of whether the results affect the evaluation of hazel dormice presence along the proposed scheme. It also presents the policy and legislative context within which the environmental impact assessment has been carried out. Likely significant effects of the proposed scheme on hazel dormice, and mitigation for hazel dormice, are considered in Chapter 9 of the Environmental Statement (ES) [TR010060/APP/6.1]).
- 1.1.2 Hazel dormice surveys were previously undertaken by National Highways in 2017 and 2020. The purpose of this report is to present the results of additional surveys undertaken in 2022 for the gas main diversion (Little Braxted to Springfield A1A2, Chapter 2 of the ES [TR010060/APP/6.1]).
- 1.1.3 The report presents an evaluation on the presence/likely absence of hazel dormice based on field surveys for the gas main diversion undertaken in 2022. It presents the policy and legislative context within which the Environmental Impact Assessment (EIA) process is being carried out.
- 1.1.4 The study area for hazel dormice was defined as the area within the construction boundary for the gas main diversion and a 250m buffer.
- 1.1.5 Habitat suitability assessments in 2022 identified ten hedgerows/woodlands with sub-optimal or optimal hazel dormouse habitat within the study area. These areas were subjected to further survey work. Nest tube surveys were subsequently carried out to identify the presence or likely absence of hazel dormice in the study area. Hazel dormice were surveyed following species best practice guidance from Bright *et al.* (2006).
- 1.1.6 No records of hazel dormice were returned from the desk study which included a 2km radius of the study area. No hazel dormice were found during the 2022 gas main diversion surveys.
- 1.1.7 The probability index score for the nest tube surveys undertaken across the area was 40, which was higher than the minimum required score of 20 (Bright *et al.* 2006).
- 1.1.8 No additional hazel dormice were identified within the habitats surveyed during the field surveys detailed in this report. Therefore, it is assessed that dormice are likely to be absent from the Order Limits. As a result, the proposed mitigation for hazel dormice outlined in Chapter 9 Biodiversity of the ES [TR010060/APP/6.1] would not be required. In addition, the assessment of effects on dormice is changed from 'slight adverse' during construction and 'neutral' during operation' to 'no effects' as there is no pathway to impact.

2 Introduction

2.1 Background

- 2.1.1 The A12 Chelmsford to A120 Widening Scheme (the 'proposed scheme') comprises improvements to the A12 between junction 19 (Boreham) at TL 741094, and junction 25 (Marks Tey) at TL 917238, a distance of approximately 24km, or 15 miles. The proposed scheme involves widening the A12 to three lanes throughout. It also includes safety improvements, such as closing existing at grade accesses and reducing access to cyclists along the dual carriageway by providing an alternative route for walkers, cyclists and horse riders.
- 2.1.2 The proposed scheme would require new crossings of watercourses and potential improvements to existing culvert and bridge crossings. There are eight crossings of main rivers, six of which comprise existing crossings and two of which comprise new crossings on proposed offline sections of road. Three of the crossings would require minor realignments at the crossing points.
- 2.1.3 The proposed scheme is classed as a Nationally Significant Infrastructure Project (NSIP) under the Planning Act (2008), triggering the need to apply for a Development Consent Order (DCO). A DCO application was submitted to the Planning Inspectorate (PINS) by National Highways in August 2022 and was accepted by the Planning Inspectorate on 12 September 2022. The application was supported by an Environmental Statement (ES) which included numerous appendices. Appendix 9.6 (Dormouse Survey Report) of the ES summarised the baseline data collected with respect to dormice.
- 2.1.4 Due to the iterative nature of the design process in the lead up to DCO submission there were changes in the Order Limits. Some of the changes occurred subsequent to the end of the optimal survey season for protected species and therefore a small number of surveys could not be completed prior to the DCO submission.

2.2 Purpose of the report

- 2.2.1 This report presents the results of these additional dormice surveys of the gas main diversion (Little Braxted to Springfield A1A2, Chapter 2 of the ES [TR010060/APP/6.1]) undertaken in 2022, in areas of land not covered by the original suite of surveys reported in Appendix 9.6 of the ES. Likely significant effects on, and mitigation for dormice are considered in Chapter 9 of the ES, and this report concludes whether the results of the surveys affect the results of that assessment. It presents the policy and legislative context within which the Environmental Impact Assessment (EIA) has been carried out.

2.3 Survey Objectives

- 2.3.1 The key objectives of this hazel dormouse survey of the gas main diversion were to:
- a. determine the presence or likely absence of dormice within the study area

-
- b. identify dormouse distribution and status in the study area
 - c. identify any areas of key connective habitat for dormice within the study area
 - d. provide an evaluation for the dormouse population in the study area
 - e. verify or update the assessment of potential impacts on dormice (as detailed in the ES), and
 - f. determine requirements for additional mitigation if necessary.

3 Dormouse ecology

- 3.1.1 The hazel dormouse is the only native species of dormouse to be found in Britain. Dormice were once widespread throughout England and Wales but over the last 100 years the species has declined in both distribution and abundance. This is due to a significant loss of their primary habitat including deciduous woodland and hedgerows. Dormice are relatively widespread throughout the southern British counties, yet the species is still uncommon and patchily distributed (Bright *et al.*, 2006).
- 3.1.2 Dormice are traditionally associated with hazel woodland, although they are found in a variety of woody habitats including semi-natural woodland, standard oaks, species-rich scrub, and hedgerows. Dormice have also been recorded in 'atypical' habitats such as reedbeds and gorse scrub. Dormice are an arboreal species, spending most of their lives within the tree-tops, only descending to the ground to hibernate during the winter months. Dormice feed on a wide variety of foods including berries, nuts, nectar, pollen, and insects (Bright *et al.*, 2006).

4 Legislation and policy

4.1 Legislation

- 4.1.1 Hazel dormice are a European Protected Species (EPS). Hazel dormice and their habitats are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2017. It is an offence to deliberately kill, capture, or disturb a dormouse. It is illegal to damage or destroy its breeding site or resting place, and to disturb a dormouse intentionally or recklessly in its nest or obstruct access to a dormouse nest.
- 4.1.2 Licences can be granted by Natural England, the licensing authority in England, to allow activities that would otherwise be illegal (e.g. the destruction of dormouse habitat because of development activity), to take place. The activities must be carried out in accordance with the provisions of the licence whereby the favourable conservation status of the species is maintained.
- 4.1.3 Section 40 of the Natural Environment and Rural Communities Act 2006 (NERC) places a duty on all public bodies to have regard to the conservation of biodiversity in England, when carrying out their normal functions (the biodiversity duty).

4.2 National planning policy and framework

- 4.2.1 The National Networks National Policy Statement (NNNPS) sets out the Government's policies to deliver the development of NSIP on the national road and rail networks in England. The Secretary of State uses the NNNPS as the primary basis for making decisions on DCO applications.
- 4.2.2 Paragraph 5.22 of the NNNPS states that the applicant's assessment should describe any likely significant effects on internationally, nationally, and locally designated sites of ecological conservation importance; protected species; habitats (including irreplaceable habitats such as ancient woodland and veteran trees); and other species identified as being of principal importance for the conservation of biodiversity. The surveys described in this report will inform the assessment of significant effects within the ES.
- 4.2.3 In addition to the national policy set out in the NNNPS, the proposed scheme has also had regard to relevant legislation and local plans and policy.

4.3 Priority species

- 4.3.1 Dormice are a 'Species of Principal Importance for the conservation of biodiversity' listed under Section 41 of the NERC. This act places a responsibility on local authorities and government departments to consider the purposes of conserving biodiversity in a manner consistent with their normal duties, such as policy and decision-making, and ties together wildlife legislation and planning policies

5 Methodology

5.1 Desk Study

- 5.1.1 A desk study was undertaken in 2020 to obtain information pertaining to dormice in the study area and surrounding landscape. The desk study provided sufficient coverage of the gas main diversion.
- 5.1.2 The methodology and the results of the desk study are presented in detail in Appendix 9.6 Dormice Survey Report [TR010060/APP/6.3].

5.2 Field Study

- 5.2.1 All dormouse surveys were led by a suitably qualified and experienced dormouse licensed ecologist. The surveys were undertaken between April and October (inclusive) in 2022. The surveys were carried out in the recommended survey season for dormice, as set out in the Dormouse Conservation Handbook (Bright *et al.* 2006).
- 5.2.2 The survey area comprised all land extending up to 250m either side of the gas main diversion and is hereafter referred to as 'the study area' (see Appendix A for the location map).
- 5.2.3 A habitat suitability assessment was undertaken to identify the quality of habitats within the study area, initially from aerial imagery and then ratified by site visits. Categories assigned were:
- a. Optimal Habitat: Habitat that provides a range of food sources, summer nesting, and hibernation sites (i.e. they can support dormice all year round). Habitats may include diverse deciduous woodland with a good understorey, intact species-rich hedgerows, or dense scrub.
 - b. Sub-optimal Habitat: Habitat that provides most, but not all requirements for dormice. Habitats may include plantation woodland or species poor/heavily managed hedgerows.
 - c. Low Potential Habitat: Habitat that offers one or two components of the requirements for dormice such as providing habitat connectivity for dispersal. Habitats may include defunct hedgerows or arable crops.
- 5.2.4 The above categories were devised and decided upon using information on factors affecting dormouse presence given in the Dormouse Conservation Handbook (Bright *et al.* 2006) which are shown (as amended) in Table 5.1.

Table 5.1 Factors affecting the probability of dormouse being present within their known range (Dormouse Conservation Handbook, 2006)

| Increased Probability | Decreased Probability |
|---|---|
| <ul style="list-style-type: none"> • Large Woodlands; area over 50 ha – very likely; at least 20 ha – likely; between 2 and 20 ha – possible; • Adjacent to ancient woodland or planted ancient woodland site (including conifer (<i>Pinophyta sp.</i>)), scrub or early successional stage woodland, including conifer; • Variety of broadleaved tree species; • Range of tree ages; • Species-rich shrub layer; • Species-rich edge strip; • Thick, wide hedgerow connections to nearby woodland; and/or • Hazel (<i>Corylus avellana</i>) or sweet chestnut (<i>Castanea sativa</i>) coppice | <ul style="list-style-type: none"> • Small wood, mostly conifer; • Isolated from other woodland; • Little or no shrub understorey; • No fruiting broadleaved trees; • High local deer population; • Presence of cattle, sheep, or pigs; and/or • Seasonally waterlogged ground |

- 5.2.5 Dormouse surveys were carried out within habitats recorded as having sub-optimal and optimal habitat, as shown in Appendix B. Ten hedgerows / woodlands were surveyed in 2022.
- 5.2.6 The study area consisted of one survey area comprising of four different land parcels. These areas represent optimal and sub-optimal dormouse habitats. The land parcel, assigned dormouse potential, habitat description and number of tubes deployed for each habitat type are detailed in Appendix B. The location of the nest tubes carried out in 2022 are shown in Appendix A.
- 5.2.7 Some surveys extended outside the study area where suitable dormouse habitat linkages were identified to suitable habitats within the wider area.
- 5.2.8 A total of 183 nest tubes were installed across the study area in the 2022 survey. Of these nest tubes, 136 were installed in April 2022 and 47 were installed in July 2022. The additional nest tubes installed in July were for land parcel B where access was previously not permitted (Appendix D).
- 5.2.9 Nest tubes were deployed at 20m intervals in accordance with good practice guidelines (Chanin and Woods, 2003) in suitable habitat along hedgerows and within woodland. The survey area exceeded the minimum recommended 50 tubes per survey site (Chanin and Woods, 2003).
- 5.2.10 Nest tubes were numbered and attached to the underside of branches using cable ties or wire. The opening of the tube pointed downwards, and at an angle no greater than 45 degrees. Where possible, the entrance of the tube faced the trunk of the tree.
- 5.2.11 For every nest tube deployed a GPS point was recorded using ArcGIS Collector. Notes and photographs were recorded to assist future surveyors to find the tubes.

5.2.12 In accordance with the Dormouse Conservation Handbook (Bright *et al.*, 2006), each month of the dormouse survey season was assigned a value which indicates the probability of finding dormice present in nest tubes (Table 5.2). This score was devised to indicate how thorough the survey effort should be and to give confidence in the results obtained. A minimum total score of 20 is required at the end of the dormouse surveys to ensure sufficient confidence in the survey results.

Table 5.2. Index of probability of finding dormice present in nest tubes in any one month (Bright *et al.*, 2006)

| Month | Index of Probability (50 nest tubes per Survey Area) | Index of Probability (100 nest tubes per Survey Area) |
|-----------|---|--|
| April | 1 | 2 |
| May | 4 | 8 |
| June | 2 | 4 |
| July | 2 | 4 |
| August | 5 | 10 |
| September | 7 | 14 |
| October | 2 | 4 |
| November | 2 | 4 |

5.2.13 The lead ecologist undertaking the dormouse nest tube surveys held a Natural England dormouse licence. The surveys were carried out monthly where possible and exceptions are detailed in Appendix D.

5.2.14 Each nest tube was carefully inspected. If evidence of activity of any small mammal (e.g. nests, movement, and droppings) was found, the tube was taken down and opened within a large plastic bag. This method allowed closer examination of the contents of the box/tube and prevented animals present from escaping. It ensures that animals can be placed back into the nest following inspection.

5.2.15 If any dormice were encountered, they were weighed and sexed with the age class of each animal recorded. The age of young dormice was determined according to weight and appearance (i.e. eyes closed, eyes open, fur, or no fur). Dormice weighing between 10g and 15g with greyish brown colouring that are recorded from July onwards are regarded as juveniles. Dormice are recorded as adults after their first winter hibernation (Büchner *et al.*, 2003).

5.2.16 Any wood mice (*Apodemus sylvaticus*), yellow-necked mice (*Apodemus flavicollis*), shrew (*Sorex sp*), bank vole (*Myodes glareolus*) or field vole (*Microtus agrestis*) nests or individuals encountered were removed from the tubes, unless a litter was present. Bird nests were not disturbed until chicks had

fledged, at which point the nest was removed. Any hornet (*Vespa crabro*), bee (*Anthophila sp*) or wasp (*vespa sp*) hive was left to vacate naturally.

5.3 Limitations

- 5.3.1 Access to land parcel D was refused after the second survey. This led to an incomplete suite of dormouse surveys for that land parcel. The overall number of nest tubes placed in suitable habitats throughout the proposed scheme is considered sufficient to form conclusions of the likely status of the species in the study area and therefore the limitation is not considered significant.
- 5.3.2 For survey visits two and five, six and ten nest tubes respectively were not checked within land parcel A due to restricted access as a result of farming activities. Restricted access was factored into calculations of survey effort and as a result more tubes were originally deployed to offset this limitation. Dormouse signs such as nests often persist within tubes for several months and, as most of the survey visits were undertaken, restricted access is not considered a significant limitation to the survey.
- 5.3.3 Due to access for land parcel B being granted later than the other land parcels, surveys for land parcel B started in August as opposed to May like the other land parcels. This meant that three surveys were conducted for land parcel B as opposed to five for parcels A and C. However, this unlikely to pose a significant limitation as additional tubes were put out to target habitats connecting land parcel B with wider suitable dormouse habitat. In these connected areas, no evidence of dormice was found, further strengthening the conclusions of the report that dormice are absent from the Order Limits.
- 5.3.4 In some habitats particularly in land parcel B, limited suitable habitat meant that some of the tubes were spaced less than 20m apart from one another. This was not considered a significant limitation as most of the tubes were spaced 20m apart and Chanin and Woods (2003) state that 'it is sometimes beneficial to reduce the spacing in order to install a reasonable number of tubes in small areas'.
- 5.3.5 Surveys can only be used to determine likely absence of dormice from any given area. This is due to their elusive nature and natural population fluctuations, allowing colonisations of areas following the completion of surveys. An absence of dormice, or their field signs found during a survey does not confirm with absolute certainty the absence of dormice.
- 5.3.6 The findings of this report represent the professional opinion of qualified ecologists and do not constitute professional legal advice. The client may wish to seek professional legal interpretation of the relevant wildlife legislation cited in this document.
- 5.3.7 This report should be read in full and excerpts may not be representative of the findings.

6 Results

6.1 Desk Study

6.1.1 The results of the desk study for dormice for the proposed scheme are presented in the ES Appendix 9.6 Dormice Survey Report.

6.2 Field Study

Habitat suitability assessments

6.2.1 One out of the ten habitat areas surveyed for dormice was considered optimal for this species. The remaining nine were considered sub-optimal (Appendix B). These habitats consisted of woodlands or hedgerows comprising a range of species suitable for dormice including hawthorn (*Crataegus sp.*), hazel (*Corylus avellana*), bramble (*Rubus fruticosus*), oak (*Quercus sp.*), silver birch (*Betula pendula*), conifer (*Pinophyta sp.*) and blackthorn (*Prunus spinosa*) (Appendix B).

Dormouse nest tube survey

6.2.2 Five surveys were undertaken on land parcels A and C between May and September, three were undertaken for land parcel B between August and October, and two surveys were carried out for land parcel D between May and June.

6.2.3 Based on 100 nest tubes surveyed in the area between May and September, the index score for the surveys was 40 (table 5.2), which is twice as much as the minimum survey effort of 20 required to determine the presence or likely absence in accordance with Bright *et al.* (2006). Since only land parcel B, was surveyed in October, this month was omitted from the probability index calculation.

6.2.4 No dormice or evidence of dormice were found during any of these surveys. A wood mice nest, and numerous birds' nests were present in the nest tubes during the surveys (Appendix C).

7 Discussion

7.1 Summary

- 7.1.1 No dormice or evidence of dormice were recorded during the gas main diversion surveys carried out in 2022. In addition to this no dormice were recorded during previous surveys conducted for the wider scheme in 2017 and 2020 [TR010060/APP/6.3].
- 7.1.2 The gas main diversion surveys included a nest tube survey where 183 nest tubes were deployed in 2022. Despite being refused access on occasions within the study area, the distribution and number of tubes deployed in suitable habitat was appropriate to have sufficient confidence in the survey results.
- 7.1.3 Following best practice guidance, the calculated index of probability score for the nest tube surveys undertaken across the overall study area in 2022 was 40. This score is over the threshold of 20 for a survey effort to be considered sufficiently robust to conclude a likely absent result (Bright *et al.* 2006).
- 7.1.4 It is concluded that dormice are likely absent from the footprint of the proposed gas main diversion and wider Order Limits. As a result, the proposed mitigation for hazel dormice outlined in Chapter 9 Biodiversity of the ES [TR010060/APP/6.1] would not be required. In addition, the assessment of effects on dormice is changed from 'slight adverse' during construction and 'neutral' during operation' to 'no effects' as there is no pathway to impact.

8 References

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Büchner, Sven & Stubbe, M. and Striese, D. (2003). *Breeding and biological data for the Common Dormouse (Muscardinus avellanarius) in Eastern Saxony (Germany)*. Acta Zoologica Academiae Scientiarum Hungaricae. 49. 19-26.

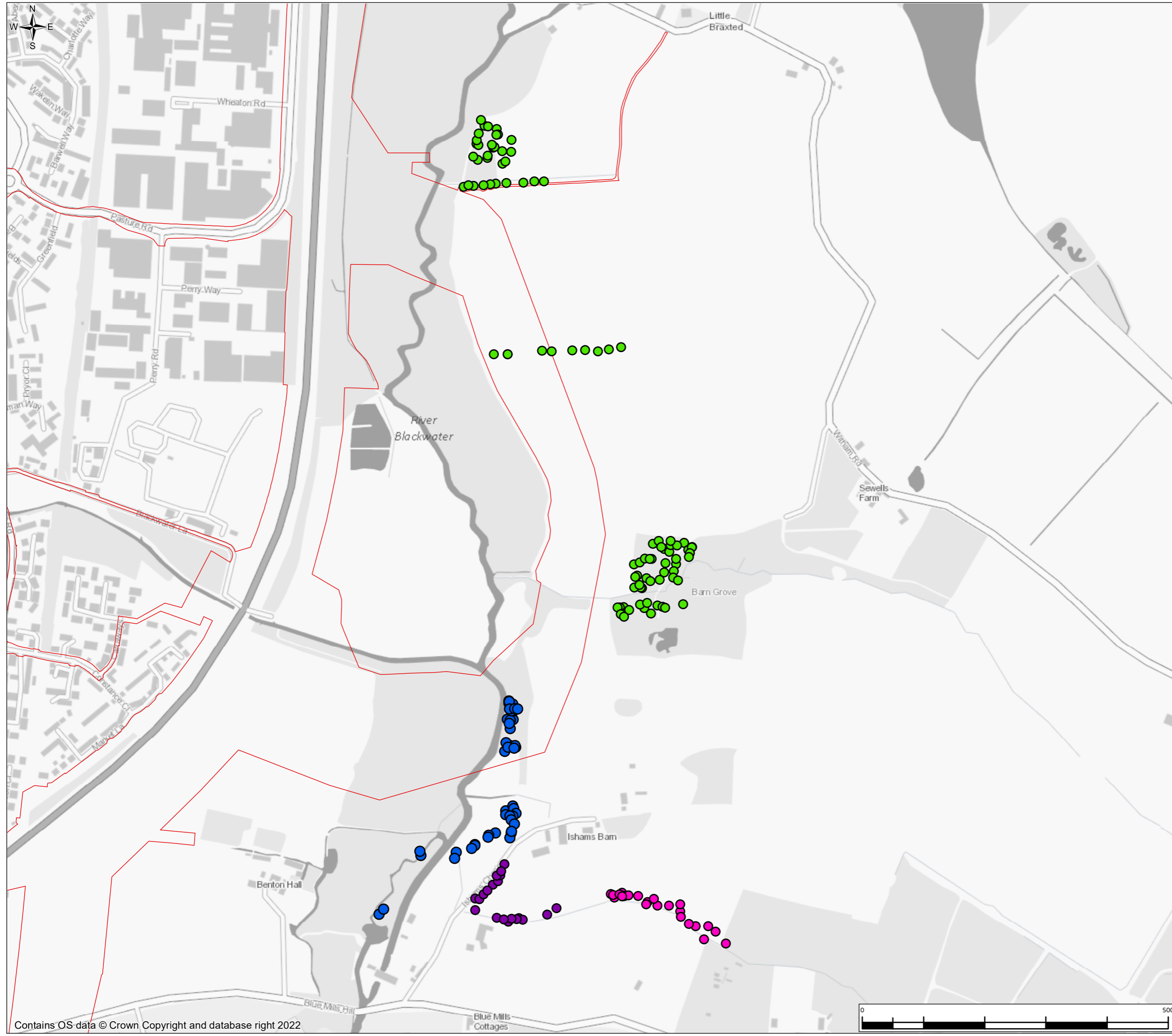
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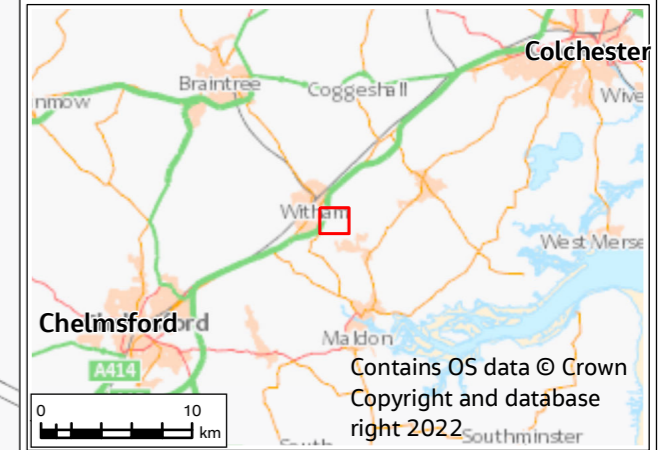
Appendix A Dormouse Survey Areas 2022

FIGURE 1



Legend

- Order Limits
- Land parcel A
- Land parcel B
- Land parcel C
- Land parcel D



| | | | | | | |
|------|-----------|---------------------|-------|---------|-------|--------|
| PO1 | 28/11/22 | Final | JC | TG | AJ | SL |
| Rev. | Rev. Date | Purpose of revision | Drawn | Check'd | Rev'd | Appr'd |



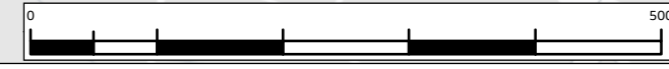
Project
REGIONAL DELIVERY PARTNERSHIP
A12 CHELMSFORD TO A120 WIDENING SCHEME

Drawing Title
DORMOUSE SURVEY AREAS 2022

Drawing Status
S4- SUITABLE FOR STAGE APPROVAL

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| Scale @ A3 | 1:6000 | DO NOT SCALE |
| Jacobs No. | B36601D4 | Rev P01 |
| Client No. | HE551497 | |

Drawing Number
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Appendix B Dormice habitat suitability, tube number and habitat description

Table A 1. Dormice habitat suitability, number of tubes and habitat description within the survey area.




| Land Parcel | Suitability | Number of tubes | Habitat description |
|-------------|-------------|-----------------|--|
| A | Sub-optimal | 22 | Plantation woodland consisting of conifer, elder (<i>Sambucus sp.</i>), hazel, bramble, field maple (<i>Acer campestre</i>), silver birch, blackthorn and hawthorn. |
| | Sub-optimal | 10 | Trimmed hedgerow consisting of hazel, hawthorn, elder and field maple, enclosing a field regularly used by livestock. |
| | Sub-optimal | 9 | Trimmed hedgerow consisting of hawthorn and bramble. |
| | Optimal | 49 | Connected woodland consisting of hazel, hawthorn, alder (<i>Alnus glutinosa</i>) and blackthorn. |
| B | Sub-optimal | 23 | Plantation woodland consisting of field maple, hazel, hornbeam (<i>Carpinus sp.</i>), lime (<i>Tilia sp.</i>) and several species of mature oak. |
| | Sub-optimal | 9 | Hedgerow consisting of limited food sources, comprising blackthorn and hawthorn. |
| | Sub-optimal | 11 | Woodland edge with poor understory consisting of oak, hawthorn, elder, blackthorn, black poplar (<i>Populus nigra</i>) and field maple. |
| | Sub-optimal | 4 | Scattered woodland with poor understory consisting of hawthorn, hornbeam and field maple. |
| C | Sub-optimal | 20 | Hedgerow with limited connectivity consisting of hawthorn, field maple, blackthorn, willow (<i>Salix sp.</i>), elder and horse chestnut (<i>Aesculus hippocastanum</i>). |


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| Land Parcel | Suitability | Number of tubes | Habitat description |
|-------------|-------------|-----------------|--|
| D | Sub-optimal | 26 | Sparse woodland consisting of blackthorn, hawthorn, oak, elder, field maple and hazel. |

Appendix C Photographs

Table B.1 Photographs of optimal / sub-optimal habitats within the site.

| Photograph | Habitat description |
|---|--|
|  | <p>Hedgerow in land parcel A with sub-optimal habitat suitability for dormice.</p> |
|  | <p>Woodland in land parcel A with optimal habitat suitability for dormice.</p> |
|  | <p>Woodland in land parcel B with sub-optimal habitat suitability for dormice.</p> |

| Photograph | Habitat description |
|---|--|
|  | <p>Woodland in land parcel B with sub-optimal habitat suitability for dormice.</p> |
|  | <p>Woodland in land parcel B with sub-optimal habitat suitability for dormice.</p> |
|  | <p>Birds nest found in one of the tubes in the woodlands of land parcel A.</p> |

Appendix D Dormouse nest tube survey visits 2022

Table C.1 Dormouse nest tube survey visits 2022

| Land Parcel | Survey status | | | | | | |
|-------------|----------------|----------|--------------------------------|----------------|----------------|---|-------------------------------|
| | April | May | June | July | August | September | October |
| A | Tubes deployed | Complete | 93% surveyed-restricted access | Complete | Complete | 89% surveyed-restricted access. Tubes collected. | - |
| B | - | - | - | Tubes deployed | Complete | Complete | Complete. Tubes collected. |
| C | Tubes deployed | Complete | Complete | Complete | Complete | Complete. Tubes collected. | - |
| D | Tubes deployed | Complete | Complete | Access refused | Access refused | Access refused | Access refused |