

# **XLINKS MOROCCO-UK POWER PROJECT**

## **Preliminary Environmental Information Report**

**Volume 2, Appendix 1.3: Dormouse Report**



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## **Annex**

Annex A: Full Dormouse Survey Results

## Glossary

Term	Meaning
Alverdiscott Substation site	The National Grid Electricity Transmission substation site within which the Alverdiscott Substation sits.
Applicant	Xlinks 1 Limited.
Converter Site	The Converter Site is proposed to be located to the immediate west of the existing Alverdiscott Substation site in north Devon. The Converter Site would contain two converter stations (known as Bipole 1 and Bipole 2) and associated infrastructure, buildings and landscaping.
Converter station	Part of an electrical transmission and distribution system. Converter stations convert electricity from Direct Current to Alternating Current, or vice versa.
Environmental Impact Assessment	The process of identifying and assessing the significant effects likely to arise from a Proposed Development. This requires consideration of the likely changes to the environment, where these arise as a consequence of a Proposed Development, through comparison with the existing and Proposed projected future baseline conditions.
HVDC Cables	The High Voltage Direct Current (HVDC) cables which would bring electricity to the UK converter stations from the Moroccan converter stations.
Landfall	The proposed area in which the offshore cables make landfall in the United Kingdom (come on shore) and the transitional area between the offshore cabling and the onshore cabling. This term applies to the entire landfall area at Cornborough Range, Devon, between Mean Low Water Springs and the Transition Joint Bay inclusive of all construction works, including the offshore and onshore cable routes, and landfall compound(s).
Nest Tube	Dormouse nest tubes are used to survey for dormouse. The tubes are 5 x 5 cm in cross section and 25 cm long, and made from stiff double walled black plastic. A plywood tray is placed inside, projecting 5 cm beyond the tube's entrance to allow the animals' easy access. The other end of the tube is sealed with a wooden block. The tubes are then suspended by wire or tape, or fixed firmly underneath horizontal limbs, where they resemble a hollow branch. Dormice form nests in these tubes and it is these nests that are used as indicators of their presence in the habitat.
Onshore HVDC Cable Corridor	The proposed corridor within which the onshore High Voltage Direct Current cables will be located.
Preliminary Environmental Information Report	A report that provides preliminary environmental information in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. This is information that enables consultees to understand the likely significant environmental effects of a Proposed Development and which helps to inform consultation responses.
Proposed Development	The element of the Xlinks Morocco-UK Power Project within the UK, which includes the offshore cables (from the UK Exclusive Economic Zone to landfall), landfall site, onshore Direct Current and Alternating Current cables, converter stations, road upgrade works and, based on current assumptions, the Alverdiscott Substation Connection Development.
Xlinks Morocco UK Power Project (the 'Project')	The overall scheme from Morocco to the national grid, including all onshore and offshore elements of the transmission network and the generation site in Morocco (referred to as the 'Project').

## Acronyms

Acronym	Meaning
EIA	Environmental Impact Assessment
HVDC	High Voltage Direct Current
NERC	Natural Environments and Rural Communities
PEIR	Preliminary Environmental Information Report
UK	United Kingdom

## Units

Units	Meaning
GW	Gigawatt
ha	Hectares
km	Kilometre
m	Metres
mm	Millimetres

# 1 DORMOUSE REPORT

## 1.1 Introduction

### Purpose and Scope of this Report

- 1.1.1 This document forms Volume 2, Appendix 1.3: Dormouse Report of the Preliminary Environmental Information Report (PEIR) prepared for the UK elements of the Xlinks Morocco-UK Power Project (referred to hereafter as ‘the Proposed Development’). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the Proposed Development.
- 1.1.2 RPS was commissioned by Xlinks 1 Ltd to undertake a series of surveys to provide an ecological baseline of habitats and species which could be affected by the proposed Onshore High Voltage Direct Current (HVDC) Cable Corridor and Converter Site from Cornborough Range at the coast to the existing Alverdiscott Substation Site.
- 1.1.3 As a part of this process, an initial assessment of the scope of ecological receptors which could be affected by the proposals, a desk study, Phase 1 Habitat Survey, and a preliminary protected species assessment were carried out. Further, a series of species-specific surveys were undertaken to provide a detailed baseline of the potential ecological receptors which could be affected by the proposed development. This report forms a part of the species-specific surveys and relates to the potential presence of dormouse. This assessment is intended to feed information into Volume 2, Chapter 1: Onshore Ecology and Nature Conservation of the PEIR.
- 1.1.4 The purpose of the dormouse survey was to determine the presence or likely absence of dormouse within suitable on-site habitats.
- 1.1.5 This report pertains to the dormouse survey and its results only; recommendations included within this report are the professional opinion of an experienced ecologist and therefore the view of RPS. The survey and subsequent report are prepared in accordance with the British Standard for Biodiversity Code of Practice for Planning and Development (BS42020:2013).
- 1.1.6 The design of the Proposed Development has changed since these surveys were undertaken. As such, updated surveys will be carried out, where possible, prior to application to ensure that all elements of the revised Proposed Development site have been considered. The updated survey results will be reported as part of the Environmental Statement.

### Proposed Development

- 1.1.7 The wider Project proposes to construct an international electricity interconnector cable linking renewable energy generating stations in Morocco with the electricity grid in the UK. The Project seeks to address three key challenges associated with the transition to a low carbon economy: securing low-cost power, from low-carbon sources whilst maintaining energy security through a reliable electricity network.
- 1.1.8 The Project would consist of a solar, wind and Battery Energy Storage System installation based in Morocco connected to the UK via subsea cables. Work has

been undertaken by RPS in relation to the terrestrial section of the HVDC Cable Corridor and infrastructure.

- 1.1.9 The proposed Offshore Cable Corridor makes landfall at the coastline at Cornborough Range, where the Onshore HVDC Cable Corridor then routes south of Bideford and crosses under the River Torridge via trenchless methods. The Onshore HVDC Cable Corridor then routes eastwards to a proposed Converter Site in Gammaton Moor. The route roughly follows the path of existing roads and lanes.

### Site Description

- 1.1.10 The onshore elements of the Proposed Development are located in north Devon. The Onshore HVDC Cable Corridor is approximately 14.5 km in length and the Converter Site is 37 ha. The National Grid coordinates for either end of the proposed route are SS412278 and SS501251. The centre of the Converter Site is at SS493238.
- 1.1.11 The Onshore HVDC Cable Corridor passes through a mixture of pastoral and arable farm land, with fields bounded by Devon hedgerows, and occasionally crossing small watercourses in wooded valleys. The Onshore HVDC Cable Corridor also crosses the River Torridge.
- 1.1.12 Aerial imaging available via Google Earth Pro was also reviewed to assess the site in relation to its context in the wider landscape.
- 1.1.13 The term Zone of Influence is used to describe the geographic extent of potential impacts of a proposed development. The Zone of Influence is determined by the nature of the development and also in relation to designated sites, habitats or species which might be affected by the proposals.
- 1.1.14 The survey included all dormouse habitat within the site boundary and adjoining sections of hedgerow.

## 1.2 Local Status of Dormouse

- 1.2.1 There is a known population of dormouse *Muscardinus avellanarius* in the local area. RPS have previously undertaken surveys in the locality, which confirmed presence of dormouse at within hedgerows along Dunn Lane near the centre of the Onshore HVDC Cable Corridor.
- 1.2.2 Local landowners have also provided anecdotal evidence of dormouse being present in woodland connected to onsite habitats at the eastern end of the site.
- 1.2.3 No records of dormouse were identified by the Devon Biodiversity Records Centre (RPS Desk study, 2022). Previous surveys undertaken for the Atlantic Array scheme identified the presence of dormice in hedgerows at a number of locations along the proposed Onshore HVDC Cable Corridor and close to the currently proposed Converter Site.
- 1.2.4 Dormice receive full protection under The Conservation of Habitats and Species Regulations 2010 and the Wildlife and Countryside Act 1981 (as amended) and are listed in Section 41 of the Natural Environments and Rural Communities (NERC) Act 2006 as species of principal importance for conservation in England.

## 1.3 Methods

### Nest Tube Survey

- 1.3.1 The nest tube survey was undertaken following a methodology based on published best practice guidelines (Bright, Morris & Mitchell Jones 2006; Chanin & Woods 2003).
- 1.3.2 Dormouse are arboreal, spending the majority of their time during the active season in the canopy. The nest tubes provide shelter in which dormice nests can be constructed, enabling the presence of dormouse to be confirmed. Nest tubes can also be used by other mice species but differences in the structure of nests enables identification of features created by dormice.
- 1.3.3 The nest tubes used were based on the standard design described in the published guidelines and as recommended by the mammal society and were set following the methodology described by Chanin and Woods (2003).
- 1.3.4 A total of 310 nest tubes were installed in each of the hedgerows and copses throughout the site between 5 and 8 July 2021. The survey covered all suitable habitat through which the Onshore HVDC Cable Corridor will cross.
- 1.3.5 Nest tubes were installed at a recommended tube spacing of 20 m (Chanin & Woods 2003). The locations of the hazel dormouse nest tubes are provided in **Figure 1.1** to **Figure 1.5** below.
- 1.3.6 The nest tubes were then inspected on six separate occasions during the following dates:
- 26 – 28 July 2021;
  - 23 – 25 August 2021;
  - 28 – 29 September 2021;
  - 26 – 27 October 2021;
  - 23 – 24 November 2021; and
  - 29 – 30 June 2022.
- 1.3.7 All the survey inspections coincided with dry weather. Each nest tube was checked and any signs of dormouse occupation or evidence of activity by small mammals or other species was recorded.

### Survey Effort

- 1.3.8 The dormouse survey guidelines provide recommendations on the minimum survey effort for presence/absence surveys. A method is outlined for quantifying survey effort based on the number of nest tubes used and the likelihood of encountering dormice during each month between April and November (when dormice are typically active).
- 1.3.9 Using this method, the months April through November are each allotted a value referred to as an 'index of probability' score reflecting the relative likelihood of dormice being detected in nest tubes in that month. The 'index of probability' scores for each month are given in **Table 1.1**. The survey effort is calculated by totalling the index of probability scores for each month in which nest tubes are installed.

**Table 1.1: Dormouse survey months and survey effort scores**

Survey Month	Index of Probability Score (based on 50 nest tubes placed in suitable habitat at 20 m spacing)
April	1
May	4
June	2
July	2
August	5
September	7
October	2
November	2

1.3.10 A total survey effort score of 20 is considered to be the minimum requirement to determine the presence/likely absence of dormouse. The 2021 survey covered July to November 2021 and June 2022, achieving an Index of Probability score of 20.

## 1.4 Limitations

### Survey Access

- 1.4.1 Survey access was not granted to a parcel of land at the west of the Onshore HVDC Cable Corridor which comprises several pasture fields and a single crop field bounded by hedgerows. Based on aerial imagery, several of the hedgerows are gappy or defunct reducing their suitability for dormice.
- 1.4.2 The Onshore HVDC Cable Corridor will follow the existing access points where possible however this may require some hedgerow removal to widen the working area and there will be a requirement for new access points to be made in other hedgerows.
- 1.4.3 The presence of dormouse will be assumed in the inaccessible land parcel and measures will be followed during the construction as with other areas of the Onshore HVDC Cable Corridor to protect dormouse.

### Dormouse Tube Removal

- 1.4.4 Throughout the 2021 survey visits, a small number of dormouse tubes were removed by cattle or hedge flailing throughout the survey period. Dormouse tubes were replaced accordingly.
- 1.4.5 Given the high number of dormouse tubes used across the survey area and the good coverage achieved, this is not considered to be a significant constraint.
- 1.4.6 During the final survey visit in June 2022, approximately one third of the dormouse tubes remained. Given the consistency of the 2021 survey results and the precautionary assumption that dormouse are present in low numbers in suitable habitat throughout the route, this is not considered to be a significant constraint on the validity of the results.



## Accurate Lifespan of Ecological Data

- 1.4.7 The majority of ecological data remain valid for only short periods due to the inherently transient nature of the subject. The survey results contained in this report are considered accurate for two years, assuming no significant considerable changes to the site conditions.
- 1.4.8 Site specific surveys used to inform Volume 2, Chapter 1: Onshore Ecology and Nature Conservation of the PEIR were undertaken between 2021 and 2024. CIEEMs Advice Note: On the lifespan of ecological reports and surveys (CIEEM, 2019) recommends that surveys exceeding three years in age are likely to require updating, whilst surveys undertaken between 18 months and three years prior to application may require site visits pre-construction to review the validity of survey findings. Therefore, in accordance with CIEEM guidance, site specific surveys undertaken over 18 months prior to the submission will be updated, where required (following a site review to confirm the validity of survey findings by a suitably qualified ecologist). Those surveys undertaken over three years will be supplemented by further surveys (if DCO is granted) to be completed pre-construction.

## 1.5 Results

### Nest Tube Survey

#### Dormouse

- 1.5.1 Dormouse were recorded at six locations throughout the survey visits, with nests recorded on both the western and eastern sides of the River Torridge.
- 1.5.2 Dormouse were recorded in three locations on the eastern side of the river. The first location is the eastern end of the route where the Alverdiscott Substation Connection Development for the Onshore HVDC Cable Corridor would be located. A dormouse and its nest were present within the wooded stream corridor at the east of the field. An empty dormouse nest was present within a hedgerow in the same field.
- 1.5.3 At the third location, an empty dormouse nest was recorded within a hedgerow bounding a small pasture field along the path of the Onshore HVDC Cable Corridor.
- 1.5.4 On the western side of the river dormouse were recorded in a further three locations along the path of the proposed cable route. At the fourth location, an empty dormouse nest was recorded within a hedgerow bounding an arable field to the west of the A386.
- 1.5.5 At the fifth and sixth locations, empty dormouse nests were recorded in hedgerows bounding arable fields to the south of the A39.
- 1.5.6 A summary of the findings of the dormouse surveys is provided in **Table 1.2** and presented in **Figure 1.1** to **Figure 1.5** below. The full survey results are provided in **Annex A: Full Dormouse Survey Report** at the end of this report.

## Other Fauna

1.5.7 Woodmouse and empty Apodemus sp. nests were recorded during each of the survey visits at several locations. Occasional birds' nests and several berry caches were also recorded.

**Table 1.2: Dormouse survey results summary.**

Dormouse Tube Number	Results	Month Recorded
2	Dormouse nest (empty)	October – November
48	Dormouse nest (empty)	August - November
122	Dormouse nest (empty)	August – November
258	Dormouse nest (empty)	September – November
277	Dormouse nest (empty)	October – November
306	Dormouse nest (empty)	November
306	Young dormouse in nest	October

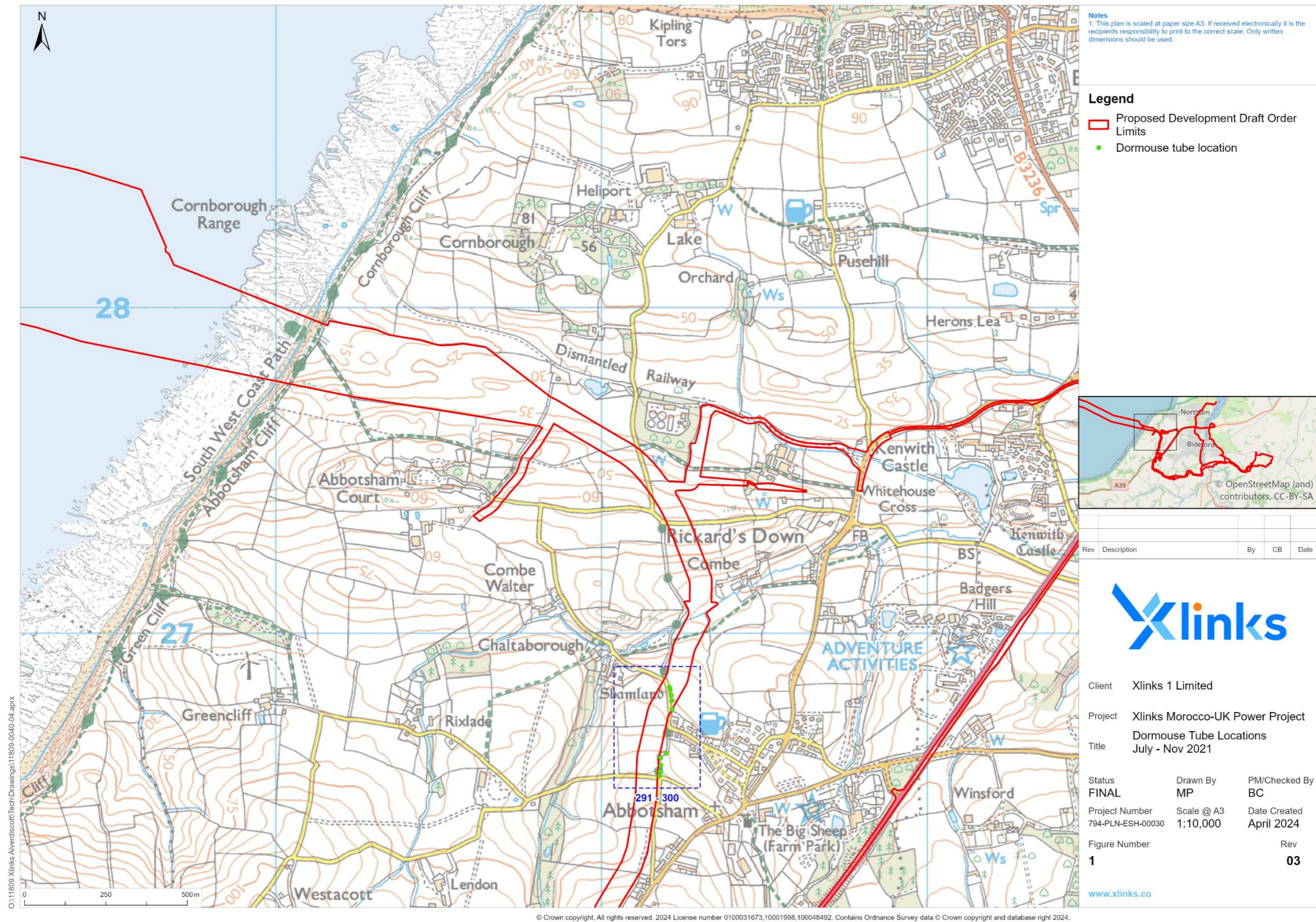


Figure 1.1: Results of the Hazel Dormouse tube surveys (sheet 1)

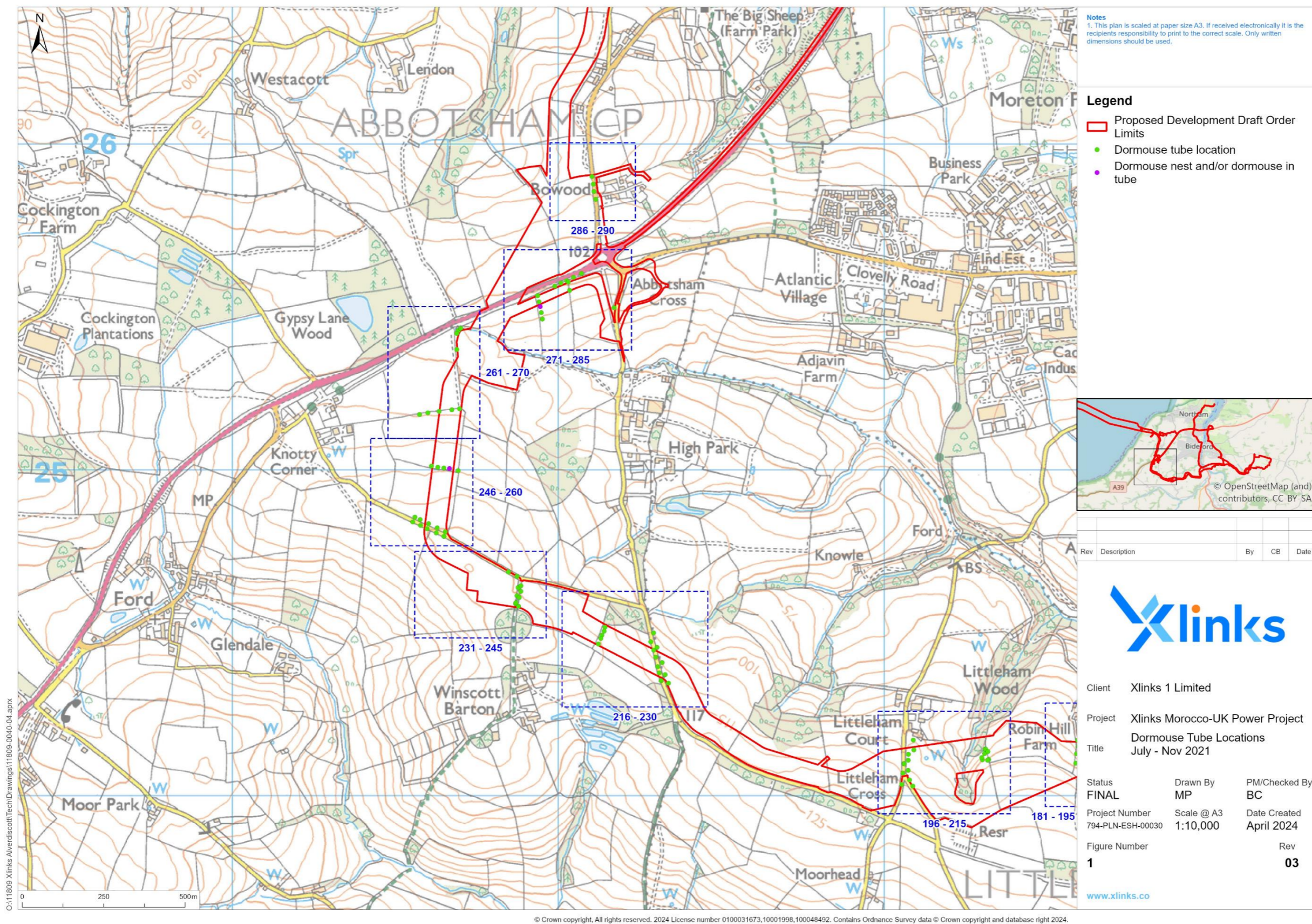


Figure 1.2: Results of the Hazel Dormouse tube surveys (sheet 2)

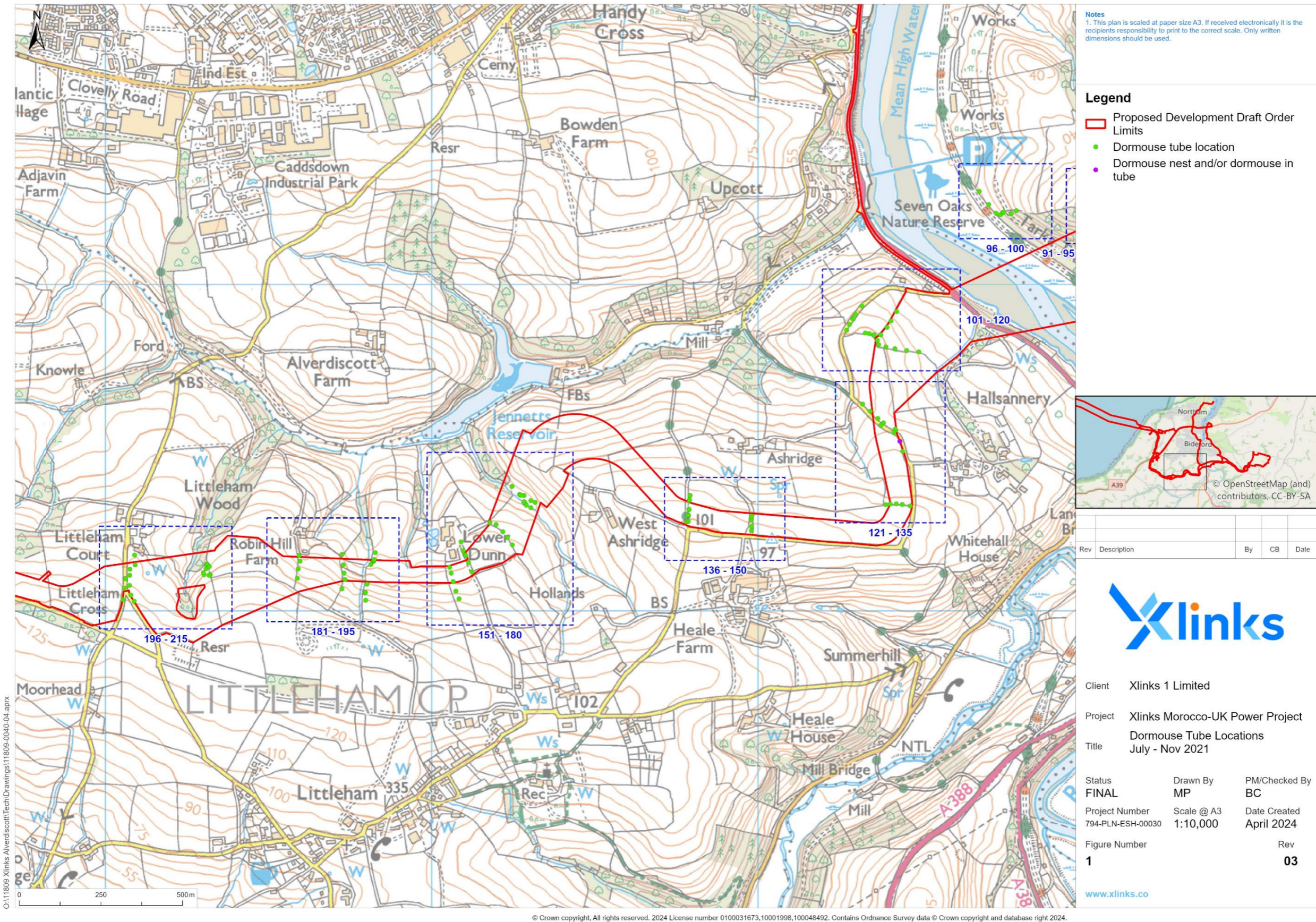


Figure 1.3: Results of the Hazel Dormouse tube surveys (sheet 3)

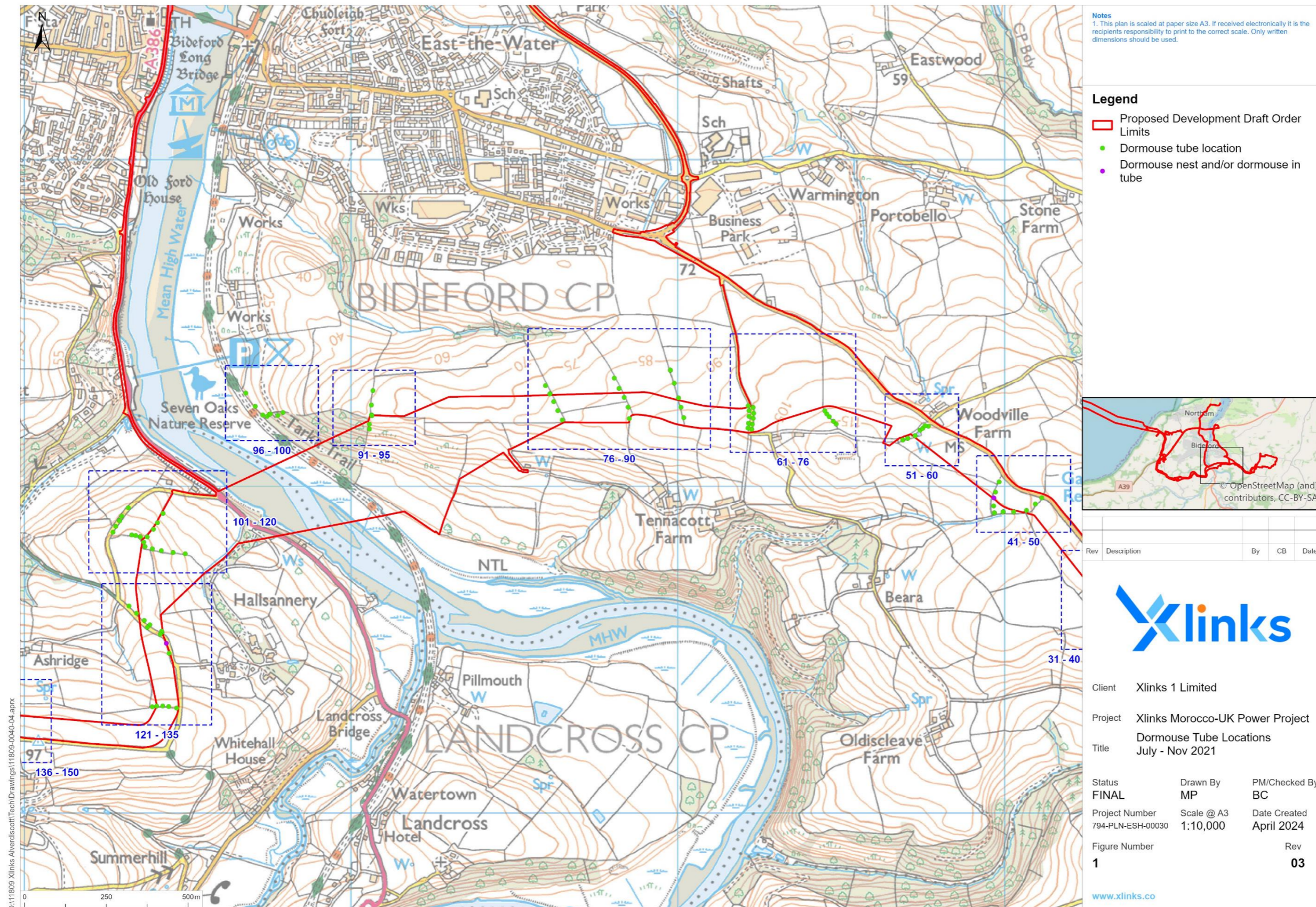


Figure 1.4: Results of the Hazel Dormouse tube surveys (sheet 4)

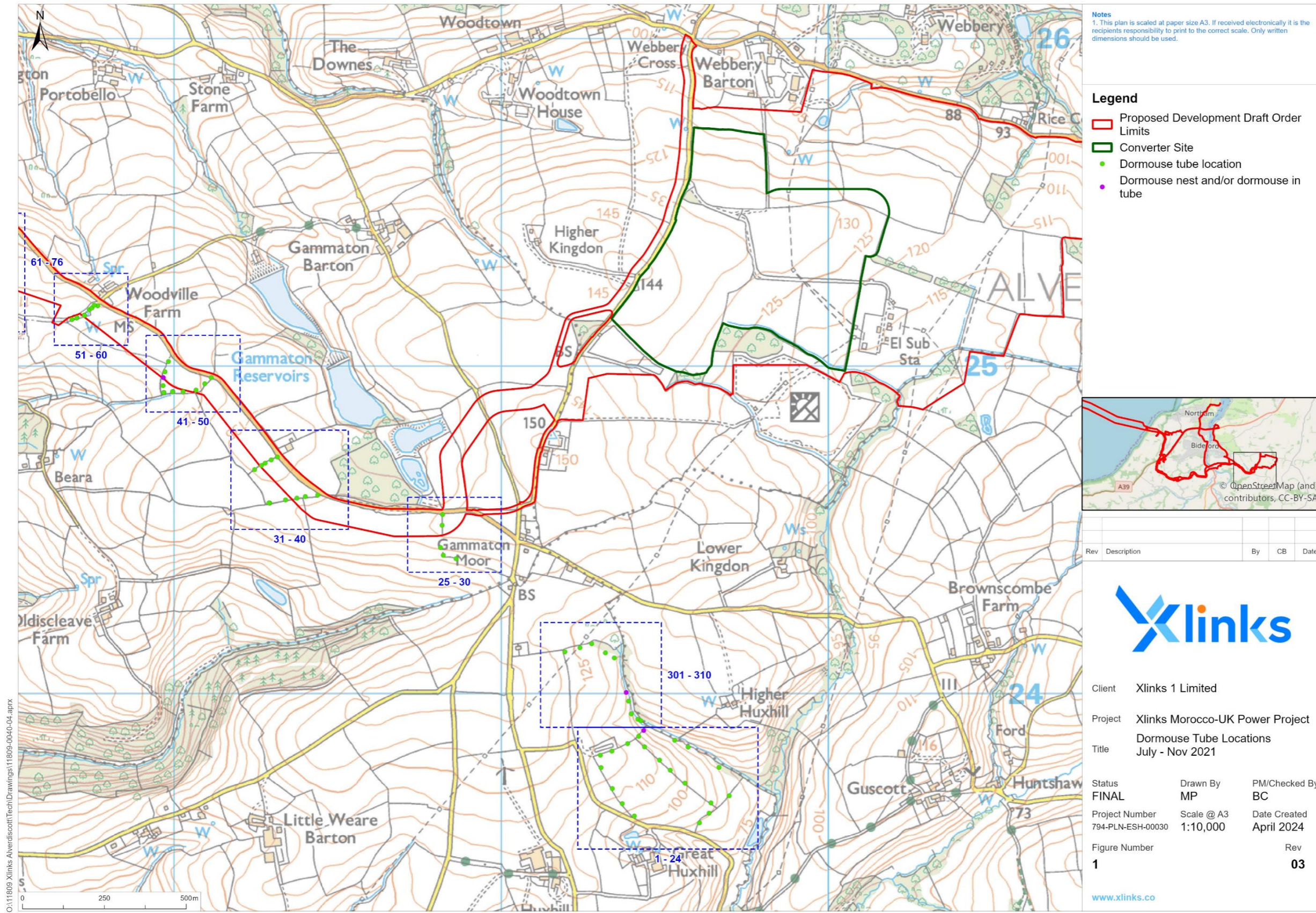


Figure 1.5: Results of the Hazel Dormouse tube surveys (sheet 5)

## 1.6 Discussion and recommendations

### Dormouse Population

- 1.6.1 The survey has confirmed that dormouse are present within the site with dormouse recorded in low numbers throughout the survey area.
- 1.6.2 The site is located in a rural area and the surrounding landscape largely comprises farmland and small villages and hamlets. Hedgerows and small sections of woodland are throughout the survey area provide suitable dormouse habitat. With the exception of the River Torridge and A39 there are few barriers for dormouse dispersal throughout the site.
- 1.6.3 Dormouse will move nesting locations throughout the year. The locations of dormouse recordings are spread throughout the survey area and have good habitat connectivity to areas where no dormouse nests were recorded and there is potential for dormouse to move between these areas. It is therefore recommended that under a precautionary basis it is assumed that dormouse are present throughout the site.

### Potential Impact of Works

- 1.6.4 The Onshore HVDC Cable Corridor and associated infrastructure and access routes will follow the path of existing field entrances wherever possible which will minimise disturbance of dormouse habitat. Where this is not possible, the temporary loss of small sections of hedgerow will be required to facilitate the cable route installation. The proposals will retain all areas of woodland.
- 1.6.5 Sections of hedgerow removal are anticipated to be no more than 12 m wide in most cases.
- 1.6.6 The proposed Converter Site at Gammaton Moor would result in some permanent hedgerow loss.
- 1.6.7 The proposed compounds could result in potential disturbance to dormice utilising hedges forming the boundaries of proposed compound areas.
- 1.6.8 Mitigation will be required to protect dormouse and their nests during the construction phase.

### Recommendations

- 1.6.9 As the Proposed Development will result in temporary and potentially permanent destruction of habitat used by dormice, a licence under the Conservation of Habitats and Species Regulations 2017 will be required. This will require the production of a detailed dormouse mitigation strategy.
- 1.6.10 Work should be timed to avoid impacts on dormouse where possible. This would include phased hedgerow cutting. Following this method, hedgerows should be cut to no less than 150 mm in winter when dormouse will be in hibernation (typically December to early March). Disturbance of hedgerow bases (vegetation below 150 mm and any below ground disturbance such as root removal) should only be undertaken when dormouse will be active (typically April to November inclusive).



- 1.6.11 Any areas of hedgerow cut when dormouse may be active should first be checked for the presence of dormouse nests by a suitably experienced Ecological Clerk of Works.
- 1.6.12 Full reinstatement of hedgerows on a like-for-like basis will be undertaken. This would ensure the habitat removed and the potential severance of connectivity will be addressed.
- 1.6.13 In addition, habitat suitable for dormice should be created as a part of the landscape scheme associated with the Proposed Development.

## **1.7 Conclusions**

### **Dormouse Population**

- 1.7.1 Devon hedgerows and small sections of woodland throughout the site provide habitat for dormouse. Low numbers of dormouse were recorded in several locations along the Onshore HVDC Cable Corridor.
- 1.7.2 Given the good connectivity of suitable habitat within the site it is recommended that the presence of dormouse is assumed throughout the site. The Proposed Development will therefore require licensing under the Conservation of Habitats and Species Regulations 2017, to cover temporary damage to dormouse habitat (hedgerows affected by the Onshore HVDC Cable Corridor), permanent damage to dormouse habitat (hedgerows removed as a result of construction of the Converter Site and those affected by the proposed road widening along Gammaton Road for improved access). Disturbance to dormice, particularly as a result of activity within construction compounds may also occur to animals utilising hedges on the boundaries of the compounds.
- 1.7.3 The Proposed Development is relatively low impact and most of the existing core habitat (woodlands) will be retained and protected. Where temporary habitat loss is required appropriate mitigation measures should be implemented to protect dormouse during the construction phase.
- 1.7.4 Reinstatement of affected hedgerows on a like-for-like basis would ensure current connectivity will be maintained post completion of construction.
- 1.7.5 Habitat creation will be implemented to compensate for permanent losses to habitat (hedgerows) associated with construction of the Converter Site and also for hedgerow modifications required to improve access. Hedgerow and woodland habitat will be created as part of the Biodiversity Net Gain and landscape requirements associated with the Proposed Development. These habitat elements are likely to provide additional resources for dormice within this landscape.

## **1.8 References**

Bright, P. Morris, P. & Mitchell-Jones, T. (2006). The Dormouse Conservation Handbook 2nd Ed. English Nature (Natural England) Peterborough.

Chanin, P. & Woods, M. (2003). English Nature Research Report No. 524: Surveying Dormice using nest tubes. Results and experiences from the South West Dormouse Project. English Nature (Natural England) Peterborough.

## Annex A: Full Dormouse Survey Report

**Apx Table 1: Full Dormouse Survey Report**

Dormouse Tube Number	Results	Month Recorded
2	Dormouse nest (empty)	October – November
43	<i>Apodemus</i> nest	September
48	Dormouse nest (empty)	August - November
49	<i>Apodemus</i> nest	July - August
58	<i>Apodemus</i> nest	September
64	Wood mouse in nest	July - August
72	<i>Apodemus</i> nest	September
76	<i>Apodemus</i> nest	August - September
77	Wood mouse nest (empty)	November
77	Wood mouse in nest	October
78	<i>Apodemus</i> nest	November
78	Wood mouse in nest	October
88	<i>Apodemus</i> nest	August
94	<i>Apodemus</i> nest	October
95	<i>Apodemus</i> nest	October
98	<i>Apodemus</i> nest	July
110	<i>Apodemus</i> nest	October - November
118	<i>Apodemus</i> nest	September
122	Dormouse nest (empty)	August - November
126	<i>Apodemus</i> nest	September
135	<i>Apodemus</i> nest	October - November
136	<i>Apodemus</i> nest	October
147	<i>Apodemus</i> nest	October
148	<i>Apodemus</i> nest	October
154	Hawthorn berry cache	September
155	<i>Apodemus</i> nest	October
161	Wood mouse in nest	September
172	<i>Apodemus</i> nest	October - November
177	Wood mouse in nest	September
188	Wood mouse in nest	August
188	Wood mouse nest (empty)	September
200	<i>Apodemus</i> nest	August - September
202	<i>Apodemus</i> nest	September - October
204	Hawthorn berry cache	September
234	<i>Apodemus</i> nest	November
241	Bird nest	September
244	Hawthorn berry cache	September
258	Dormouse nest (empty)	September - November

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<b>Dormouse Tube Number</b>	<b>Results</b>	<b>Month Recorded</b>
274	<i>Apodemus</i> nest	October
275	<i>Apodemus</i> nest	October - November
277	Dormouse nest (empty)	October - November
299	<i>Apodemus</i> nest	October
302	<i>Apodemus</i> nest	October
306	Dormouse nest (empty)	November
306	Young dormouse in nest	October
308	<i>Apodemus</i> nest	October