

# Rampion 2 Wind Farm

## Category 6: Environmental Statement

### Volume 4, Appendix 22.9: Hazel dormouse report 2020-2022

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# 1. Introduction

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## 1.1 Background

- 1.1.1 This Appendix should be read in conjunction with **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the Environmental Statement (ES) (Document Reference: 6.2.22) which is provided in support of the delivery of an Environmental Impact Assessment (EIA) associated with the Rampion 2 Offshore Wind Farm, hereafter referred to as the 'Proposed Development' or 'Rampion 2'.
- 1.1.2 This Appendix describes the survey method and summarises the results of a hazel dormouse survey undertaken between 2020 and 2022. **Annex D** provides the scientific names of species described in this appendix.

## 1.2 Purpose of this Appendix

- 1.2.1 The proposed DCO Order Limits include, and are adjacent to, habitats with the potential to support hazel dormouse *Muscardinus avellanarius*, a European Protected Species (EPS)<sup>1</sup>.
- 1.2.2 This Appendix outlines the methodologies used, and summarises the results gathered as part of an effort to determine the presence of hazel dormouse.
- 1.2.3 Hazel dormouse surveys were undertaken in October and November 2020, and between April and November in both 2021 and 2022. Guidance suggests that these are the months in which hazel dormouse are most likely to be encountered during surveys.
- 1.2.4 The following survey methodologies were used:
- nest tube survey to ascertain presence / likely absence; and
  - hazelnut search within areas considered suitable habitat.
- 1.2.5 The hazel dormouse surveys were designed to identify the presence or likely absence of hazel dormouse within, or close to, the proposed DCO Order Limits connected by functionally linked habitat.

## 1.3 Legislation

- 1.3.1 Legislation is detailed in full in **Annex C**, but in brief; hazel dormouse are protected under the Wildlife and Countryside Act 1981 (as amended). This legislation makes it an offence to intentionally or recklessly:
- *“disturb hazel dormice while they occupy a structure or place used for shelter or protection; or*

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<sup>1</sup> A European Protected Species receives specific legal protection under the Conservation of Habitats and Species Regulations 2017 (as amended).

- *obstruct access to a place of shelter or protection.”*

1.3.2 This species is also designated and protected as a EPS. EPS are protected under the Conservation of Habitats and Species Regulations 2017, which makes it an offence to:

- *“deliberately kill, injure, disturb or capture them;*
- *damage or destroy their breeding sites and resting places; or*
- *possess, control, transport (alive or dead).”*

## 1.4 Structure of this Appendix

1.4.1 This Appendix is structured as follows:

- **Section 2: Methods;**
- **Section 3: Results;**
- **Section 4: Discussion;**
- **Section 5: References;**
- **Annex A: Figures;**
- **Annex B: Full survey results;**
- **Annex C: Legislation; and**
- **Annex D: Scientific species names.**

## 2. Methods

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### 2.1 Overview

2.1.1 Details of the methodology used for establishing the ecological baseline for hazel dormouse are provided below (see **Sections 2.3, 2.4 and 2.5**). The approach to hazel dormouse survey was discussed with Natural England in April 2020, and again within a variety of forums with stakeholders including South Downs National Park Authority, West Sussex County Council and the Sussex Wildlife Trust (see **Section 22.3 of Chapter 22: Terrestrial ecology and nature conservation, Volume 2** (Document Reference: 6.2.22) of the ES) with agreement to the approach documented through meeting minutes.

### 2.2 Survey guidance

2.2.1 The following survey guidance has been taken into account in the methodology design. Any deviation from standard industry practice is noted in **Section 2.6**:

- Interim Natural England Advice Note: Dormouse Surveys for Mitigation Licensing – Best practice and common misconceptions (Natural England, 2011);
- The Dormouse Conservation Handbook, Second Edition (Bright et al., 2006);
- Standing Advice Note; Dormouse (Natural England, 2015); and
- Guidance on Ecological Survey and Assessment in the UK During the COVID-19 Outbreak, (Chartered Institute of Ecology and Environmental Management (CIEEM), 2021).

### 2.3 Desk study

2.3.1 An environmental desk study was undertaken in 2020 as part of the Environmental Impact Assessment scoping (RED, 2020), with an update in May 2023 (collectively: the 'desk study'). The desk study provided records of hazel dormouse within 5km of the proposed DCO Order Limits. This data was used to formulate the survey design, as well as inform assessment (see **Chapter 22: Terrestrial Ecology and Nature Conservation, Volume 4** (Document Reference: 6.2.22) of the ES).

### 2.4 Survey design

2.4.1 The proposed DCO Order Limits contain habitats with high potential for the presence of hazel dormouse as it supports a strong well-connected mosaic of woodlands and hedgerows. Although the loss of these types of habitat will be relatively low in absolute area terms compared with losses of arable land or pasture; the potential for this loss to fragment the landscape and interfere with breeding success and dispersal of hazel dormouse remains a key consideration.

- 2.4.2 A full survey programme to confirm presence / likely absence of hazel dormouse in all suitable habitats within the proposed DCO Order Limits was not deemed proportionate, especially given the 'Rochdale Envelope' approach (Planning Inspectorate, 2018).
- 2.4.3 Instead, and in line with CIEEM guidance (CIEEM, 2018), discrete 'survey sites' were selected for sampling. These survey sites were chosen based on their level of potential to support hazel dormouse and, as important, where it was considered that works associated with the Proposed Development (particularly loss of hedgerows and/or woodland) could contribute to significant adverse effects on hazel dormouse populations at that location.

## Survey site selection locations

- 2.4.4 Optimal hazel dormouse habitat is comprised of coppiced woodland, containing hazel, oak, bramble and honeysuckle, which are important food sources. Ancient semi-natural woodland, broadleaved deciduous woodland and dense, outgrown hedgerows that support a range of fruit-bearing species and are well-connected to the wider landscape are also considered good hazel dormouse habitat (Bright, 2006).
- 2.4.5 The survey focused on six site locations across 2020 and 2021, with a further two sites added in 2022. All survey sites were in proximity to, or intersected with, the proposed DCO Order Limits as they were at the time of the survey. Since that time, the layout of the proposed DCO Order Limits has been finalised to the current configuration (see **Figure 22.9.1, Annex A**).
- 2.4.6 Hazel dormouse survey site selection was based on an interpretation of the desk study (see **Appendix 22.2: Terrestrial ecology desk study, Volume 4** (Application Document Reference: 6.4.22.2)), and Phase 1 habitat survey results (see **Appendix 22.3: Extended Phase 1 habitat survey, Volume 4** (Application Document Reference: 6.4.22.3)). Nest tube micro-siting was then informed by a scoping exercise at each survey site. Indicative locations of the eight survey sites are presented in **Figure 22.9.2a-c, Annex A**. Many sections of the onshore cable corridor were unlikely to be suitable to support hazel dormouse as they were prone to flooding (for example, Floodplain and Coastal Grazing Marsh and associated low lying areas in the Arun and Adur Valleys) and were therefore not selected for further survey work.
- 2.4.7 As the design of the Proposed Development evolved, a number of the survey sites areas are no longer within or adjacent to the proposed DCO Order Limits. However, the full hazel dormouse survey results are provided in this Appendix for the purpose of providing useful context.
- 2.4.8 The survey sites are referred to as follows:
- Survey site 1: Crossbush;
  - Survey site 2: Warningcamp;
  - Survey site 3: Wiston;
  - Survey site 4: Partridge Green;



- Survey site 5: Wineham;
- Survey site 6: Kent Street;
- Survey site 7: Oakendene Industrial Estate; and
- Survey site 8: Ashurst.

## 2.5 Field survey methodology

- 2.5.1 The survey guidance set out by Bright et al. (2006) states that to effectively detect presence or likely absence of hazel dormouse a minimum of 50 nest tubes should be placed in for every continuous area of suitable habitat. The nest tube mimics a suitable nesting site on a branch of a tree or shrub. Nest tubes were made from a stiff black plastic sheet folded into a tube measuring approximately 5cm x 5cm square in cross section and 25cm long. A plywood tray is placed inside, with one end of the tube sealed with a wooden block mounted on the tray. Tubes were tied to the underside of suitable branches using wire.
- 2.5.2 Nest tube deployment was undertaken as follows:
- 2020: Nest tubes installed at Sites 1 and 2 in September;
  - 2021: Nest tubes installed at Site 6 in April and Sites 3,4 and 5 in July; and
  - 2022: Nest tubes installed at Sites 7 and 8 in April.
- 2.5.3 Once installed, survey guidance states that nest tubes should be checked every month for an entire season (April / May to October) for signs of hazel dormouse occupancy.

### Nest tube survey technique

- 2.5.4 To effectively check each nest tube, a quiet and careful approach was made by the surveyor before the entrance was sealed with a cloth to prevent animals from escaping before they could be recorded. The inside of the nest tube was then carefully inspected for the presence of nests or animals. Any nesting material found within nest tubes was replaced 'as found' and the nest tube retied in the same location.

### Other hazel dormouse field signs

- 2.5.5 During each hazel dormouse survey visit other signs of hazel dormouse presence were also searched for around tube locations, such as nests within trees and shrubs, and feeding remains comprising hazelnuts, honeysuckle flowers and stripped honeysuckle bark.
- 2.5.6 Nut searches were also conducted between October and November 2021 (inclusive) at survey sites 1 to 6 and between October and November 2022 at survey site 7 and 8 in order to supplement the presence or likely absence surveys. Bright et al. (2006) recommends searching on the ground around hazel stools in five 10m by 10m quadrats, searching for 20 minutes at each location. Hazelnuts eaten by hazel dormouse have a distinctive smooth round hole, as opposed to those

eaten by other rodents where tooth marks are visible; this provides a definitive technique for confirming hazel dormouse presence.

## Index of Probability

- 2.5.7 The current standing advice note from Natural England (Bright et al, 2006) bases the level of survey effort required and the corresponding likelihood of detecting dormouse on an Index of Probability (the 'index'). This index based on the number of nest tubes used for survey, combined with the number of months over which the surveys of the nest tubes is undertaken.
- 2.5.8 Within the index, each month has a probability value associated with it based on the known suitability of dormouse to use nest tubes within that month. The highest probability values are obtained during May, August and September, relating to the period of early nest building and dispersing sub-adults (see **Table 2-1**).

**Table 2-1 Index of Probability of finding dormice in nest tubes in any one survey month**

Month of survey visit	Index of Probability value (for 50 tubes)
April	1
May	4
June	2
July	2
August	5
September	7
October	2
November	2
Minimum requirement: 20	

- 2.5.9 For each month that the nest tubes are in place and surveyed, that month's value is summed to provide a final Probability Score. In order for a dormouse survey to be considered valid and to reliably indicate presence of likely absence, the total score at the end of survey must be at least 20.

## 2.6 Limitations

- 2.6.1 Due to land access restrictions, it was not possible to deploy all nest tubes in April 2021, deployment was delayed in Survey sites 3, 4 and 5. **Table 2-2** summarises the reasons for the delayed deployment.

**Table 2-2 Summary of Sites with delayed nest tube deployment**

<b>Survey site</b>	<b>Nest tube deployment date</b>	<b>Reason for delayed deployment</b>	<b>Disruption significant</b>
<b>Survey site 3</b>	24 June 2021	Land access restrictions.	No, additional (70) nesting tubes deployed
<b>Survey site 4</b>	15 in April 2021 and 35 in June 2021	Two stage deployment was undertaken as further land parcels became available.	No
<b>Survey site 5</b>	50 in June 2021 and 25 in July	Two stage deployment was required due to the temporary restriction of land access at the deployment site.	No, additional (75) nesting tubes deployed

- 2.6.2 Nest tubes in Survey sites 1 and 2 were left in situ between 2020 and 2021, however a proportion in each site were redeployed ahead of the 2021 surveys following the removal of an onshore cable route option being considered at Crossbush. Twenty tubes were relocated at Survey site 1 and 53 tubes were relocated at Survey site 2 to allow for further survey coverage.
- 2.6.3 Eight nest tubes could not be checked in Survey site 5 in August 2021 due to the temporary land access restrictions.
- 2.6.4 Four nest tubes could not be checked in Survey site 1 in Batworth Park Plantation in August 2021 due to dense scrub growth preventing access.
- 2.6.5 In 2021, a number of hedgerows at Survey site 5 were found to be defunct and of poor quality on the initial site visit, and so nest tubes were placed in more suitable areas within Survey site 5. Similarly, an area of suitable woodland within Survey site 5 could not be surveyed due to the limited availability of understorey cover or suitable branches to attach the nest tubes to, and so tubes were deployed in different area of the same woodland.
- 2.6.6 In 2022, a number of hedgerows at Survey site 7 were found to be defunct and of poor quality, as well as evidence of regular and heavy flailing, and so nest tubes were placed in more suitable areas within Survey site 7. Survey site 8 could not be accessed for survey in June and July 2022 due to land access restrictions.
- 2.6.7 Nest boxes were not deployed in addition to nest tubes at any of the survey sites as they do not contribute to the index of probability score and a sufficient area of suitable habitat was available at each survey site as not to require them.
- 2.6.8 All survey sites contained numerous areas of mature hazel, however 2021 was not a mast year and the trees produced negligible numbers of nuts, and as such, five 10m by 10m quadrats were not feasible at any of the survey sites. Bright et al. (2006) was adapted by collecting and assessing all hazelnuts eaten by rodents to ensure an appropriate level of search effort at each location. Furthermore, search

areas were expanded at Survey sites 3, 4 and 5 to increase the detection of hazelnuts. Despite this and following an adequate search effort, 100 hazelnuts could not be found to be assessed at Survey sites 1 (59) and 6 (40).

- 2.6.9 The limitations above (**paragraphs 2.6.1 - 2.6.8**) are not deemed to be significant, where necessary additional nesting tubes were deployed to ensure a minimum threshold index of probability score was obtained.

## 3. Results

### 3.1 Desk study results

- 3.1.1 A total of 265 records of hazel dormouse made within 5km of the proposed DCO Order Limits were provided by Sussex Biodiversity Records Centre (SxBRC). All records were within the last ten years. None of these were made on land inside the proposed DCO Order Limits. A summary of the records is provided below in **Table 3-1**.

**Table 3-1 Desk study results**

Number of records	Distance and direction from proposed DCO Order Limits
49	Within 1km – To the north and north-west
77	Within 1km to 3km – To the east and south-east
139	Within 3km to 5km – To the south-east

- 3.1.2 Records were primarily clustered around Binsted Woods (2.5km west of the proposed DCO Order Limits and 2.4km west of Survey site 1); and north of Storrington (1.2 to 3.1km north of the proposed DCO Order Limits and 3.8km west of Survey site 3).
- 3.1.3 The closest records were located just south of the A27 at Hammerpot (300m south of the proposed DCO Order Limits).
- 3.1.4 **Figure 22.9.3, Annex A** shows the distribution of the desk study records.

### Survey site selection

- 3.1.5 Suitable hazel dormouse habitat was recorded in all survey sites, and nest tubes were placed in predetermined locations based of the Phase 1 habitat survey mapping data (see **Appendix 22.3: Extended Phase 1 Habitat Survey, Volume 4** (Document Reference: 6.4.22.3)), as shown below in **Table 3-2**.
- 3.1.6 Rationale for survey site selection is provided in **Table 3-2** below, with a summary of site size / length and the number of nest tubes used, and nest tube locations for each survey site are presented in **Figure 22.9.4a-I, Annex A**.

**Table 3-2 Survey Sites and rationale for survey**

<b>Survey Site</b>	<b>Rationale for survey</b>	<b>Size / Length of site</b>
<p>Survey site 1 <b>Crossbush</b></p> <p>Surveyed in 2020 and 2021</p>	<p>Site description: Two ancient semi-natural woodland blocks (Batworth Park Plantation: 12.9 hectares (ha) and Park Rough: 5ha).</p> <p>Structure and species composition: Batworth Park Plantation had high tree and shrub species diversity and dense understory. Park Rough had good tree and shrub species diversity and a sparse understory.</p> <p>Connectivity within survey site / Connectivity beyond survey site: Connected to one another and to the wider landscape by hedgerow / treelines and scrub habitat.</p> <p>Context to proposed DCO Order Limits: The southern boundary of Park Rough is located 1.1km from the proposed DCO Order Limits.</p>	<p>17.9ha, 500m</p>
<p>2020 survey site: Mature tree line (15-20m wide) comprised of broadleaved deciduous trees with hedgerow / bramble component at base. The tree line had connectivity to the wider landscape.</p>		370m
<p>Survey site 2 <b>Warningcamp</b></p> <p>Surveyed in 2020 and 2021</p>	<p>Site description: An ancient semi-natural broadleaved woodland (Woodleighs: 17.1ha), connected hedgerows / tree lines, and a young broadleaved plantation woodland block (2.1ha).</p> <p>Structure and species composition: Woodleighs was ash dominated with occasional oak and had a dense understory containing hazel coppice. The woodland block was comprised of young ash and beech with dense hawthorn and dogwood understory. The surveyed hedgerow sections were species-rich with fruit bearing plants.</p> <p>Connectivity within survey site / Connectivity beyond survey site: Connected to one another and to the wider landscape by hedgerow / treelines and scrub habitat.</p> <p>Context to proposed DCO Order Limits: The eastern boundary of Woodleighs is 0.25km west of the proposed DCO Order Limits.</p>	<p>19.2ha, 520m</p>

Survey Site	Rationale for survey	Size / Length of site
	<p>2020 survey site: An ancient semi-natural woodland parcel (The Knell: 3ha) connected to a large expanse of woodland (520ha) to the south by hedgerow and arboreal tree links. The woodland was comprised of hazel coppice, mature oak and silver birch.</p>	3.0ha, 545m
<p>Survey site 3 <b>Wiston</b></p>	<p>Site description: Narrow 15m wide mature broadleaved woodland (Brush Hovel: 0.4ha) with bridleway running through the centre. Connecting hedgerows marking field boundaries.</p>	0.4ha, 680m
<p>Surveyed in 2021</p>	<p>Structure and species composition: Brush Hovel is a mature oak, ash and white poplar woodland with abundant hazel coppice and occasional bramble. Species-rich hedgerows demarcating field boundaries dominated by hazel with frequent blackthorn, occasional field maple. Bracken and bramble dominant with occasional honeysuckle.</p>	
	<p>Connectivity within survey site / Connectivity beyond survey site: Both treeline and hedgerows were connected to one another and to the surrounding hedgerows in the wider landscape.</p>	
	<p>Context to proposed DCO Order Limits: The proposed DCO Order Limits intersects Survey site 3.</p>	
<p>Survey site 4 <b>Partridge Green</b></p>	<p>Site description: Deciduous broadleaved woodland (Millar's Wood 19.4ha), and connected hedgerows.</p>	19.4ha, 375m
<p>Surveyed in 2021</p>	<p>Structure and species composition: Oak dominate woodland with understorey layer comprised of frequent hazel coppice. The surveyed hedgerow sections were intact and species-poor comprising of hawthorn and bramble.</p>	
	<p>Connectivity within survey site / Connectivity beyond survey site: The woodland and surveyed hedgerow sections were connected to one another and to the wider landscape by hedgerows and tree lines.</p>	
	<p>Context to proposed DCO Order Limits: The eastern boundary of the woodland which makes up Survey site 4 overlaps the proposed DCO Order Limits.</p>	

Survey Site	Rationale for survey	Size / Length of site
<p>Survey site 5 <b>Wineham</b></p> <p>Surveyed in 2021</p>	<p>Site description: Deciduous broadleaved woodland parcel (1.6ha) and field margin hedgerows with mature trees.</p> <p>Structure and species composition: The woodland was dominated by oak and the understory layer was comprised of dense hawthorn and dog rose. The hedgerows were predominantly comprised of blackthorn and hawthorn with hazel in sections.</p> <p>Connectivity within survey site / Connectivity beyond survey site: The woodland parcel and surveyed hedgerow sections are connected to one another and to the wider landscape by scrub sections and hedgerows with trees.</p> <p>Context to proposed DCO Order Limits: Survey site 5 intersects the proposed DCO Order Limits at multiple points.</p>	1.6ha, 620m
<p>Survey site 6 <b>Kent Street</b></p> <p>Surveyed in 2021</p>	<p>Site description: Deciduous oak woodland (20.4 ha).</p> <p>Structure and species composition: Oak dominated species-rich woodland, managed for pheasant rearing. The understorey layer is dominated with hazel coppice and bramble.</p> <p>Connectivity within survey site / Connectivity beyond survey site: The woodland is well connected to the wider landscape by hedgerows and tree lines.</p> <p>Context to proposed DCO Order Limits: Survey site 6 is located 0.5km from the proposed DCO Order Limits.</p>	20.4ha
<p>Survey site 7 <b>Oakendene Industrial Estate</b></p> <p>Surveyed in 2022</p>	<p>Site description: Improved grassland with field margin hedgerows with mature trees and mixed deciduous woodland.</p> <p>Structure and species composition: Blackthorn and hawthorn dominated hedgerows with occasional mature and semi mature oak trees, maintained as field boundaries. A 3.6ha woodland at the south of the survey area contains a mix of oak, hazel, bramble, blackthorn and hawthorn.</p>	19ha



Survey Site	Rationale for survey	Size / Length of site
	<p>Connectivity within survey site / Connectivity beyond survey site: The hedgerows are well connected to the wider landscape by hedgerows and tree lines.</p> <p>Context to proposed DCO Order Limits: The hedgerows and woodland which comprise Survey site 7 intersect the proposed DCO Order Limits.</p>	
<p><b>Survey site 8 Ashurst</b></p> <p><b>Surveyed in 2022</b></p>	<p>Site description: Historic improved and poor semi-improved grassland with field margin intact species-poor hedgerows with mature trees.</p> <p>Structure and species composition: Blackthorn and hawthorn dominated hedgerows with occasional mature and semi mature oak trees, maintained as field boundaries. Rare hazel coppice appearing throughout. Two small woodlands comprising of semi mature oak, as well as a bramble and hazel understory are situated in the middle of the study area, connected to the hedgerows surveyed.</p> <p>Connectivity within survey site / Connectivity beyond survey site: The hedgerows were well connected to the wider landscape by hedgerows and tree lines.</p> <p>Context to proposed DCO Order Limits: Survey site 8 intersects the proposed DCO Order Limits at multiple locations.</p>	25.9ha

## 3.2 Field survey results

### Nest tube survey

- 3.2.1 One hazel dormouse was found during the survey period: a juvenile at Survey site 7 (nest tube 70 – see **Figure 22.9.4k, Annex A**) during the October 2022 survey visit.
- 3.2.2 Evidence of other rodent species using the tubes in similar habitats, and within other hedgerows within the proposed DCO Order Limits, was also recorded on each visit. Both wood mice and yellow-necked mice were recorded; however, it is not possible to distinguish between the nests created by these two species, with distinction only possible by inspecting mice in the hand if they were found at the time of the survey visits. Records of other animals and field observations during each survey are presented in **Table B-1 in Annex B: Survey results**.

## Other signs

- 3.2.3 In 2021, hazelnut searches were carried out in six survey sites where mature hazel was found to be present, shown in **Figure 22.9.5a-f, Annex A**. No nuts that had been eaten by hazel dormouse were identified.

## 3.3 Index of probability results

- 3.3.1 In order to achieve the appropriate Index of Probability Score (see **Table 2-1, Section 2.5**), tubes were left in-situ and were surveyed between April and October 2021, and May and October 2022. A minimum of 50 tubes were used in each site and additional tubes were used in sites when the deployment dates were setback due to land access restrictions.
- 3.3.2 Survey sites 1 and 2 were surveyed in 2020 and 2021. The 2020 probability score was not adequate to count as a valid survey (see **paragraphs 2.5.7 to 2.5.9**), and therefore surveys into a second season were required.
- 3.3.3 The score achieved at all the survey sites is above the minimum score of 20 required for a valid survey and it is therefore reasonable to conclude that hazel dormouse presence or absence can be confidently determined. See **Table 3-3** for a summary of the scores for each survey site.

**Table 3-3 Summary of Index of Probability Scores**

Survey Site	Deployment date	No. of tubes	Score (year)
Survey site 1	28 September 2020, 08 April 2021	100 (2020)	8 (2020)
		110 (2021)	55 (2021)
			63 (combined)
Survey site 2	29 September 2020, 08 April 2021	100 (2020)	8 (2020)
		100 (2021)	50 (2021)
			58 (combined)
Survey site 3	24 June 2021	70	28.8 (2021)
Survey site 4	27 April 2021, 23 June 2021	(15, 35) 50	21.5 (2021)
Survey site 5	03 June 2021, 13 July 2021	(50, 25) 75	26 (2021)
Survey site 6	01 April 2021	50	25 (2021)
Survey site 7	05 April 2022	100	22 (2022)
Survey site 8	06 April 2022	100	22 (2022)

## 4. Discussion

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### 4.1 Survey Results

- 4.1.1 The desk study provided 265 records of hazel dormouse within 5km of the Study Area, with the nearest record made 300m south of the proposed DCO Order Limits.
- 4.1.2 Presence or likely absence, and nut search surveys were conducted in suitable habitat within or in proximity to the proposed DCO Order Limits between September 2020 and November 2022. A single dormouse was found at Survey site 7 during the October 2022 survey, thus confirming dormouse presence at this location only. No other signs of hazel dormouse were identified during these surveys.

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# Annex A

## Figures

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Figure 22.9.1	Site plan
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Figure 22.9.3	Desk study results
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Figure 22.9.4b	Dormouse nest tube locations – Area 1
Figure 22.9.4c	Dormouse nest tube locations – Area 2
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Figure 22.9.5a-f	Hazelnut search locations

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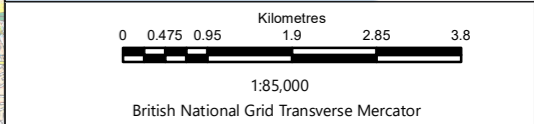
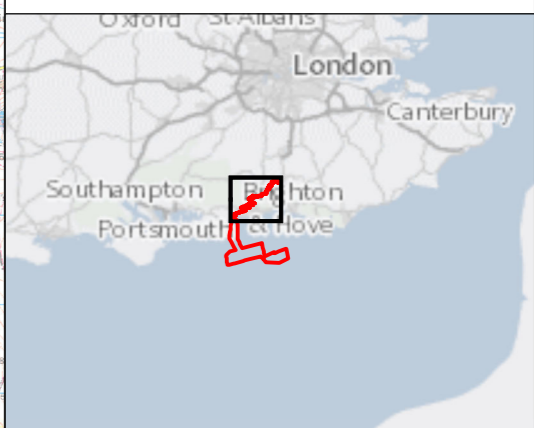




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Proposed DCO Order Limits

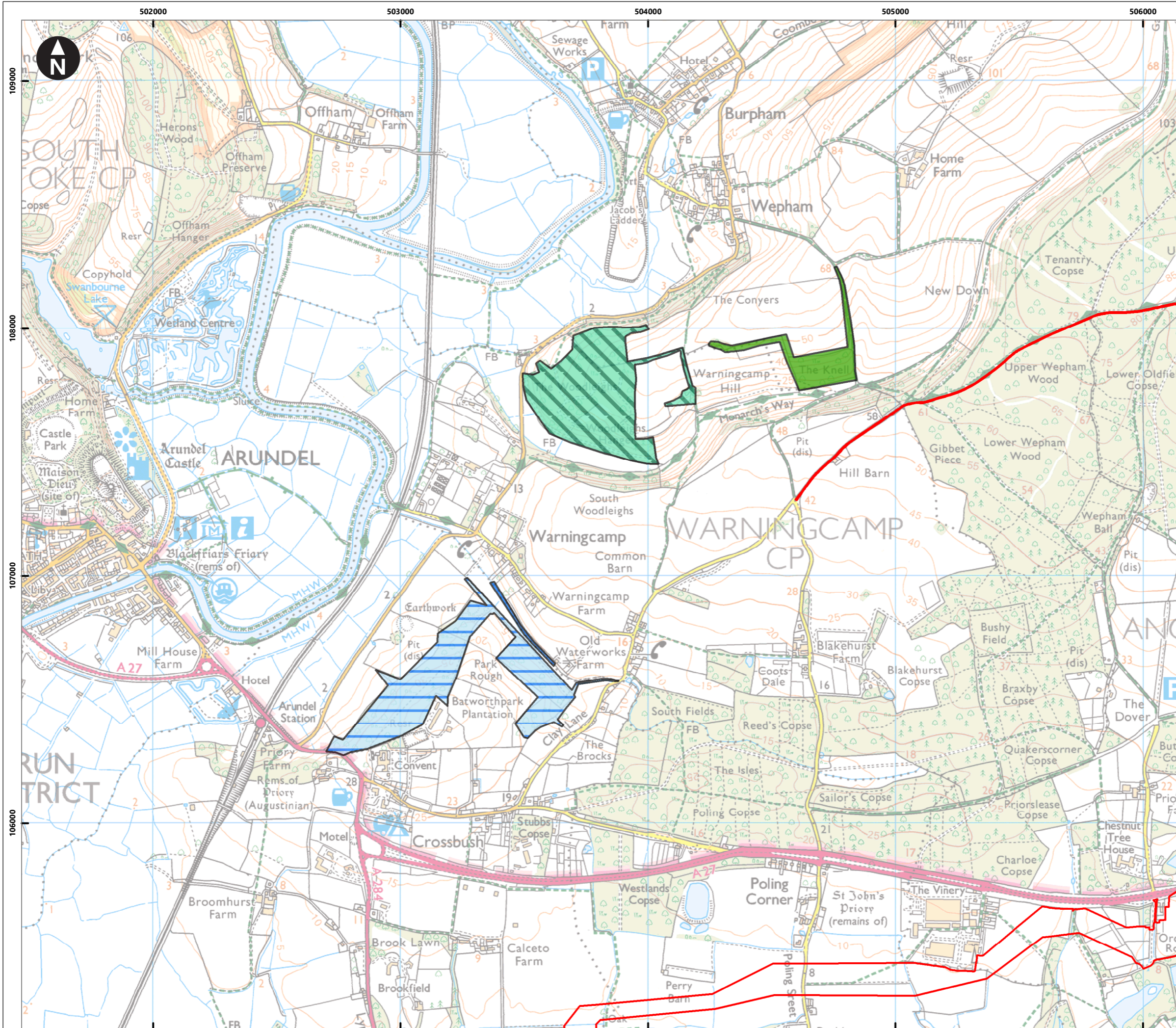


Rampion Extension Development

Rampion 2 Offshore Wind Farm  
 22.9.1 Site plan  
 Hazel dormouse report 2020-2022  
 Environmental Statement

System Identifier: 42285-WSP-ES-ON-FG-OO-7606	Version: 1.0
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Company: WSP	Drawn By: HADJE	Chk/Prvrd: SUTET	Drawn Date: 20/07/2023	Status: Final
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**Key**

- Proposed DCO Order Limits
- 2020**
  - Survey site 1
  - Survey site 2
- 2021**
  - Survey site 1
  - Survey site 2
  - Survey site 3
  - Survey site 4
  - Survey site 5
  - Survey site 6
- 2022**
  - Survey site 7
  - Survey site 8

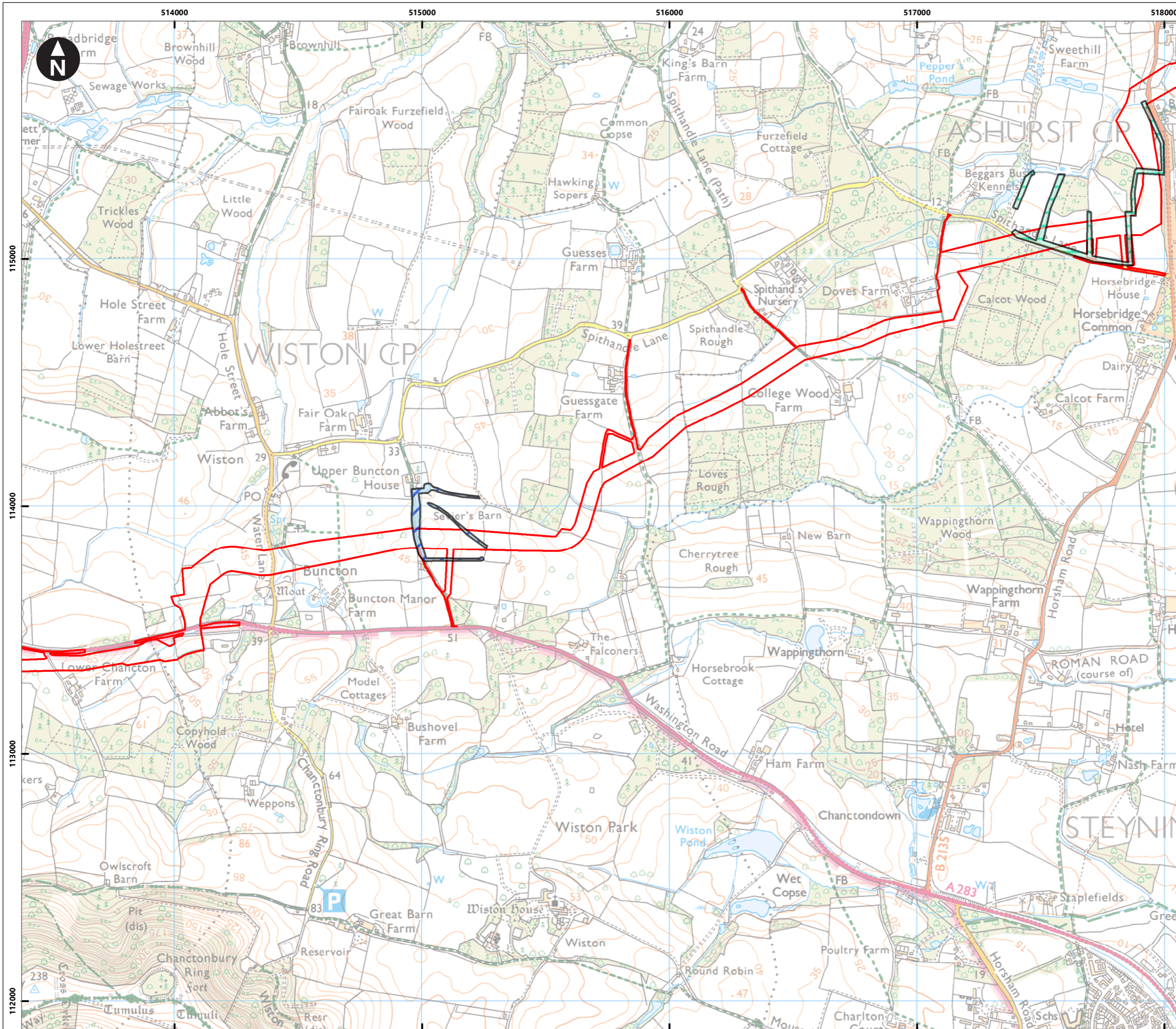
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Rampion Extension Development

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 22.9.2a Dormouse survey sites  
 Hazel dormouse report 2020-2022  
 Environmental Statement

System Identifier: 42285-WSPE-ES-ON-FG-OO-9234      Version: 1.0

Company: WSP	Drawn By: HADJE	Chk/Prvrd: SUTET	Drawn Date: 28/07/2023	Status: FINAL
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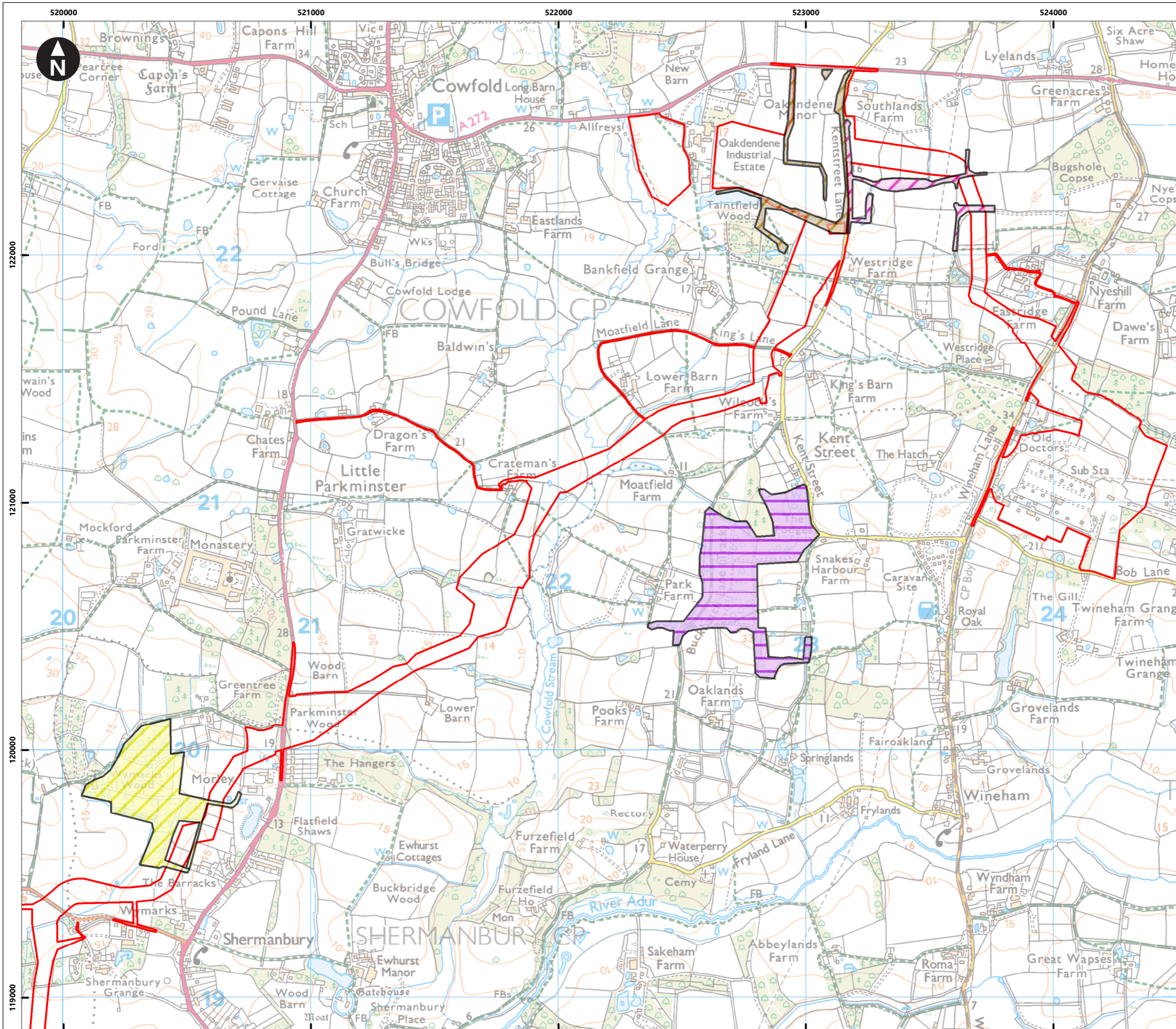
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- 2020**
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  - Survey site 2
- 2021**
  - Survey site 1
  - Survey site 2
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  - Survey site 4
  - Survey site 5
  - Survey site 6
- 2022**
  - Survey site 7
  - Survey site 8

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 Kilometres  
 1:15,000  
 British National Grid Transverse Mercator

Rampion Extension Development

Rampion 2 Offshore Wind Farm  
 22.9.2b Dormouse survey sites  
 Hazel dormouse report 2020-2022  
 Environmental Statement

System Identifier: 42285-WSPE-ES-ON-FG-OO-9234		Version: 1.0
Company: WSP	Drawn By: HADJE	Chk/Prvrd: SUTET
Drawn Date: 28/07/2023	Status: FINAL	



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**Key**

- Proposed DCO Order Limits
- 2020**
  - Survey site 1
  - Survey site 2
- 2021**
  - Survey site 1
  - Survey site 2
  - Survey site 3
  - Survey site 4
  - Survey site 5
  - Survey site 6
- 2022**
  - Survey site 7
  - Survey site 8

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 British National Grid Transverse Mercator

Rampion Extension Development

Rampion 2 Offshore Wind Farm

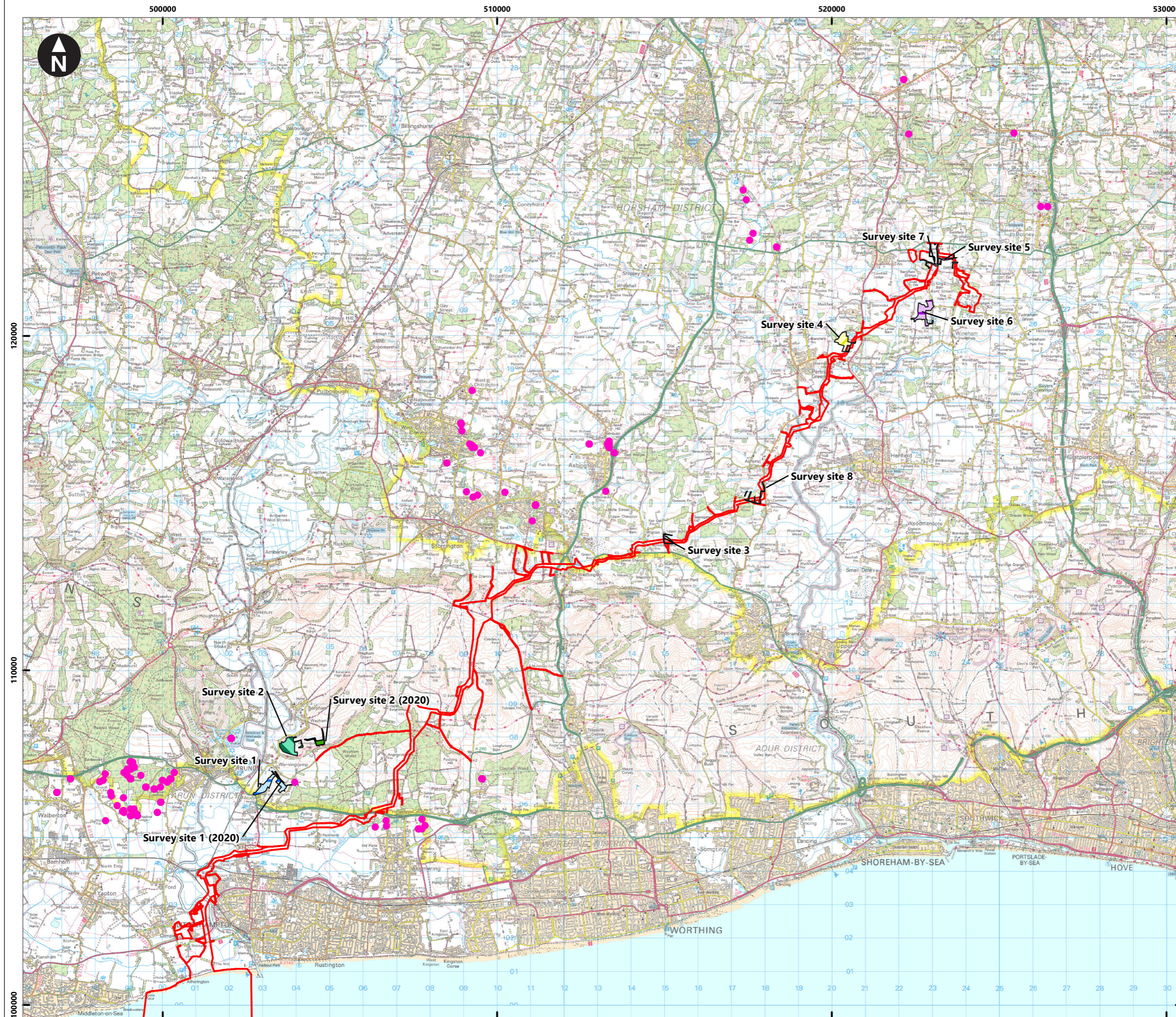
22.9.2c Dormouse survey sites

Hazel dormouse report 2020-2022

Environmental Statement

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Company: WSP    Drawn By: HADJE    Chk/Prvrd: SUTET    Drawn Date: 28/07/2023    Status: FINAL



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**Key**

- Proposed DCO Order Limits
- Hazel Dormouse Records

**2020**

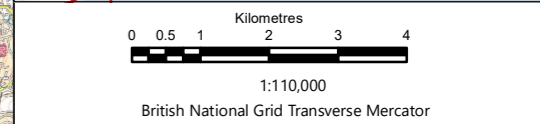
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- Survey site 2

**2021**

- Survey site 1
- Survey site 2
- Survey site 3
- Survey site 4
- Survey site 5
- Survey site 6

**2022**

- Survey site 7
- Survey site 8



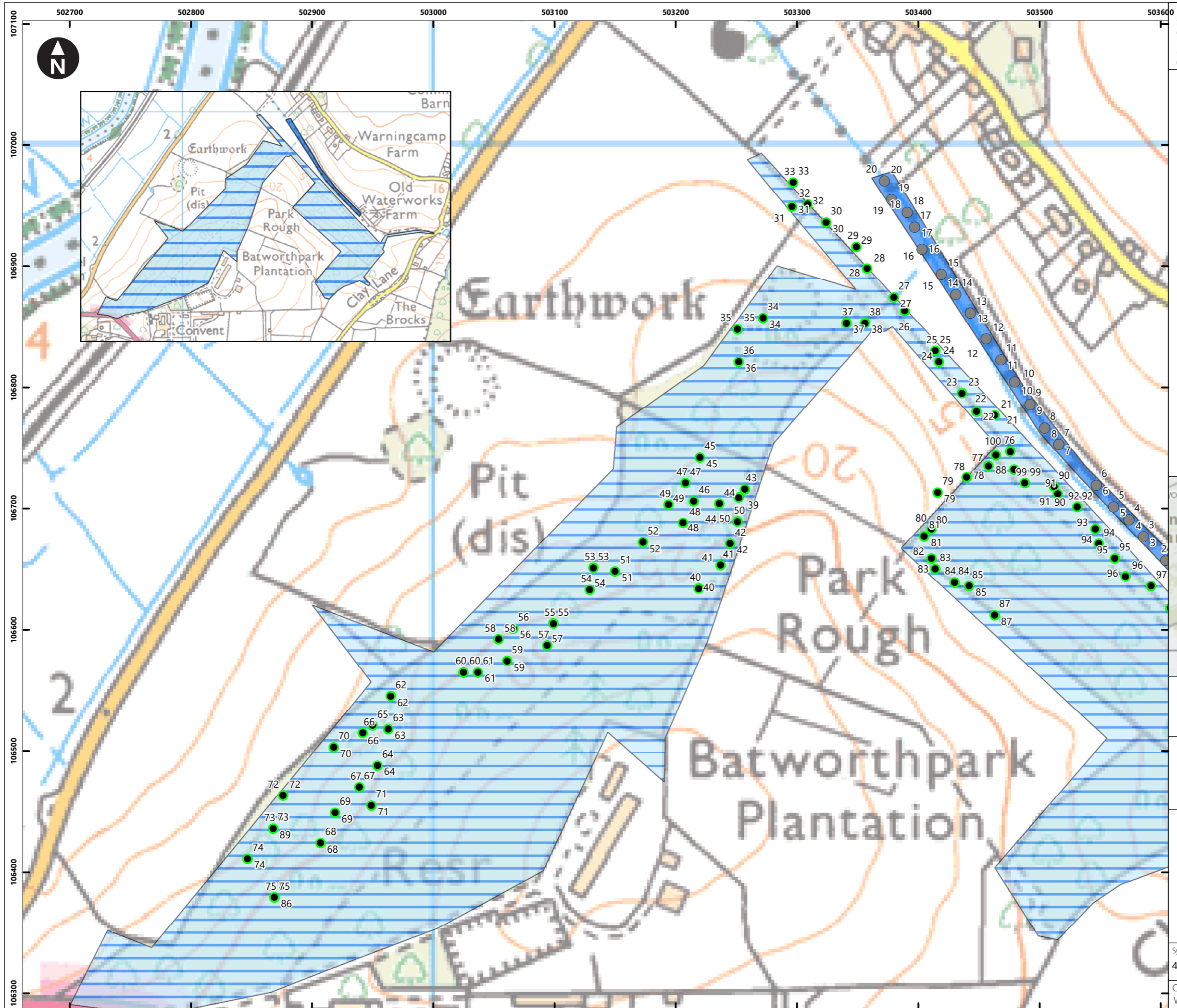
Rampion Extension Development



Rampion 2 Offshore Wind Farm  
 22.9.3 Desk study results  
 Hazel dormouse report 2020-2022  
 Environmental Statement

System Identifier: 42285-WSPE-ES-ON-FG-OO-2618	Version: 1.0
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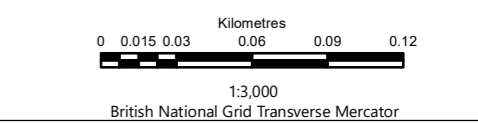
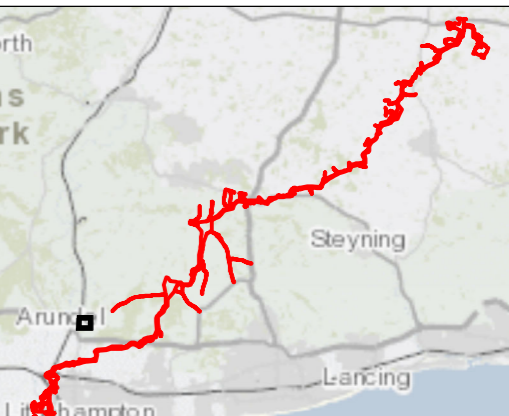
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**Key**

Proposed DCO Order Limits

**Year of deployment**

- 2020
- 2020 and 2021

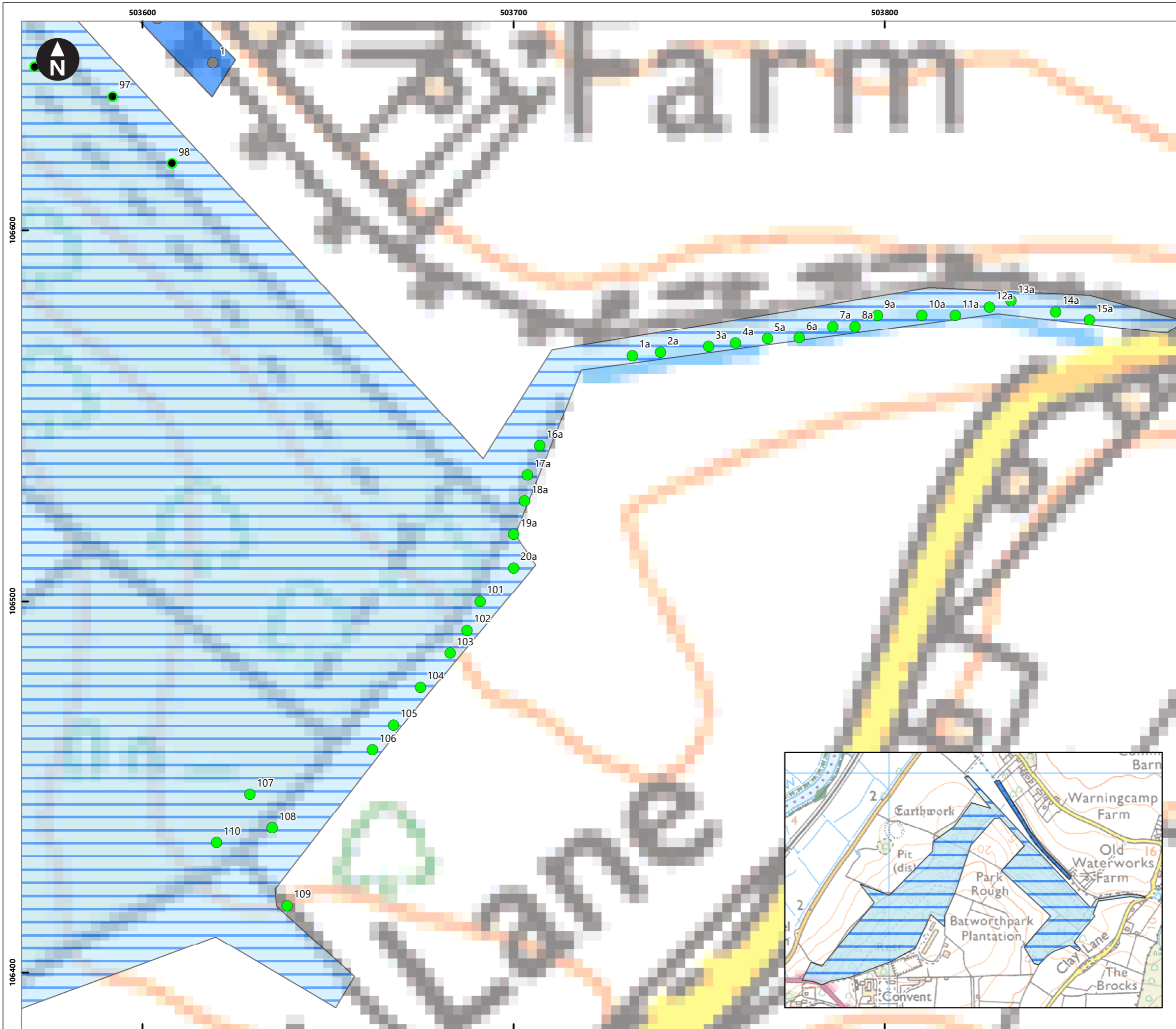


Rampion Extension Development

Rampion 2 Offshore Wind Farm  
 22.9.4a Dormouse nest tube locations - Area 1  
 Hazel dormouse report 2020-2022  
 Environmental Statement

System Identifier: 42285-WSPE-ES-ON-FG-OO-8692	Version: 1.0
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Company: WSP	Drawn By: HADJE	Chk/Prvrd: SUTET	Drawn Date: 20/07/2023	Status: FINAL
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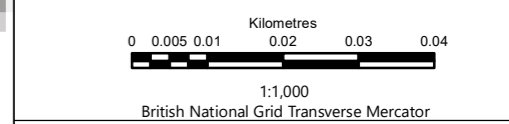
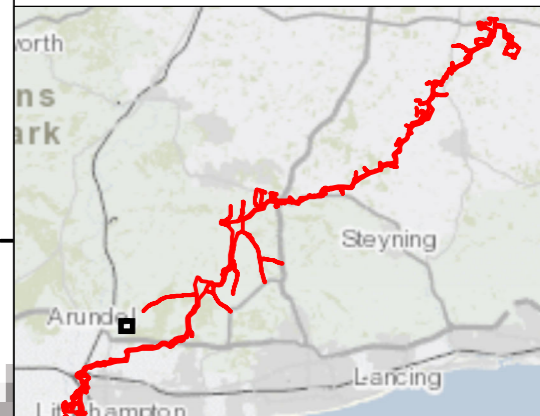
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- Proposed DCO Order Limits
- Survey site 1 (2020)
- Survey site 1

**Year of deployment**

- 2020
- 2020 and 2021

2021 'a' denotes tubes moved from Areas 1 (2020) to Area 1 (2021)

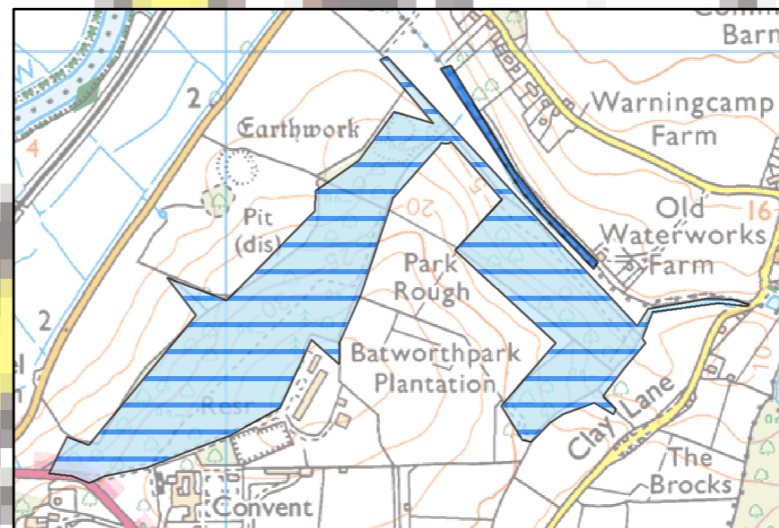


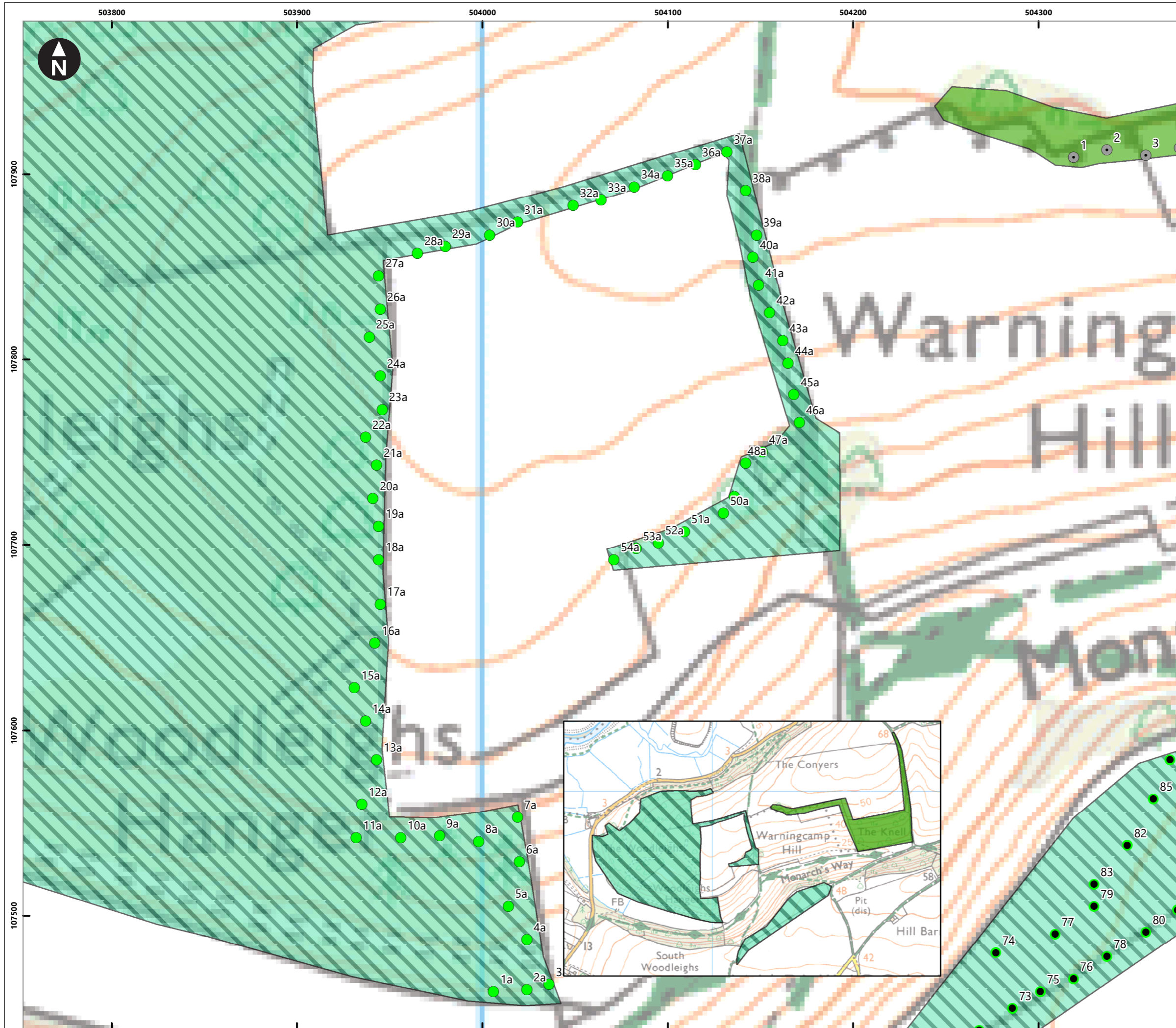
Rampion Extension Development

Rampion 2 Offshore Wind Farm  
 22.9.4b Dormouse nest tube locations - Area 1  
 Hazel dormouse report 2020-2022  
 Environmental Statement

System Identifier: 42285-WSPE-ES-ON-FG-OO-8692      Version: 1.0

Company: WSP	Drawn By: HADJE	Chk/Prvd: SUTET	Drawn Date: 20/07/2023	Status: FINAL
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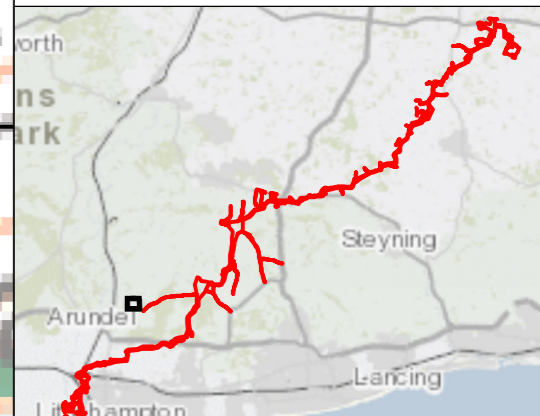
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**Key**

- Proposed DCO Order Limits
- Survey site 2 (2020)
- Survey site 2

**Year of deployment**

- 2020
- 2020 and 2021
- 2021 'a' denotes tubes moved from Areas 2 (2020) to Area 2 (2021)



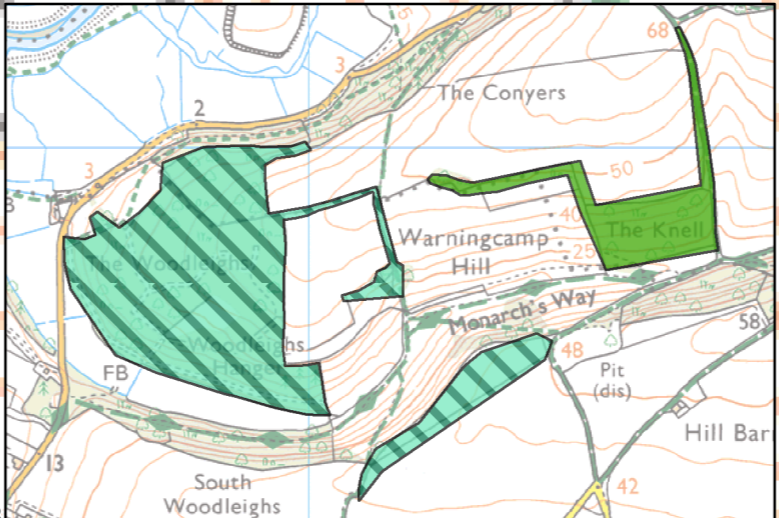
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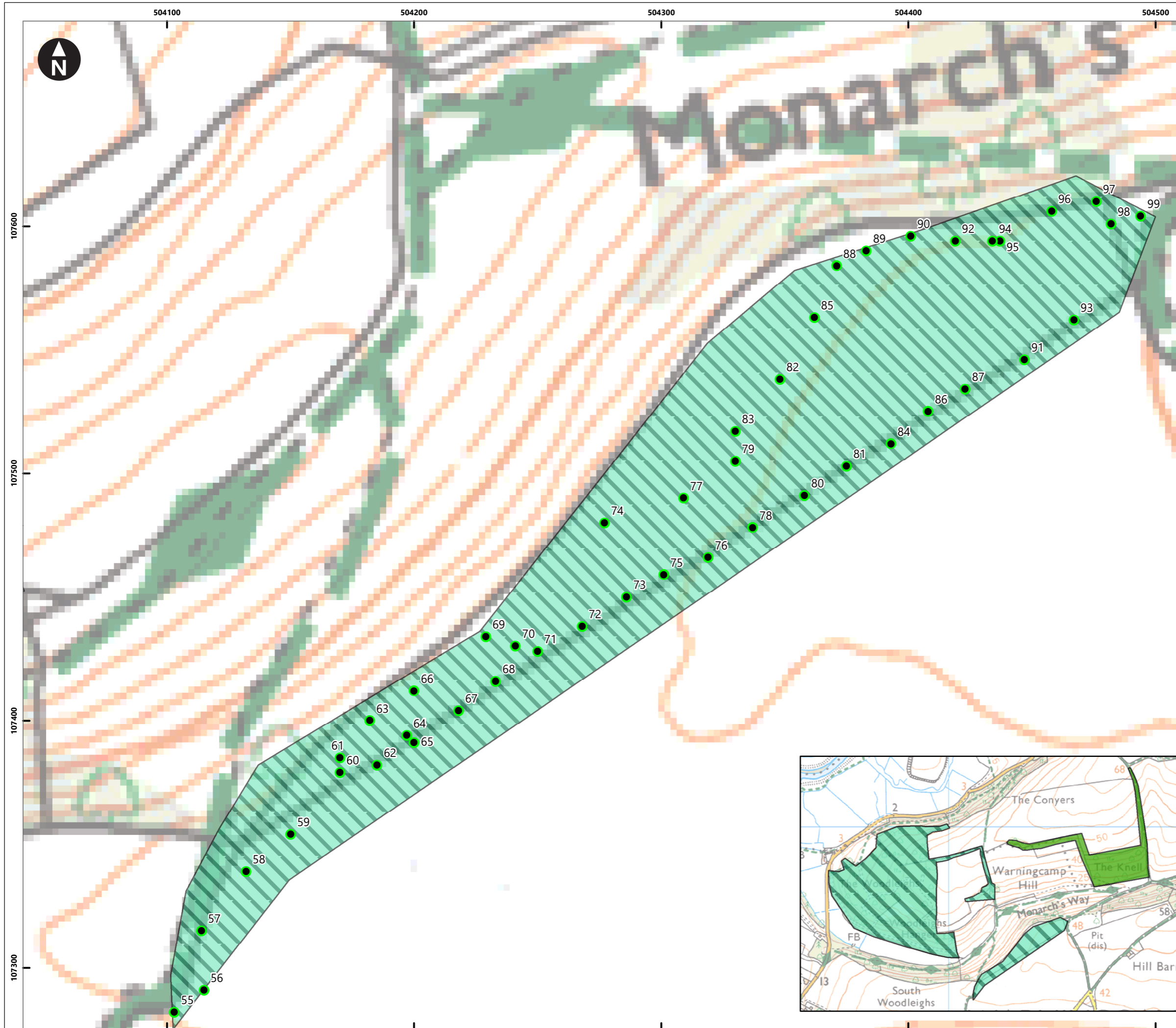
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 Environmental Statement

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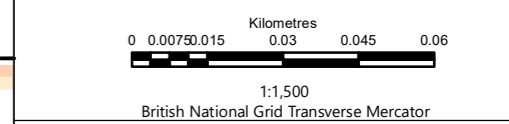
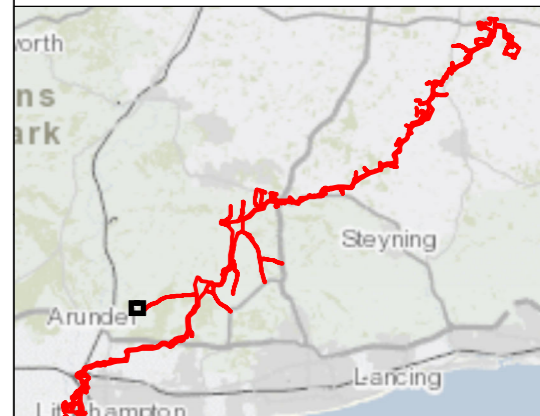
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**Key**

- Proposed DCO Order Limits
- Survey site 2

**Year of deployment**

- 2020 and 2021

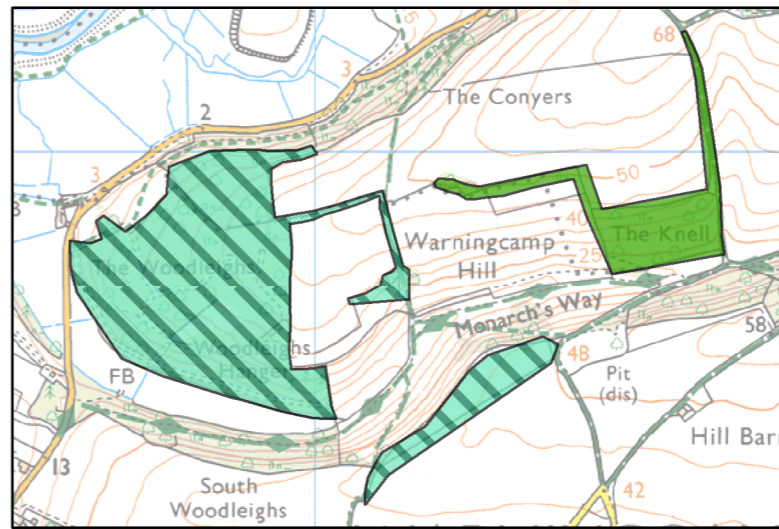


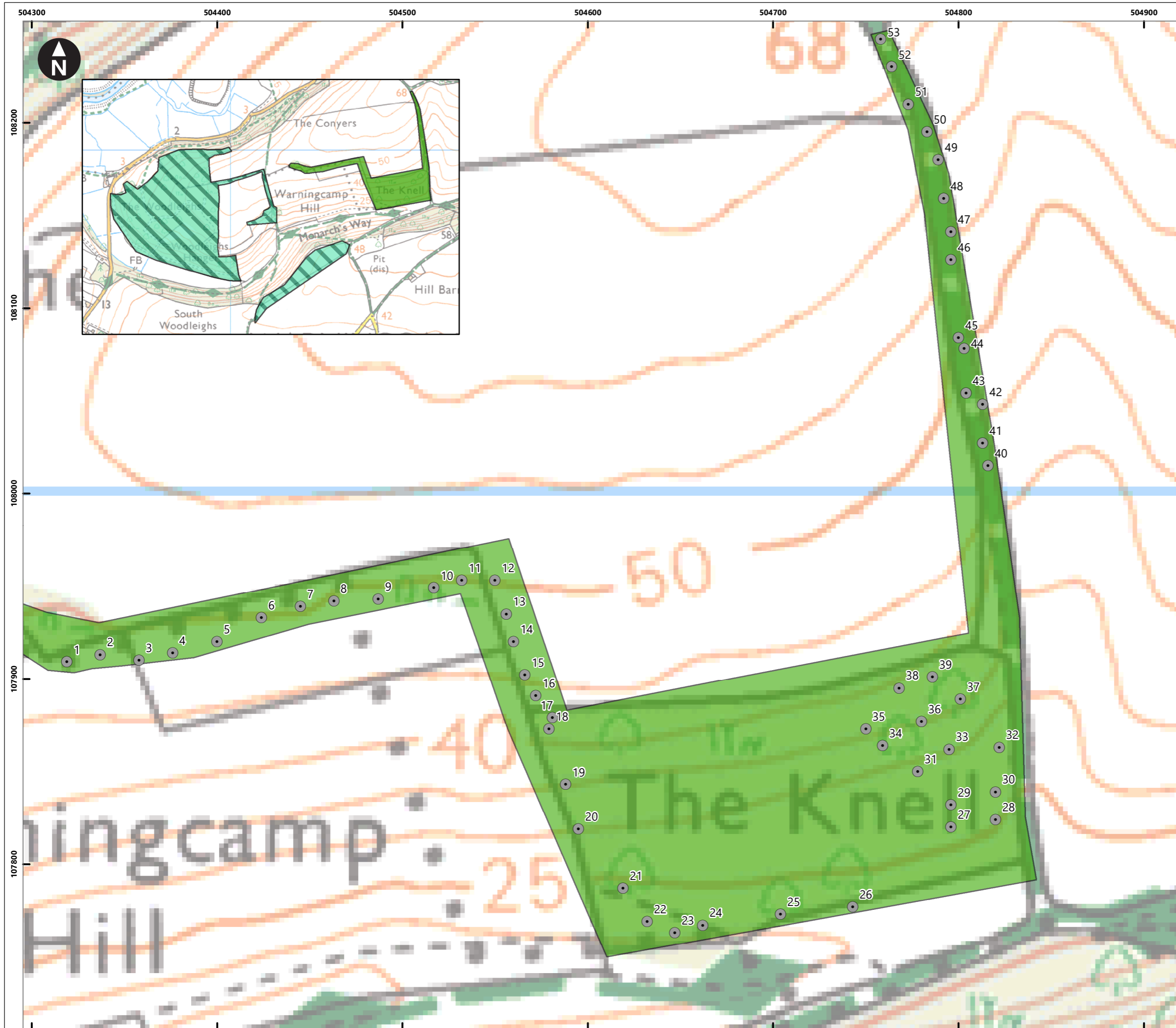
Rampion Extension Development

Rampion 2 Offshore Wind Farm  
 22.9.4d Dormouse nest tube locations - Area 2  
 Hazel dormouse report 2020-2022  
 Environmental Statement

System Identifier: 42285-WSPE-ES-ON-FG-OO-8692	Version: 1.0
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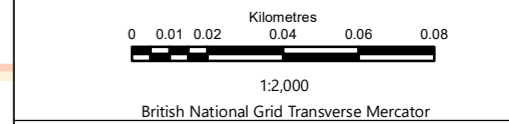
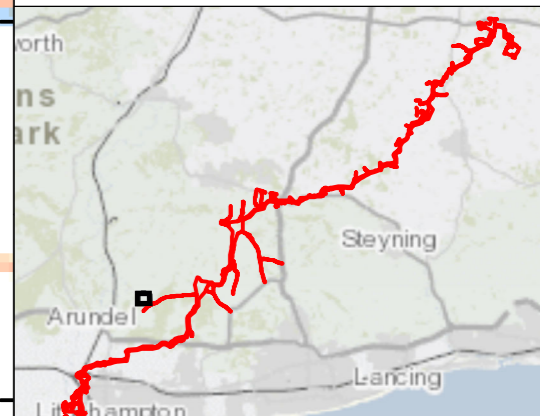
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**Key**

- Proposed DCO Order Limits
- Survey site 2 (2020)

**Year of deployment**

- 2020

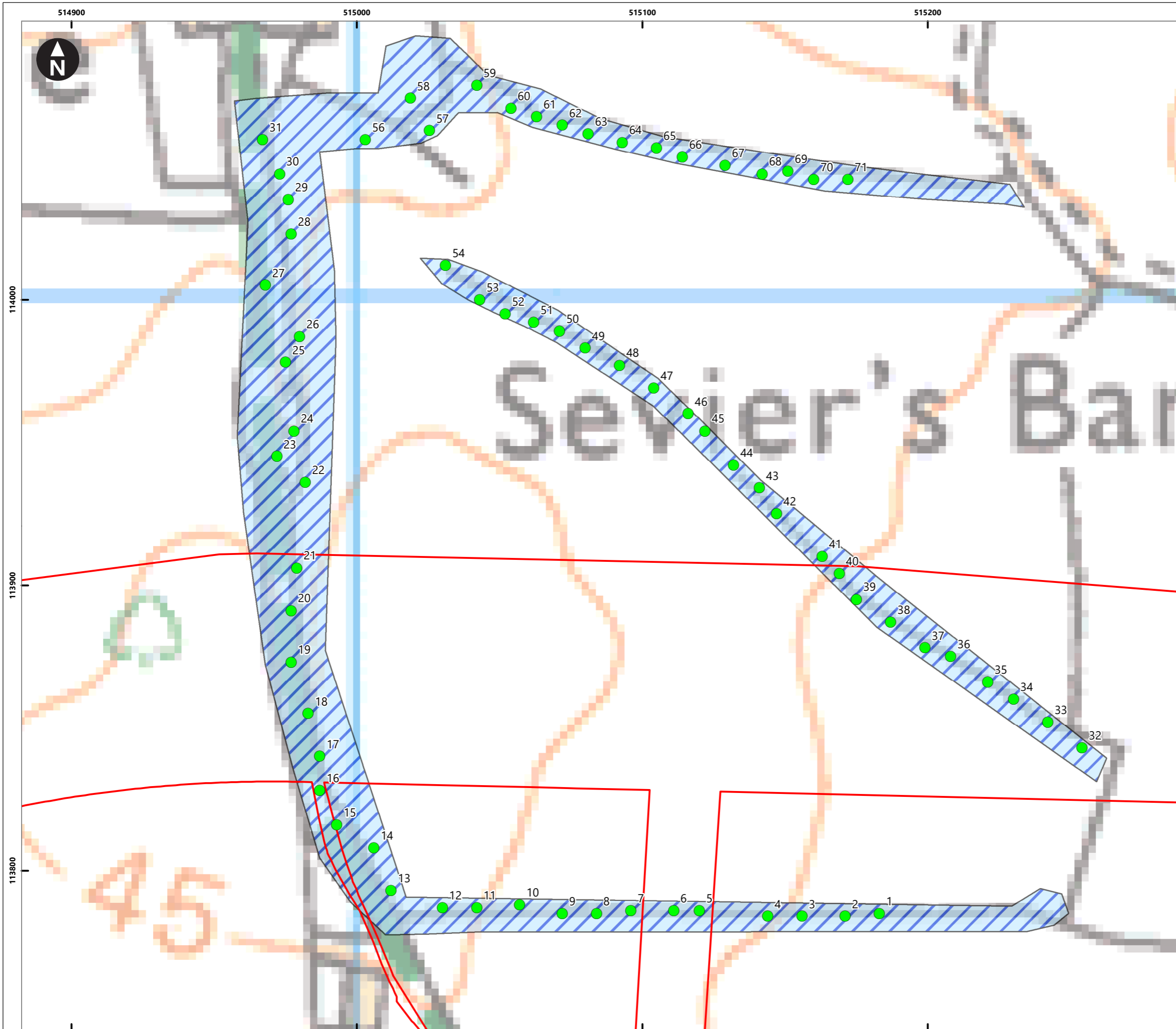


Rampion Extension Development

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 22.9.4e Dormouse nest tube locations - Area 2  
 Hazel dormouse report 2020-2022  
 Environmental Statement

System Identifier: 42285-WSPE-ES-ON-FG-OO-8692	Version: 1.0
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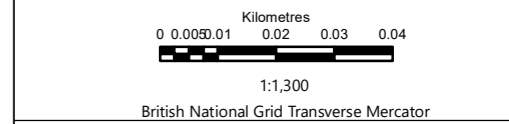
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**Key**

- Proposed DCO Order Limits
- Survey site 3

**Year of deployment**

- 2021

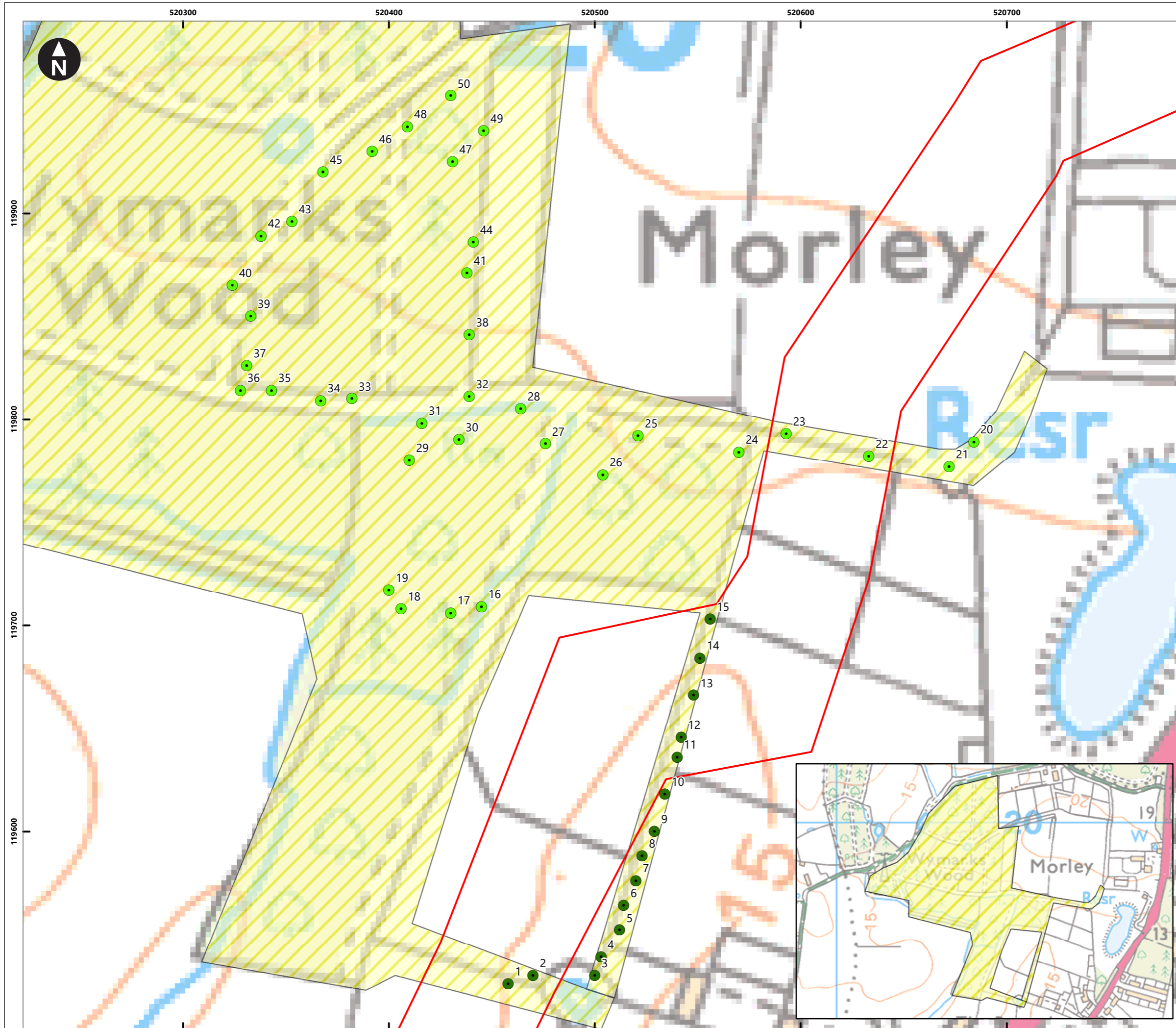


Rampion Extension Development

Rampion 2 Offshore Wind Farm  
 22.9.4f Dormouse nest tube locations - Area 3  
 Hazel dormouse report 2020-2022  
 Environmental Statement

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Company: WSP	Drawn By: HADJE	Chk/Aprvd: SUTET	Drawn Date: 20/07/2023	Status: FINAL
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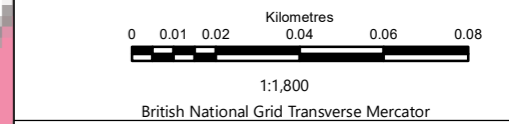
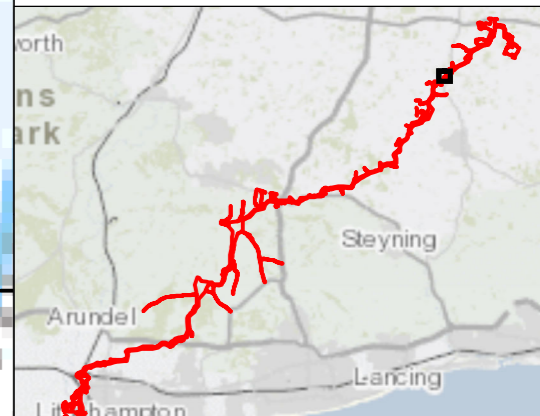
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**Key**

- Proposed DCO Order
- Survey site 4

**Month of deployment**

- April 2021
- June 2021

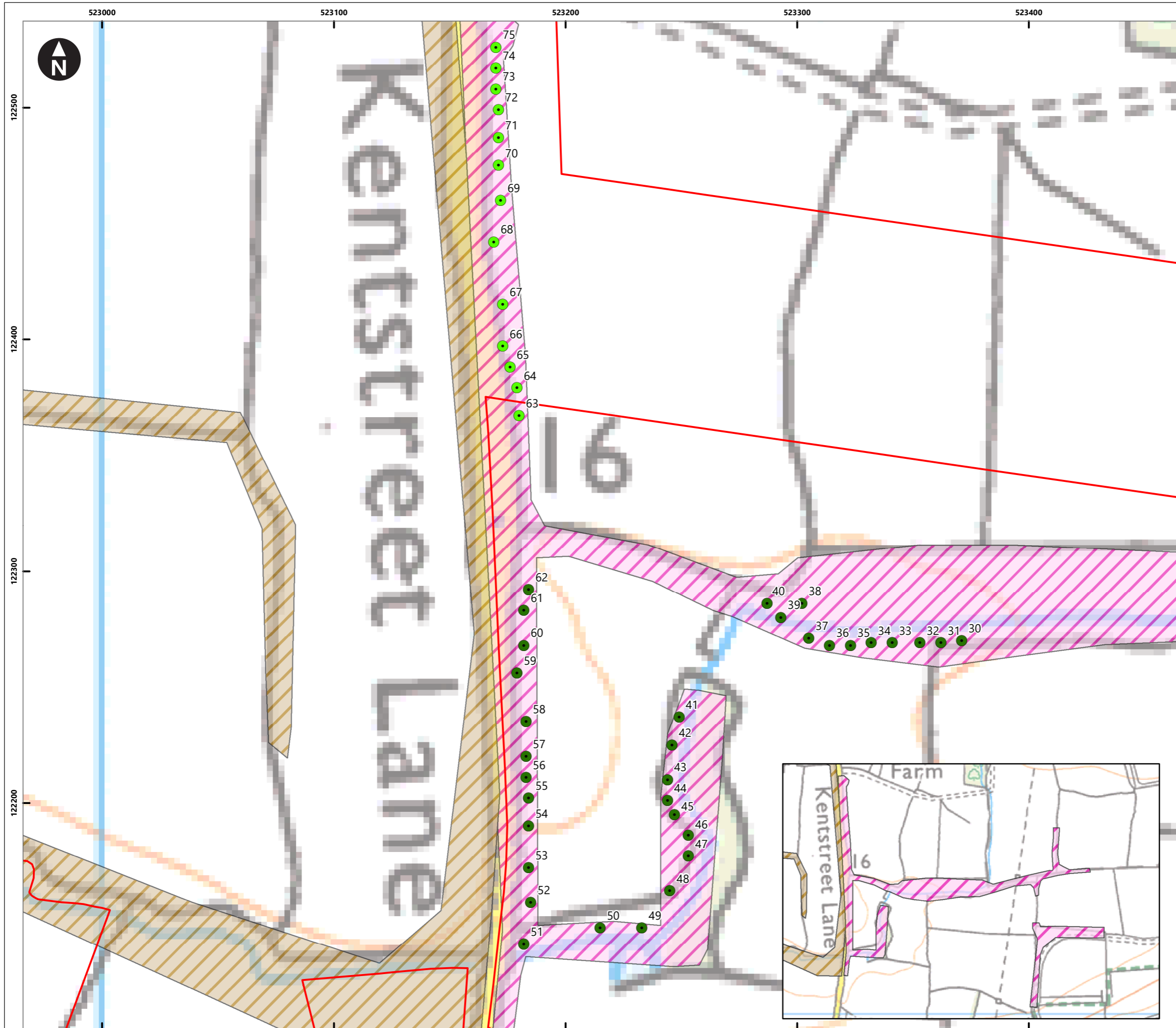


Rampion Extension Development

Rampion 2 Offshore Wind Farm  
 22.9.4g Dormouse nest tube locations - Area 4  
 Hazel dormouse report 2020-2022  
 Environmental Statement

System Identifier: 42285-WSPE-ES-ON-FG-OO-8692	Version: 1.0
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Company: WSP	Drawn By: HADJE	Chk/Aprvd: SUTET	Drawn Date: 20/07/2023	Status: FINAL
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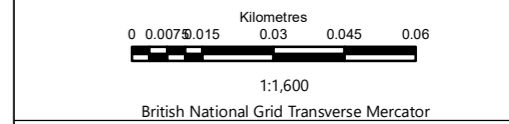
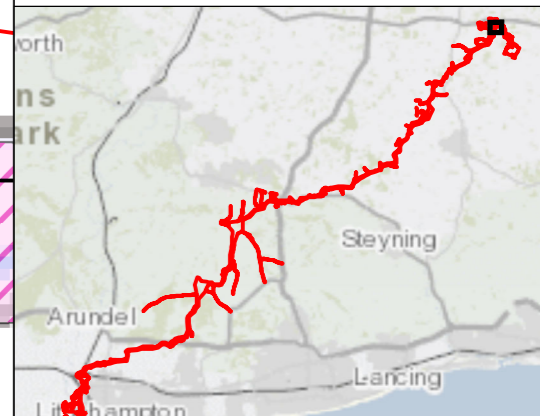
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**Key**

- Proposed DCO Order Limits
- Survey site 5
- Survey site 7

**Month of deployment**

- July 2021
- June 2021

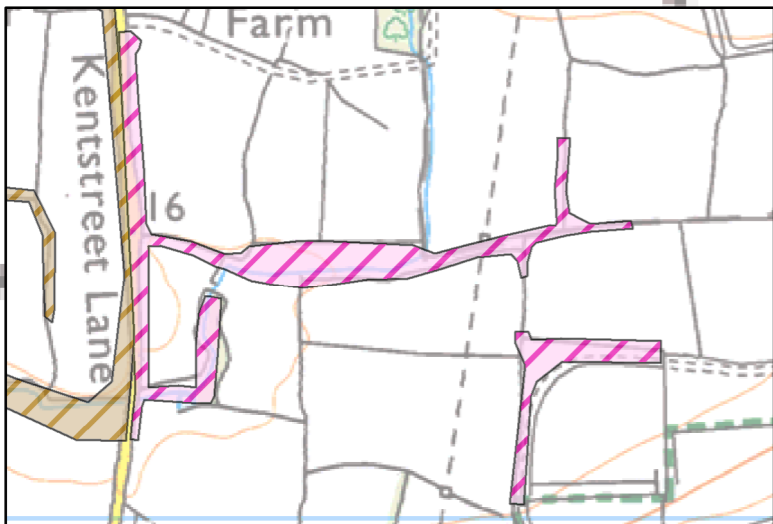


Rampion Extension Development

**Rampion 2 Offshore Wind Farm**  
 22.9.4h Dormouse nest tube locations - Area 5  
 Hazel dormouse report 2020-2022  
 Environmental Statement

System Identifier: 42285-WSPE-ES-ON-FG-OO-8692	Version: 1.0
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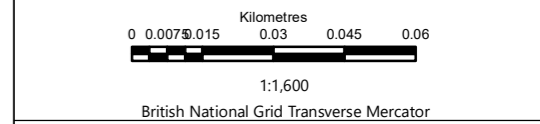
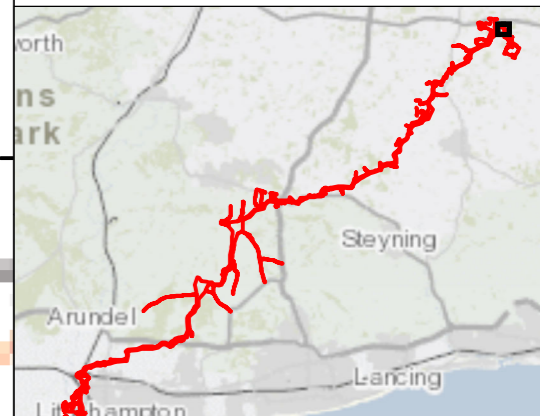
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**Key**

- Proposed DCO Order Limits
- Survey site 5

**Month of deployment**

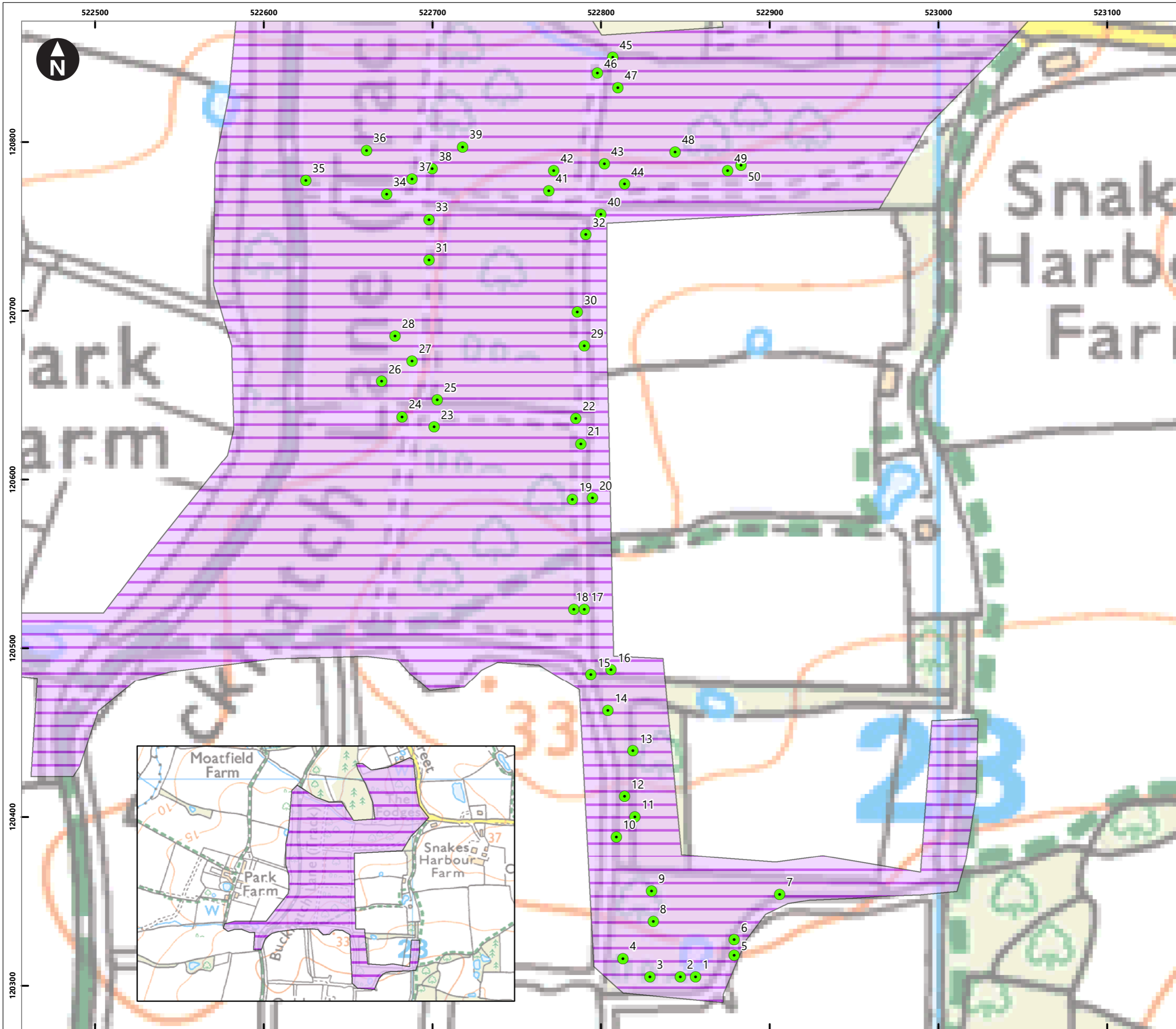
- June 2021



Rampion Extension Development

Rampion 2 Offshore Wind Farm  
 22.9.4i Dormouse nest tube locations - Area 5  
 Hazel dormouse report 2020-2022  
 Environmental Statement

System Identifier: 42285-WSPE-ES-ON-FG-OO-8692				Version: 1.0
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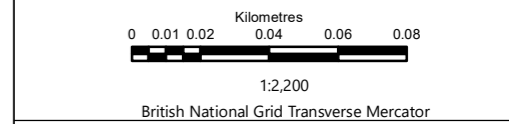
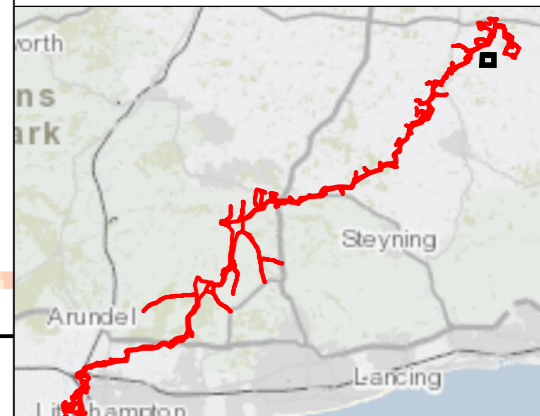
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**Key**

- Proposed DCO Order Limits
- Survey site 6

**Year of deployment**

- 2021



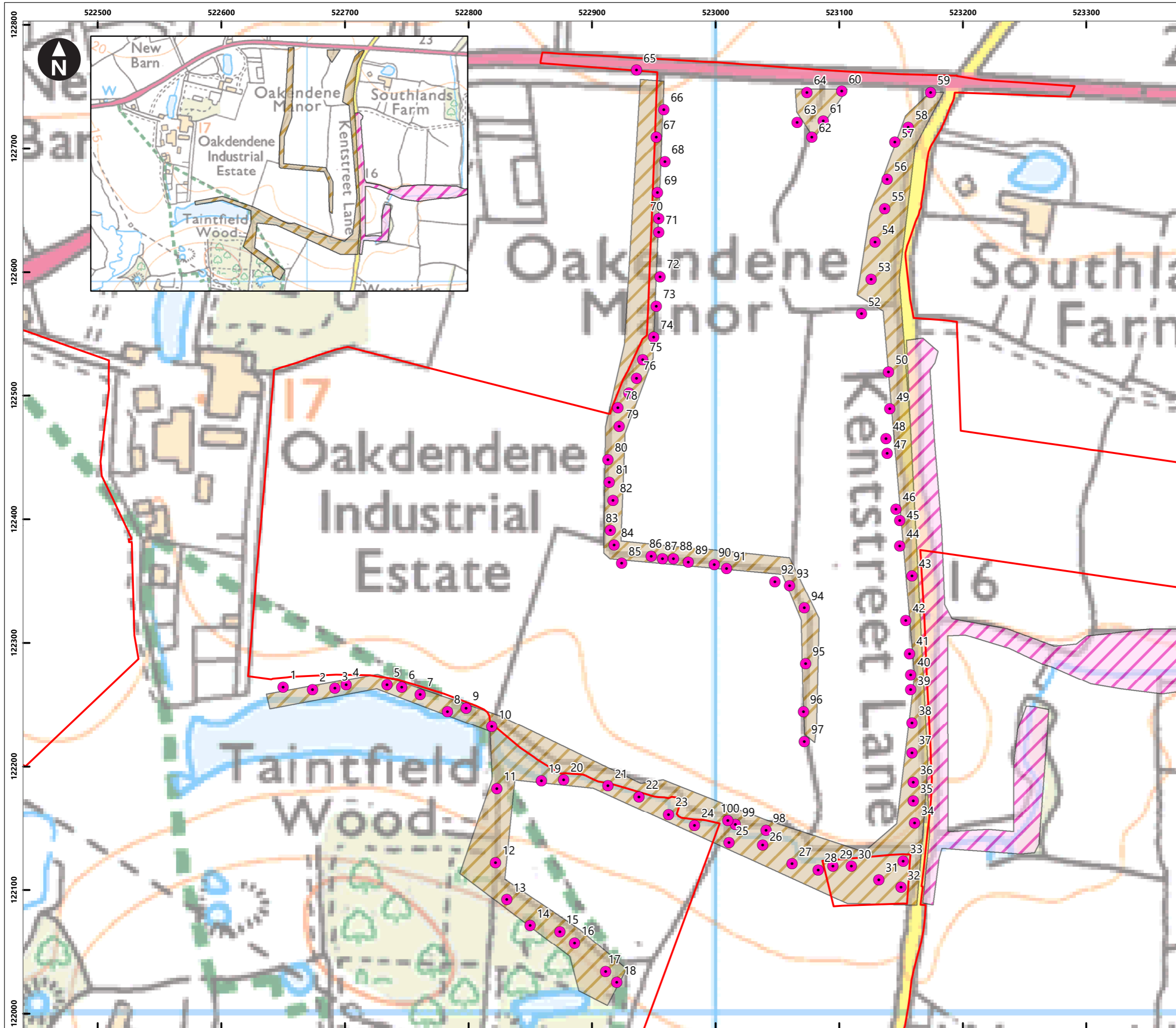
Rampion Extension Development



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 22.9.4j Dormouse nest tube locations - Area 6  
 Hazel dormouse report 2020-2022  
 Environmental Statement

System Identifier: 42285-WSPE-ES-ON-FG-OO-8692	Version: 1.0
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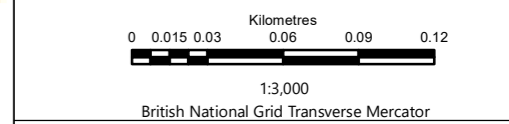
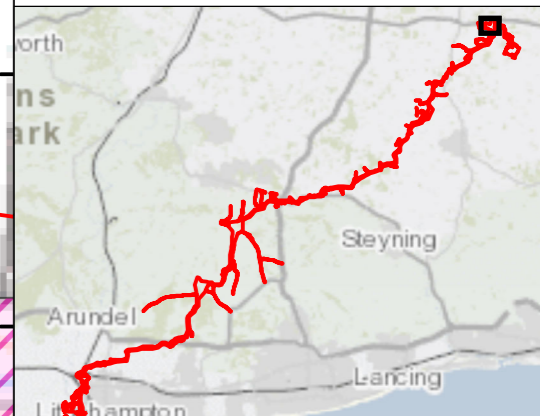
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**Key**

- Proposed DCO Order Limits
- Survey site 5
- Survey site 7

**Year of deployment**

- 2022



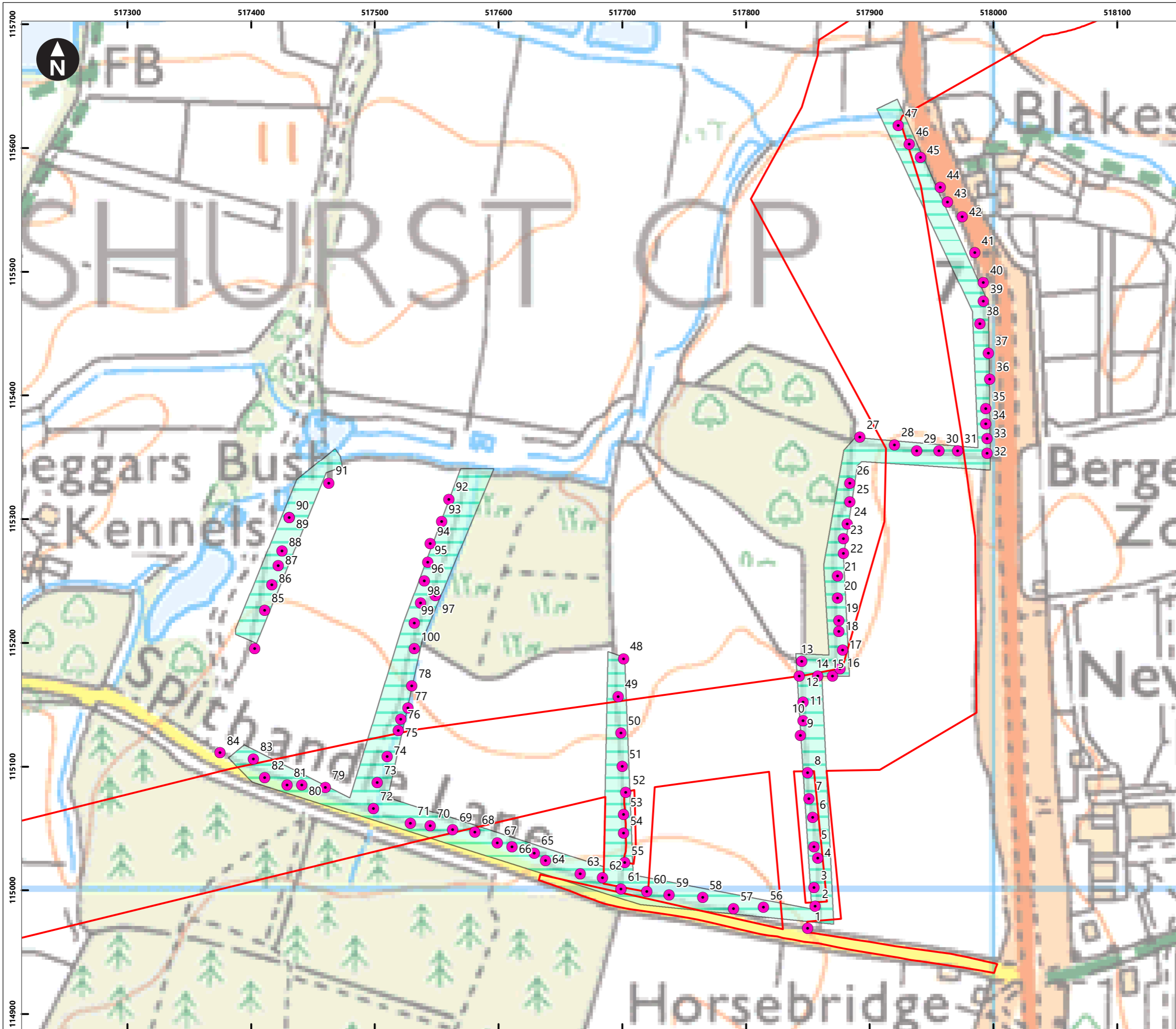
Rampion Extension Development  


Rampion 2 Offshore Wind Farm  
 22.9.4k Dormouse nest tube locations - Area 7  
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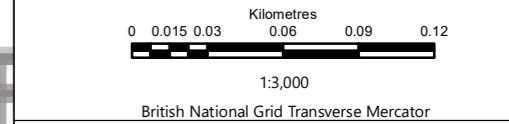
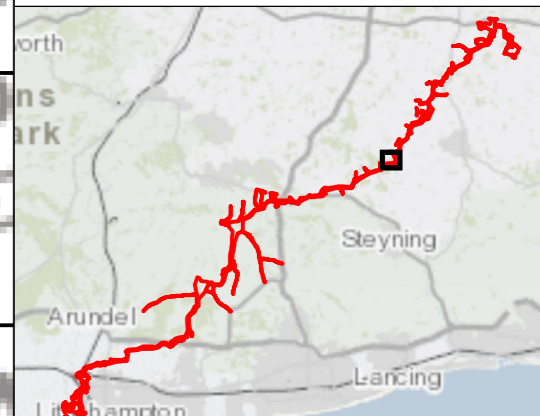
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**Key**

- Proposed DCO Order Limits
- Survey site 8

**Year of deployment**

- 2022

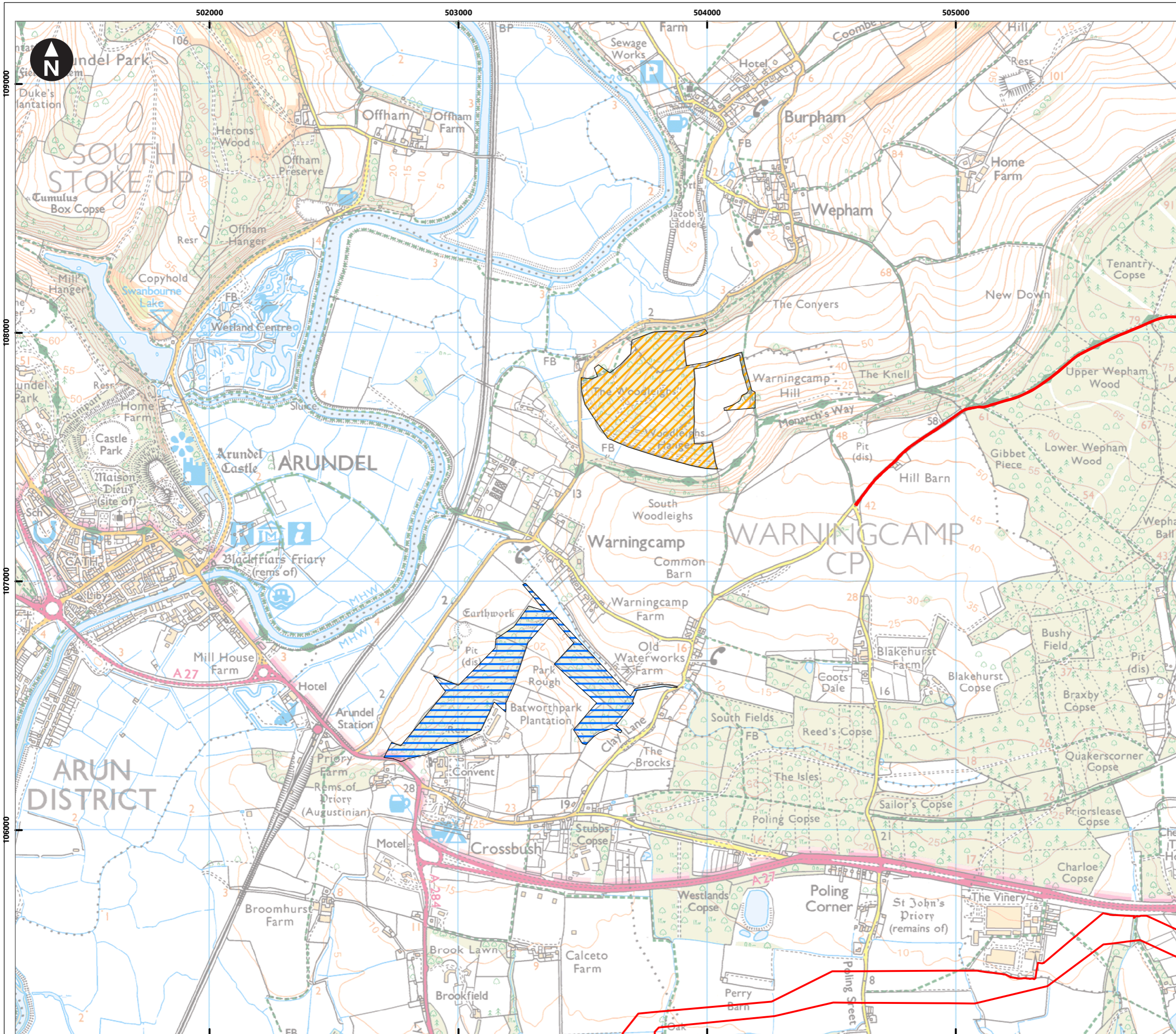


British National Grid Transverse Mercator  
 Rampion Extension Development

Rampion 2 Offshore Wind Farm  
 22.9.4I Dormouse nest tube locations - Area 8  
 Hazel dormouse report 2020-2022  
 Environmental Statement

System Identifier: 42285-WSPE-ES-ON-FG-OO-8692	Version: 1.0
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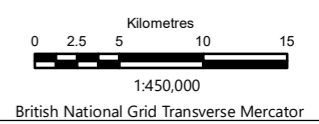
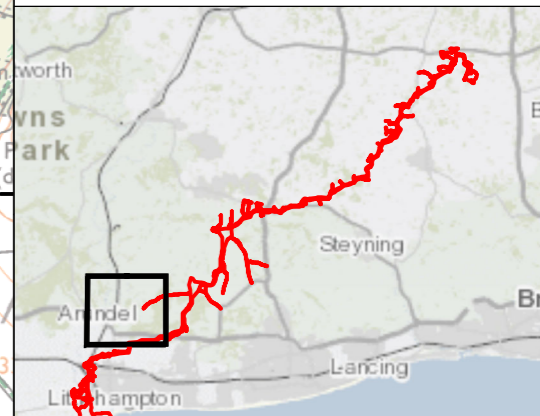
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  - Survey site 3
  - Additional survey site 3
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  - Survey site 5
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  - Survey site 6
  - 2022**
  - Survey site 7
  - Survey site 8



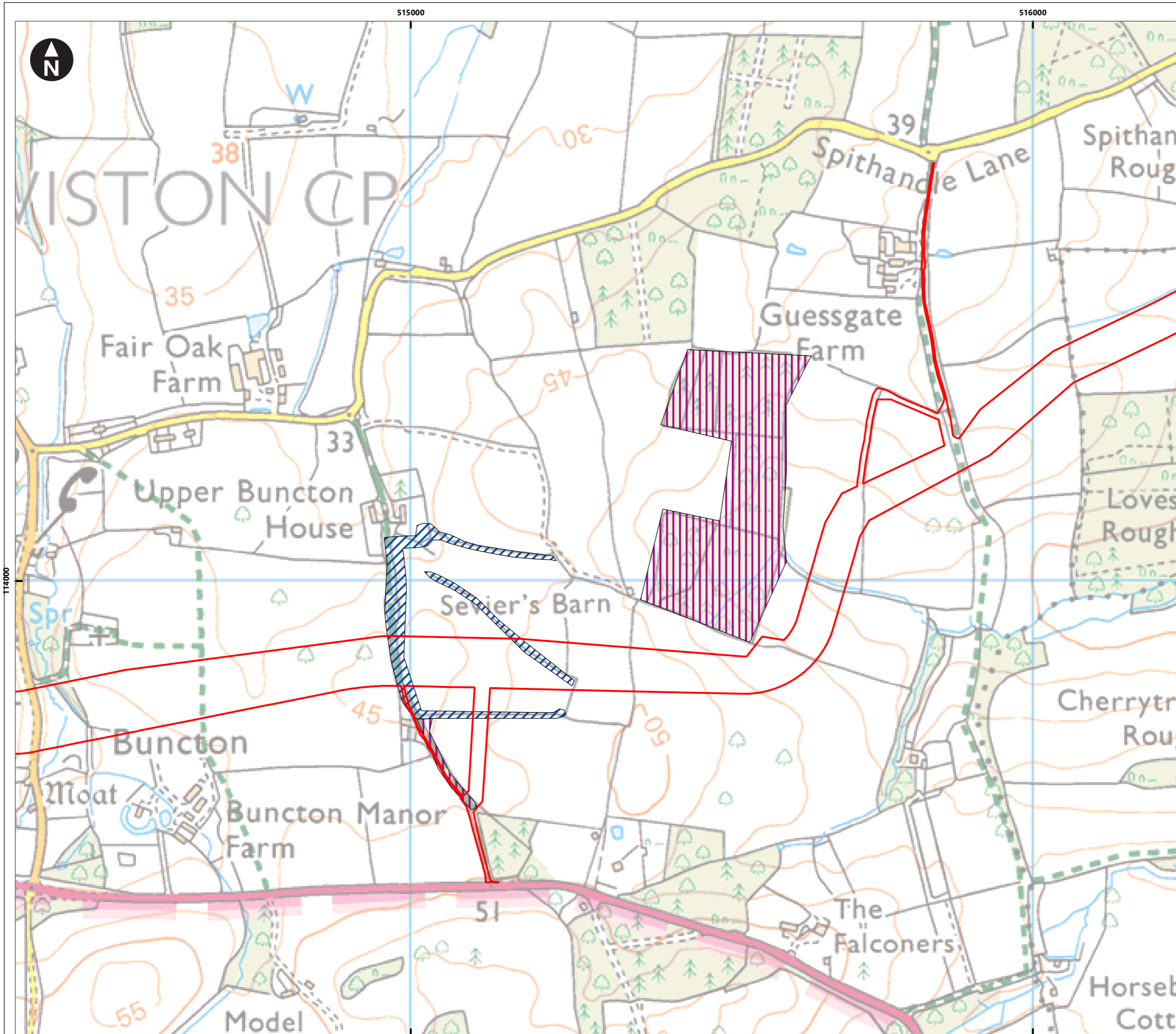
Rampion Extension Development



Rampion 2 Offshore Wind Farm  
 22.9.5a Hazelnut search locations  
 Hazel dormouse report 2020-2022  
 Environmental Statement

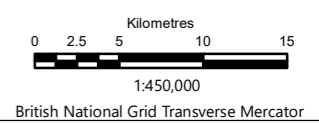
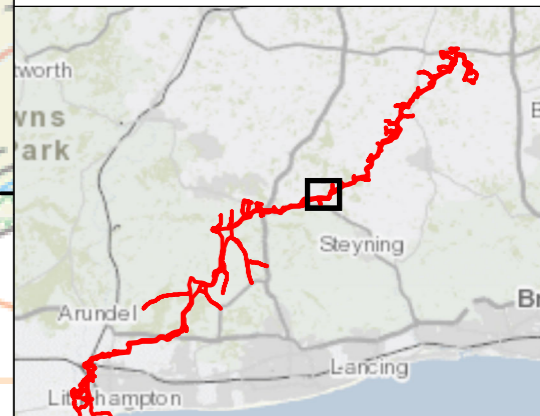
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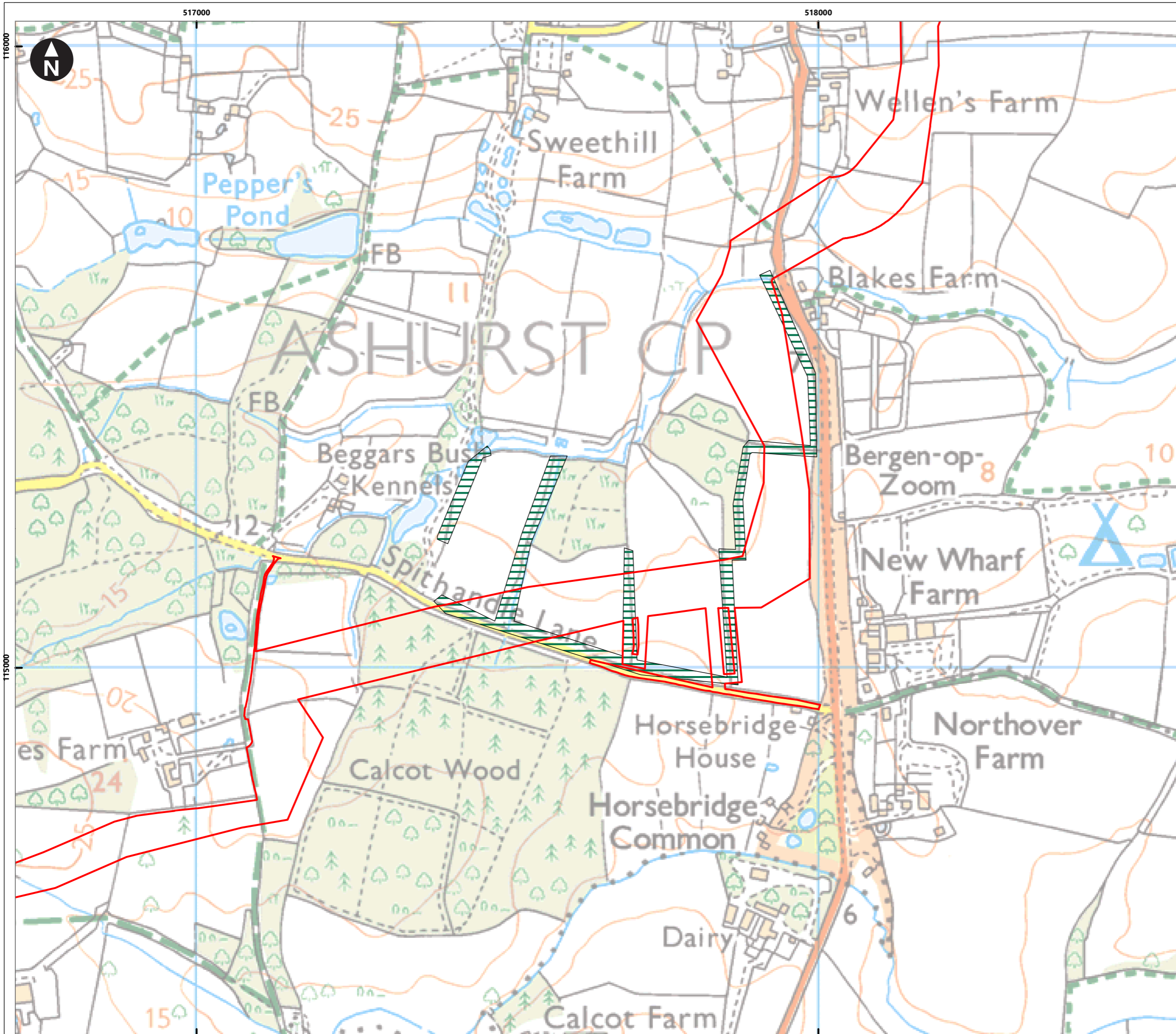


Rampion Extension Development



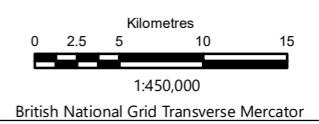
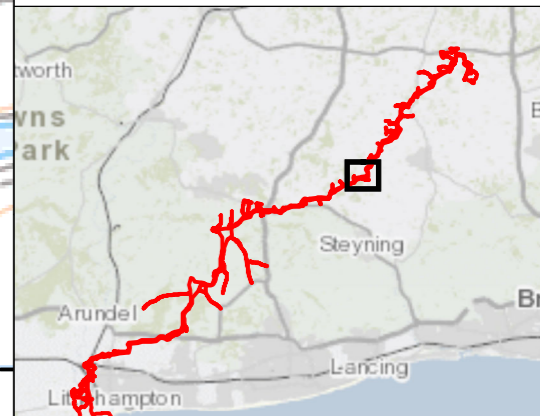
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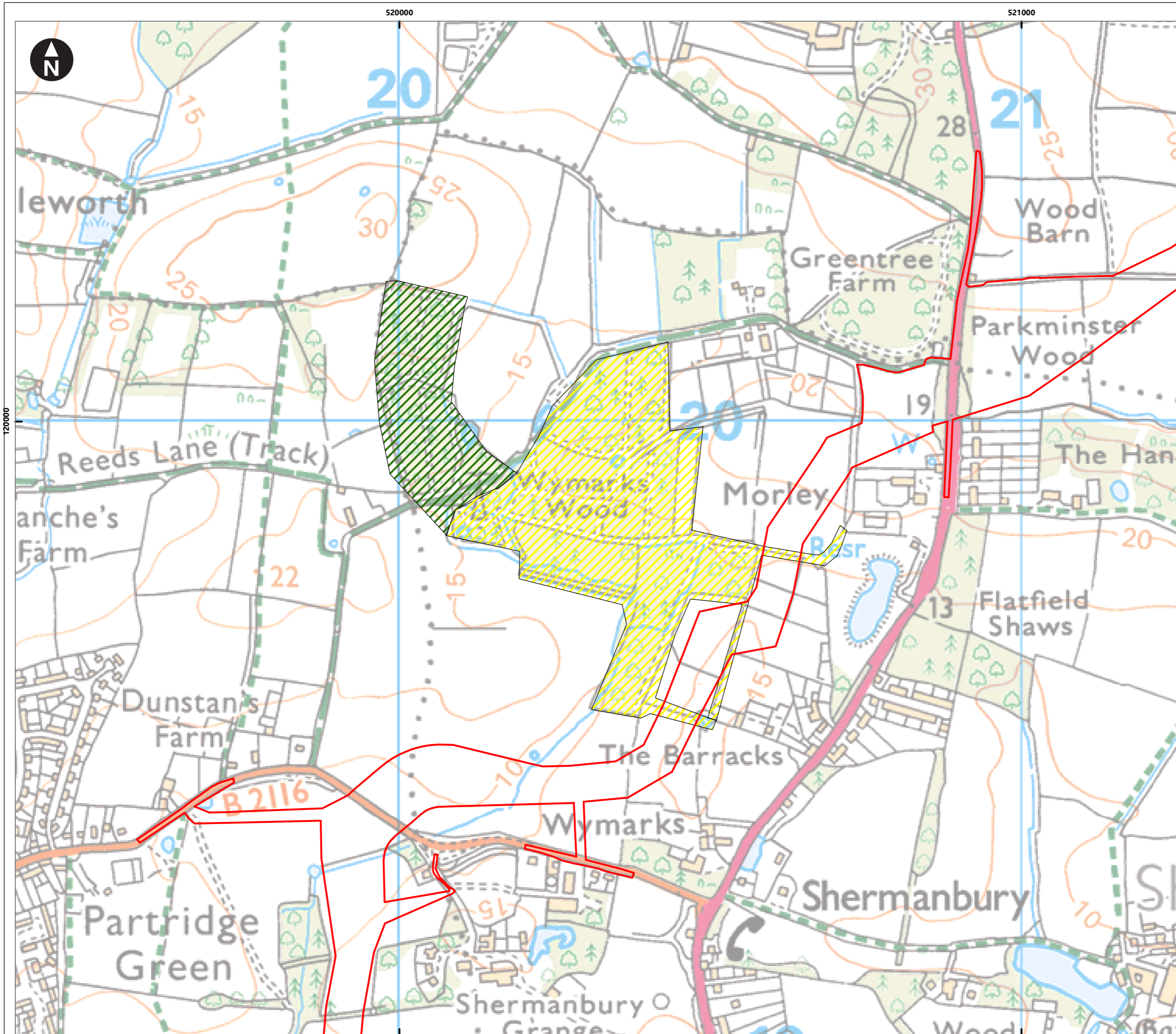


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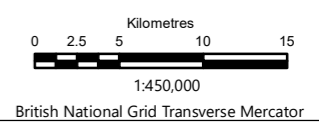
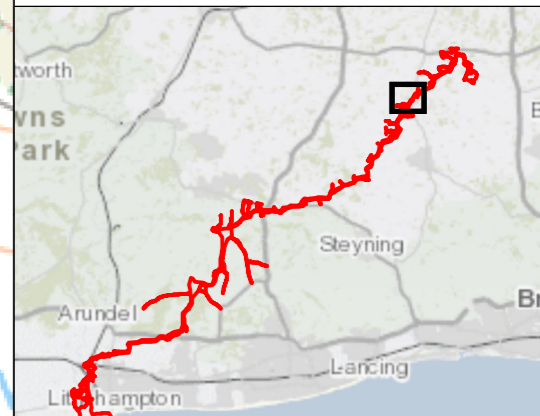
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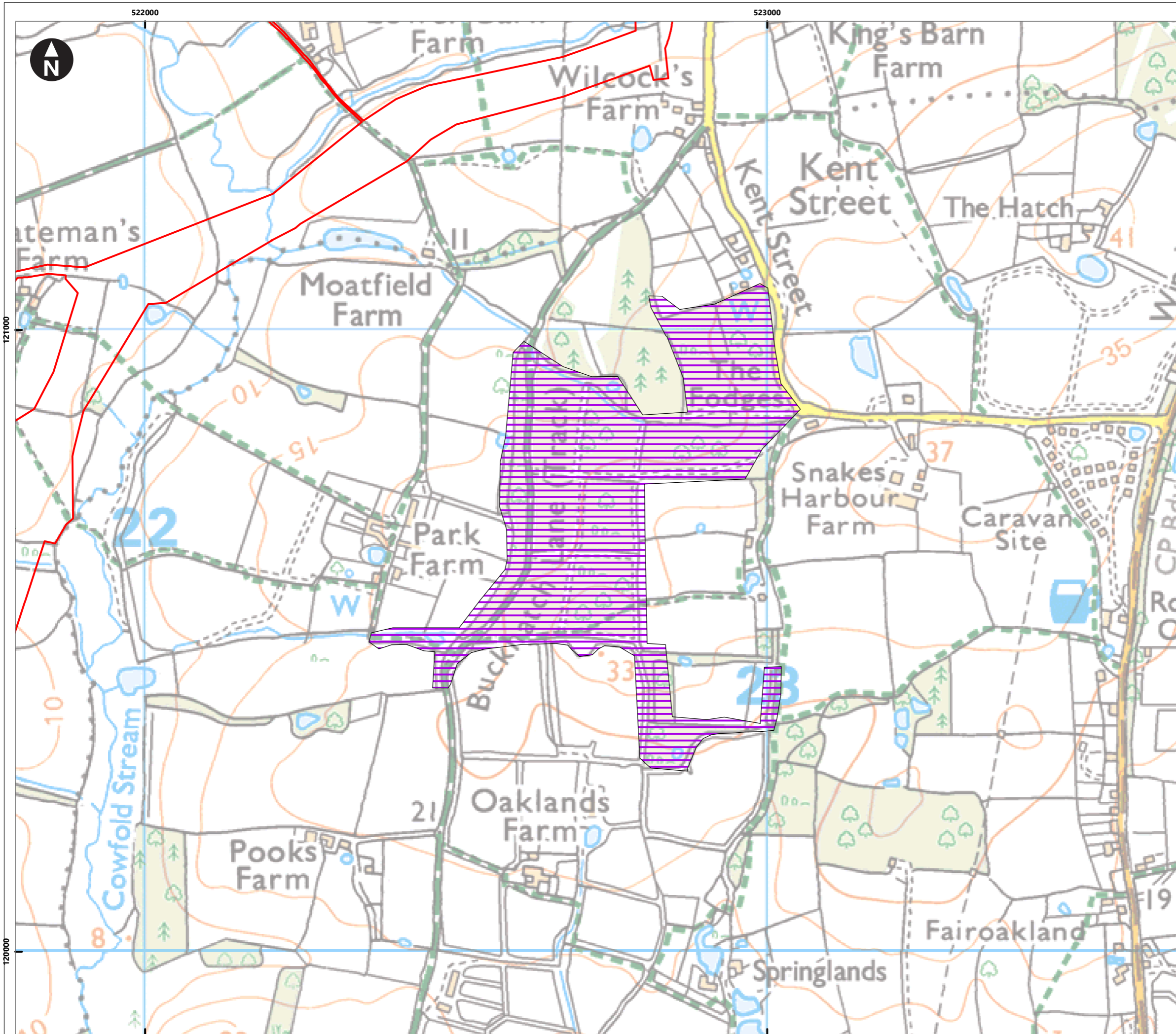


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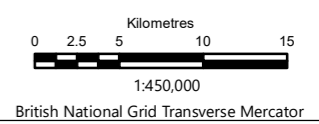
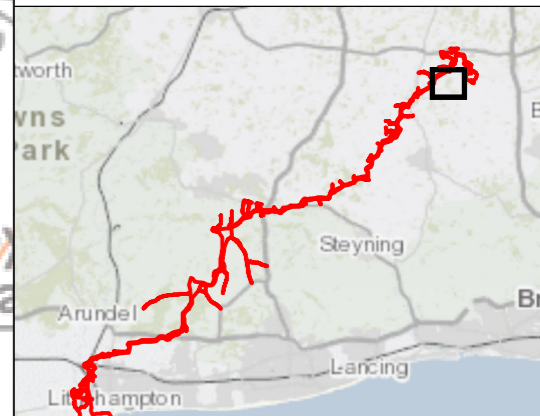
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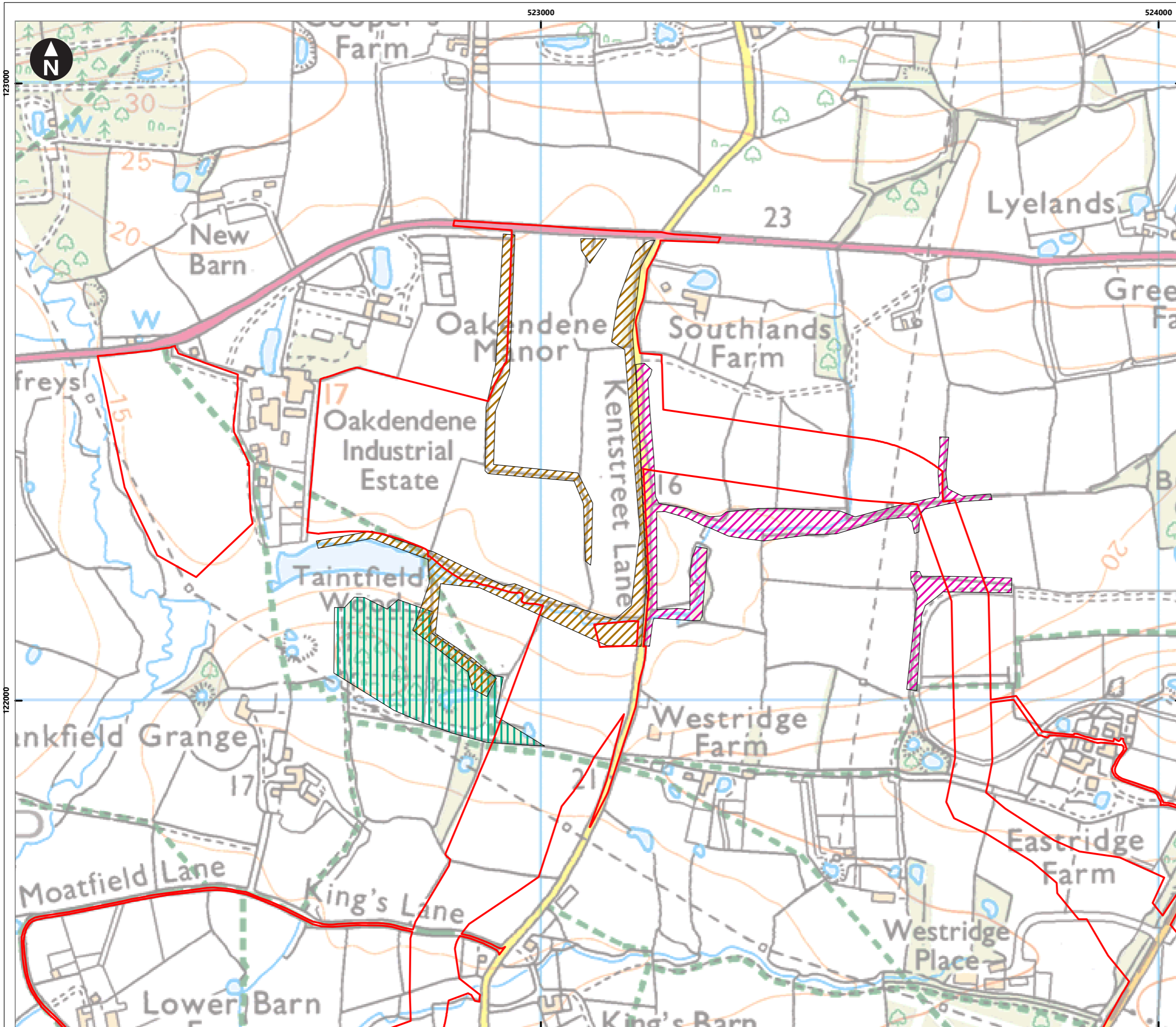


Rampion Extension Development



Rampion 2 Offshore Wind Farm  
 22.9.5e Hazelnut search locations  
 Hazel dormouse report 2020-2022  
 Environmental Statement

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  - Survey site 7
  - Survey site 8

0 2.5 5 10 15  
 Kilometres  
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 British National Grid Transverse Mercator

Rampion Extension Development

Rampion 2 Offshore Wind Farm  
 22.9.5f Hazelnut search locations  
 Hazel dormouse report 2020-2022  
 Environmental Statement

System Identifier: 42285-WSPE-ES-ON-FG-OO-5238		Version: 1.0
Company: WSP	Drawn By: HADJE	Chk/Prvrd: SUTET
Drawn Date: 20/07/2023	Status: FINAL	

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# Annex B

## Full Survey Results

**Table B-1** below lists all observations recorded during the dormouse surveys, October 2020 to October 2022 inclusive.

**Table B-1 Dormouse survey results and observations recorded October to June 2022 inclusive**

Month	Survey Site	Tube reference	Observations
<b>2020</b>			
October	N/A		
November	1	16	Very loose, unstructured small mammal nest comprising just several leaves layered flat atop each other. Lots of half eaten rosehips present as well. Some green leaves present but lacking structure and presence of feeding signs within nest so unlikely to be dormouse.
<b>2021</b>			
April	N/A		
May	6	50	Active bird nest – small passerine species
	6	30	Active bird nest – small passerine species
	6	34	Active bird nest – small passerine species
June	n/a		
July	6	30	Active bird nest – small passerine species
August	3	8	x1 wood mouse with nest
	3	4	Very loose, unstructured small mammal nest comprising just several leaves layered flat atop each other
	3	2	Very loose, unstructured small mammal nest comprising just several leaves layered flat atop each other

Month	Survey Site	Tube reference	Observations
	3	1	x1 wood mouse with nest
	3	53	x1 wood mouse with nest
<b>September</b>	1	15a	Very loose, unstructured small mammal nest comprising just several leaves layered flat atop each other
	1	10a	Very loose, unstructured small mammal nest comprising just several leaves layered flat atop each other
	1	13a	Very loose, unstructured small mammal nest comprising just several leaves layered flat atop each other
	1	5a	Nut cache, hazelnuts and blackberries
	1	3a	Very loose, unstructured small mammal nest comprising just several leaves layered flat atop each other
	1	1a	Food cache of blackberries
	1	66	Very loose, unstructured small mammal nest comprising just several leaves layered flat atop each other
	2	57	Very loose, unstructured small mammal nest comprising just several leaves layered flat atop each other
	2	93	x4 wood mouse in nest
	3	21	x1 wood mouse, leaves and food remains
	3	9	green leaves, wood mouse feeding remains
	3	4	green leaves, wood mouse feeding remains
	3	2	green leaves, wood mouse feeding remains
	3	32	Very loose, unstructured small mammal nest comprising just several leaves layered flat atop each other
	3	35	x1 wood mouse in nest
	3	36	x1 wood mouse in nest

Month	Survey Site	Tube reference	Observations
3		38	x4 yellow-necked mice in nest
3		39	Very loose, unstructured small mammal nest comprising just several leaves layered flat atop each other and feeding remains
3		42	x1 wood mouse in nest of green leaves
3		45	Bird droppings (emptied)
3		48	Green leaves and wood mouse feeding remains
3		50	x1 wood mouse in nest of green leaves
3		53	x1 wood mouse with nest of green leaves
3		67	Bird droppings present
3		59	x1 wood mouse in nest
3		71	Bird droppings present
4		8	x1 wood mouse in nest of green leaves
4		7	Feeding remains present, sloe berries
5		75	Very loose, unstructured small mammal nest comprising just several leaves layered flat atop each other
5		58	Food cache comprised of sloe berries
5		57	Food cache comprised of sloe berries
5		56	Food cache comprised of sloe berries
5		26	Very loose, unstructured small mammal nest comprising just several leaves layered flat atop each other
5		18	Very loose, unstructured small mammal nest comprising just several leaves layered flat atop each other
5		11	Very loose, unstructured small mammal nest comprising just several leaves layered flat atop each other

Month	Survey Site	Tube reference	Observations
	5	10	Very loose, unstructured small mammal nest comprising just several leaves layered flat atop each other
<b>October</b>	2	88	Old small mammal nest comprised of rotting leaves
	3	9	x1 wood mouse in nest
	3	7	Very loose, unstructured small mammal nest comprising just several leaves layered flat atop each other
	3	6	Very loose, unstructured small mammal nest comprising just several leaves layered flat atop each other
	3	5	Feeding remains: rose hips
	3	3	Very loose, unstructured small mammal nest comprising just several leaves layered flat atop each other
	3	2	Very loose, unstructured small mammal nest comprising just several leaves layered flat atop each other
	3	1	Feeding remains: rose hips
	3	36	Pile of brown leaves, unlikely to be small mammal nest
	3	38	x1 yellow-necked mouse
	3	39	Very loose, unstructured small mammal nest comprising just several leaves layered flat atop each other and feeding remains
	3	51	Brown leaves (emptied)
	3	52	Feeding remains (emptied)
	3	54	x1 yellow necked mouse
	3	64	x1 yellow necked mouse
	3	65	Food cache: blackberries
	3	68	x1 yellow-necked mouse

Month	Survey Site	Tube reference	Observations
	3	69	x1 yellow-necked mouse
	3	71	x1 yellow-necked mouse
	4	14	Food cache, hawthorn pips
	4	8	Food cache, sloe berry pips
	4	7	Food cache, sloe berry pips
	4	3	Food cache, tube full of detritus/rotting fruit
	4	2	Food cache, full of blackberries and sloes
	5	68	Food cache of seeds
	5	69	Old dried leaves, no structure
	5	73	Food cache of seeds
	5	20	Food cache of seeds
	5	23	Food cache of seeds and collection of brown leaves
	5	8	Food cache of seeds and collection of brown leaves
	5	12	Very loose, unstructured small mammal nest comprising just several leaves layered flat atop each other
	5	11	Old, loose, unstructured small mammal nest comprising just several leaves layered flat atop each other
	5	58	Small mammal nest of green leaves with very loose structure.
	6	50	Containing moss (emptied)
<b>November</b>	1	88	Hazelnut in tube
	3	12	Very loose, unstructured small mammal nest comprising just several leaves layered flat atop each other
	3	2	x1 wood mouse in green leaves
	3	36	x2 yellow necked mouse

Month	Survey Site	Tube reference	Observations
	3	37	Hawthorn leaves, no structure
	3	39	Very loose, unstructured small mammal nest comprising just several leaves layered flat atop each other
	4	14	Feeding remains – rotting berries
	4	12	Feeding remains – rotting berries
	4	11	Feeding remains – rotting berries
	4	10	Feeding remains – rotting berries
	4	9	Feeding remains – rotting berries
	4	8	Feeding remains – rotting berries
	4	7	Feeding remains – rotting berries
	4	6	Feeding remains – rotting berries
	4	5	Feeding remains – rotting berries
	4	4	Feeding remains – rotting berries
	4	3	Feeding remains – rotting berries
	4	2	Food cache - full of blackberries and sloes
	4	1	Feeding remains – rotting berries
	5	44	Very loose, partially constructed nest with no structure comprising leaves layered in a loose mass
	6	4	A few brown leaves
	6	21	Small mammal nest of green and brown leaves, with no structure
<b>2022</b>			
<b>April</b>	8	N/A	Land access denied
<b>May</b>	8	28	x1 wood mouse in nest of green leaves
<b>June</b>	8	N/A	Land access denied
<b>July</b>	8	N/A	Land access denied

Month	Survey Site	Tube reference	Observations
August	8	28	Wood mouse nest
		57	Bird (tit) nest
September	8	28	Apodemus sp. Nest (unoccupied). Nest of leaves but no structure.
		31	Acorn cache, Apodemus sp./Microtus sp. Feeding marks, definitely not dormouse
October	7	59	Woven nest of grass and dried leaves with internal chamber
	7	70	Juvenile dormouse flushed from box. Woven nest of grass and dried leaves with internal chamber
	7	75	Woven nest of grass and dried leaves with internal chamber

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# Annex C

## Legislation

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### **The Wildlife and Countryside Act 1981 (as amended)**

The hazel dormouse is listed in Schedule 5 of The Wildlife and Countryside Act 1981 (as amended). The Act transposes into UK law the Convention on the Conservation of European Wildlife and Natural Habitats (commonly referred to as the 'Bern Convention'). Dormice are listed on Schedule 5 of the Act in respect of Section 9, which makes it an offence, inter alia, to:

- intentionally or recklessly kill, injure, or take (handle) a dormouse;
- intentionally or recklessly damage, destroy or obstruct access to any structure or place that a dormouse uses for shelter or protection; or
- intentionally or recklessly disturb a dormouse while it is occupying a structure or place that it uses for shelter or protection.

### **Regulation 41 of The Conservation of Habitats and Species Regulations 2010**

The hazel dormouse receives further protection under Regulation 41 of The Conservation of Habitats and Species Regulations 2010, which make provision for the purpose of implementing the European Union Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora 1992. Here, they are listed on Annex IV, which means that member states are required to put in place a system of strict protection as outlined in Article 12, and this is done through inclusion on Schedule 2 of the Regulations, which makes it an offence, inter alia, to:

- deliberately capture, injure or kill any dormouse;
- deliberately disturb a dormouse, in particular any disturbance which is likely:
  - (a) to impair their ability
    - ▶ (i) to survive, to breed or reproduce, or to rear or nurture their young, or
    - ▶ (ii) to hibernate or migrate
  - (b) to affect significantly the local distribution or abundance of dormouse; or
- damage or destroy a breeding site or resting place of a dormouse.

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# Annex D

## Scientific species names

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**Table D-1** below lists all species mentioned within this Appendix, note some species mentioned below were not recorded during hazel dormouse surveys.

**Table D-1 Scientific names of species mentioned in this report**

<b>Common name</b>	<b>Scientific name</b>
<b>Ash</b>	<i>Fraxinus excelsior</i>
<b>Blackthorn</b>	<i>Prunus spinosa</i>
<b>Bracken</b>	<i>Pteridium sp.</i>
<b>Bramble</b>	<i>Rubus sp.</i>
<b>Field maple</b>	<i>Acer campestre</i>
<b>Hawthorn</b>	<i>Crataegus sp.</i>
<b>Hazel</b>	<i>Corylus avellana</i>
<b>Hazel dormouse</b>	<i>Muscardinus avellanarius</i>
<b>Honeysuckle</b>	<i>Lonicera periclymenum</i>
<b>Oak</b>	<i>Quercus sp.</i>
<b>Silver birch</b>	<i>Betula pendula</i>
<b>White poplar</b>	<i>Populus alba</i>
<b>Wood mouse</b>	<i>Apodemus sylvaticus</i>
<b>Yellow-necked mouse</b>	<i>Apodemus flavicollis</i>

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