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Appendix 7L

Dormouse Survey Report

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Welsh Government
**Global Centre for Rail Excellence
(GCRE)**
Dormouse Survey Report

Rev A | 18 June 2020

This report takes into account the particular instructions and requirements of our client.
It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 264904

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1 Introduction

1.1 Background

Ove Arup & Partners Ltd (Arup) was commissioned by the Welsh Government (WG) to undertake a range of consultancy services in relation to the Global Centre for Rail Excellence (GCRE), hereafter referred to as ‘the Project’.

As part of that commission, a range of ecological surveys have been undertaken to identify the baseline ecological conditions of the Project area, to inform the assessment of impacts as part of the Environmental Impact Assessment (EIA) process.

This document describes the hazel dormouse (*Muscardinus avellanarius*) surveys undertaken for the Project.

1.2 Survey Objectives

The aims and objectives of the surveys were to:

- Determine the presence and distribution, or likely absence of dormouse within the study area; and
- Where present, to determine the likely population size of dormouse within the study area.

2 Project Description and Context

The WG are proposing to develop a rail testing, maintenance, research, development and storage facility (also referred to as the Global Rail Centre for Excellence) at the site of the Onllwyn washery and Nant Helen open cast mine site. The site for development is approximately 475 ha.

The proposed site is currently being mined by Celtic Energy, who will cease extraction operations in 2021, at which point Celtic Energy will be required to restore the land in accordance with regulatory requirements and agreements with Powys County Council (PCC) and Neath Port Talbot County Borough Council (NPTCBC). This includes Section 106 planning obligations and planning conditions that need to be discharged.

Celtic Energy has submitted two recent planning applications for the site, including: the revised restoration strategy for approval (Planning reference number: 19/1899/REM) which would change the existing approved restoration scheme (for planning application ref 18/1070/REM). And, the Nant Helen complementary earthworks application for approval (Planning reference number: 20/0738/FUL) The purpose of these applications is to allow for a ‘flexible and adaptable landform for a variety of future uses on restoration, including the use of the site as a rail testing and storage facility, proposed by the WG.

3 Site Description

The Project site is within the Dulais Valley located within Powys and Neath Port Talbot, with the Brecon Beacons National Park Authority boundary immediately to the north. Nearby settlements include Onllwyn, Seven Sisters, Ystradgynlais, Caehopkin, Abercrave or Coelbren.

The site is predominantly brownfield land that has been heavily worked by open cast mining. Much of the site has been revegetated.

4 Study Area

The study area (Figure 1) encompasses the majority of land within the Nant Helen open cast operational site, which at the time of commencing the ecological surveys was considered to be the likely boundary of the project site.

5 Relevant Legislation and Biodiversity Framework

The dormouse is protected as a European Protected Species (EPS), under the Conservation of Habitats and Species Regulations 2017 (as amended), commonly referred to as the Habitats Regulations. Under this legislation it is an offence to:

- deliberately or recklessly kill, injure or capture a dormouse;
- to deliberately or recklessly disturb a dormouse such as to affect its ability to breed or its local distribution, and;
- Or to damage, destroy or obstruct access to a breeding site or resting place (e.g. shelter) used by a dormouse.

Dormice are also fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Legal protection makes it an offence to:

- intentionally kill, injure or take (capture) a dormouse;
- possess or control alive or dead dormouse, or any part of a dormouse; and
- intentionally or recklessly damage, destroy or obstruct access to any structure or place which dormouse use for shelter or protection, or disturb dormouse while they are using such a place.

The Environment (Wales) Act 2016 includes a duty on all public authorities to have regard to the conservation of biodiversity in the exercise of their functions. This duty applies to government bodies, local authorities and statutory undertakers. The Act also requires lists to be published of Habitats and Species considered to be of Principal Importance for the Conservation of Biological Diversity. These are referred as Section 7 habitats and species after the sections of the Act which require the publication of lists in each devolved area. Dormice are listed as a Section 7 Species considered of Principal Importance for the Conservation of Biological Diversity.

Actions that are prohibited by legislation can be made lawful on the approval and granting of a licence from Natural Resources Wales (NRW), subject to conditions.

6 Methodology

6.1 Desk Study

Dormouse records within 2 km of the study area were obtained from a review of existing ecological data and a new ecological data search. Existing ecological data that informed the 2011 Environmental Statement¹ was reviewed, and a new ecological data search was requested from the Biodiversity Information Service for Powys & Brecon Beacons National Park (BIS²).

Freely available web-based mapping and aerial imagery resources such as MAGIC³ and Google⁴ were used to assess the likely suitability of habitat for dormice, taking into consideration the connectivity of woodland and hedgerow habitat within the wider landscape. This was prior to Arup ecologists completing the Extended Phase 1 Habitat Survey on 26th November 2018, and 25th April, 26th April, 29th May and 7th November 2019. During these surveys, potential habitats were assessed further for their suitability to support dormouse.

BIS data was obtained on 21 November 2018 and is also presented within the Extended Phase 1 Habitat Survey Report in relation the Project⁵, along with results of the review of existing data.

6.2 Presence / Likely Absence Survey

Dormouse presence/absence surveys were undertaken using nest tubes and nest boxes, according to best practice guidelines in the Dormouse Conservation Handbook⁶.

Nest tubes are an effective method to survey for dormice, who use them for breeding as well as daytime shelter. Dormouse nest tubes consist of a length of corrugated plastic tubing with a wooden sliding tray which also forms the end of the tube. Tubes are attached horizontally within trees and scrub using wire. Nest tubes are used by dormice as an alternative to tree holes and other suitable nesting sites. Other species, such as wood mice (*Apodemus sylvaticus*) or birds, may also use the dormouse nest tubes. However, dormice build tightly woven nests which are usually readily identifiable from the nests of other species.

Habitats were considered for their potential to contain suitable fruiting and flowering species that could be used as a food resource for dormouse. Dormice are known to favour deciduous woodland habitat with a diverse scrub understorey and readily colonise connected scrub and species-rich hedgerow habitats⁶.

¹ Environmental Statement (2011), Celtic Energy Ltd.

² <https://www.bis.org.uk/home> Accessed online 21/11/2018

³ <https://magic.defra.gov.uk/>

⁴ <https://www.google.co.uk/maps/@51.7836206,-3.7070783,6384m/data=!3m1!1e3?hl=en>

⁵ Arup (2019) *Nant Helen Complementary Restoration Earthworks Extended Phase 1 Habitat Survey Report*

⁶ Bright, P, Morris, P, & Mitchell-Jones, T. (2006). *The Dormouse Conservation Handbook* (2nd ed.). English Nature

In addition, nest tubes and nest boxes were also placed in coniferous plantation areas of the study area. Although traditionally associated with hazel, dormice can occur in a wide variety of woody habitats. They are also increasingly reported living in hedgerows, areas of plantation conifers and rural gardens. Certain softwood species may support sufficient insects (aphids and caterpillars for example) to sustain a small dormouse population in the absence of more conventional food. It is also possible that dormice can make use of sap as a food source in such habitats⁵.

Nest boxes were also deployed to provide an alternative nesting option for dormice potentially present within coniferous plantation habitat. Due to the sparse understorey in this habitat, it was also practical to install these here. These are wooden and similar to bird boxes, but with the entrance hole facing the supporting tree or branch, are readily used by dormice and offer a means of detecting the animals in the absence of gnawed hazel nuts. Spacing bars above and below the entrance allow easy access to the entrance hole, which is about 35 mm in diameter. Boxes were attached using a wire sling, for ease of removal for inspection.

Nest tubes and boxes tend to be most frequently occupied in May and August to September⁵. Guidance recommends the use of at least 50 tubes to sample a site, with tubes deployed and spaced at about 20 m intervals in suitable habitat, e.g. dense hedgerow shrubs. As such, based on the size of the site and habitats present, 279 nest tubes and 20 nest boxes were installed (Figure 1) at intervals of approximately 20 m, where access was possible on the following dates:

Table 1. Dormouse nest tube and nest box installation dates.

Tube-Box Ref	Installation Date
Tubes 1 - 60	14.05.19
Tubes 61-100	15.05.19
Tubes 111 - 115	16.05.19
Boxes 1- 20	16.05.19
Tubes 116-165	20.06.19
Tubes 1 - 64 - Restored Hedgerows	07.06.19
Tubes 1 - 50 - The Washery	13.06.19 20.06.19

The nest tube and box locations are shown in Figure 1.

The tubes were inspected 5 times on a monthly basis between July and November (inclusive) on the following dates, noting it took more than one day for some of the monthly checks:

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Table 2. Table of nest tube and nest box inspection dates.

Date	Notes
17.07.2019	Washery and conifer plantation Northern area and hedgerows
23.07.2019	
19.08.2019	All tubes and boxes
20.08.2019	
25.09.2019	All tubes and boxes
26.09.2019	
16.10.2019	All tubes and boxes
17.10.2019	
18.11.2019	All tubes and boxes
19.11.2019	
20.11.2019	

In accordance with the Dormouse Conservation Handbook, adequate survey effort was achieved using the scores provided in Table 3 (which are per 50 nest tubes), derived from the index of probability in the Handbook. Using this method, the survey effort provided a score of 119.6, indicating that the survey effort was sufficient.

Table 3. Index of probability of finding dormice present in nest tubes in any one month (based on 50 nest tubes). Months denoted with a * are months in which survey visits took place.

Month	Score
April	1
May	4
June	2
July*	2
August*	5
September*	7
October*	2
November*	2
Total for 50 tubes	18
Total for 279 tubes + 20 boxes	20 x 5.98 = 119.6

Charlotte Phillips (Arup) was responsible for overseeing the dormouse surveys (accredited under Natural Resources Wales dormice licence number 79949:OTH:SA:2018, Debbie Brown) and was aided by accredited agents Kathryn Jones, Alexandra Escott and Alexandra Kinsey (accredited under Debbie Brown or Claire Pooley, Natural Resources Wales dormouse licence number

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77661a: OTH:SA:2017) plus assistants (Martyn Owen, Biome Consulting). Surveys were also undertaken by Matt Levan (Levan Ecology Ltd, dormouse licence number 79534:OTH:SA:2018). All surveys were undertaken in suitable weather conditions, details of these and which staff member attended each site visit are in Appendix A.

There was a limited presence of fruiting hazel within the study area, so a nut search was not undertaken; however, the survey score above, with the addition of nest boxes, provides a sufficient survey effort for the site in accordance with best practice survey guidance.

During each survey, a record was taken of positive and negative results, at each nest tube location. The GPS location of each nest tube was also recorded, along with any other comments such as any fallen trays of tubes that had been tampered with. Field signs or features relevant to the survey were photographed, with a GPS location attached to the digital image. Evidence of any other small mammal activity was also recorded where this occurred.

6.3 Limitations and Assumptions

It should be stressed that the findings presented in this study represent those at the time of survey and reporting, and data collected from available sources. Ecological surveys are limited by factors which affect the presence of species, such as weather conditions, movement patterns and behaviour.

Nevertheless, these surveys were conducted at an appropriate time of year and using appropriate methods. Every effort has been made to ensure that the findings of the study present as accurate an interpretation as possible of the status of dormice within the study area.

7 Results

7.1 Desk Study

7.1.1 Existing Data

Existing data that informed the 2011 Environmental Statement included a dormouse survey where one hundred dormouse nest tubes were deployed in July 2010 in four representative areas of suitable habitat on site. The tubes were then checked for presence/signs of dormice once per month in August, September, October and November 2010. Additionally, an inspection of hazel nuts was undertaken, to determine whether they had been opened by dormice. No dormice or signs of dormice were identified during the nest tube checks and no hazel nuts were found to have been opened by dormice.

Study of the site using aerial imagery and in the field during the Extended Phase 1 Habitat Survey showed that suitable habitat for dormouse existed in areas of semi-natural broadleaved woodland on the northern boundary of the site. Species compositions were broadly similar throughout the site and comprised willow (*Salix* sp.), silver birch (*Betula pendula*), hawthorn (*Crataegus monogyna*), rowan (*Sorbus acuparia*), sessile oak (*Quercus petraea*) and hazel (*Corylus avellana*). Along the access road to the Nant Helen site, there was a small area of large mature oak trees with a bluebell (*Hyacinthoides non-scripta*) understorey.

Small areas of semi-mature planted woodland were present throughout the site and formed some of the previously restored mining areas. Species compositions were similar to those of the semi-natural woodlands on site. A large conifer plantation was present to the north-west of the site. Larch trees (*Larix* sp.) were the dominant species, with pine (*Pinus* sp.) and spruce (*Picea* sp.) also present. The understorey was sparse and was dominated by mosses and common wintergreen (*Pyrola minor*). A small area of semi-natural mixed woodland was present in the south-east corner of the site, bordered by the A4221 and A4109 which was willow dominated, with occasional hawthorn, pine and spruce species. Ground flora primarily consisted of bramble and European gorse (*Ulex europeaus*) with rare incidences of heather (*Calluna vulgaris*).

A network of intact species-poor hedgerows was present in the restored land to the east of the site, where hawthorn was the dominant species present. Species-poor hedges with large gaps were also present in the restored area to the east of the site. The dominant species present was hawthorn with occasional willow.

7.1.2 New Data Search

The biological records centre (BIS) did not return any records of dormouse from the previous 10 years (2009 to 2019 inclusive) within 2 km of the study area

7.2 Field Survey

No dormice were found during the course of the survey. In addition, no nests or other evidence to suggest the presence of dormice was found. Table 4 below indicates evidence of other small mammals recorded.

Table 4. Table of dormouse survey results.

Survey Date	Nest tube number	Result
17.07.2019	/	All empty
23.07.2019	/	All empty
19.08.2019	/	All empty
20.08.2019	/	All empty
25.09.2019	24	Wood mouse nest
	41	Wood mouse food cache
26.09.2019	/	All empty
16.10.2019	33	Wood mouse nest
	35	Wood mouse nest
	62	Wood mouse nest
17.10.2019	/	All empty
18.11.2019	3	Wood mouse food cache
	4	Seed cache
	24	Droppings
	33	Wood mouse nest
19.11.2019	34	Wood mouse nest
	35	Wood mouse nest
	38	Wood mouse food cache
	39	Feeding remains
	59	Droppings
	62	Wood mouse nest
	63	Droppings
	B13	Droppings
	B12	Droppings
20.11.2019	11	Droppings
	17	Chewed nuts (probable wood mouse)
	18	Wood mouse nest
	19	Wood mouse nest
	23	Wood mouse food cache
	28	Wood mouse nest
	35	Wood mouse nest
	39	Droppings

8 Conclusions and Recommendations

No dormice were recorded during the survey and it is therefore assumed that this species is likely absent from the site.

A full ecological impact assessment will be included within the Environmental Statement for the project and this will include an assessment of the significance of impacts from the project on dormouse. This will also detail any mitigation or compensation measures required to ensure there is no significant effect on dormice within the site.

This report is the result of the survey work undertaken between April and November 2019. This report refers, within the limitations stated, to the condition of the site at the time of the surveys. Changes in legislation, guidance, best practice, etc. may necessitate a re-assessment/survey. No warranty is given as to the possibility of future changes in the condition of the site.

The results of these surveys are considered valid for a minimum of 18 months to a maximum of 3 years. If more than 18 months elapses before any planning application is submitted, the requirement for repeat surveys should be reviewed⁷.

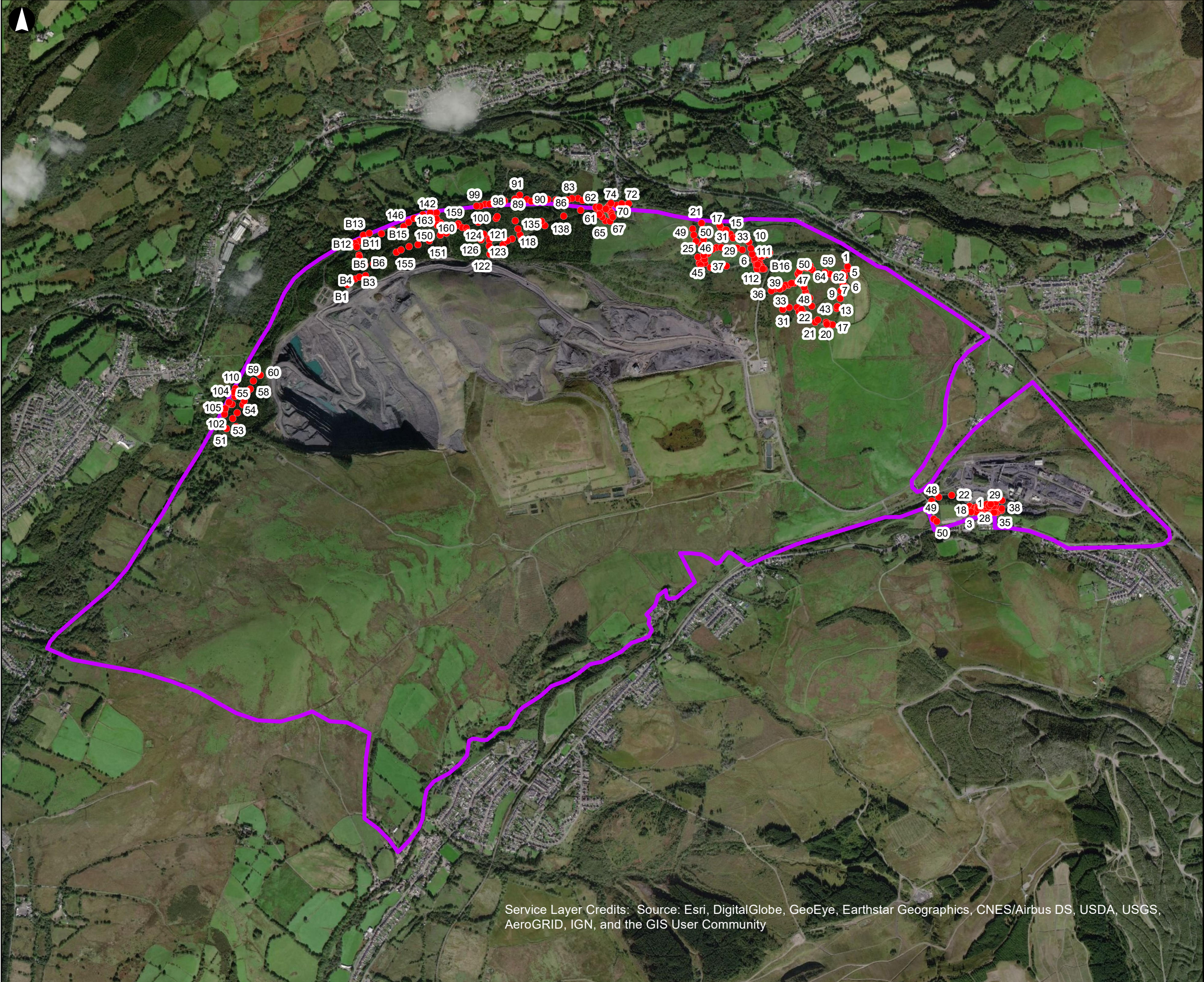
⁷ Chartered Institute of Ecology and Environmental Management (2019) Advice Note on the Lifespan of Ecological Reports and Surveys

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Figures

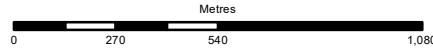
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- Legend
- Dormouse Tubes and Nest Boxes
 - Study Area Boundary

F1	2019-07-01	PW	PC	DB
Issue	Date	By	Chkd	Appd



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Job Title
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Study Area and Nest Tube/Nest Box Locations

Scale at A3
1:20,000

Job No 264904	Drawing Status For Issue
Drawing No 001	Issue F1

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Appendix A

Survey Weather Conditions

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A1 Survey Weather Conditions

Date	Temperature (°C)	Wind Speed (Bft)	Wind Direction	Cloud Cover (%)	Conditions	Surveyors	Notes	Results
17.07.2019	17	2	W	100	Dry	Alex Escott/Kathryn Jones	Washery and conifer plantation	No dormice found
23.07.2019	15	2	E	10	Sunny	Kathryn Jones/Alex Kinsey	Northern section and hedgerows	No dormice found
19.08.2019	14	3	W	90	Dry	Kathryn Jones/Alex Kinsey	All tubes	No dormice found
20.08.2019	16	1	W	70	Sunny			No dormice found
25.09.2019	15	2	W	100	Light showers	Kathryn Jones/Alex Kinsey	All tubes	No dormice found
26.09.2019	13	2	SW	90	Heavy showers			No dormice found
16.10.2019	13	1	E	50	Dry	Martyn Owen (Biome Consulting)	All other tubes	No dormice found
17.10.2019	14	2	N	20	Sunny	Alex Escott	Coniferous plantation	No dormice found
18.11.2019	3	1	SSE	100	Dry	Matt Levan (Levan Ecology Ltd)	Washery	No dormice found
19.11.2019	6	1	SSE	100	Dry		Hedgerows and northern section	No dormice found
20.11.2019	7	2	SSE	100	Dry		Remaining tubes	No dormice found