

8 Conclusions

The comprehensive suite of bat roost potential surveys in relation to buildings and trees within the study area did not identify any bat roosts. One of the structures – an old stone railway tunnel, was found to support a bat roost however. It is not anticipated that this roost will be affected by the Project. However, if this roost were to be disturbed by any works, a European Protected Species (EPS) mitigation licence application would be required to ensure compliance with legislation.

In addition, following a tree climbing assessment, 12 trees (Table 9, Figure 3) still retained bat roost potential (having low or moderate bat roost potential). As such, these 12 trees should be retained if possible. However, if removal/works are required these trees should be subject to updated tree climb inspections immediately prior to removal/works (if required), and only be felled/pruned if confirmed as being clear of any roosting bats.

If any bats or evidence of bats is found to be present during the updated tree climb inspection then further survey work, in the form of nocturnal surveys to establish species and numbers of bats present, would be required during the bat active season (May-September inclusive) that would inform a European Protected Species (EPS) mitigation licence application to enable tree works to be undertaken legally.

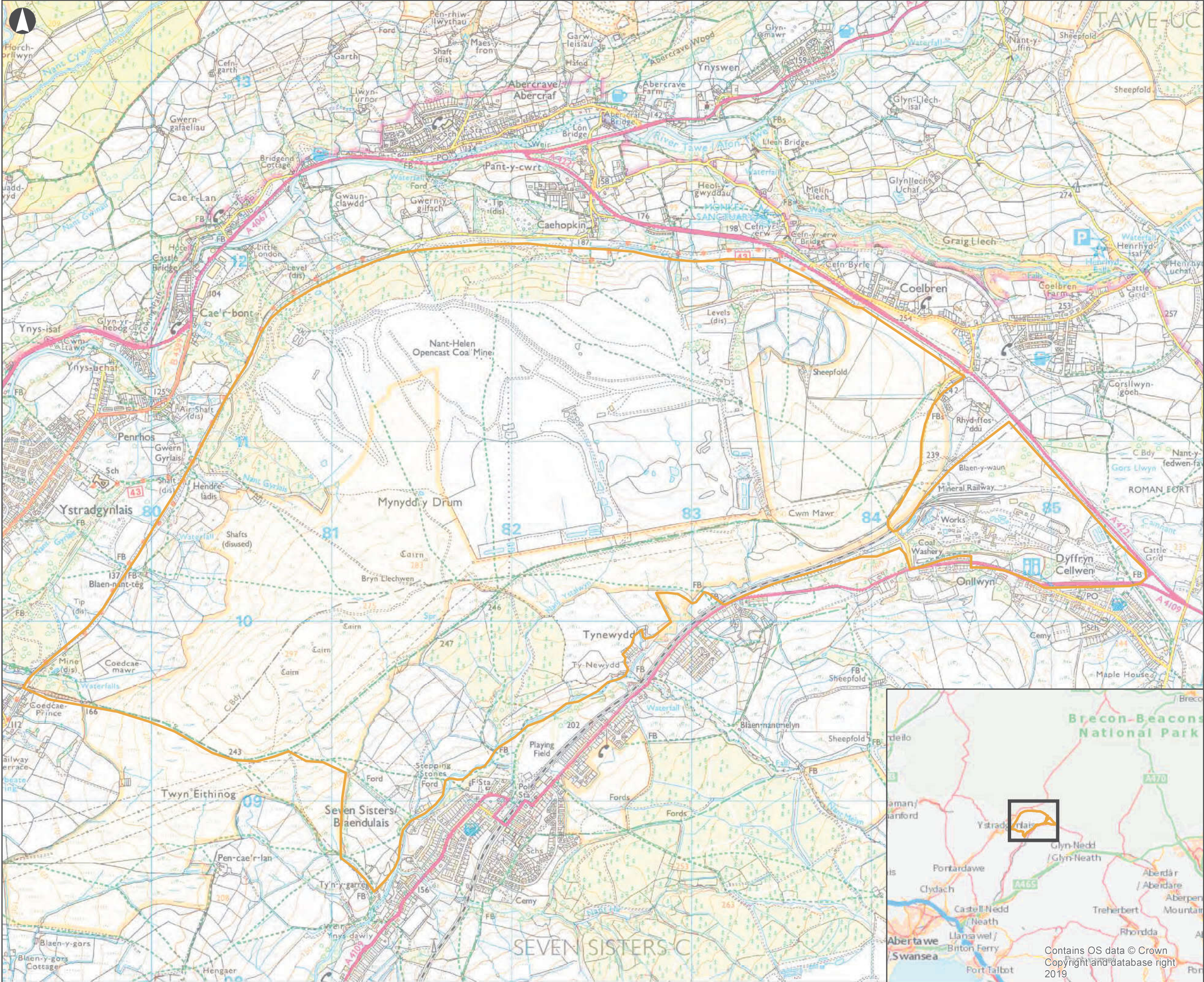
A full ecological impact assessment will be included within the Environmental Statement for the project and this will include an assessment of the significance of impacts from the project on bat species. This will also detail any mitigation or compensation measures required to ensure there is no significant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

This report is the result of the survey work undertaken between June and September 2019. This report refers, within the limitations stated, to the condition or proposed works 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 reviewed

Figures

- Figure 1** Site Location
- Figure 2** Building/Structure Survey Results
- Figure 3** Tree Survey Results

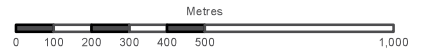


Legend

Survey Area

© Crown copyright and database rights 2019
Ordnance Survey 0100031673

F1	06/01/20	JG	AC	PC
Issue	Date	By	Chkd	Appd

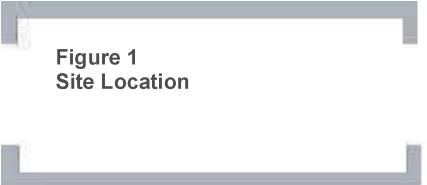


ARUP

4 Pierhead Street
Cardiff CF10 4QP
Tel +44 29 2047 3727 Fax +44 29 2047 2277
www.arup.com

Client
Celtic Energy Ltd.

Job Title
**Nant Helen Complementary Restoration
Earthworks
Bat Roost Survey Report**



Scale at A3 1:20,000	
Job No 271968-05	Drawing Status For Issue
Drawing No 001	Issue F1

Contains OS data © Crown
Copyright and database right
2019



Legend

Bat Roost Potential Suitability

Moderate

Low

Negligable

Survey Area

© Crown copyright and database rights 2019
Ordnance Survey 0100031673

F1	06/01/20	JG	AC	PC
----	----------	----	----	----

Issue	Date	By	Chkd	Appd
-------	------	----	------	------

Metres

01002003004005001,000

ARUP

4 Pierhead Street
Cardiff CF10 4QP
Tel +44 29 2047 3727 Fax +44 29 2047 2277
www.arup.com

Client

Celtic Energy Ltd.

Job Title

Nant Helen Complementary Restoration
Earthworks
Bat Roost Survey Report

Figure 2
Building/Structure Survey
Results

Scale at A3

1:20,000

Job No	271968-05	Drawing Status	For Issue
Drawing No	001	Issue	F1

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

06/01/2020 16:07:46

© Arup



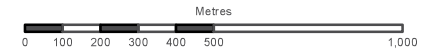
Legend

Bat Roost Potential Suitability

- Moderate
- Low
- Negligible
- Survey

© Crown copyright and database rights 2019
Ordnance Survey 0100031673

F1	06/01/20	JG	AC	PC
Issue	Date	By	Chkd	Appd



ARUP

4 Pierhead Street
Cardiff CF10 4QP
Tel +44 29 2047 3727 Fax +44 29 2047 2277
www.arup.com

Client
Celtic Energy Ltd.

Job Title
Nant Helen Complementary Restoration Earthworks Bat Roost Survey Report

Figure 3
Tree Survey Results

Scale at A3
1:20,000

Job No
271968-05

Drawing Status
For Issue

Drawing No
001

Issue
F1

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Appendix 7K

Badger survey report



BADGER SURVEY

Nant Helen Restoration

Report

Rev 1

For ARUP

May 2019

TerrAqua Ecological Services Ltd

SE Wales Office
36 Somerset Road East
Barry
Vale of Glamorgan
CF63 1BE
01446 748052
carmenjones@terraqua-ecological-services.co.uk
Mobile 07742149344

W Wales Office
Swyn yr Awel,
Bwlch y Groes,
Llandysul
Ceredigion
SA44 5JX
dyfrig@terraqua-ecological-services.co.uk
Mobile 07951023358

Survey Undertaken By:

Carmen Jones MSc MCIEEM and Dyfrig Jones BSc

Report Written By:

Carmen Jones

Report Verified By:

Dyfrig Jones

*Copyright **TerrAqua Ecological Services Ltd**. All rights reserved. Ownership of the report remains with **TerrAqua Ecological Services Ltd** until payment has been received in full*

*No part of the report may be altered or extracted without the prior written consent of **TerrAqua Ecological Services Ltd** as to the form and context in which it may appear*

***TerrAqua Ecological Services** have produced the report for the sole use of the client and no other party may use or copy (Either in part or whole) any part of the report without the written confirmation of **TerrAqua Ecological Services Ltd**. Any part of the report cannot be altered or extracted without the prior written consent of **TerrAqua Ecological Services Ltd** as to the form and context in which it may appear.*

***TerrAqua Ecological Services Ltd** accepts no responsibility for any use of or reliance on the contents of this report by any third party.*

TerrAqua Ecological Services Ltd Company Registration Number 805342

Contents Page

1	Introduction	Page 4
	1.1 Client Details	Page 4
	1.2 Survey Brief	Page 4
2	Background	Page 4
	2.1 Legal Protection	Page 5
3	Methodologies	Page 5
	3.1 Survey Extent	Page 5
	3.2 Survey Personnel	Page 5
	3.3 Survey Methods and Recording	Page 6
	3.4 Setts	Page 6
	3.5 Activity Levels	Page 7
	3.6 Mammal Pathways	Page 8
	3.7 Tracks/Prints	Page 9
	3.8 Latrines	Page 9
	3.9 Digging	Page 9
	3.10 Badger Hair	Page 9
4	Survey Limitations	Page 9
5	Results	Page 10
6	Conclusions and General Summary	Page 12

Appendix I Plate 1-9

Appendix II Drawing TQ: ARUP/GCRE Badger V1

Table 1 Mammal Activity Results Seven Sisters

1 Introduction

1.1 Client Details

The following survey report has been produced by TerraAqua Ecological Services Ltd on behalf of ARUP following instructions to proceed by Chloe Delgerry, Senior Ecologist, 8 St Thomas Street, Winchester, Hampshire, SO23 9HE.

1.2 Survey Brief

A badger survey of the designated area as supplied by ARUP was undertaken by TerraAqua Ecological Services in May 2019. The survey was undertaken as part of an extensive suite of ecological surveys and assessments at the site of the operational Celtic Energy opencast site and washery at Seven Sisters, NPT. The surveys were undertaken as part of the engineering, planning and environmental assessment services to support Celtic Energy in the Nant Helen Restoration project and any future planning application associated with site redevelopment. The survey brief included:

- Badger surveys;
- Mapping of any field signs;
- Submission of associated field survey results and data in agreed format (factual report).

2 Background

This report presents the findings of the Badger survey of the land within the survey boundary as shown in Drawing TQ: ARUP/GCRE Badger V1. The survey aims to identify the use, if any, being made of the site by badger in order to ascertain if measures will be required to ensure that any proposed future works will not contravene the Protection of Badgers Act (1992).

Prior to the survey work commencing a full data search was undertaken on behalf of ARUP by the South East Wales Biodiversity Records Centre (SEWBReC) in order to identify any known badger setts or activity within or adjacent to the site boundary. These records were used to assist in the interpretation of recorded field signs and extent of badger activity within the site boundary.

2.1 Legal Protection

Badgers and their setts are afforded protection under the Protection of Badgers Act (1992 as amended) which makes it an offence to: kill, injure, take or possess a badger or attempt to do so; to damage, destroy or obstruct access to any structure or place that a badger uses for shelter or protection; or to disturb a badger whilst it is occupying a structure or place which it uses for shelter or protection. Badgers are a relatively common species and the legal protection afforded to them is intended to prevent ill-treatment such as badger baiting and not for reasons of rarity.

3 Methodology

3.1 Survey Extent

In order to understand the use being made of the site by badger all accessible land within the survey boundary was surveyed. This included a wide range of habitats including open moorland, semi improved grasslands, broadleaf deciduous woodlands, wood pasture, conifer plantations, hedgerows and operational industrial areas.

As badger territories/foraging areas can extend over considerable distances normal survey practise would be to survey 50m beyond a given survey boundary, however in this instance access was confined to the survey area and no survey work was undertaken outside of the designated boundary.

3.2 Survey Personnel

The survey was undertaken by Carmen Jones MCIEEM and Dyfrig Jones BSc both highly experienced ecologists with over eighteen years' experience in surveying for badger and other mammals.

3.3 Survey Methods and Recording

The survey was undertaken over a three day period, 16th, 17th and 22nd May 2019. The surveys were completed by two experienced surveyors from TerraAqua Ecological Services and followed the principles of Neal and Cheesman (1996).

The surveys were undertaken during daylight hours and included the walking of all accessible habitats in order to identify any field signs or evidence of badger activity. All mammal activity was recorded on an aerial image of the site using numerical target notes (Appendix II). Particular attention was paid to areas often associated with the creation of setts such as banks, woodlands, hedgerows and dense scrub. All identified badger setts and specific field signs or points of interest were photographed for future reference. The following field signs/observations were used to ascertain the presence of badger:

3.4 Setts

Badgers live in social groups and can occupy large territories. Within the territory group will have a number of different setts of differing sizes and subject to varying levels of use. The main sett is usually permanently occupied and will be used as breeding site while annexe, subsidiary and outlier setts will be used on a less frequent basis.

Badger setts (access holes) can usually be identified by their semi-circular and flat based appearance. The access holes vary in size but are generally 22 to 25cm wide or greater, with a height of approximately 20cm. Badger setts can form part of a regularly used complex or form part of a less frequently used subsidiary or outlier sett. Setts can also be abandoned for long periods and then reactivated or can become permanently disused. The levels of activity associated with an identified sett can be used to assess the use being made of the sett and the frequency to which it is currently used. Discarded bedding and fresh digging indicating an active sett while evidence of dry leaves and lack of digging around sett entrances is likely to mean the sett is unoccupied at that time. Badgers have large territories and move between setts according to season and fluctuations in food availability.

All burrows considered suitable for use by badger either grouped or individual were recorded as part of the survey including those with no obvious signs of current use.

Main Sett- these typically possess a large number of entrances compared to the other setts usually eight to thirty or more depending on the group size and environmental factors. A main sett will be constantly occupied by badgers and is typically used for breeding by the dominant female.

Annexe Sett- these are linked to the main sett by well-worn tracks. They can comprise any number of entrances and are usually in frequent use, but they are not necessarily constantly occupied. Can occasionally be used for breeding by non-dominant females.

Subsidiary Sett- these support a number of entrance holes, normally three to eight, and are not connected to the main sett by well-worn tracks. The frequency of use of subsidiary setts varies greatly, but are rarely constantly occupied and often they are in sporadic use. Can sometimes be used for breeding by non-dominant females.

Outlier sett –these usually comprise one or two entrances only and are not connected to the main sett by well-worn tracks. They are often in sporadic use, but may show periods of high use when local seasonal food resources are available. May occasionally be used for breeding by non-dominant females.

3.5 Activity levels

The level of activity associated with an identified sett will help to establish the frequency with which a particular sett is used. Activity levels are based on the interpretation of field signs and surveyor experience and represent a general indication of activity rather than a quantitative assessment. Levels of activity were assessed for each identified sett based on the following criteria:

Inactive/discussed-No evidence of badger activity with vegetation growth etc. around the sett entrance indicating no activity for a period of several months. No clear pathways from sett into surrounding vegetation.

Low-sett entrance will contain a lot of leaf debris but burrow entrance will be intact and accessible. No evidence of recent digging or clearing of burrow but may show some scattering of dirt outside the sett. No clear pathways from sett into surrounding vegetation. Such setts are likely to be used by badger less than once a month and possibly only once in several months.

Moderate- sett entrance shows signs of clearing with some evidence of new excavation around burrow entrances. Some signs of discarded bedding material may be present along with possible bundles of new bedding. Some evidence of pathways from the sett into surrounding areas. Moderately active setts are likely to be used on a monthly basis and seasonally as high as weekly.

High-sett with a high level of activity will be clear of leaf-litter and there will usually be a large amount of freshly excavated spoil on the surface of the spoil heap. Fresh prints may be visible within newly dug soil. Large volumes of discarded bedding may be present. Burrow entrances will be clear with no encroachment by vegetation. Clear well-worn paths will be visible across spoil heaps leading into surrounding vegetation. Highly active setts will be in use several times per month and possibly more than once a week.

Very High- Permanently occupied sett usually with extensive spoil heaps and discarded bedding. All sett entrances will be clear of vegetation with clear pathways between entrances and surrounding vegetation, such pathways may show a smooth or polished appearance due to the constant sweeping of the path by the badger's coat.

3.6 Mammal Pathways

All mammal pathways were recorded during the survey, these included those assessed as being used by badger and those used by other mammals such as fox. Badger runs/pathways are identifiable by their clear and broad nature. Badgers are short legged animals and in traversing the ground effectively sweep the vegetation with their underside hairs leading to clear characteristic badger pathways. The regular use of such pathways leading from setts to feeding areas means that over time such paths can become very clear and identifiable although in some habitats such as dense conifer plantations and areas lacking ground vegetation such tracks are less obvious.

3.7 Tracks/Prints

Badgers have very powerful claws and their tracks are easily identifiable where left in soft mud and spoil heaps. All areas of soft earth were search for evidence of badger tracks during the survey.

3.8 Latrines

Badgers usual defecate into prepared pits, providing a characteristic field sign of their presence. A number of pits may be found together, forming a latrine. Dung pits and latrines are often used by badgers to mark territorial boundaries and are often found along boundaries such as hedgerows, woodland edges and fence lines. The survey included the search for latrines at suitable locations.

3.9 Digging

Badgers habitually forage with their nose down and typical field signs of badger activity include marks made by snuffling and digging. Typical claw marks are often visible where badgers have been digging for worms and around destroyed ant nests.

3.10 Badger Hairs

Badgers frequently crawl beneath fence lines while moving around the countryside. As a result hairs can be displaced from the badger and become attached to the bottom of fences and strands of wire. The presence of badger hair at these locations can help to confirm the presence of badger and identify commuting routes. All fence lines under which evidence of mammal activity was observed were checked for the presence of badger hairs.

4 Survey Limitations

The survey was confined to areas immediately within the given boundary. No survey work was undertaken outside of this area. Field signs were found in very close proximity to the survey boundary indicating unrecorded setts may be present close to the survey limit. This was

particularly noticeable along the northern boundary of the site in close proximity to the cycle track.

Some small areas of conifer woodland immediately adjacent to the edge of the current workings were not searched due to the extreme drops into the opencast area and potential for land slippage. These uncovered areas were not extensive and it is likely that were badgers present within these areas then field signs of badger would have been detected in the surrounding survey area. As a result these omissions are not thought likely to have a significant negative impact on the overall survey results.

5 Results

Badger activity across the site as a whole was low with recorded activity confined to the northern perimeter of the site and an area close to the main site access road. No currently occupied setts were found during the survey. Three setts were recorded all with low levels of current activity:

A single outlier sett was recorded close to the cycle track at the northern boundary of the site (TN9). Relatively recent activity in the form of a number of badger latrines and badger runs was recorded close to the northern boundary near to the cycle track.

A three hole subsidiary sett was located within woodland adjacent to the main access road into the site (TN21). No current badger activity was recorded around the sett.

A more complex five hole subsidiary sett, also showing low activity levels, was recorded within the same woodland and some 30m from the above subsidiary sett (TN22).

All mammal activity, including badger, was recorded during the survey, full results are shown in Drawing No TQ: ARUP/GCRE Badger V1 and table 1:

Table 1 Mammal Activity Results Seven Sisters

Target Note	Field Signs	Comments
TN1	Mammal run beneath fence with single hole beneath mature oak. No evidence of badger.	Probable fox Den
TN2	Mammal run in undergrowth... No evidence badger	Probable Fox
TN3	Mammal run adjacent to cycle track. No evidence of badger	Probable Fox
TN4	Mammal run crossing cycle track. No evidence of badger.	Probable fox
TN5	Mammal run near cycle track. No evidence badger.	Probable Fox
TN6	Digging in woodland adjacent to cycle track. No evidence of badger.	Probable Rabbit
TN7	Mammal run crossing cycle track. No evidence of badger.	Probable Fox
TN8	Mammal run crossing cycle track. No evidence of badger.	Probable Fox
TN9	Mammal runs (several) across cycle track and associated digging on track edge. Runs through woodland with possible old outlier sett within woodland close to cycle track (Plate 1)	Outlier sett with low activity levels SN8038111141
TN10	Badger latrines close to fence line along track. Evidence of previous cutting of fence to allow badger movement between woodland and track. Badger runs crossing beneath wire fence (Plates 2 & 3)	Badger Latrines and runs SN8048211711
TN11	Mammal runs	Probable Badger
TN12	Washery site, mammal tracks across railway line into open fields. No evidence of badger.	Probable Fox
TN13	Washery site, single hole on grass bank with feeding remains outside (Plate 4). No evidence of badger.	Confirmed Fox
TN14	Mammal runs-extensive. No evidence if badger	Probable Fox
TN15	Mammal runs and paw prints of fox and cubs. No evidence badger.	Confirmed Fox
TN16	Mammal runs between clear fell areas and conifer forest block. No evidence badger.	Probable Fox
TN17	Mammal runs across bank into adjacent fields. No evidenced badger.	Probable Fox
TN18	Mammal runs and digging around ant hills. No evidence of badger.	Runs probable fox with digging by Rabbit
TN19	Digging around tree roots possible badger.	Possible badger although no runs apparent in surrounding

		damp vegetation
TN20	Digging/foraging and Badger latrines	Confirmed Badger SN80382 11173
TN21	Currently unoccupied three hole subsidiary sett no evidence of recent use within woodland (plate 7,8 &9)	Subsidiary Sett unoccupied SN8324111748
TN22	Subsidiary sett located on bank within woodland. Five holes no recent badger activity (old latrine found in woodland), No runs from sett to surrounding vegetation and no evidence of badger in adjacent field. (Plates 5 & 6)	Subsidiary sett with low activity and no signs of recent use by badger. One hole shows some evidence of recent excavation but likely to be that of fox utilising existing burrow. SN8324211745
TN23	Mammal run along road verge. No evidence of badger.	Probable Fox
TN24	Mammal runs crossing main access drive. No evidenced badger.	Probable Fox

6 Conclusions-General Summary

The badger survey confirmed the location of three badger setts. One was assessed as being an outlier sett and comprised a single hole. A subsidiary sett of three holes was located within woodland close to a more complex subsidiary sett comprising a total of five holes. None of the setts had evidence of recent use by badger. The single hole outlier sett near the northern boundary of the site did have evidence of badger activity in the general vicinity but not within the actual sett. The subsidiary setts showed no evidence of current use by badger but some digging out was apparent in one of the holes and this was attributed to possible use by fox rather than badger.

Badger activity in the form of runs and presence of latrines was concentrated along the cycle track along the northern site boundary with a number of runs observed crossing the track from woodland within the site boundary to areas outside the survey area. Latrines were recorded along the track at this northern end of the site approximately 30m from the identified outlier sett.

It was observed during the survey that the stock proof fencing bordering a track/green lane leading from the cycle track towards the common (within the site boundary) had previously been cut presumably to allow badgers passage across the site. This would suggest that a badger sett has previously been identified, potentially during the creation of the cycle track, in relatively close proximity, possibly north of the survey boundary, although no records of such were found during the data search.

Along the eastern boundary it was noticed that a ground level strand of barbed wire would prevent free movement of badger and other mammals except in exceptional circumstances.

No evidence of badger activity was recorded within the active working area of the opencast mine or within the area of the coal washery.

Appendix I

Plates 1-9



Plate 1 Outlier Set TN9



Plate 2 badger Latrine TN10



Plate 3 Cut Fence (Badger Access) TN10

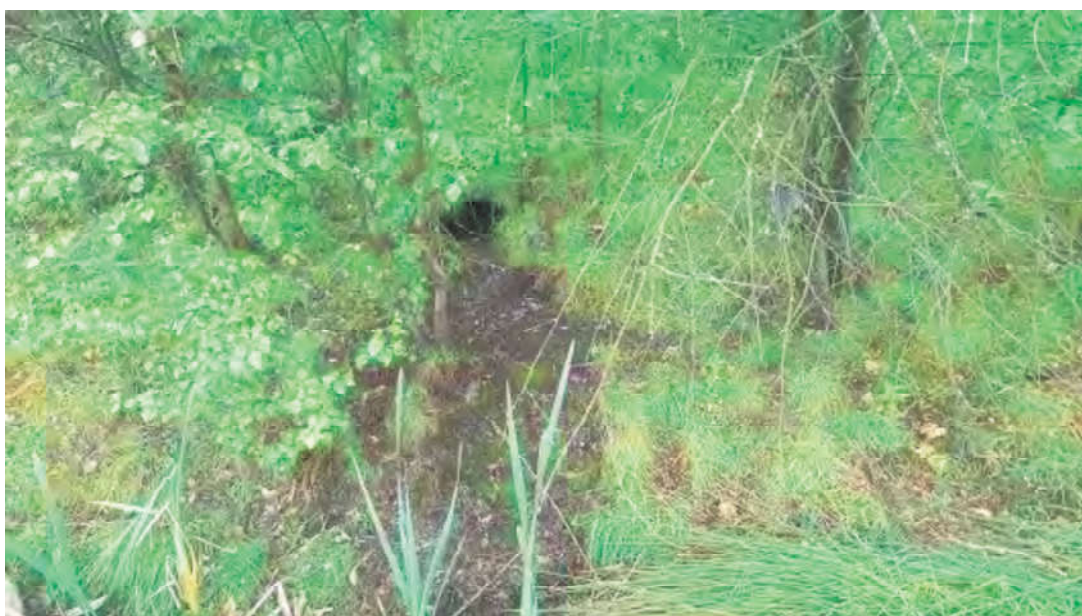


Plate 4 Fox Den Washery Site TN13



Plate 5 Location of Subsidiary Sett TN22

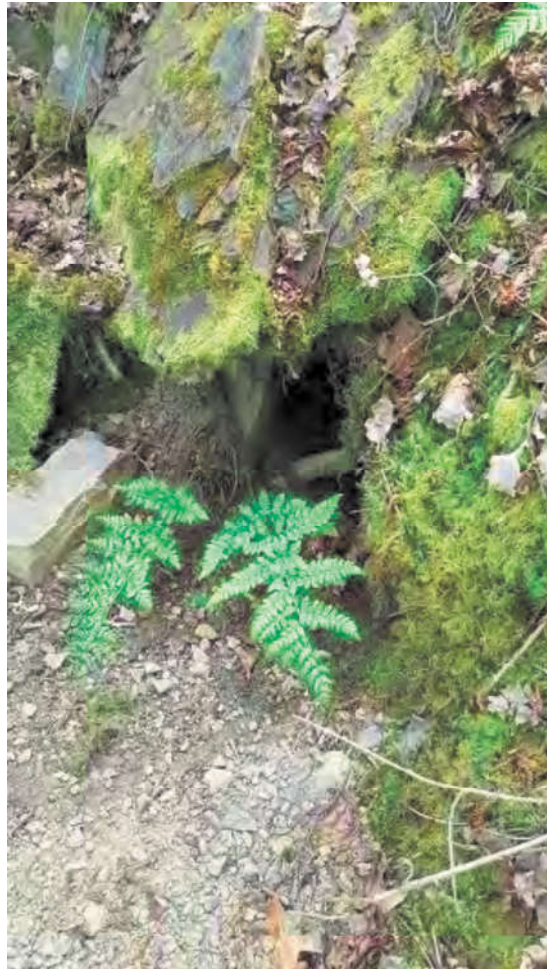


Plate 6 entrance Hole TN22

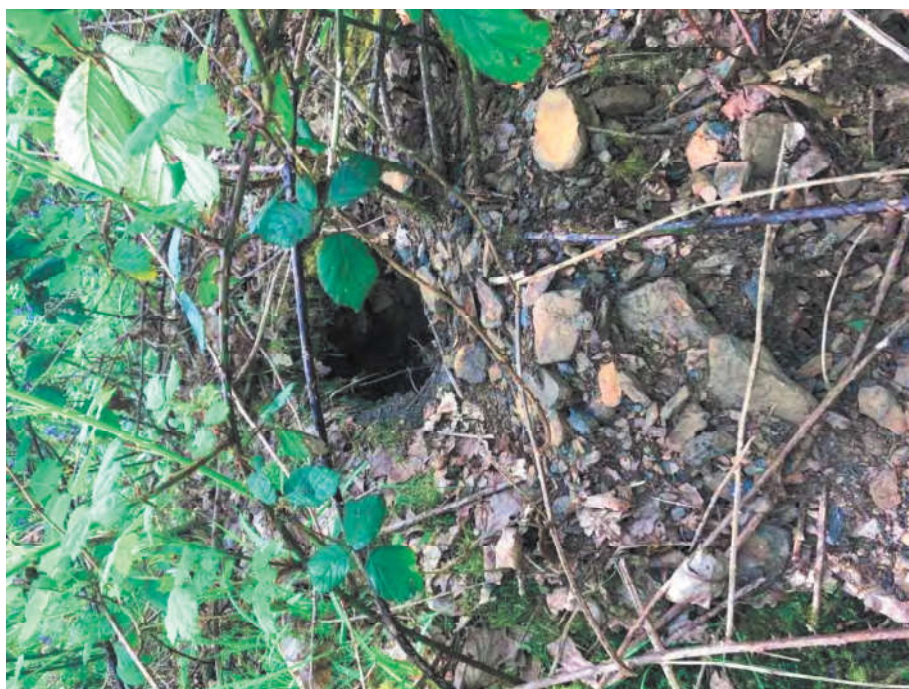


Plate 7 Entrance Hole TN21



Plate 8 Entrance Hole TN21



Plate 9 Entrance Hole field boundary TN21

Appendix II

Badger Survey Results

Drawing: Nant Helen Restoration (Seven Sisters) Celtic Energy



Appendix 7L

Dormouse Survey Report

Celtic Energy
**Nant Helen Complementary
Restoration Earthworks**
Dormouse Survey Report

Issue | 21 November 2019

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 271968

Ove Arup & Partners Ltd
13 Fitzroy Street
London
W1T 4BQ
United Kingdom
www.arup.com

ARUP

Document verification

ARUP

Job title		Nant Helen Complementary Restoration Earthworks		Job number		271968	
Document title		Dormouse Survey Report		File reference		4-50	
Document ref							
Revision	Date	Filename	Nant Helen_Dormouse Report_DRAFT.docx				
Draft 1	14 Nov 2019	Description	First draft				
			Prepared by	Checked by	Approved by		
		Name	Alex Escott	Claire Pooley			
		Signature					
Draft 2	20 Nov 2019	Filename	Nant Helen_Dormouse Report_DRAFT_AE for approval.docx				
		Description	Reviewers comments				
			Prepared by	Checked by	Approved by		
		Name	Alex Escott	Claire Pooley			
		Signature					
Issue	21 Nov 2019	Filename	Nant Helen_Dormouse Report_Issue.docx				
		Description					
			Prepared by	Checked by	Approved by		
		Name	Alex Escott	Claire Pooley	Neil Harwood		
		Signature					
		Filename					
		Description					
			Prepared by	Checked by	Approved by		
		Name					
		Signature					
Issue Document verification with document ☒							

Contents

	Page
1 Introduction	1
1.1 Background	1
1.2 Survey Objectives	1
2 Project Description and Context	2
3 Site Description	4
4 Study Area	5
5 Relevant Legislation and Biodiversity Framework	6
6 Methodology	7
6.1 Desk Study	7
6.2 Presence / Likely Absence Survey	7
6.3 Limitations and Assumptions	10
7 Results	11
7.1 Desk Study	11
7.2 Field Survey	12
8 Conclusions and Recommendations	13

Figures

Figure 1 Study Area and Nest Tube/Nest Box Locations

Appendices

Appendix A

Survey Weather Conditions

1 Introduction

1.1 Background

Ove Arup & Partners Ltd (Arup) was commissioned by Celtic Energy to undertake a range of consultancy services in relation to Nant Helen Complementary Restoration Earthworks, 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 planning application for this project includes:

- Earthworks to include cutting and embankment; and
- Drainage works associated with the revised landform.

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 a revised restoration strategy for approval (under Section 73 application under the Town and Country Planning Act 1990) which would change the existing approved restoration scheme (for planning application ref 18/1070/REM). The purpose of the variation is to allow for a 'flexible and adaptable landform for a variety of uses on restoration including agriculture, nature conservation, leisure, tourism and some industrial uses'.

Following discussions with PCC and NPTCBC both authorities have expressed a desire along with Celtic Energy to look at regeneration projects for the area that will create long term, sustainable jobs. Whilst not within the Brecon Beacons National Park (BBNP), due to its proximity the area has been identified as having the potential for a variety of uses. It is the intention of this project to complement the revised restoration proposal submitted by Celtic Energy in October 2019.

The revised restoration proposal looks to provide a flexible landform that can be used or adapted for a diverse set of future uses. This could range from the traditional agriculture, woodland and nature conservation uses, to amenity, leisure and tourism uses (including the potential for tourist accommodation to add to the existing offering within the BBNP) that would be designed to help take visitor pressure off the BBNP.

Other uses of the site could also include industrial after uses such as the Welsh Government's (WG) proposal to develop a rail testing and storage facility, known as the Global Centre of Rail Excellence (GCRE) at this site together with the adjacent Onllwyn Washery. It is anticipated that a planning application for the GCRE will be submitted early next year subject to confirmation of its feasibility.

The justifications for designing the proposed earthworks in this way are that they would not only make an ideal bridleway / footpath for walking, cycling and horse riding, but should planning permission be awarded for the GCRE, then the required profile for this would already have been created, thereby avoiding the need for further extensive earthmoving should GCRE gain planning permission.

If desired, the earthworks programme required to create the profile for the GCRE could be accelerated. By accelerating this part of the programme then the financial and environmental impacts of the GCRE project could be reduced by:

- utilising existing, onsite resources;

- reducing heavy plant vehicle movements into, and out of the site, thereby reducing any impact on the local road network;
- avoiding double handling of materials and therefore reduction in additional cost;
- aligning the earthworks programme with other restoration earthworks, therefore reducing the time period of construction activity on site;
- taking advantage of the opportunity for the GCRE earlier and contributing to the positive viability and deliverability;
- increasing the viability of future tourist developments such as hotels which would be supported by the GCRE temporary workforce both during and after construction; and
- more sustainable use of existing resources (including natural, human and mechanical) to allow for the full restoration of the site to be delivered without further disturbance in the event of future development.

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 to 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:

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

Date	Notes
17.07.2019	Washery and conifer plantation
23.07.2019	Northern area and hedgerows
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

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 europeus*) 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

Figures

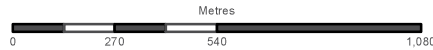


Legend

- Dormouse Tubes and Nest Boxes
- Study Area Boundary

F1	2019-07-01	PW	PC	DB
----	------------	----	----	----

Issue	Date	By	Chkd	Appd
-------	------	----	------	------



ARUP

4 Pierhead Street
Cardiff CF10 4QP
Tel +44 29 2047 3727 Fax +44 29 2047 2277
www.arup.com

Client
Celtic Energy Ltd.

Job Title
**Nant Helen Complementary
Restoration Earthworks**

**Study Area and
Nest Tube/Nest Box Locations**

Scale at A3
1:20,000

Job No 271968-05	Drawing Status For Issue
----------------------------	------------------------------------

Drawing No 001	Issue F1
--------------------------	--------------------

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Appendix A

Survey Weather Conditions

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

Appendix 7M

Arboreal Survey Report

Celtic Energy
**Nant Helen Complementary
Restoration Earthworks**
Arboreal Mammal Survey Report

Issue | 20 November 2019

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 271968-05

Ove Arup & Partners Ltd
63 St Thomas Street
Bristol BS1 6JZ
United Kingdom
www.arup.com

ARUP

Document verification

ARUP

Job title		Nant Helen Complementary Restoration Earthworks		Job number		271968-05	
Document title		Arboreal Mammal Survey Report		File reference			
Document ref							
Revision	Date	Filename	Arboreal Mammals Survey Report_EA_draft_v1.docx				
Draft 1	31 Oct 2019	Description	First draft				
			Prepared by	Checked by	Approved by		
		Name	Eloise Arif	Pete Wells			
		Signature					
Draft 2	14 Nov 2019	Filename	Arboreal Mammals Survey Report_EA_draft_v2.docx				
		Description	Addressing Pete's comments				
			Prepared by	Checked by	Approved by		
		Name	Eloise Arif	Claire Pooley			
		Signature					
Issue	20 Nov 2019	Filename	Nant Helen_Arboreal Mammals Survey Report_Issue.docx				
		Description					
			Prepared by	Checked by	Approved by		
		Name	Eloise Arif	Claire Pooley	Neil Harwood		
		Signature					
Issue Document verification with document							☒

Contents

	Page
1 Introduction	1
1.1 Background	1
1.2 Objectives	1
2 Project Description and Context	2
3 Site Description	4
4 Study Area	5
5 Legislation	6
6 Methodology	7
6.1 Desk Study	7
6.2 Field Surveys	7
6.3 Limitations	8
7 Results	9
7.1 Desk Study	9
7.2 Field Surveys	9
8 Conclusions	12

Figures

Figure 1 Study Area

Figure 2 Arboreal mammal transect route and transect survey results

Figure 3 Feeding station locations

Photographs

Photograph 1: Scat collected during September transect

Photograph 2: Mustelid tracks with 40cm stride identified during May transect

Photograph 3: Mustelid prints considered too small for pine marten, identified during May transect

Photograph 4: Small mustelid prints identified during May transect

Photograph 5: Squirrel feeding signs identified during May transect

Photograph 6: Squirrel feeding signs identified during May transect

Photograph 7: Polecat at station 3 in October

Photograph 8: Rabbit at station 3 in June

Photograph 9: Passerines at station 1 in July

Photograph 10: Grey squirrel at station 2 in July

Photograph 11: Jays at station 2 in July

Photograph 12: Red fox at station 3 in August

Photograph 13: Mouse at station 3 in September

Appendices

Appendix A

Weather Conditions

Appendix B

EcoWarwicker Scat DNA Analysis Results

1 Introduction

1.1 Background

Ove Arup & Partners Ltd (Arup) was commissioned by Celtic Energy to undertake a range of consultancy services in relation to Nant Helen Complementary Restoration Earthworks, 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 arboreal mammal surveys undertaken for the Project.

1.2 Objectives

The objectives of the arboreal mammal survey were to ascertain the presence/likely absence of the following protected and/or notable¹ arboreal mammal and mustelid² species (the ‘target species’):

- pine marten (*Martes martes*);
- red squirrel (*Sciurus vulgaris*); and
- polecat (*Mustela putorius*).

Otter (*Lutra lutra*) and badger (*Meles meles*), are reported separately.

¹ ‘Notable’ species and habitats considered in this report include species and habitats of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales, in response to section 7 of the Environment (Wales) Act 2016, in addition to any species considered to be of significance for nature conservation such species listed in red data books, the Royal Society for the Protection of Birds (RSPB) ‘Birds of Conservation Concern’ lists and or Local Biodiversity Action Plans (LBAPs).

² Of the Mustelidae family, including pine marten, polecat, American mink, stoat, weasel, badger and otter.

2 Project Description and Context

The planning application for this project includes:

- Earthworks to include cuttings and embankments; and
- Drainage works associated with the revised landform.

The proposed site is currently being mined for coal 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 a revised restoration strategy for approval (under Section 73 application under the Town and Country Planning Act 1990) which would change the existing approved restoration scheme (for planning application ref 18/1070/REM). The purpose of the variation is to allow for a ‘flexible and adaptable landform for a variety of uses on restoration including agriculture, nature conservation, leisure, tourism and some industrial uses’.

Following discussions with PCC and NPTCBC both authorities have expressed a desire along with Celtic Energy to look at regeneration projects for the area that will create long term, sustainable jobs. Whilst not within the Brecon Beacons National Park (BBNP), due to its proximity the area has been identified as having the potential for a variety of uses. It is the intention of this project to compliment the revised restoration proposal submitted by Celtic Energy in October 2019.

The revised restoration proposal looks to provide a flexible landform that can be used or adapted for a diverse set of future uses. This could range from the traditional agriculture, woodland and nature conservation uses, to amenity, leisure and tourism uses (including the potential for tourist accommodation to add to the existing offering within the BBNP) that would be designed to help take visitor pressure off the BBNP.

Other uses of the site could also include industrial after uses such as the Welsh Government’s (WG) proposal to develop a rail testing and storage facility, known as the Global Centre of Rail Excellence (GCRE) at this site together with the adjacent Onllwyn Washery. It is anticipated that a planning application for the GCRE will be submitted early next year subject to confirmation of its feasibility.

The justification for designing the proposed earthworks in this way is that they would not only make an ideal bridleway / footpath for walking, cycling and horse riding, but should planning permission be awarded for the GCRE, then the required profile for this would already have been created, thereby avoiding the need for further extensive earthmoving.

If desired, the earthworks programme required to create the profile for the GCRE could be accelerated. By accelerating this part of the programme then the financial and environmental impacts of the GCRE project could be reduced by:-

- utilising existing, onsite resources;

- reducing heavy plant vehicle movements into, and out of the site, thereby reducing any impact on the local road network;
- avoiding double handling of materials and therefore reduction in additional cost;
- aligning the earthworks programme with other restoration earthworks, therefore reducing the time period of construction activity on site;
- taking advantage of the opportunity for the GCRE earlier and contributing to the positive viability and deliverability;
- increasing the viability of future tourist developments such as hotels which would be supported by the GCRE temporary workforce both during and after construction; and
- more sustainable use of existing resources (including natural, human and mechanical) to allow for the full restoration of the site to be delivered without further disturbance in the event of future development.

3 Site Description

The study area is shown on Figure 1 and is hereafter referred to as the 'site'.

The 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 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.

The survey was carried out within the coniferous plantation woodland to the north-west of the study area. This was considered to be the only habitat suitable to support the target species, in particular pine marten and red squirrel, within the study area.

5 Legislation

Pine marten and red squirrel are fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (WCA). This protects them against intentional killing, injuring or taking, and against their possession and trade. They are also protected from disturbance through prohibition of actions that could affect places they use for shelter.

Pine marten and red squirrel, along with polecat are also listed as priority species of principle importance for the conservation of biodiversity in response to Section 7 of the Environment Act (Wales) 2016. This legislation places duties on public bodies in Wales to conserve and enhance biodiversity in the exercise of their functions, including the consideration of the resilience of ecosystems in terms of their diversity, connectivity, adaptability, scale and condition.

Pine marten, red squirrel and polecat are also all listed as UK Biodiversity Action Plan Priority Species. Action Plans exist for each UK BAP Priority Species to demonstrate the UK's commitment to help reduce or halt the significant losses in global biodiversity³.

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

³ The UKBAP was succeeded by the 'UK Post-2010 Biodiversity Framework' in July 2012. The UK list of priority species, however, remains an important reference source and has been used to help draw up statutory lists of priority species.

6 Methodology

6.1 Desk Study

A data search was obtained from the Biodiversity Information Service (BIS⁴) for Powys & Brecon Beacons National Park on 21st November 2018. The data search included all historic records of protected and/or notable¹ species from the last 10 years within a 5 km radius of the site (Figure 1). This included records of the target species, which are summarised in the Desk Study Results section below.

Targeted surveys for these species were not undertaken in preparation for the previous Environmental Statement (ES) undertaken by Celtic Energy⁵. Nevertheless, the previous ES was reviewed for any incidental records, along with publicly available ordnance survey mapping and aerial imagery to identify suitable habitat^{6,7,8} for the target species within the study area (Figure 1).

6.2 Field Surveys

6.2.1 Transect Survey

The transect route was located within an area of coniferous plantation woodland to the north-west of the study area, which was considered suitable habitat for the target species. The route was approximately 8.5 km in length and is shown on Figure 2. The transect survey was carried out six times: once per month between May and October 2019 (inclusive).

Surveyors (Suitably Qualified Ecologists (SQE)) walked the transect looking for evidence of target mammal species including footprints, trails, scats (pine marten and polecat), live sightings, red squirrel feeding remains and red squirrel dreys (nests), as per best practice guidance^{9,10}. Any mustelid scats found were collected and sent for DNA analysis at EcoWarwick Ecological Forensics¹¹. The dates and the weather during each of these transect survey visits are detailed in Appendix A.

⁴ Aderyn is a Local Environmental Records Centres (LERC) Wales system, developed and maintained by the Biodiversity Information Service (BIS).

⁵ Celtic Energy Ltd (2011). *Environmental Statement*.

⁶ <https://www.britishtoredsquirrel.org/red-squirrels/dreys-nests/> Accessed 13th November 2019.

⁷ <https://www.mammal.org.uk/species-hub/full-species-hub/discover-mammals/species-pine-marten/> Accessed 13th November 2019.

⁸ <https://www.mammal.org.uk/species-hub/full-species-hub/discover-mammals/species-pine-marten/> Accessed 13th November 2019.

⁹ O'Mahony et al. (2006). *National Pine Marten Survey of Ireland 2005*.

¹⁰ Gurnell et al. (2009). *Practical techniques for surveying and monitoring squirrels*. Practice Note. Forestry Commission.

¹¹ https://warwick.ac.uk/fac/sci/lifesci/research/archaeobotany/ecological_forensics/

6.2.2 Camera Trapping Survey

Three feeding stations were installed along the transect route with two motion-sensitive camera traps (Bushnell Trophy Cam HD) placed at each station (six camera traps placed in total). Feeding station 1 was located at National Grid Reference (NGR) SN 80770 11642, feeding station 2 was located at NGR SN 81159 11820 and feeding station 3 was located at NGR SN 82196 11866. The feeding station locations are shown on Figure 3.

Bait (dried mealworms, nuts, seeds, jam sandwiches, peanut butter, eggs and/or dog food) was placed on a platform in the centre of the two camera traps at each feeding station. Feeding stations were deployed for 125 days between 14th June 2019 and 17th October 2019. The SD cards within the cameras, and the bait on the feeding platform were refreshed once per month during the transect surveys.

Camera trap footage was recorded as a combination of jpeg images and ten-second mp4 video clips onto SD cards, which were subsequently analysed to determine the presence of target species.

6.2.3 Surveyors

Field surveys were carried out by a combination of SQE: Pete Wells BSc MSc CEnv MCIEEM, Alexandra Escott BSc (Hons) MSc, Eloise Arif BSc (Hons) ACIEEM, and Alexandra Kinsey BSc (Hons).

6.3 Limitations

Surveyors were unable to find feeding station 1 during the August survey visit due to a GPS mapping error. As such, the bait was not refreshed in August at feeding station 1. This is not considered to have negatively affected the survey results however, as animals were still recorded visiting feeding station 1 between the August and September survey visit, and the survey effort overall is considered to still be sufficient enough to be confident in the results.

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 flora and fauna, factors such as the time of year and natural behaviour of the animals. Nevertheless, these surveys were conducted at the optimal survey periods and using methodologies which are in accordance with published guidelines.

7 Results

7.1 Desk Study

The BIS provided four records of polecat within 5 km of the site from the last 10 years. The closest of these was located approximately 1.5 km north east. No recent records of red squirrel or pine marten were returned, although there was one record of a red squirrel sighting from 1998 located approximately 3.7 km south west.

The desk study identified one area of coniferous plantation woodland to the north west of the site, which was considered the only habitat suitable to support pine marten and red squirrel within the study area. Polecat, if present, would also use this habitat.

7.2 Field Surveys

7.2.1 Transect Survey

The transect survey results are shown on Figure 2. One scat was collected during the August transect survey visit, and five scats were collected during the September transect survey visit for DNA analysis. All six scats collected were considered to potentially be from pine marten, due to their shape (dark and coiled) (Photograph 1) and their smell (musty sweet scent, not unpleasant)¹². However, the DNA analysis revealed that all six scats were produced by fox, not pine marten.

Mustelid prints were identified on three occasions during the May transect: prints with a 40 cm stride were identified at the western end of the transect route (Photograph 2), prints that were considered too small for pine marten were identified near feeding station 3 (Photograph 3) and small prints were identified near feeding station 2 (Photograph 4). Due to the small size of these prints, it was considered more likely that they were from polecat, ferret (*Mustela furo*), or a polecat-ferret hybrid¹³, rather than pine marten^{14:15}.

Squirrel feeding signs in the form of a stripped pine cone¹⁶ (Photograph 5 and Photograph 6) were also identified in May. However, grey squirrels (*Sciurus carolinensis*) and red squirrels both feed in this distinctive way¹⁷ and as such, this

¹²<https://pine-marten-recovery-project.org.uk/our-work/field-signs> Accessed 5th November 2019

¹³The Vincent Wildlife Trust (2014) Polecats and Ferrets. <https://www.vwt.org.uk/wp-content/uploads/2015/04/polecat-ferret-leaflet-.pdf> Accessed 8th November 2019

¹⁴The Vincent Wildlife Trust (2017) A guide to identifying evidence of pine martens in Wales. <https://www.vwt.org.uk/wp-content/uploads/2017/11/Evidence-of-Pine-Martens-in-Wales.pdf> Accessed 8th November 2019

¹⁵Wiltshire Mammal Group (2015) Small mustelid footprint ID guide.

¹⁶<https://www.mammal.org.uk/sites/default/files/Red%20Squirrel%20Field%20Sign%20Guide%20PDF.pdf> Accessed 7th November 2019

¹⁷<https://treesforlife.org.uk/into-the-forest/trees-plants-animals/mammals/red-squirrel/red-squirrel-feeding-signs/> Accessed 7th November 2019

cannot be considered conclusive proof of red squirrel presence within the woodland. Grey squirrels were observed on several occasions during the transect surveys.

No other signs of target species were identified during the transect survey.

7.2.2 Camera Trapping Survey

The camera trapping survey recorded one instance of a polecat on 6th October at feeding station 3 (Photograph 7). No activity of other target species (pine marten and red squirrel) was recorded. Non-target species recorded include red fox (*Vulpes vulpes*), rabbit (*Oryctolagus cuniculus*) some unidentifiable mouse species (considered most likely to be wood mouse (*Apodemus sylvaticus*)), birds, and numerous instances of grey squirrel, a naturalised non-native species listed on Schedule 9 of the WCA.

The volume of grey squirrel activity recorded is considered to contribute to the lack of red squirrel activity. The species identified at each feeding station in each month are summarised in Table 1, and locations of feeding stations are shown on Figure 3.

Table 1: Species recorded at each feeding station during camera trapping survey

Month	Feeding Station Ref.	Target Species Recorded	Other Species Recorded
June	1	None	Birds (robin (<i>Erithacus rubecula</i>), jay (<i>Garrulus glandarius</i>), coal tit (<i>Periparus ater</i>), great tit (<i>Parus major</i>)); mice; grey squirrel; red fox.
	2	None	Grey squirrel; mice.
	3	None	Red fox; rabbit; grey squirrel; mice.
July	1	None	Grey squirrel; mice; birds (robin, great tit, blue tit (<i>Cyanistes caeruleus</i>), great spotted woodpecker (<i>Dendrocopos major</i>), blackbird (<i>Turdus merula</i>)).
	2	None	Red fox; grey squirrel; mice; birds (jay).
	3	None	Red fox; grey squirrel; mice; birds (jay, blackbird); rabbit.
Aug	1	None	Red fox; grey squirrel; mice; birds (robin, blue tit, jay).
	2	None	Red fox; grey squirrel; mice; birds (jay).
	3	None	Red fox; rabbit; grey squirrel; mice; birds (great tit, jay).
Sept	1	None	Mice; birds (great tit, jay, robin, blue tit).
	2	None	Red fox; grey squirrel; mice; birds (robin, great tit, blue tit, jay).
	3	None	Red fox; rabbit; grey squirrel; mice, birds (jay, robin, great tit).
Oct	1	None	Red fox; mice; birds (passerines, magpie (<i>Pica pica</i>)).

Month	Feeding Station Ref.	Target Species Recorded	Other Species Recorded
	2	None	Grey squirrel; birds (jay).
	3	Polecat	Red fox; rabbit; grey squirrel; mice; birds (jay).

Red squirrel are considered likely to be absent from the survey area due to the lack of recent and nearby desk study records, the high volume of grey squirrel activity, and the inconclusive feeding signs identified during the transect survey.

Pine marten are also considered likely to be absent from the survey area due to the lack of desk study records and the lack of evidence identified during the field surveys. However, it should be noted that a pine marten re-introduction project has been undertaken in mid-Wales¹⁸, and, as such, pine marten are likely to be present (in low numbers) in the vicinity of the study area despite the lack of records.

¹⁸ <https://www.vwt.org.uk/projects-all/pine-marten-recovery-project/> Accessed 14th November 2019

8 Conclusions

The camera trapping survey identified the presence of polecat at feeding station 3 in October. Red squirrel and pine marten were found likely to be absent from the survey area. Numerous other native UK species were recorded during this suite of surveys, including red fox, rabbit, jays, mice, and numerous bird species.

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 protected and/or notable mammal species. This will also detail any mitigation or compensation measures required to ensure there is no significant effect on arboreal mammals within the site.

This report is the result of the survey work undertaken during 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, as may the passage of time.

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 reviewed¹⁹.

¹⁹ Chartered Institute of Ecology and Environmental Management (2019). *Advice Note on the Lifespan of Ecological Reports and Surveys*.

Figures



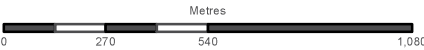
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

LEGEND

Study Area

F1	2019-11-14	EA	CP	
----	------------	----	----	--

Issue	Date	By	Chkd	Appd
-------	------	----	------	------



ARUP

4 Pierhead Street
Cardiff CF10 4QP
Tel +44 29 2047 3727 Fax +44 29 2047 2277
www.arup.com

Client
Celtic Energy

Job Title
**Nant Helen Complementary
Restoration Earthworks**

**Figure 1
Study Area**

Scale at A3
1:20,000

Job No 271968-05	Drawing Status For Issue
----------------------------	------------------------------------

Drawing No 001	Issue F1
--------------------------	--------------------



LEGEND

- Study Area
- Arboreal mammal transect route
- Mustelid prints
- Squirrel feeding signs
- Scats collected for DNA analysis

F1	2019-11-14	EA	CP	
----	------------	----	----	--

Issue	Date	By	Chkd	Appd

Metres
0 87.5 175 350

ARUP

4 Pierhead Street
Cardiff CF10 4QP
Tel +44 29 2047 3727 Fax +44 29 2047 2277
www.arup.com

Client

Celtic Energy

Job Title

**Nant Helen Complementary
Restoration Earthworks**

Figure 2
Arboreal mammal transect route
and transect survey results

Scale at A3

1:6,500

Job No	Drawing Status
271968-05	For Issue

Drawing No	Issue
002	F1

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



LEGEND

- Study Area
- Feeding stations

F1	2019-11-14	EA	PW	
----	------------	----	----	--

Issue	Date	By	Chkd	Appd

Metres

0

87.5

175

350

ARUP

4 Pierhead Street
Cardiff CF10 4QP
Tel +44 29 2047 3727 Fax +44 29 2047 2277
www.arup.com

Client

Celtic Energy

Job Title

**Nant Helen Complementary
Restoration Earthworks**

Figure 3
Feeding station locations

Scale at A3

1:6,500

Job No	Drawing Status
271968-05	For Issue
Drawing No	Issue
003	F1

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Photographs



Photograph 1: Scat collected during September transect



Photograph 2: Mustelid tracks with 40cm stride identified during May transect



Photograph 3: Mustelid prints considered too small for pine marten, identified during May transect



Photograph 4: Small mustelid prints identified during May transect



Photograph 5: Squirrel feeding signs identified during May transect



Photograph 6: Squirrel feeding signs identified during May transect



Photograph 7: Polecat at station 3 in October



Photograph 8: Rabbit at station 3 in June



Photograph 9: Passerines at station 1 in July



Photograph 10: Grey squirrel at station 2 in July



Photograph 11: Jays at station 2 in July



Photograph 12: Red fox at station 3 in August



Photograph 13: Mouse at station 3 in September

Appendix A

Weather Conditions

A1 Weather Conditions

Table A1: Weather conditions during arboreal mammal transect survey visits

Survey Visit	Date	Temp. (°C)	Wind Speed (Beaufort Scale)	Wind Direction	Cloud Cover (%)	Comments
Transect 1	23/05/2019	18	2	SW	10	Sunny
Camera trap and feeding station install	14/06/2019	13	1	E	100	Dry
Transect 2	28/06/2019	21	4	NE	0	Sunny
Transect 3	25/07/2019	27	2	SW	20	Sunny
Transect 4	29/08/2019	14	2	SW	100	Light drizzle
Transect 5	11/09/2019	16	3	W	100	Stead rain
Transect 6	17/10/2019	12	2	S	90	Dry

Appendix B

EcoWarwicker Scat DNA Analysis Results



8 October 19

Re: Identification Results for Alexandra Kinsey, Arup

Job number 14632, received 19 September 2019

Sample labelled: GCRE Pine marten transect. Poss. Mustelid scat sample 1

PCR amplification successful. DNA sequence:

CCACCTACACACCTCAAAACAACGTGGGATAATATTCCGACCCCTTAGTCAATGCCT
ATTCTGACTTCTAACCGCAGACC

Phylogenetic analysis identification: *Vulpes vulpes*

Confirmed by maximum likelihood, maximum parsimony, bootstrap 100%.

Best regards,

Professor Robin Allaby

The results and conclusions in this report are based on an investigation of mtDNA sequence analysis. The results obtained have been reported with accuracy. The interpretation represents the most probable conclusion for the DNA sequence obtained rather than the sample provided given current levels of species data. It should be borne in mind that different circumstances might produce different results. Therefore, care must be taken with interpretation of the results especially if they are used as the basis for commercial recommendations.

Professor Robin Allaby

School of Life Sciences,
Gibbet Hill Campus,
University of Warwick,
Coventry CV4 7AL
Tel: 02476575059
Fax: 02476574500
Email: r.g.allaby@warwick.ac.uk