

Appendix 7L

Bat Roost Survey Report

Welsh Government

**Global Centre for Rail Excellence
(GCRE)**

Bat Roost 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.

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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 bat roost surveys undertaken for the Project.

1.2 Objectives

The objectives of the surveys were to ascertain the following:

- The presence/likely absence of roosting bats within buildings/structures within the study area; and
- The presence/likely absence of roosting bats within trees in 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.

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 Legislation

All British bat species are fully protected at national and European levels, through their inclusion in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended)¹ and in Schedule 2 of the Conservation of Habitat and Species Regulations 2017 (as amended)². Under this legislation, it is an offence to deliberately kill, injure or take a bat as well as intentionally or recklessly damage, destroy or obstruct access to any structure or resting place used for shelter or protection by a bat or disturb an animal while it is occupying a structure or place which it uses for that purpose. It is also an offence to possess or advertise/sell/exchange a bat of a species found in the wild in the EU (dead or alive) or any part of a bat

Four species of bat, Greater Horseshoe Bat *Rhinolophus ferrumequinum*, Lesser Horseshoe Bat *R. hipposideros*, Bechstein's Bat *Myotis bechsteinii* and Western Barbastelle *Barbastella barbastellus*, are included on Annex II of the Habitats Directive³, which requires the designation of Special Areas of Conservation to ensure the maintenance of favourable conservation status (and these are therefore generally considered as perhaps the most important UK species).

Eight bat species are included within Section 7 of the Environment (Wales) Act 2016, these being the list of living organisms of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales. These species are Barbastelle, Bechstein's Bat, Noctule *Nyctalus noctula*, Common Pipistrelle *Pipistrellus pipistrellus*, Soprano Pipistrelle *P. pygmaeus*, Brown Long-eared Bat *Plecotus auritus*, Greater Horseshoe Bat and Lesser Horseshoe Bat.

¹ The Wildlife and Countryside Act 1981 (as amended).

2 The Conservation of Habitats and Species Regulations 2017.

3 Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

6 Methodology

6.1 Desk Study

The desk study element involved two methodologies: a review of existing ecological reports in relation to the site and an ecological data search with the Local Biodiversity Records Centre.

Existing ecological data, obtained in 2011 to inform the Environmental Statement⁴, was reviewed which included previous desk study results, habitat and species surveys.

Protected and notable⁵ species (including bats), Schedule 9 invasive non-native species and non-statutory site data within 5 km of the site were obtained from the Biodiversity Information Service for Powys & Brecon Beacons National Park (BIS)⁶ on 21 November 2018.

In addition, online searches were carried out using the Multi Agency Geographic Information for the Countryside (MAGIC)⁷, Natural Resources Wales website⁸ and the Joint Nature Conservation Committee (JNCC) website⁹ to identify any statutory designated sites up to 5 km from the site, and any designated European sites within 10 km; for which bats are a qualifying feature.

The full desk study results are provided in the Extended Phase 1 Habitat Report for the Project¹⁰.

6.2 Field Surveys

All surveys were completed in line with Bat Conservation Trust (BCT) guidance¹¹, detail in relation to which is provided below.

The majority of surveys were led by Richard Moores (RM) MCIEEM (Natural England (NE) bat licence no. 2015-12259-CLS-CLS, NRW licence no.: 78258:OTH:CSAB:2018) with assistance from his accredited agent Martyn Owen

⁴ Environmental Statement (2011), Celtic Energy.

⁵ 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, under 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)

⁶ <https://www.bis.org.uk/home>.

⁷ <http://magic.defra.gov.uk/>

⁸ <https://naturalresources.wales/conservation-biodiversity-and-wildlife/find-protected-areas-offland-and-seas/designated-sites-search/?lang=en>

⁹ <http://jncc.defra.gov.uk>

¹⁰ Arup (2019) Nant Helen Complementary Restoration Earthworks Extended Phase 1 Habitat Survey Report.

¹¹ Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.

(MO) MCIEEM (NE bat licence no. 2015-1974-CLS-CLS), Stuart Thomas (ST) MCIEEM (NRW bat licence number: 78183:OTH:CSAB:2018, NE bat licence no. 2016-26245-CLS-CLS) and Steven Forrester (SF), all of whom are experienced bat surveyors.

One of the structures (an old railway tunnel) was surveyed by Pete Wells (PW) CEnv, MCIEEM (NRW licence no. S086930/1) and Claire Pooley (CP) CEcol, MCIEEM (Natural England (NE) licence no. 2015-19288-CLS-CLS and NRW licence no. S087582/1, both of whom are experienced bat surveyors.

6.2.1 Buildings/Structures

6.2.1.1 Preliminary Roost Assessment

The potential suitability of the buildings/structures (which were given a numeric reference, the locations of which are shown on Figure 2) for roosting bats within the study area was assessed and allocated to one of the categories detailed within Table 1. These inspections were completed by experienced ecologists (Table 2).

A systematic search of the interior and exterior of all buildings/structures within the study area was completed to identify potential or actual bat access points and roosting sites, and to locate any evidence of bats such as live or dead specimens, bat droppings, urine splashes, fur-oil staining and/or squeaking noises.

The external inspection also included the examination of the ground, particularly beneath any potential bat access points, for example any windowsills, window panes, walls, behind any peeling paintwork or lifted rendering, hanging tiles, weatherboarding, eaves, soffit boxes, fascias, lead flashing, gaps under felt, and under tiles/slates where present and accessible.

It should be noted that occasionally bats leave no visible sign of their presence in a building's interior or on its exterior, particularly when there are hidden cracks, crevices and/or voids.

Table 1 Guidelines for assessing the potential suitability of roosting habitats for bats.

Suitability	Description of Roosting Habitats
Negligible (0)	Negligible habitat features on site likely to be used by roosting bats.
Low (1)	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation).
Moderate (2)	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).
High (3)	A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

Table 2 Preliminary roost assessment survey details.

Date	Surveyors	Temp (°C)	Cloud Cover	Wind (Beaufort)	Precipitation
12/06/2019	MO, ST	10-16	5/8-8/8	1 SE	Nil
22/07/2019	MO, SF	16-18	8/8	1 S	Occasional light rain
23/07/2019	MO, SF	18-23	3/8-5/8	1-2 S	Nil
24/07/2019	MO, SF	17-22	5/8-3/8	2-3SW	Nil
26/9/2019	PW, CP	21	8/8	2-3SW	Light rain

6.2.1.2 Nocturnal Surveys

Following the preliminary roost assessment (PRA) inspections, nocturnal bat activity surveys (i.e. emergence or re-entry surveys) of all buildings within the study area assessed to be of at least 'Low' suitability (Table 1) for roosting bats was completed (Figure 2). At least one survey of all buildings/structures of low potential was completed with at least two surveys of buildings/structures of moderate potential, with further surveys to be completed depending upon the results of these initial surveys. No buildings/structures of high potential were identified during the PRA.

Surveyors were equipped with electronic bat detectors (EM3, EM Touch Pro 2, Anabat SD2, Batlogger M or Peersonic) and any sound files were analysed with appropriate bat analysis software (Kaleidoscope) once the surveys were completed, if required.

The nocturnal bat surveys were undertaken in weather conditions considered appropriate for surveys of this kind (Table 3).

One of the structures (an old railway tunnel, Building 36) was not subject to an emergence or re-entry survey, since roosting by small numbers of pipistrelle bats

¹² Arup (2020) Nant Helen Bat Activity Survey Report.

Table 3 Nocturnal survey details.

Building Ref	Survey Number	Date	Dusk/Dawn	Sunset/sunrise	Survey Start	Survey End	Surveyors	Temp (°C)	Cloud Cover (/8)	Wind (Beaufort)	Precipitation
4	1	22/07/19	dusk	21.19	21.04	23.19	MO, SF	16-18	5-6	1SW	Nil
13	1	23/07/19	dusk	21.24	21.09	23.24	MO, ST, SF	20-22	7-8	1SE	21.09 - nil. 22.56 - Light rain
19	1	24/07/19	dawn	05.24	03.30	05.39	MO, ST, SF	20-22	5-7	2SW	Nil
14	1	07/08/19	dusk	20.54	20.39	22.54	MO, ST, SF	15	2-4	1SW	Nil
6a	1	08/08/19	dawn	05.46	03.50	06.01	MO & RM	13	4-6	0-1SW	Nil
16	1	08/08/19	dawn	05.46	03.50	06.01	ST & SF	13	4-6	0-1SW	Nil
12	1	12/08/19	dawn	05.50	03.47	06.02	MO, RM, SF	10	6-7	1W	Nil
24	1	12/08/19	dusk	20.45	20.30	22.45	ST, RM, MO, SF	13-14	3-6	0-1E	Nil
15	1	13/08/19	dawn	05.56	03.56	06.11	RM, MO	11-12	4-5	1W	Nil
35	1	15/08/19	dawn	06.00	04.00	06.15	ST, MO, SF	14-15	8	1-2W	Nil
13	2	19/09/19	dawn	06.56	05.00	07.10	MO, SF, RM	10-11	1	1E	Nil
19	2	20/09/19	dawn	06:57	05.00	07.10	MO, SF, RM	12	0-1	1E	Nil
24	2	18/09/19	dawn	06.55	05.01	07.11	ST, RM, MO, SF	10-12	2	!E	Nil
35	2	20/09/19	dusk	19.20	19.05	21.15	ST, MO, SF	11-12	2-4	1E	Nil

6.2.2 Trees

6.2.2.1 Ground Level Inspection

To evaluate the potential suitability of trees in areas to be impacted (directly or indirectly) within the study area (Figure 2) for roosting bats a Preliminary Ground Level Inspection (PGLI) survey was completed in accordance with relevant guidelines¹³. This required the detailed inspection of the exterior of a tree from ground level to look for features that bats could use for roosting, in addition to any bat evidence. Details of this survey are provided within Table 4.

Table 4 Ground level inspection survey details.

Date	Surveyors	Temp (°C)	Cloud Cover	Wind (Beaufort)/ Direction	Precipitation
13/08/19	MO, SF	17-19	0/8-3/8	1-2W	Nil
14/08/19	MO, SF	14-16	8/8	1SSE	Rain

6.2.2.2 Aerial Inspection

During the PGLI a number of trees were identified which Potential Roost Features (PRFs) that could support roosting bats. Consequently, these trees were climbed by Martyn Owen MCIEEM and Richard Moores MCIEEM (both qualified in tree climbing and aerial rescue) to inspect these features in detail using a torch, endoscope and dental mirrors. Details of this survey are provided within Table 5.

Table 5 Aerial inspection survey details.

Date	Surveyors	Temp (°C)	Cloud Cover	Wind (Beaufort)/ Direction	Precipitation
17/09/19	MO, RM	19-21	0/8	1S	Nil
18/09/19	MO, RM	18-21	1-2	1S	Nil

¹³ Bat Tree Habitat Key (2018). *Bat Roosts in Trees – A Guide to Identification for Tree-care and Ecology Professionals*. Exeter: Pelagic Publishing.

6.3 Limitations

Full access to all roof voids within buildings to assess presence/likely absence of PRFs was not possible in a number of buildings due to health and safety and/or access restrictions. Full inspection of building exteriors was possible and when full internal assessment was not possible and the presence of PRFs was considered possible, nocturnal surveys were completed. This is not therefore considered to represent a significant limitation.

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

7.1.1 Existing Survey Data

A full summary of the existing survey data collated from the surveys undertaken to inform the Environmental Statement for the site in 2011 is provided within the Extended Phase 1 Habitat Report¹⁰. A summary of bat roost survey data results is as follows;

All trees and buildings within and adjacent to the site were assessed for their suitability to support roosting bats in June 2010, in-line with good practice guidelines of the time¹⁴. Trees that were assessed from the ground as being suitable for bats were subject to aerial inspections. Only one tree was identified from aerial surveys as being suitable for roosting bats and a single pipistrelle was found in a small cavity.

Twenty bat boxes were installed on site in 2014 and 2015 as mitigation for previous expansion of the Nant Helen mine¹⁵. These were inspected for signs of use by bats in 2015 and 2016, using a torch. In 2015, two boxes were found to be occupied by a pipistrelle bat. In 2016, 3 boxes were found to be occupied by a pipistrelle bat. *Pipistrellus sp.* were confirmed to be roosting in the following boxes;

Table 6. Positive inspection results of bat boxes 2015-2016 by Sylvan Ecology.

Bat Box No.	GPS	Tree No.
7	SN 80427 10771	3
8	SN 80427 10771	3
11	SN 80403 10775	5
19	SN 80288 10812	8

¹⁴ Bat Conservation Trust (2007). Bat Surveys – Good Practice Guidelines. Bat Conservation Trust, London.

¹⁵ Sylvan Ecology (2016) Bat Box inspection Report 2016, Nant Helen Surface Mine.

7.1.2 New Data Search

7.1.2.1 Protected and Notable Species

The data provided by BIS in November 2018 detailed records of bat species identified within 5 km of the site, as summarised below. The distance given is that to the closest point on the site boundary.

Table 7 Bat species recorded within 5 km of the site

Species/Group	Scientific Name	Status	Number of Records	Approximate distance of closest record (m)
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	EPS, WCA, Sec 7	10	300
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	EPS, WCA, Sec 7	27	400
Unidentified bat	<i>Chiroptera</i>	EPS, WCA, Sec 7	10	400
Daubenton's bat	<i>Myotis daubentonii</i>	EPS, WCA, Sec 7	7	400
Noctule bat	<i>Nyctalus noctula</i>	EPS, WCA, sec 7	11	400
Pipistrelle species	<i>Pipistrellus</i> spp.	EPS, WCA, sec 7	14	600
Brown long-eared bat	<i>Plecotus auritus</i>	EPS, WCA, Sec 7	7	1000
Myotis bat	<i>Myotis</i> spp.	EPS, WCA, sec 7	2	1700
Nathusius' pipistrelle	<i>Pipistrellus nathusii</i>	EPS, WCA, sec 7	2	2000
Natterer's bat	<i>Myotis nattereri</i>	EPS, WCA, Sec 7	2	2000
Lesser horseshoe bat	<i>Rhinolophus hipposideros</i>	EPS, WCA, sec 7	1	2000

7.1.2.3 Statutory and Non-Statutory Designated Sites

Fourteen statutorily designated sites were identified within 5 km of the site. They comprised one Special Area of Conservation (SAC), one National Park and 12 Sites of Special Scientific Interest (SSSI), one of which is also designated as a National Nature Reserve (NNR). No sites designated for bats were identified within 10 km of the site however. The identified sites are detailed within the Extended Phase 1 Habitat Report¹⁰.

7.2 Field Surveys

7.2.1 Building/Structures

The results of the PRA and nocturnal surveys are presented within Table 8 below, with building/structure locations shown on Figure 2. A bat roost was confirmed within a stone tunnel (No. 36), at the western end of the study area. No other evidence or roosts were found within any buildings/structures in the study area.

Table 8 Building survey results.

Building Reference (Figure 2)	Preliminary Roost Assessment Results	Bat Roost Potential Assessment	Number of Nocturnal Surveys Completed	Roost/s identified?
1	Offices. Constructed of prefabricated panels with flat (felted) roof. Plastic fascias with narrow gap between fascia and wall. Small wooden porch on north side, with gaps in wooden fabric (through water damage).	0	0	No
2	Offices. Constructed of prefabricated panels with flat (felted) roof. Wooden fascias with numerous areas of damage/lifting. Detailed inspection of all potential access/roost sites checked with endoscope/mirrors. No evidence of bats. All damage to fascia boards due to water ingress, and all potential roost features noted to be wet and unsuitable for bats.	0	0	No
3	Offices. Constructed of prefabricated panels with flat (felted) roof. Plastic fascias with narrow gap between fascia and wall.	0	0	No
4	Boiler House. Brick, two-storey with flat (felted) roof. Wooden fascias with soffit box and grills (on underside) on north and south side, damaged in places. Numerous areas of missing mortar in brickwork. Non-fresh bat dropping on ground (slab) on south side (likely from flying bat). Not possible to inspect roof area due to height. Red brick outer skim with breeze block interior, possibly cavity between. Warm within building due to boilers.	1	1	No
5	Constructed of prefabricated panels with flat (felted) roof. Plastic fascias with narrow gap between fascia and wall. Areas of damaged fascias on corners providing access to cavity. Detailed inspection of all potential access/roost sites checked with endoscope/mirrors.; no evidence of bats. All damage to fascia boards due to water ingress, and all potential roost features noted to be wet/unsuitable for bats.	0	0	No

Building Reference (Figure 2)	Preliminary Roost Assessment Results	Bat Roost Potential Assessment	Number of Nocturnal Surveys Completed	Roost/s identified?
6	Sheet metal shed with corrugated sheet metal roof. Much external lighting.	0	0	No
6a	Rail weighbridge. Brick built with flat (felted) roof and plastic fascias (lifting in places). Detailed/full endoscope survey of external areas. No signs of bats and no limitations. However, numerous potential PRFs considered to be of low value.	1	1	No
7	Pumphouse. Brick built with flat (felted) roof with wooden soffit boxes. Much noise from pumps. Much damage to wooden soffits. Detailed/full endoscope survey of external areas. No signs of bats and no limitations. Wet fascias and roof. Roof constructed of wood, overlain with felt, due to leaking this was then covered in metal sheeting.	0	0	No
8	Corrugated iron shed.	0	0	No
9	Metal two-storey shed. Internally illuminated through plastic roof panels within metal roof.	0	0	No
10	Metal two-storey shed. Internally illuminated through plastic roof panels within metal roof.	0	0	No
11	Pumphouse. Breeze block rendered walls, corrugated iron roof with wooden fascias, missing in places. Detailed/full endoscope survey of external areas. No signs of bats and no limitations. PRFs all wet/unsuitable for bats.	0	0	No
12	Offices. Brick built, single storey with pitched metal roof. Hanging ceiling within building. Wooden fascias, missing in places. Metal overhanging gable walls. Endoscope and internal inspection completed. Roof steel framed with insulation panels under and sheet metal roof. Roof void very dusty with coal dust. No bat evidence encountered and roosting opportunities limited.	1	1	No

Building Reference (Figure 2)	Preliminary Roost Assessment Results	Bat Roost Potential Assessment	Number of Nocturnal Surveys Completed	Roost/s identified?
13	Office/reception. Pebble-dashed/rendered walls. Slate roof with clay ridge tiles (some missing/damaged). Plastic soffit boxes. Gaps under lead flashing and tiles. Hanging ceiling below original ceiling, with no access to void.	2	2	No
14	Visitor Centre. Rendered walls, pitched slate roof of recent construction. Plastic soffit boxes. Some lifting tiles. Constructed five years ago. Very narrow, low roof void running length of building. Roof lined with breathable membrane in excellent condition. No bat evidence within roof.	1	1	No
15	Brick walls with corrugated iron roof. Subject to much disturbance next to weighbridge. Much missing mortar. Fully inspected internally and externally. No evidence of bats, building generally wet inside/dilapidated although numerous PRFs considered to be of limited value to bats present.	1	1	No
16	Chemical Store. Brick walls with sheet metal roof. No access to interior (chemicals). Roof void present, although no access hatch.	1	1	No
17	Laboratory. Metal and brick walls of pitched roof section, roof void above hanging ceiling. Flat roof extensions rendered with felt roof. Roof void and exterior fully inspected. Much ventilation apparatus/noise in roof, which was constructed of metal, generally unlined though areas of insulation board present. No bat evidence in roof and no PRFs.	0	0	No
18	Substation. Red brick walls with cement (felted) roof. Wooden fascias in very poor condition, no PRFs.	0	0	No
19	Two sections. 1. Large slate pitched roof with red brick walls and wooden fascias. 2. Small sheet metal roof with red brick walls and wooden soffits. Slates slipped and numerous gaps in ridge/flashing. No roof void in slated section, lined inside with wood on pitched roof. Hanging ceiling below corrugated metal section, no access. No bat evidence but PRFs present.	2	2	No

Building Reference (Figure 2)	Preliminary Roost Assessment Results	Bat Roost Potential Assessment	Number of Nocturnal Surveys Completed	Roost/s identified?
20	Workshop. Red brick with sheet metal cladding. Metal and plastic roof. Full internal inspection. No bat evidence and no PRFs.	0	0	No
21	Metal coal processing shed. No PRFs.	0	0	No
22	Metal coal processing shed. No PRFs.	0	0	No
23	Metal coal processing shed. No PRFs.	0	0	No
24	Stone wall with numerous gaps, though some gaps appeared full of sediment, others appeared deeper. Some large deep (c.1.5m) holes, where beams were previously present, or for drainage. Inspected with endoscope, although full inspection impossible due to depth. No bat evidence although many PRFs.	2	2	No
25	Metal coal processing shed. No PRFs.	0	0	No
26	Brick and metal sheds. Metal roof. No PRFs	0	0	No
27	Metal coal processing shed. No PRFs.	0	0	No
28	Metal coal processing shed. No PRFs.	0	0	No
29	Metal coal processing shed. No PRFs.	0	0	No
30	Metal coal processing shed. No PRFs.	0	0	No
31	Metal coal processing shed. No PRFs.	0	0	No
32	Metal shed. No PRFs.	0	0	No
33	Brick substation with flat roof. No PRFs.	0	0	No
34	Metal open-sided weighbridge shed. Adjoining metal shed. No PRFs.	0	0	No

Building Reference (Figure 2)	Preliminary Roost Assessment Results	Bat Roost Potential Assessment	Number of Nocturnal Surveys Completed	Roost/s identified?
35	Two-storey red brick walls with pitched roof of concrete roof/ridge tiles, though some gaps. Plastic and wood soffit boxes with numerous gaps. Cement pointing at verge missing in places. Roof void c. 1m high and many wooden roof supports making full inspection impossible. Areas in vicinity of two roof access hatches inspected in detail and no bat evidence although much coal dust making the identification of droppings (if present) difficult. Roof lined with plastic, beneath tiles, and bitumen beneath plastic. Numerous access points to roof void.	2	2	No
36	Old railway tunnel, approximately 20m long and open at both ends. numerous crevices between stones suitable for small numbers of roosting bats. A natterer bat was found in one crevice at the northern end of the tunnel.	2	0	Yes

7.2.2 Trees

The results of the ground level inspection and tree climbing assessment surveys are presented within Table 9 below, with tree locations shown on Figure 3. No bat roosts were identified within any tree within the study area.

Table 9 Tree survey results.

Tree Reference (Figure 3)	Tree Species	Diameter at Breast Height (m)	Feature Description	Height Above Ground (m)	Side of Tree	Feature Orientation	Distance from Trunk (m)	PGLI Bat Roost Potential Assessment (BRP)	Comment(s)	Tree Climb Results	Updated BRP
2.01	Sycamore	0.4	Lifting bark	0.2-4.0	All	All	0.0	1	Dead tree	Full assessment, no signs	1
2.02	Sycamore	0.4	Lifting bark	0.2-0.3	All	All	0.0	1	Dead tree	Full assessment, no signs	0
3.01	Oak	1.0	Knothole	5.0	SW	W	0.5	1		Full assessment, no signs	1
			Knothole	5.0	S	S	2.5	1		Full assessment, no signs	1
3.02	Oak	0.75	Woodpecker hole x3	6.0	N	N	0.0	2	Sections of trunk appear hollow, which may be accessible via holes.	Two holes do not extend. One hole extends, although no signs	2
3.03	Dead Field Maple (?)	0.30	Lifting bark	1.0-4.0	All	All	0.0	1		Full assessment, no potential	0
3.04	Oak	1.30	Rot Holes	2.0	E	S	0.0	1		Full assessment, no potential	0

Tree Reference (Figure 3)	Tree Species	Diameter at Breast Height (m)	Feature Description	Height Above Ground (m)	Side of Tree	Feature Orientation	Distance from Trunk (m)	PGLI Bat Roost Potential Assessment (BRP)	Comment(s)	Tree Climb Results	Updated BRP
			Knot Hole	8.0	W	N	1.0	1		Full assessment, no potential	0
			Knothole	4.0	E	S	1.0	1		Full assessment, no signs	1
3.05	Oak	1.0	Rot Hole	4.0	N	N	0.0	1		Full assessment, no potential	0
3.06	Oak	1.0	Knot Hole	3.0	E	E	0.0	1		Full assessment, no signs	1
3.07	Oak	1.3	Rotting central trunk with numerous features	2.0-4.0	All	All	0.0	1		Full assessment, no signs	1
3.08	Oak	1.0	Knot Hole	5.0	W	W	1.0	2		Full assessment, no potential	0
			Rot Hole	4.0	W	W	1.0	1		Full assessment, no potential	0
			Knot Hole	2.0	N	E	1.0	1		Full assessment, no potential	0

Tree Reference (Figure 3)	Tree Species	Diameter at Breast Height (m)	Feature Description	Height Above Ground (m)	Side of Tree	Feature Orientation	Distance from Trunk (m)	PGLI Bat Roost Potential Assessment (BRP)	Comment(s)	Tree Climb Results	Updated BRP
3.09	Oak	1.30	Thick-stemmed ivy	0.0-5.0	NW	All	0.0	1		Considerable amount of Ivy. Inspected; no signs	1
3.10	Oak	1.30	Knot Hole	3.5	W	W	0.0	2		Full assessment, no potential	0
3.11	Oak	1.5	Thick-stemmed ivy	1.0-10.0	All	All	0.0	1		Full assessment, no signs	1
3.12	Oak	0.5	Rot Hole	1.0	W	SW	0.0	1		Full assessment, no signs	1
3.13	Oak	1.2	Woodpecker Hole	2.0	W	NW	0.0	1		Full assessment, no signs	1
			Woodpecker Hole	3.0	W	W	0.0	1		Full assessment, no potential	0
			Woodpecker Hole	2.5	W	W	0.0	1		Full assessment, no potential	0
3.14	Oak	1.0	Knot Hole	1.3	S	S	0.0	1		Full assessment, no potential	0

Tree Reference (Figure 3)	Tree Species	Diameter at Breast Height (m)	Feature Description	Height Above Ground (m)	Side of Tree	Feature Orientation	Distance from Trunk (m)	PGLI Bat Roost Potential Assessment (BRP)	Comment(s)	Tree Climb Results	Updated BRP
			Knot Hole	1.5	S	S	0.25	1		Full assessment, no potential	0
3.15	Oak	0.75	Rot Hole	2.5	S	SE	0.2	1		Full assessment, no potential	0
			Rot Hole	3.0	S	S	2.0	1		Full assessment, no potential	0
			Dead Branch/Cracks/Lifting Bark	3.0	N	NE	0.5	1		Full assessment, no potential	0
			Large split on broken branch	3.0	N	NE	0.5-1.0	1		Full assessment, no potential	0
			Calloused split	3.0	S	NE	0.0	1		Full assessment, no signs	1
3.16	Oak	0.75	Rot Hole	3.0	E	N	0.3	1		Full assessment, no potential	0
3.17	Oak	0.5	Knot Hole	3.0	N	N	0.5	1		Full assessment, no potential	0

Tree Reference (Figure 3)	Tree Species	Diameter at Breast Height (m)	Feature Description	Height Above Ground (m)	Side of Tree	Feature Orientation	Distance from Trunk (m)	PGLI Bat Roost Potential Assessment (BRP)	Comment(s)	Tree Climb Results	Updated BRP
3.18	Oak	1.25	Knot Hole	3.0	S	SE	3.0	1		Full assessment, no potential	0
3.19	Oak	1.0	Knot Hole	2.5	S	S	0.0	2	Dying tree	Full assessment, no potential	0
3.20	Oak	0.75	Broken Brank/Cracks	5.0	NW	N & S	2.5	1		Full assessment, no potential	0

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.

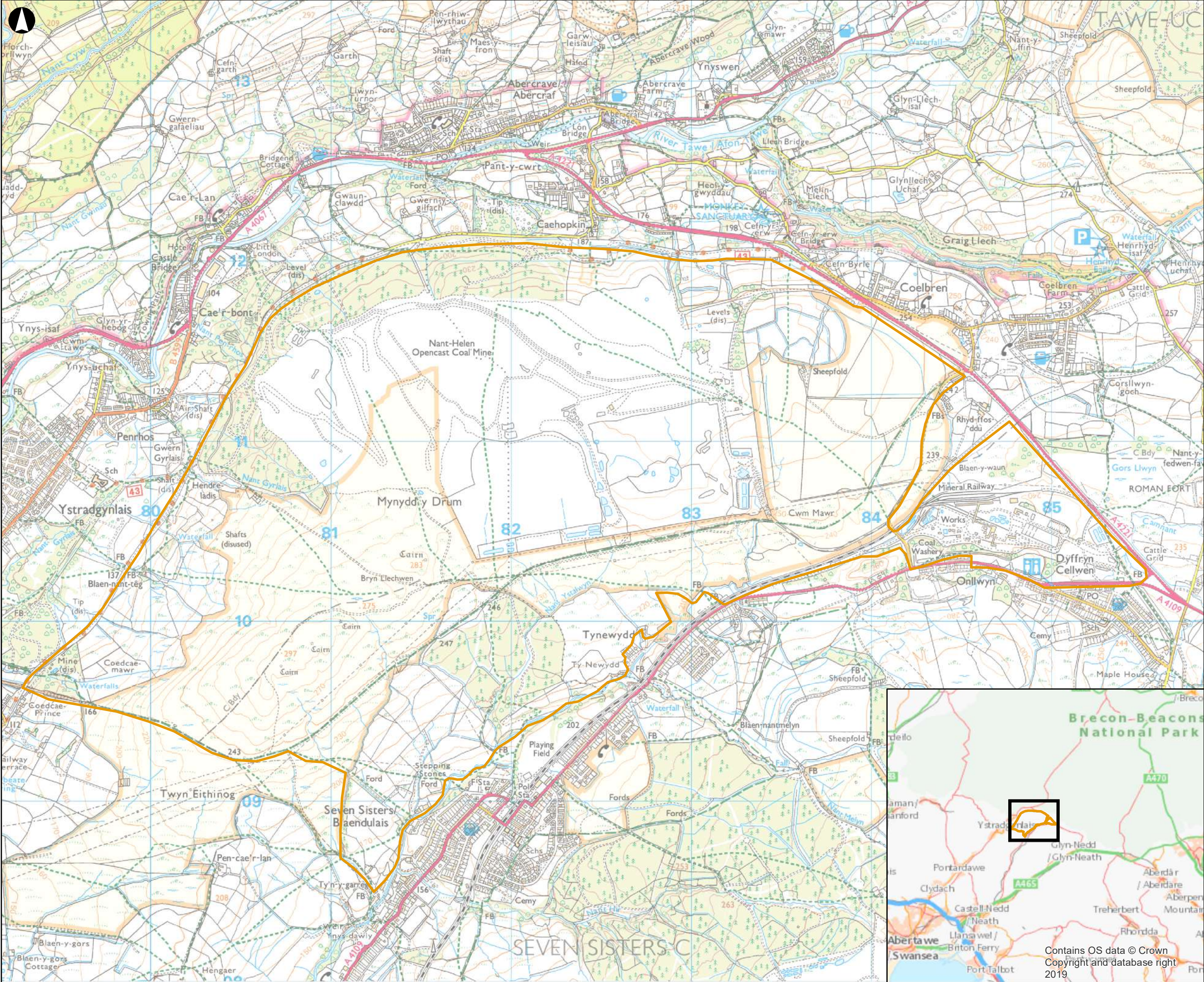
If any bats or evidence of bats is found to be present during the updated tree climb inspection then further survey work, in the form of nocturnal surveys to establish species and numbers of bats present, would be required during the bat active season (May-September inclusive) that would inform a European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

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

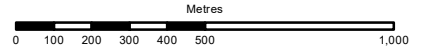


Legend

Survey Area

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Ordnance Survey 0100031673

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



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Client

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Job Title

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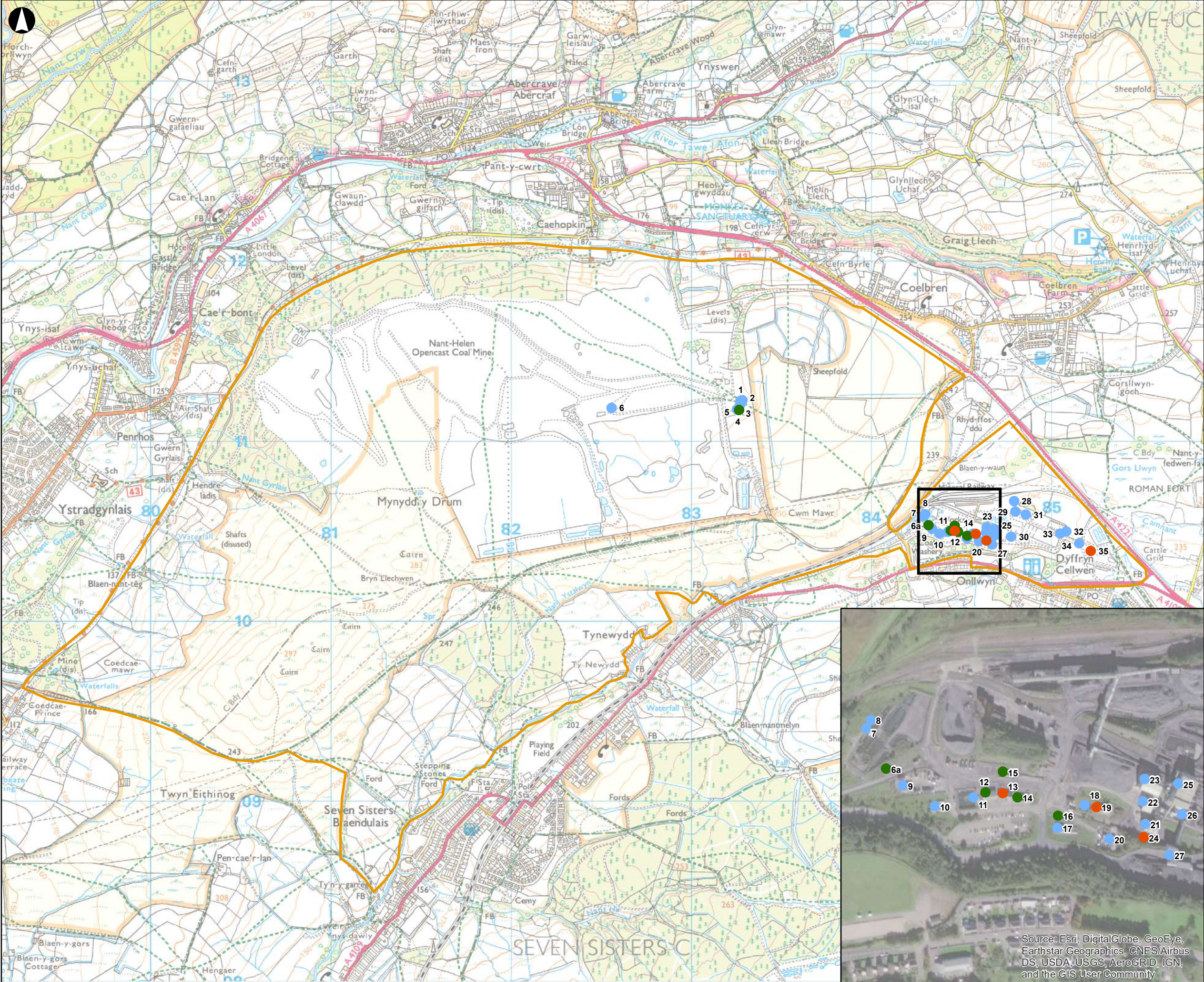
Figure 1
Site Location

Scale at A3

1:20,000

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

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Bat Roost Potential Suitability

Moderate

Low

Negligible

Survey Area

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Issue	Date	By	Chkd	Appd

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Job Title
Global Centre for Rail Excellence

**Figure 2
Building/Structure Survey
Results**

Scale at A3
1:20,000

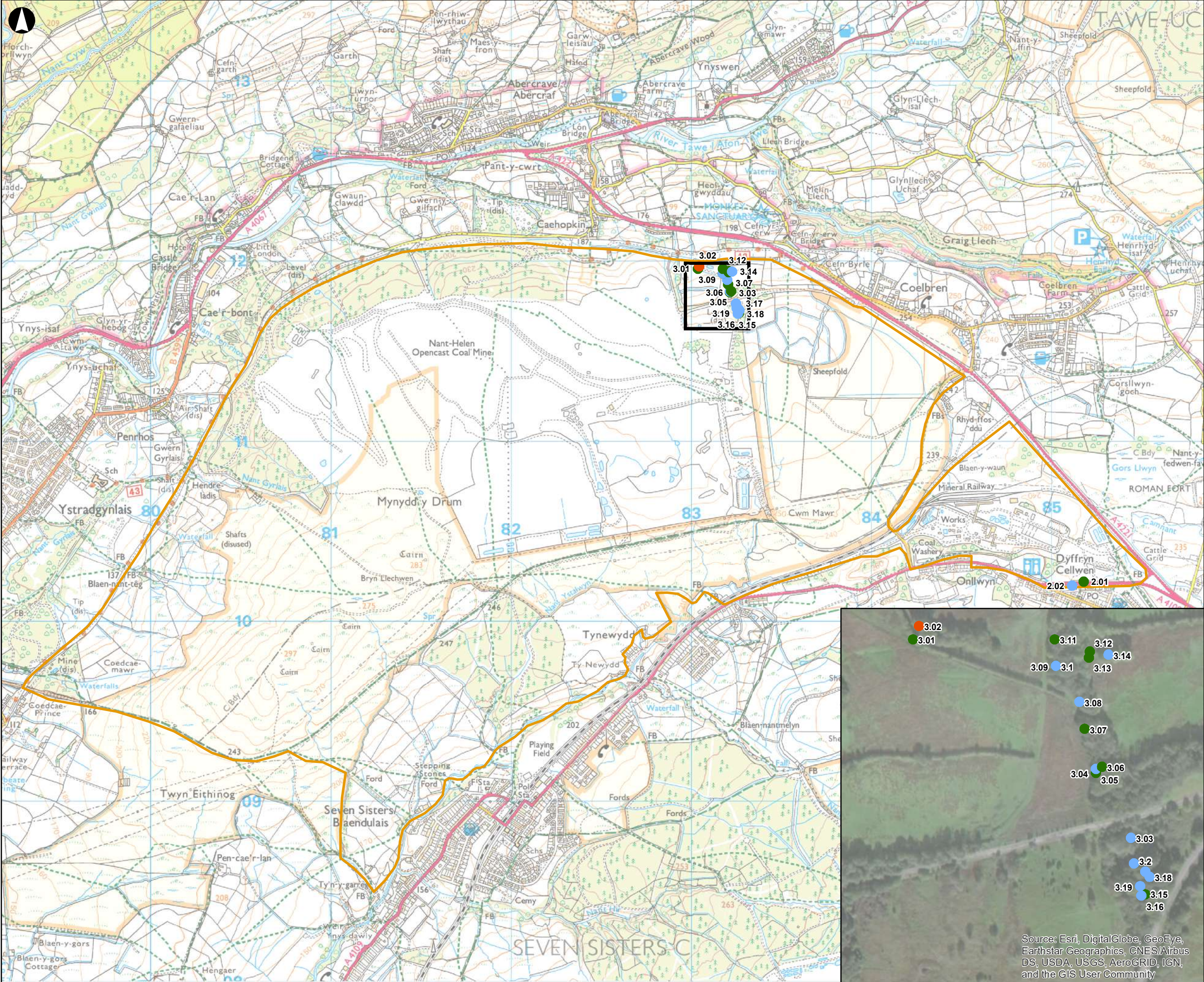
Job No 264904	Drawing Status For Issue
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Drawing No 001	Issue F1
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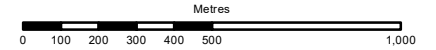
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Bat Roost Potential Suitability

- Moderate
- Low
- Negligible
- Survey

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Figure 3
Tree Survey Results

Scale at A3

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264904	For Issue
Drawing No	Issue
001	F1