The Abergelli Power Gas Fired Generating Station Order

6.2 Environmental Statement Appendices - Volume F Ecology Part III

Planning Act 2008
The Infrastructure Planning
(Applications: Prescribed Forms and Procedure) Regulations 2009

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Appendix 8.10

Otter and Water Vole Survey Report

Abergelli Power Project
Otter and Water Vole Survey Report

Abergelli Power Limited
May 2017

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Organisation	AECOM		
Author	Ursula Jones		
Approved by (1st checker)	Melanie Pritchard		
Approved by (2nd checker)	Kevin Webb		
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Prepared for:

Abergelli Power Limited

Prepared by:

AECOM Limited
3rd Floor
Portwall Place
Portwall Lane
Bristol
BS1 6NA
UK

T: +44 117 901 7000
aecom.com

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1. Introduction

1.1 Introduction

1.1.1 AECOM was commissioned to undertake a suite of ecological survey work to inform the Abergelli Power Project (the "Project").

1.1.2 The Project Site is located near to the village of Felindre, Swansea, as shown in Figure 1.1, and the central grid reference for the Site is SN 6528 0143. A full description of the Project is provided in Chapter 3: Project and Site Description of the Environmental Statement.

1.1.3 The Preliminary Ecological Appraisal Report (Appendix 8.1) identified that surveys for otter *Lutra lutra* and water vole *Arvicola amphibius* were required at the Project Site.

1.1.4 This baseline report outlines the presence of otter and water vole within the otter and water vole survey area and outlines initial recommendations for further surveys, mitigation and enhancement.

1.1.5 The otter and water vole survey area encompasses all suitable and accessible watercourses within the Project Site boundary and within a 100 m radius from the Project Site boundary, as shown on Figure 1.1.

1.1.6 Previous surveys have been undertaken by BSG Ecology and supported the 2014 ES Ecology Chapter which are presented in the ES Appendix 8.14.

1.2 Objectives of the Survey

1.2.1 The objectives of this survey were:

- To identify any designated nature conservation sites within or in the vicinity of the Project Site boundary that have the potential to support otter and water vole;
- To identify any known records and/or populations of otter or water vole in the vicinity of the Project Site boundary;
- To record and map evidence of otter and water vole;
- To make an initial ecological assessment of the Project Site boundary in respect to otter and water vole;
- To highlight any initial potential ecological constraints in respect to otter and water vole;
- To outline further survey work that may be required; and,
- To make initial suggestions for mitigation, compensation and enhancement of the natural features identified on the within the Project Site boundary in respect to otter and water vole.

1.3 Legislation

a) Otter Legislation

1.3.1 Otters are a European Protected Species under The Conservation of Habitats and Species Regulations 2010 (as amended), known as the 'Habitats Regulations', making it an offence to:

- deliberately capture, injure or kill an otter;
- deliberately disturb an otter; and
- damage or destroy a breeding site or resting place of an otter.

1.3.2 Disturbance is defined as that which is likely to impair their ability:

- to survive, to breed or reproduce, or to rear or nurture their young, or
- in the case of animals of a hibernating or migratory species, to hibernate or migrate; or
- to affect significantly the local distribution or abundance of the species to which they belong.

1.3.3 Under the Wildlife and Countryside Act 1981(as amended) it is illegal to:

- intentionally or recklessly disturb any otter while it is occupying a structure or place which it uses for shelter or protection;
- intentionally or recklessly obstructs access to any structure or place used by an otter for shelter or protection; and,
- sell, offer or expose for sale any otter.

1.3.4 A Natural Resources Wales licence would be required for any works likely to constitute an offence in respect to otters.

b) Water Vole Legislation

1.3.5 The water vole is listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), for which the following are offences:

- Intentional killing, injuring or taking;
- Intentionally or recklessly damaging/destroying a place of shelter/protection;
- Intentionally or recklessly disturbing an animal in its place of shelter/protection;
- Intentionally or recklessly obstructing access to its place of shelter/protection; and,
- Possession (live or dead, including derivatives), sale and offering for sale.

1.4 Quality Assurance

1.4.1 This survey and subsequent report was undertaken in line with AECOM's Integrated Management System (IMS). Our IMS places great emphasis on professionalism, technical excellence, quality, environmental and Health and Safety management. All staff members are committed to establishing and maintaining our certification to the international standards BS EN ISO 9001:2008 and 14001:2004 and BS OHSAS 18001:2007. In addition, our IMS requires careful selection and monitoring of the performance of all sub-consultants and contractors.

1.4.2 All AECOM Ecologists who worked on this Project are members of (at the appropriate level) the Chartered Institute of Ecology and Environmental Management (CIEEM) and follow their code of professional conduct (CIEEM, 2013) when undertaking ecological work.

2. Methodology

2.1 Desk study

2.1.1 The objective of the desk study is to review the existing information available in the public domain concerning species and habitats to identify the following:

- Internationally and nationally designated sites for otter and water vole, up to 2 km from the Site using the Multi Agency Geographic Information for the Countryside (MAGIC) website (www.magic.gov.uk);
- Otter and water vole records and records of locally designated sites for otter and water vole up to 2 km from the Site, using the South East Wales Biodiversity Records Centre (SEWBReC);
- The Section 7 list of Principal Importance for Conservation of Biological Diversity in Wales was reviewed for inclusion of otter and water vole; and,
- Aerial photographs and Ordnance Survey (OS) maps were reviewed to identify features of ecological interest surrounding the Site, nearby areas of ecological interest and features connecting these habitats (hedgerows, watercourses, railway lines).

2.1.2 The reports of previous surveys undertaken by BSG Ecology were provided by the client and were reviewed.

2.2 Otter Survey

2.2.1 The Phase 1 Habitat map (Appendix 8.1) and OS mapping were used to identify watercourses within the Project Site boundary and within a 100 m radius of the Project Site boundary.

2.2.2 Surveys for otter were conducted by AECOM ecologists on 18 July 2017 under suitable weather conditions. A detailed visual search of the watercourses within the otter survey area was undertaken.

2.2.3 Searches for otter activity were undertaken following guidance provided in Monitoring the otter *Lutra lutra* (Chanin and Smith, 2003). The survey methodology involved recording all evidence of otter activity, which is detailed below.

- Holt entrances – holes characteristically in river banks or under tree roots at river edges.
- Couch – typically an above-ground nest-like structure used as a resting place;
- Footprints – five toes which arch around the front of a large pad. In soft ground claw marks and webs between toes may show. Often seen in sand or soft mud deposits along rivers and under river bridges;
- Otter trails through vegetation – otters use the same routes within their territory to access rivers, so the paths are usually worn leading down the banks to the

river and may have a ‘slide’ at the end of well-worn mud as they slide into the water;

- Spraint – found in prominent locations adjacent or along a river, for example on tree stumps, large rocks and ledges under bridges. Sometimes otters may build a ‘castle’ of soft mud or sand along a river to spraint on top of. Spraints are made up of clearly visible fish bones and scales, with some other small bones, fur, feather and insect fragments sometimes present. Fresh spraint is usually black, tarry and sticky. It has a distinctive sweet-musky odour, which is not unpleasant;
- Anal jelly – a jelly-like secretion that smells strongly of otter and can vary in colour from pale brown, greenish to amber; and
- Other signs – for example, occasionally remains of dead otters can be seen on roads.

2.3 Water Vole Survey

2.3.1 The Phase 1 Habitat map (Appendix 8.1) and OS mapping were used to identify watercourses within the Project Site boundary and with a 100m radius of the Project Site boundary.

2.3.2 Surveys for water vole were conducted by AECOM ecologists on two separate visits on the 28th June 2017 and 29th September 2017. This is to allow for variations in habitat suitability across the season and because water voles are increasingly being shown to utilise different areas at different times of year. A detailed visual search of the watercourses within the water vole survey area was undertaken.

2.3.3 The survey methodology used was in accordance with the Water Vole Conservation Handbook (Strachan and Moorhouse, 2011). This consisted of identifying the extent and distribution of water vole through searches of both banks (where possible) of watercourses for field signs indicating recent activity (i.e. feeding stations and latrines), as well as signs of past and potentially present activity (i.e. burrows). Where conditions allowed, a surveyor walked in the watercourse channel to check for field signs along the water’s edge.

2.3.4 The survey methodology involved recording all evidence of water vole activity, which is detailed below.

- Faeces – these are 8 – 12mm long and 4 – 5mm wide, with a smooth ‘tic tac’ like shape, varying in colour from green to black, and odourless with a putty-like texture;
- Latrines – found throughout the territory, often comprising a pile of flattened droppings, with fresh droppings on top, used to mark range boundaries or favoured spots close to burrows;
- Feeding stations – comprise a neat pile of chewed feeding remains, often comprising lengths of vegetation up to 10cm long, showing the marks of the two large incisors;
- Burrows – these are typically wider than they are high, with a diameter of 4 – 8cm, and are usually located along the water’s edge;

- Lawns – around burrows there is often an area of grazed vegetation, surrounded by taller vegetation, these are most often produced when the female is nursing young;
- Nests – these comprise a large ball of shredded material, often woven into the bases of rushes and reeds, and are normally found in areas where the water table is high, such as wetlands;
- Footprints – as with other rodents, the footprints of the fore foot, show four toes in a star arrangement, with the hind foot showing five toes. The size of footprints for the hind foot is 26-34mm; and,
- Runways – these are low tunnels within the vegetation, often adjacent to the water's edge; and

2.3.5 The presence of water vole can also be confirmed by sightings and from the characteristic 'plop' of the water vole entering the water, which acts as a warning to other voles.

2.3.6 Latrines are indicators of territorial behaviour, which in turn generally correlates with water vole breeding activity. For the presentation of water vole distribution data, sections of the ditch where latrines were identified would be illustrated as "Breeding Activity", and sections of the ditch where evidence other than latrines was identified would be illustrated as "Non-Breeding Activity".

2.4 Limitations

2.4.1 Biological records can be received from a wide variety of sources and may or may not be comprehensive and accurate. However, if assessed in conjunction with a survey, they can contribute to a robust ecological assessment of a site.

2.4.2 There was heavy rain the night before the second survey on the 29th September 2017 which had the potential to wash away spraint or faeces evidence.

2.4.3 Two watercourses (Afon Llan and a tributary of the Afon Llan) were not accessible at the time of survey due to dense vegetation obscuring the view of the banks, and land access permissions. These watercourses were partially viewed and were assessed as having suitability to support both species. There is potential for signs of both species to have gone unrecorded.

3. Baseline Environment

3.1 Desk Study Results

3.1.1 The designated habitats, sites and features within proximity to the Project Site are listed in Table 1.1 below.

Table 3.1: Desk Study Results

Designation / Feature	Description
Nationally and Internationally Designated Sites within 2 km	There are no national or international sites designated for otter or water vole within 2 km of the Project Site boundary.
Locally Designated Sites within 2 km	There are no local sites designated for otter or water vole within 2 km of the Project Site boundary.
Otter and water vole Records from the last 10 years within 2 km	There are two records of otter approximately 1km south of the Project Site boundary one located between the Afon Llan and Nant y Gors watercourses and one from the Afon Llan. There are no records of water vole from with 2 km.
Priority Species – Listed on The Environment Act (Wales) 2016 Section 7	Otter and water vole are both listed in the Environment Act (Wales) 2016 Section 7.
Surrounding Land Use	The Site is located to the north of Junction 46 of the M4 Motorway close to the village of Felindre, Swansea. The Site has agricultural fields to the east, south and north. Areas of woodland are located to the south, east and west of the Site. Afon Llan runs adjacent the southern Site boundary. Areas of the National Grid Power Station with associated roads and buildings are partially within and adjacent to the Site boundary. A water treatment works is located in the north-west outside of the Site boundary.
Ponds within 500m	OS mapping shows 25 Ponds within 500m of the Site Boundary, three of these (Ponds 16, 22 and 23) are within the Site boundary: • Ponds 1 – 8: Located near to wastewater treatment works approximately 350m west. Connected to the Site via woodland and grassland. Outside of the otter and water vole survey area; • Ponds 9, 10 and 21: Located approximately 350m east and connected to the north-east tip of the road boundary via grassland. Outside of the otter and water vole survey area; • Pond 11: Approximately 210m west of the Site boundary and connected to the Site via grassland and scrub. Outside of the otter and water vole survey area; • Ponds 12 – 14 and 18: Located approximately 450m east and connected to the Site via woodland and grassland. Outside of the otter and water vole survey area; • Pond 15: Located approximately 130m north and connected to the Site via woodland and grassland. Outside of the otter and water vole survey area; • Pond 16: Within the Site boundary, dry during the Phase 1

Designation / Feature	Description
	Habitat Survey. Not suitable for otter or water vole as dry; • Pond 17: Located approximately 200m west and connected to the Site via woodland, grassland and scrub. Outside of the otter and water vole survey area; • Ponds 19a and 19b: Approximately 400m north and connected to the Site via grassland. Outside of the otter and water vole survey area; • Pond 20: Approximately 450m north, connected to the Site via grassland. This pond was identified as dry in 2017. Outside of the otter and water vole survey area; • Pond 22: Within the Site Boundary. Included within the otter and water vole survey area; • Pond 23: Within the Site Boundary and identified during the Phase 1 Habitat Survey.. Included within the otter and water vole survey area ; and, • Pond 24: Approximately 150m north within the garden of Pen-y-Waun Fach Cottage. The pond is connected to the Site via grassland and woodland. Outside of the otter and water vole survey area.
Previous Surveys undertaken by BSG Ecology	An otter spraint was identified during the previous surveys (ES Appendix 8.14), the location of which is approximately 500m east of the Project Site boundary and the watercourse on which it was found flows through the Project Site. Holes, that were likely to be mammal burrows, were observed. The holes have the right dimensions to allow use by water voles but did not show signs of current occupation. No latrines, footprints or grazing lawns were observed during the survey (ES Appendix 8.14).

4. Otter and Water Vole Survey Results

4.1.1 The results of the otter and water vole survey are given in Table 1.2, Table 1.3 and Table 1.4. Figure 1.1 shows the watercourses and ponds surveyed, their suitability to support otter and water vole and the reference numbers listed below as part of the survey notes. Photographs (Plates) referenced, can be found below Table 1.4.

Table 4.1: Otter and Water Vole Survey Results – Culverts, Mammal Burrows, Mammal Trails,Spraints

Number	Notes
1	Push under likely used by fox or badger.
2	Culvert.
3	On watercourse 43: burrows; no evidence of current occupancy; could be water vole or brown rat. Water level too high in September to be suitable.
4	Couch-type hole, extends back 0.5m; no worn muddy trail leading to/from entrance, but vegetation is trampled. Plate 1.1.
5	Spraints and a possible otter footprint identified on Pond 19 during the great crested newt surveys in May 2017. Outside of otter survey area. Plate 1.2.

Table 4.2: Otter and Water Vole Survey Results – Mammal Trails

Number	Notes
1	Mammal trail, moderately well-used.
2	Mammal trail.

Table 4.3: Otter and Water Vole Survey Results – Watercourse Features

Watercourse Feature	Potential	Notes
1	Unsuitable	Unsuitable for otter, although it has water vole potential (rushes & steep bank) it is completely isolated and was dry during the survey; no fish; overgrown next to photovoltaic farm.
2	Unsuitable	Accessible by livestock and had no banks, and no food sources; low water level (1cm) during the survey, and is likely to dry. Leads to culvert under road. Plate 1.3.
3	Unsuitable	No banks; livestock can access; low water level.
4	Unsuitable	Partially shaded, with no banks; livestock can access; low water level. Section to south fences with heavy bramble and tree cover; steep tall banks; no food sources.
5	Unsuitable	Dry at northern 1/3; heavily shaded; access impeded by bramble; wet for southern 2/3rds but 1 cm – 5 cm deep.
6	Suitable	Suitable for otters only. Steep, shaded banks; unsuitable for water vole; water up to 5cm deep; some commuting

Watercourse Feature	Potential	Notes
		potential for otter or couch creation, but limited; no food source.
7	Not accessible	Not accessible, very dense vegetation; steep-sided stream/ravine. Unlikely to be suitable for water vole due to lack of food source.
8	Unsuitable	Very densely vegetated and shallow stream.
9	Not accessible	Unable to survey.
10	Suitable	Suitable for otters only, not water vole; dense vegetation and shaded.
11	Suitable	Suitable for otters only; unsuitable for water vole ; some commuting potential for otter or couch creation, but limited; no food source. Heavily shaded by dense woodland, not always accessible/viewable. Plate 1.4.
12	Suitable	Suitable for otters only. Wooded, heavily shaded; unsuitable for water vole; some commuting potential for otter or couch creation, but limited; no food source.
13	Not accessible	Unable to survey.
14	Suitable	Suitable for otters only. Heavily shaded, dense vegetation - woodland; running water; some commuting potential for otter or couch creation; unsuitable for water vole.
15	Not accessible	Not fully accessible, viewed from west end only. Wide watercourse, deep water. Dense vegetation in some areas; good otter potential for foraging, commute and holt/couch creation. Burrows; no evidence of current occupancy; could be water vole or brown rat. . Plate 1.5.
16	Unsuitable	Heavily shaded; little/no water; no food sources.
17	Unsuitable	Heavily shaded, shallow and narrow; no food sources.
18	Unsuitable	Heavily shaded, shallow and narrow; no food sources.
19	Unsuitable	Heavily shaded, shallow and narrow; no food sources.
20	Unsuitable	Completely shaded drain.
21	Unsuitable	Almost dry drain.
22	Unsuitable	Heavily shaded, shallow <1cm water, rocky banks; no food sources. Viewed from the National Grid access road.
23	Not accessible	No land access agreement in place.
24	Not accessible	No land access agreement in place.
25	Unsuitable	Heavily shaded and shallow; unsuitable for otter or water

Watercourse Feature	Potential	Notes
		vole.
26	Unsuitable	Dry; unsuitable for otter or water vole.
27	Suitable	Suitable for otters only. Low water quality, lots of brown algae; livestock can access; some limited commuting potential for otter- sub-optimal.
28	Suitable	Suitable for otters only. Fenced; wooded and shaded; some commuting potential for otter and couch creation; unsuitable for water vole. Majority not viewable due to woodland.
29	Suitable	Suitable for otter commuting only; unsuitable for water vole.
30	Unsuitable	Shallow ditch.
31	Unsuitable	Heavily shaded ditch.
32	Unsuitable	Dry at the time of survey.
33	Suitable	Soft rush abundant, steep muddy banks; shallow water July (10cm max); no fish; limited water vole potential; otter unlikely.
34	Suitable	Suitable for otters only. Ditch dry in July; wet in September and suitable for occasional commuting otter only.
35	Suitable	Suitable for otters only. Ditch dry in July; wet in September and suitable for occasional commuting otter only.
36	Suitable	Suitable for otters only. Suitable for occasional commuting otter only.
37	Unsuitable	Peat cutting.
38	No watercourse	Dry, no watercourse.
39	Unsuitable	Pooling of water into field at western end, no ditch along rest of boundary.
40	Unsuitable	Heavily shaded, shallow water, no food resources.
41	Suitable	Suitable for otters only, unsuitable for water vole; dense vegetation and shaded.
42	Unsuitable	Heavily shaded woodland, unsuitable for water vole; some commuting potential for otter or couch creation, but limited; no food source. No access due to vegetation.
43	Suitable	Wide watercourse, deep water. Dense vegetation in some areas; good otter potential for foraging, commute and holt/couch creation. Burrows; no evidence of current occupancy; could be water vole or brown rat. ; unfenced sheep either side will reduce suitability.
44	Unsuitable	No potential.
45	Suitable	Suitable for otters and water vole in the less shaded areas;

Watercourse Feature	Potential	Notes
		wooded and reasonably deep water.
46	Not accessible	Unable to survey.

Plate 4.1: Photographs of couch-type hole (Feature 1)

Plate 4.2: Photographs of spraints and a possible otter footprint from May 2015 (Feature 5)

Plate 4.3: Photographs of Watercourse Feature 2, unsuitable for otter and water vole

Plate 4.4: Photographs of Watercourse Feature 11, suitable for otter and unsuitable for water vole

Plate 4.5: Photographs of Watercourse Feature 15, suitable for otter and limited suitability for water vole

5. Conclusions

5.1 Otter

5.1.1 A total of thirteen watercourses within the otter survey area were suitable for supporting commuting otter and two watercourses were suitable for supporting foraging otter, holt and couch creation. One potential couch was identified with a trampled vegetation track leading to it which suggested occasional use by a mammal. Two mammal tracks were identified; these may have been fox or another mammal. No spraints, holts, footprints, anal jelly or other signs were identified during the surveys.

5.1.2 Due to the confirmed presence of otter upstream from the Project Site in 2015 and the presence of spraints and a footprint from a nearby pond in May 2017 it can be concluded that otters are still active in the locality. As such it is likely that otters use the suitable watercourses (numbers 10, 11, 12, 14, 15, 41, 43 and 45) within the otter survey area and Project Site boundary for occasional forging, commuting, resting and holt creation (although no evidence of holts was identified during the survey).

5.2 Water Vole

5.2.1 Four watercourses that had potential for supporting water vole were recorded within the water vole survey area (15, 43, 46 and 48). Two of these (15 and 45) had limited potential for water vole due to the relative isolation of these watercourses within the landscape (i.e. not connected to watercourses with potential to support water vole). However, it should be noted that some watercourses could not be adequately surveyed due to dense vegetation and therefore signs may have been missed. Burrows suitable for water vole were found (watercourses 15 and 43) but there was no evidence of current occupancy. It was therefore not possible to determine if the burrows had been excavated by brown rat or water vole. There were no records of water vole from SEWBReC, and it appears likely that water vole are absent from the water vole survey area.

5.3 Recommendations

a) Recommendations for Further Surveys

5.3.1 A full assessment of required further surveys has been made during EcIA and reported in the ES. At this stage the following recommendations have been made:

- Due to the time that would have elapsed between the otter and water vole survey and the proposed construction start date it is recommended that a pre-construction survey for otters and water voles is undertaken on suitable watercourses to check for activity or any newly created holts or couches, or burrows. The survey will focus on watercousres and water bodies likely to be impatcted by the propsed works.

b) Recommendations for Mitigation

5.3.2 A full series of recommendations for mitigation at construction and operation has been undertaken for the EcIA and reported in the S. Further recommendations may be made as a result of the outcome of the pre-construction survey. At this stage the following key recommendations have been made:

- An exclusion area of 100 m will be established around any newly identified otter holts and resting places prior to works commencing and further advice will be sought from Natural Resources Wales.
- An exclusion area of 10 m will be established around any newly identified owater vole burrows prior to works commencing and further advice will be sought from Natural Resources Wales.
- Access to open-water habitats must be safeguarded at all times; effects to newly identified established otter paths and traditional routes between such areas (such as field drains) during the construction phase should be minimised.
- Habitat loss should be compensated – particularly key habitat types for the species.
- A buffer should be in place during construction to prevent pollution and/or run off into the watercourses/water bodies.

c) Recommendations for Biodiversity Enhancement

5.3.3 A full series of recommendations for biodiversity enhancement has been made during the EcIA and reported in the ES. Further recommendations may be made as a result of the outcome of the pre-construction survey. At this stage the following precautionary recommendations have been made:

- Habitat restoration or enhancement works.

6. References

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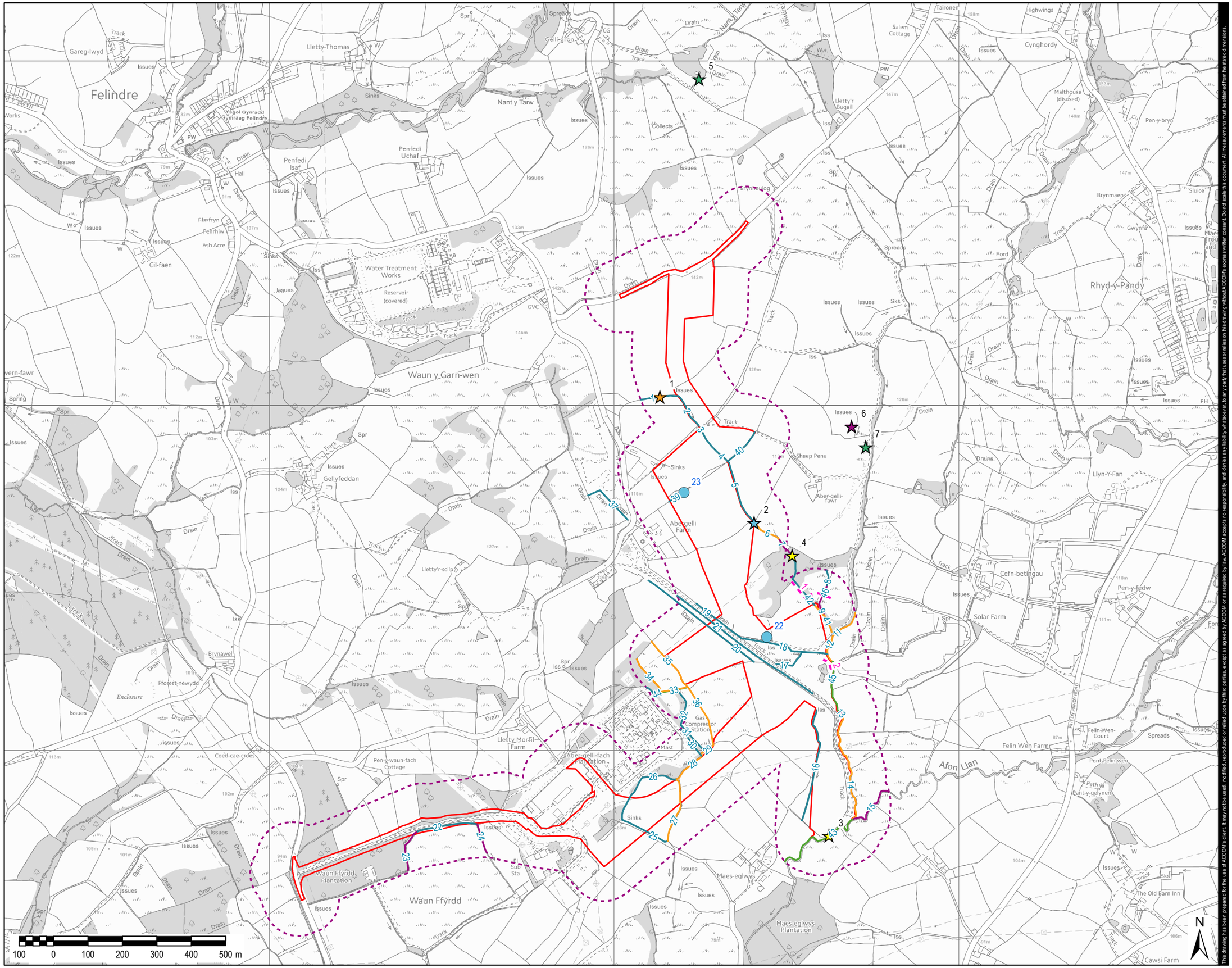
Figure 1.1 Otter and Water Vole Survey Area and Survey Results



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AECOM Limited
1 Callaghan Square
Cardiff, CF10 5BT
+44 (0)29 2067 4600 tel
www.aecom.com

Project Title:

ABERGELLI POWER PROJECT

Client:

ABERGELLI POWER LTD.

LEGEND

- Ponds
- Culvert
- Mammal Burrow
- Mammal Trail
- Otter Holt/Resting Place
- Spraint
- Not accessible
- Suitable
- Suitable - Otter Only
- Unsuitable
- Mammal Trail
- Otter and Water Vole Survey Area
- Project Site Boundary

AECOM Internal Project No:

60542910

Drawing Title:

OTTER AND WATER VOLE SURVEY

Scale at A3: 1:10,000

Drawing No:			Rev:
FIGURE 1.1			002
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GM	CC	CA	02/05/18

Appendix 8.11

Badger Survey Report

CONFIDENTIAL

Appendix 8.12

Arboriculture Survey Report 2014

PARSONS BRINCKERHOFF

November 2014

ABERGELLI POWER PROJECT

BS5837 ARBORICULTURE SURVEY REPORT

Abergelli Power Ltd

Applicant Reference: 287521A

PINS Reference: EN010069

Regulation: EIAR & r5(2)(a)

Abergelli Power Project

BS5837 Arboriculture Survey Report

Applicant Reference: 287521A
PINS Reference: EN010069
Regulation: EIAR & r5(2)(a)

Prepared for
Abergelli Power Ltd
49 York Place
Edinburgh
EH1 3JD

Prepared by
Parsons Brinckerhoff
29 Cathedral Road
Cardiff
CF11 9HA
www.pbworld.com

www.pbworld.com

CONTENTS

1 INTRODUCTION

1.1 Overview

1.1.1 Parsons Brinckerhoff has been commissioned by Abergelli Power Ltd (ALP) to undertake a BS5837: 2012 "Trees in Relation to Design Demolition and Construction – recommendations" (BS5837) arboriculture survey in relation to the proposed 299MW gas-fired 'peaking' plant at Abergelli Farm Felindre, near Swansea (hereafter referred to as 'the Project').

1.2 Context

1.2.1 The Arboriculture Survey Report is required in support of an application for Development Consent as an Appendix to the Environmental Statement (ES) for the Project.

1.3 Purpose

1.3.1 The purpose of this report is to assess all qualifying trees, groups of trees, hedges and woodland (individuals with a stem diameter of at least 75mm measured at 1.5m above ground level) within the survey areas (identified as "project site" within the Tree Constraints Plan at appendix D)and those where the Root Protection Areas (RPA) may be affected by the Project as defined in BS5837

1.3.2 Parsons Brinckerhoff Ltd carried out the BS5837 Arboriculture Survey between 17th and 19th September 2014 and on 18th November 2014.

1.4 Planning and Legislative Context

1.4.1 This report has been carried out in accordance with the most recently published (30th April 2012) BS5837 which updates the previous BS5837 of 2005 by:

- Taking account of current practice regarding planning for the management, protection and planting of trees in the vicinity of structures, and for the protection of structures near trees;
- Updating the guidance in relation to building regulations; and
- Recognising the contribution that trees make to climate change adaptation.

1.4.2 Trees are a material consideration in the UK planning system, and existing trees are an important factor on construction sites, whether on or near the working areas. BS 5837 2012 Arboriculture reports are intended to assist decision-making, by ensuring consideration is given

to existing and proposed trees in the context of design, demolition and construction.

1.4.3 The primary source of protection afforded to trees is through the application of Tree Preservation Orders (TPO) as part of the Town and Country Planning (Tree Preservation) (England) Regulations 2012 which came into effect on April 6th 2012. There are two offences under this Act:

- in contravention of tree preservation regulations: cut down, uproot or wilfully destroy a protected tree; or to damage, top or lop it wilfully in such a manner as to be likely to destroy it; or to cause and permit any such activity; and
- to carry out any other works in contravention of tree preservation regulations.

1.4.4 It has been confirmed that there are no tree preservation orders with the survey site.

1.4.5 In recent years greater weight has been added to the protection of ancient and veteran trees within our landscape. This is reflected in the recent update to Planning Policy Wales which states “Ancient and Semi Natural woodlands are irreplaceable habitats of high biodiversity value which should be protected from development that would result in significant damage” (paragraph 5.2.9).

1.4.6 The Forestry Act of 1967 requires any person wishing to fell trees to apply for a felling licence before those works are undertaken. There are many exemptions to this requirement that often reflect good forest and woodland management and other exemptions that may be reasonably expected such as dead, diseased or dangerous trees. Exemptions are also afford to works required to facilitate planning consent

2 METHODOLOGY

2.1 Survey

2.1.1 The trees on the survey site qualifying for survey were inspected and classified, by a competent arboriculture consultant with regard to BS5837. The trees were classified in accordance with BS5837: 2012 tree quality assessment categories A, B, C and U, as set out in Table 1 and 2 of the British Standard. Qualifying trees are defined as individual trees with a stem diameter of at least 75 mm measured at 1.5 m above ground level.

2.1.2 All trees within the survey site were inspected from ground level using the Visual Tree Assessment (VTA) method. VTA assessment is a non-invasive method for ascertaining the physiological and structural condition of trees. The method requires the use of a Thor 10 nylon acoustic mallet, and a wire probe.

2.1.3 The VTA was undertaken on the above ground portion of the trees. No aerial inspection, sampling, or excavations for the purpose of soil or root analysis were undertaken. Binoculars were used to inspect the upper parts of the tree canopy from ground level, if required.

2.1.4 To allow the assessment of trees on site to be completed in a practicable way and to best reflect the tree population on site, where trees formed groups either aerodynamically, through mutual support or by forming a screen or other such feature they have been recorded as such. This is a widely used method and is supported by Section 4.4.2.3 of BS 5837: 2012.

2.2 Survey Limitations

2.2.1 Trees are large dynamic organisms, influenced by a variety of environmental variables, whose health and condition can change rapidly. Due to the changeable nature of trees and other site and environmental considerations which may influence the trees, this report, and any recommendations made within it are valid for a period of 12 months from the date of the site survey (November 2014).

2.2.2 Although comments and recommendations on the safety of particular trees may have been made, this survey is not a tree hazard assessment and should not be used as such.

2.2.3 Any management recommendations have been made in accordance with BS 3998: 2010 “Tree Works – Recommendations” and industry best practice. Works have been recommended in accordance with any statutory obligations owed by the land owners or occupiers.

2.2.4 All areas have the potential to support protected species. This survey did not include an ecological survey of the vegetation and habitat areas.

3 RESULTS

3.1 Overview

3.1.1 None of the trees within the survey site were found to be of such poor condition that urgent remedial work was required.

3.1.2 The hedge recorded as part of this survey was not made the subject of detailed assessment for their importance in relation to the Hedgerow Regulations.

3.2 Site Context

3.2.1 Many of the trees within the survey site were of reasonable but not outstanding quality. Due to the relatively low hedges and open field systems mature trees are locally prominent in the landscape.

3.2.2 The following features were recorded during the survey and recorded in the Tree Survey Schedule in Appendix A and plotted on the Tree Constraints Plan in Appendix D:

- Woodlands 1 and 2;
- Groups 1 to 6;
- Hedge 1; and
- Trees 922 to 924.

3.2.3 Where access was not possible, trees were listed as A to C. These trees were not tagged and stem diameters were estimated using neighbouring trees as a reference.

3.3 Notable Features

3.3.1 Woodland 1 is designated as Ancient Woodland and a Site of Importance for Nature Conservation (SINC). It is relatively open woodland with birch as the dominant species in most areas. Many of the birch trees are in full maturity and will start to decline over the next 20 to 30 years. This is due to the fungal pathogen *Piptoporus betulinus* (birch strop fungi) which is dormant in birch trees for most of their life becoming active when the tree suffers a wound or bark lesion. The fruiting body of this fungi is clearly visible on many of the birch within this woodland. It is important to note that the decline of the birch within the woodland is not a sign of ill health or poor quality within the woodland. The decline of the birch will make way for the oak and ash within the woodland to succeed and form woodland with greater longevity.

3.3.2 Woodland 2 to the south of the National Grid Access Road is designated as Ancient Woodland and a SINC. However, it is of relatively low quality with the oldest individuals within the woodland being no more than 80 or 90 years old and the majority being under 50 years old. The woodland would benefit from management and creation of a more structured woodland edge.

3.3.3 The trees to the north of the National Grid Access Road at this location (within Group 1) are also located within Ancient Woodland and a SINC. They are of greater quality individually than those within the Woodland 2 and when considered as parts of the hedge form a linear feature providing connectivity east to west. The existing National Grid Access Road extends in places to almost 2 m under the saplings, bramble and leaf litter that has accumulated at the edge of the clear area.

3.3.4 Many of the individual trees on site such as those within groups 5 and 6 have grown from former hedge lines or are formed from outgrown hedge trees. Browsing by horses has caused bark damage in some areas.

3.3.5 Groups 3, 4 and 6 will require pruning and in some cases minor felling to allow construction traffic pass safely without causing damage to the vehicles or vegetation. Pruning should be carried out in accordance with Section 154 of the Highway Act 1980 to a height of 5.2m above the carriage way. These works are not considered to be a significant impact.

4 CONCLUSION

4.1.1 The presence of trees on the Project Site is not considered to be an obstruction to the Project. Careful consideration of trees at all stages of the development process will ensure that existing trees of high retention value are retained and protected throughout the Project. Suitable mitigation for any tree loss should be designed into the Project from the outset.

4.1.2 The Tree Constraints Plan (TCP), in Appendix D, will be used as a tool to inform the Project design, the practicalities of implementing the Project throughout construction and the final landscaping / mitigation planting.

4.1.3 Table 1 of BS 5837 (shown in Appendix B) defines Category C trees as “Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm”. With this point in mind, Category C trees can potentially be removed if suitable justification is given and appropriate mitigation provided.

4.1.4 British Standard 5837 provides a specification for protective fencing as shown in Appendix C. Although this fencing is perfectly suitable for individual significant trees it is not always practical for large areas of fencing. With this in mind it is recommended that for large areas fencing constructed of wooden post and netting with appropriate signage may be used.

APPENDIX A

TREE SURVEY SCHEDULE

APPENDIX B

BS5837 2012: TABLE 1

Table 1 **Cascade chart for tree quality assessment**

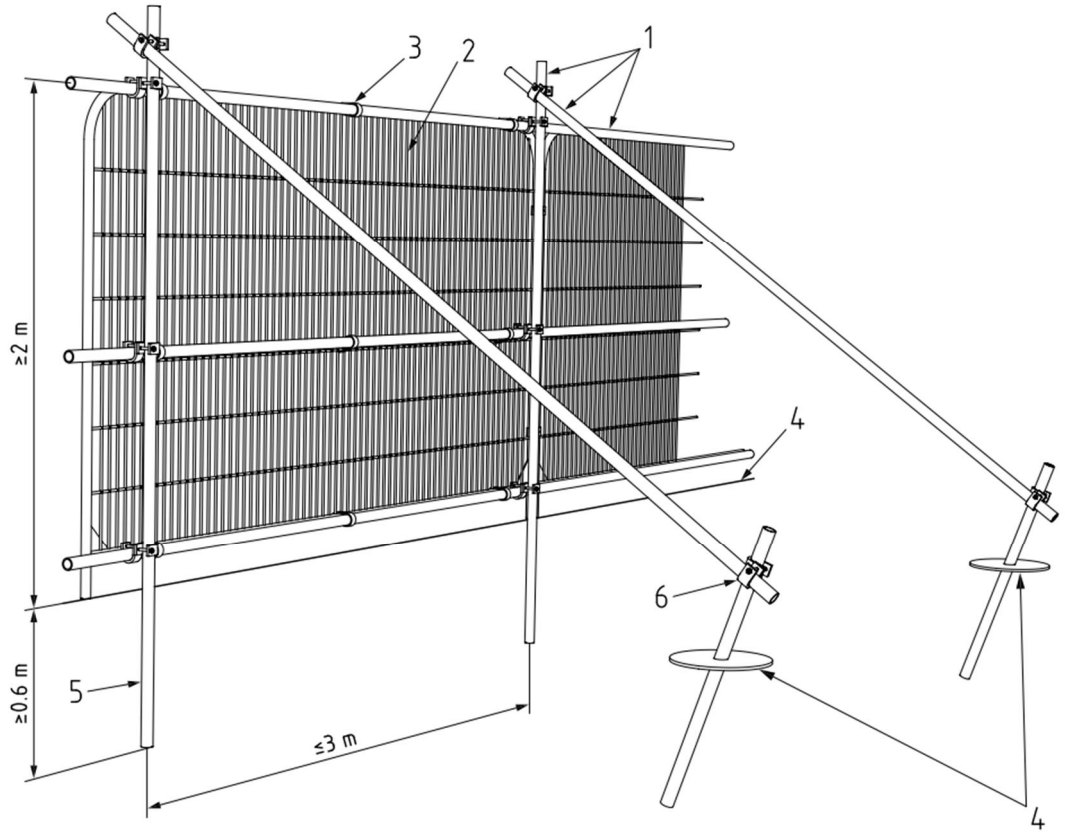
Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see **4.5.7**.*			See Table 2
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
Trees to be considered for retention				
Category A **Trees of high quality** with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	See Table 2
Category B **Trees of moderate quality** with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	See Table 2
Category C **Trees of low quality** with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	See Table 2

4.1.5

APPENDIX C

BS5837 2012: FIGURE 2

Figure 2 **Default specification for protective barrier**



Key

1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

APPENDIX D

BS5837 2012: TREE CONSTRAINTS PLAN

APPENDIX A

TREE SURVEY SCHEDULE

Tree	Species	Height	Diameter	RPA	N	S	E	W	1st Branch	Canopy Ht	Age	Years	Category	Observation /Recommendations
G1	Oak, Ash, Thorn, Hazel, Holly, Willow, Birch, Sycamore	15	250	3	>	>	>	>	0	0	Mature	40+	B2	Access track to sub station through group, Occasional Buddleia, reasonable quality with good clearance over road.
W1	Birch, Oak, Ash,	15	400	4.8	>	>	>	>	2	20	Mature	40+	B2	Reasonably open woodland with predominantly Birch. Most trees at 4m apart. Some evidence of burrowing animals.
G2	Oak, Willow, Ash, Thorn	10	200	2.4	>	>	>	>	0	0	Mature	40+	B2	Predominantly hedge with elements of a scrubby group to the West.
G3	Oak, Ash Sycamore, Hazel, Thorn	20	500	6	>	>	>	>	0	0	Mature	40+	C2	This group consist of various mature trees adjacent to the existing access track. The trees are of average quality individually but are more significant in their amenity value to the local setting. No obvious sign of significant defect was noted at the time of survey but there was some evidence of browsing by horses. several Ash and Oak and
G4	Oak, Thorn, Willow,	12	300	3.6	>	>	>	>	0	0	Mature	40+	B2	Group of relatively minor trees and scrub bordering the existing access track. The loss of these trees would not be considered significant.
G5	Oak, Birch, Holly, Rowan	15	300	3.6	>	>	>	>	0	3	Mature	40+	B2	Grown out hedge atop a stop bank, average quality. Gappy in places.
G6	Oak, Thorn, Ash	10	250	3	>	>	>	>	0	4	Mature	40+	B2	Roadside group either side of minor road. Trees atop earth bank adjoining arable land to the south and scrub to the north, no obvious sign of significant defect. Should not be effected by proposed Project.
T922	Oak	7	225	2.7	3	5	6	3	3	4	Mature	20+	C2	Dense ivy throughout low vigour, atop roadside bank.
T923	Oak	7	300	3.6	5	5	5	5	2	2	Mature	40+	B2	Tag on post No obvious sign of significant defect.
T924	Holly	8	200	2.4	5	6	3	3	0	0	Mature	40+	C2	Grown from former hedge planting, browsed at base, multi-stem tree.
G7	Oak, Sycamore, Ash	22	450	5.4	>	>	>	>	0	0	Mature	40+	B2	Remnant woodland edge. Non inspected in detail due to access issues at the time of survey. Provides partial screen between arable land and existing sub.
H1	Oak, Ash	15	400	4.8	>	>	>	>	0	0	Mature	40+	B2	Trees of various quality within field boundary, some browsing damage from horses. Stem diameter is average estimate only.
A	Oak	18	400	4.8	8	7	9	9	5	10	Mature	40+	B2	TREE IS 7M FROM BOUNDARY FENCE
B	PINE	20	500	6	5	7	4	3	6	15	Mature	40+	B2	TREE IS 5M FROM BOUNDARY FENCE
C	ASH	20	600	7.2	8	6	4	4	10	15	Early-Mature	40+	B2	TREE I2M FROM BOUNDARY FENCE
W2	Pine, Oak, Willow, Sycamore, Hazel, Birch	20	400	4.8	>	>	>	>	0		Early-Mature	40+	B2	Average but not outstanding, most growth roughly 50 years old with a few individuals reaching 90yrs.

APPENDIX B

BS5837 2012: TABLE 1

Table 1 **Cascade chart for tree quality assessment**

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see **4.5.7**.*			See Table 2
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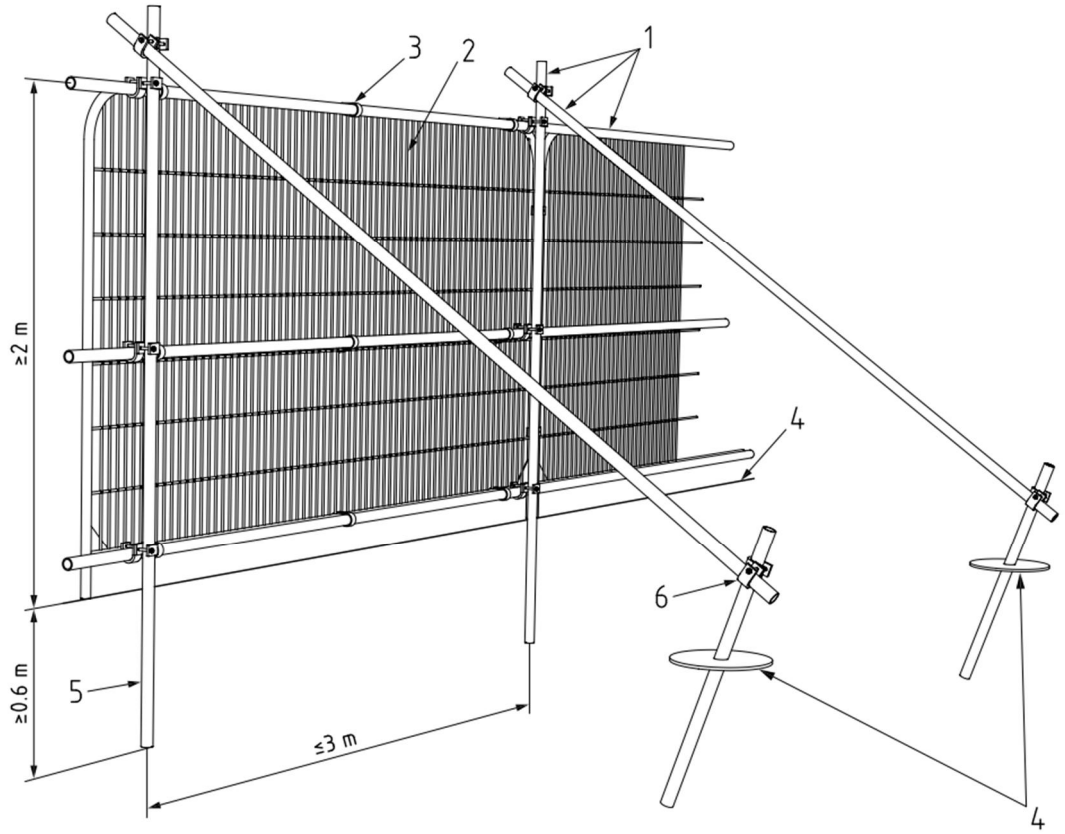
Category C **Trees of low quality** with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	See Table 2

APPENDIX C

BS5837 2012: FIGURE 2

Figure 2 **Default specification for protective barrier**

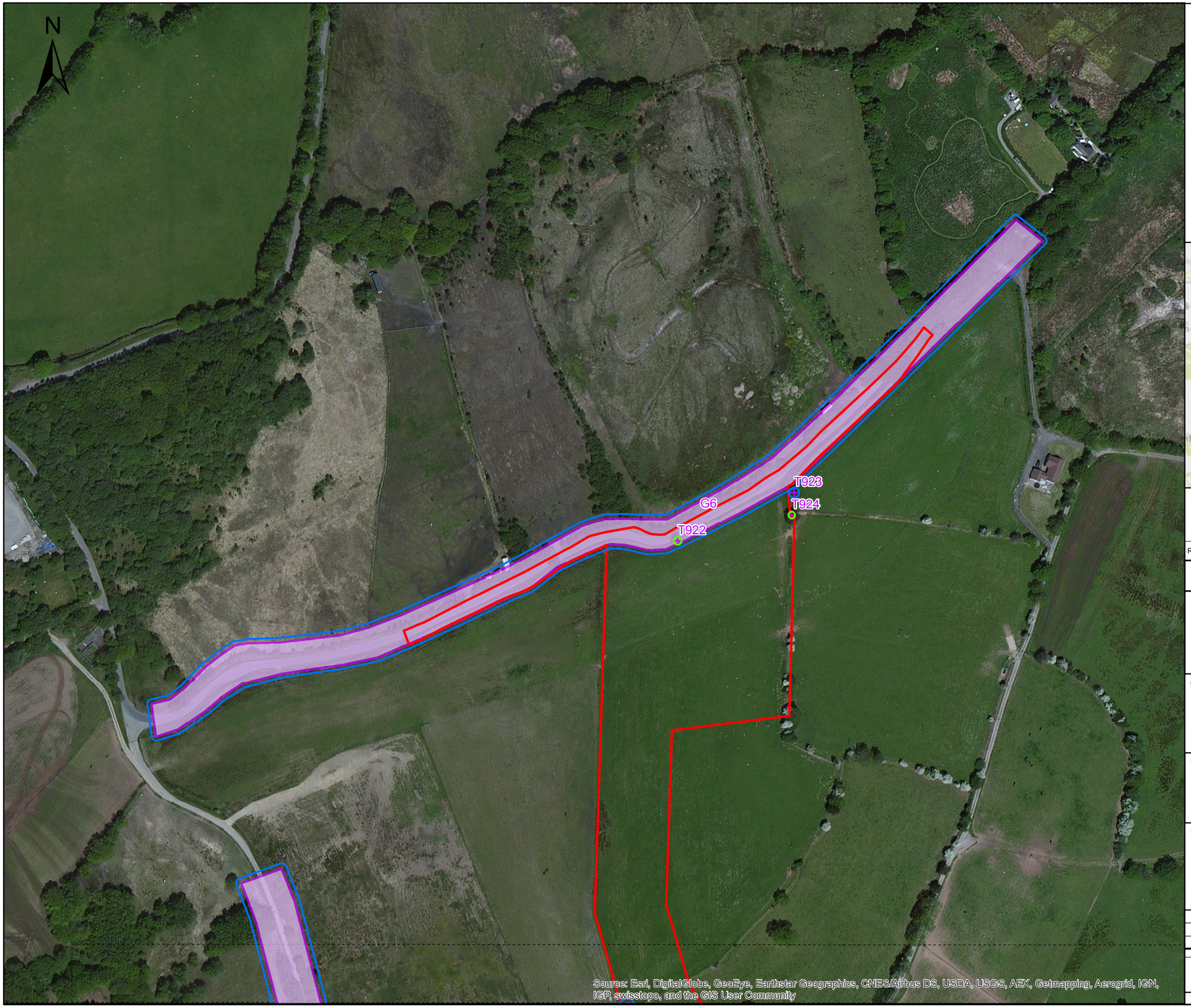


Key

1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

APPENDIX D

BS5837 2012: TREE CONSTRAINTS PLAN



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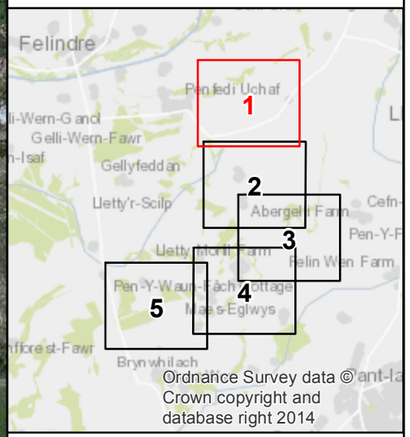
Temporary Access Road Land-take
Surveyed Tree
Surveyed Hedge
Surveyed Tree Area
Root Protection Area Category Grading
B2
C2



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6 Devonshire Square,
London, EC2M 4YE
Tel: 020 7337 1700 Fax: 020 7337 1701

Client: Abergelli power

Site/Project:
Abergelli Power Project

Title:
Tree Constraints Plan
Regulation 5(2)(l)
Sheet 1 of 5

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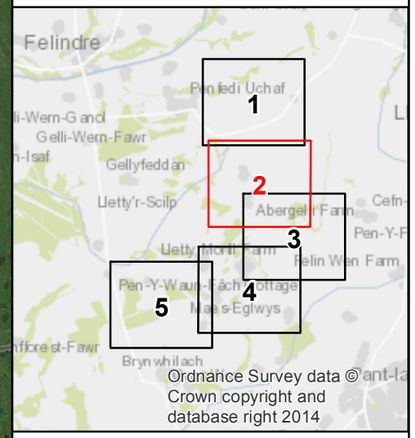
Temporary Access Road Land-take
Surveyed Tree
Surveyed Hedge
Surveyed Tree Area

Root Protection Area Category Grading
B2
C2



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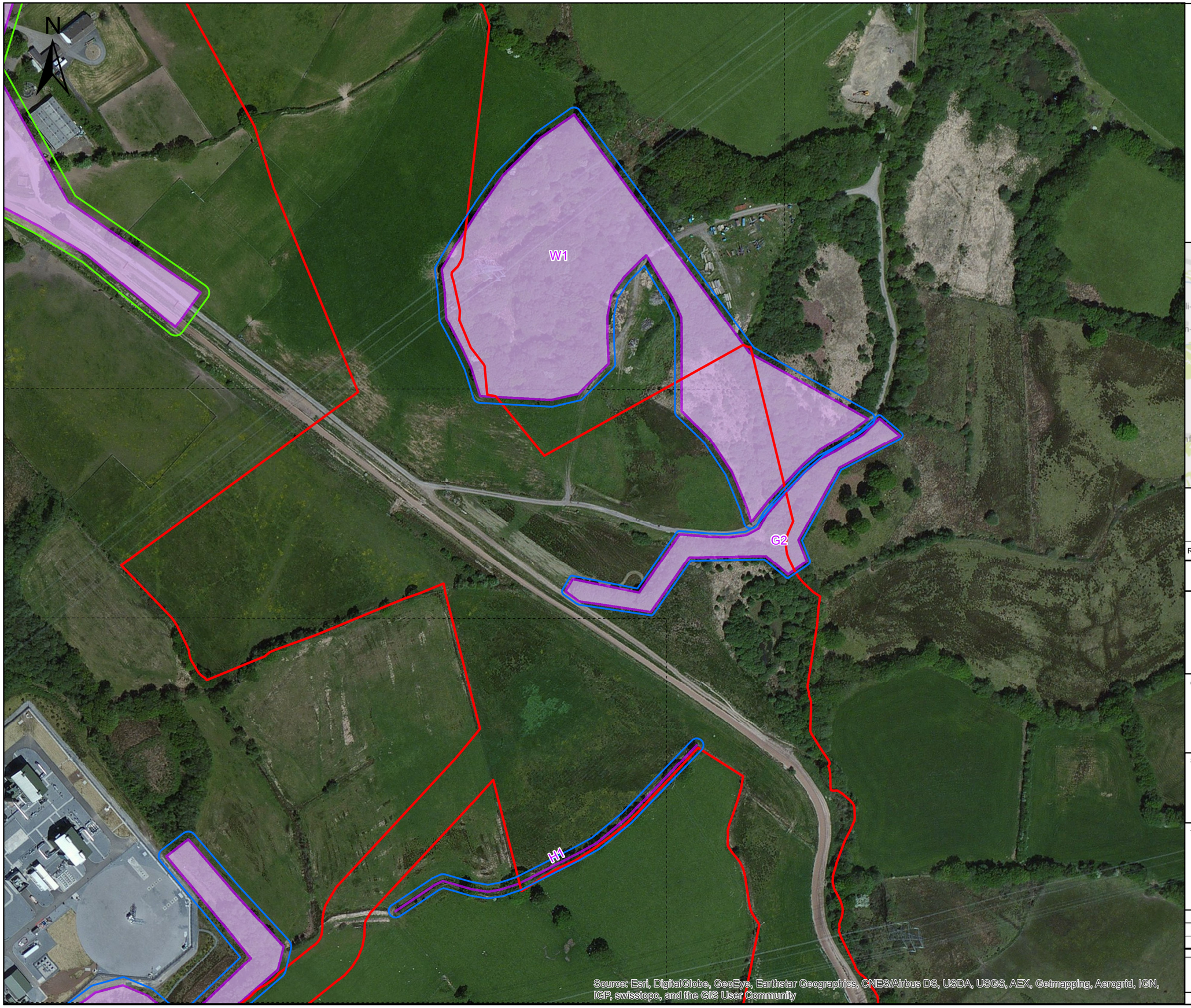

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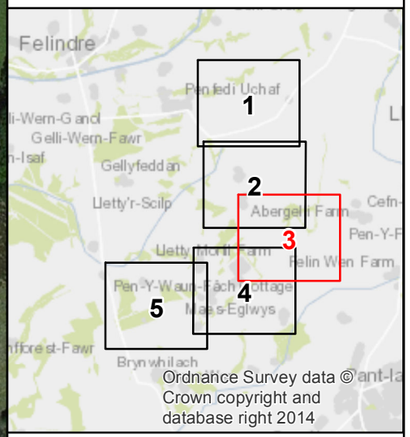

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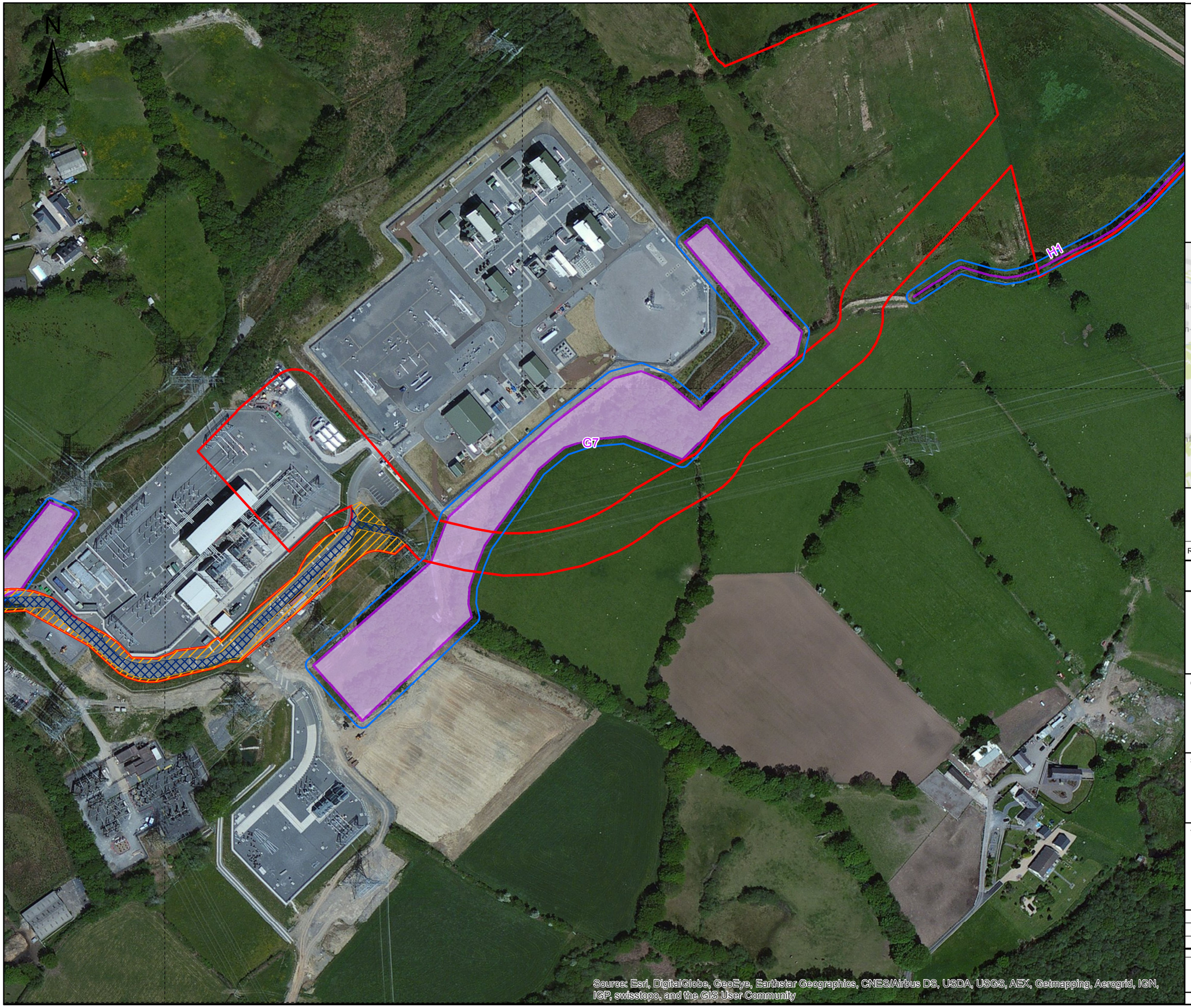

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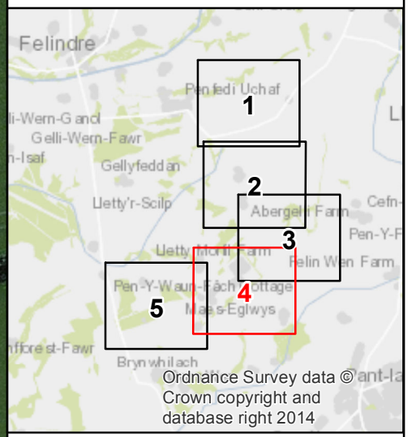

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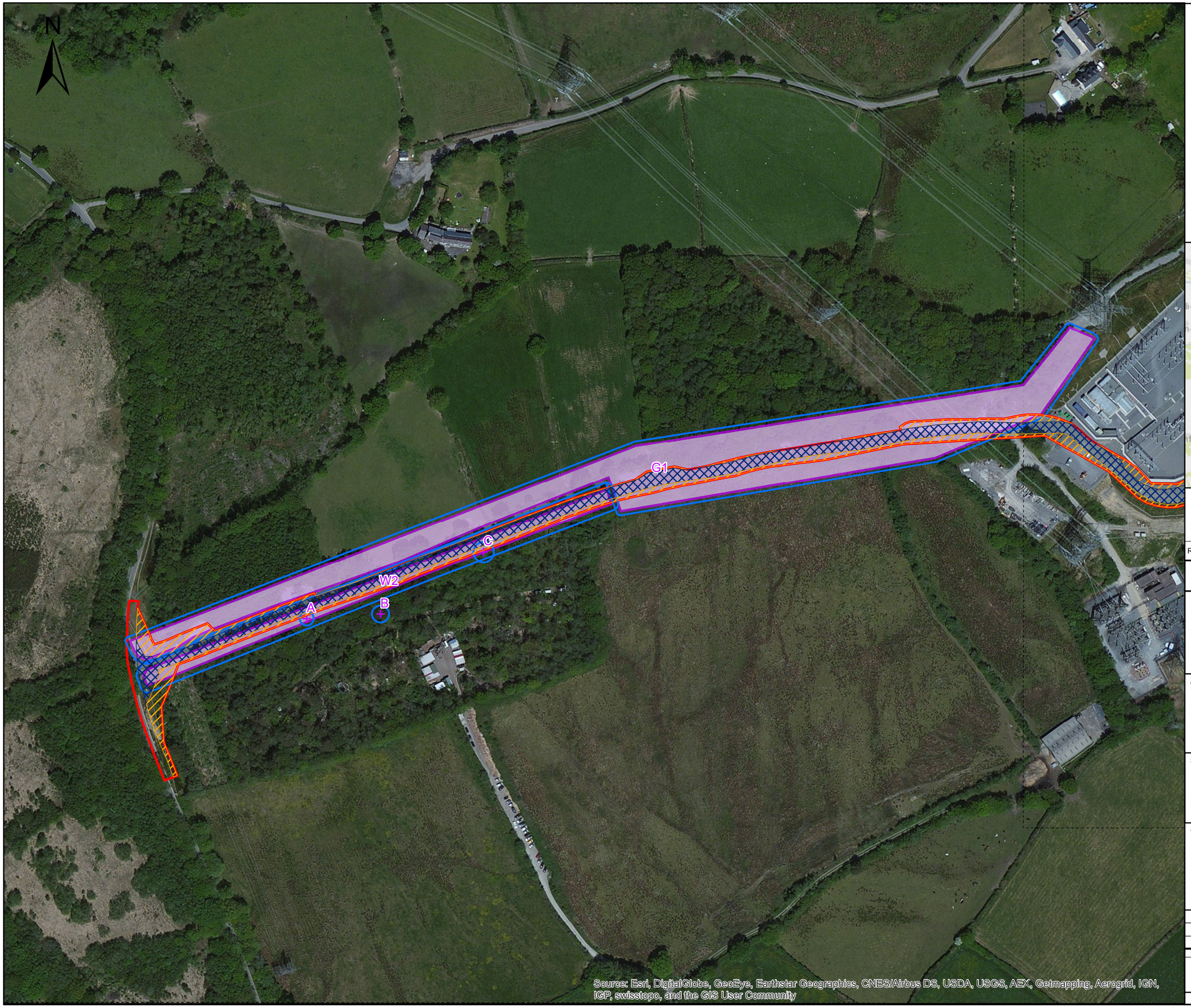

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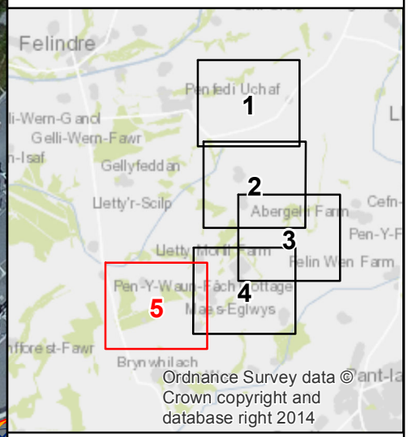

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Plot Date: 18/03/2015
Login: chris.davies

Appendix 8.13

Preliminary Ecological Appraisal 2014

BSG | ecology

Abergelli

Abergelli Power Project

Preliminary Ecological Appraisal

BSG | ecology

Issuing office

Wyastone Business Park | Wyastone Leys | Monmouth | NP25 3SR
T: 01600 891576 | W: www.bsg-ecology.com | E: info@bsg-ecology.com

Client	Stag Energy
Job	Abergelli Power Project
Report title	Preliminary Ecological Appraisal
Draft version/final	FINAL
File reference	7399_R_Phase 1_non-confidential_APPR(4)_180614

	Name	**Position**	**Date**
Originated	Anna Gundrey	Senior Ecologist	05 March 2014
Reviewed	Matthew Hobbs	Principal Ecologist	06 March 2014
Reviewed	Jim Fairclough	Principal Ecologist	07 March 2014
Approved for issue to client	Matthew Hobbs	Principal Ecologist	07 March 2014
Issued to client	Matthew Hobbs	Principal Ecologist	07 March 2014
Amended	Matthew Hobbs	Principal Ecologist	20 March 2014
2nd Issue to client	Matthew Hobbs	Principal Ecologist	20 March 2014
Updated	Anna Gundrey	Senior Ecologist	28 May 2014
3rd Issue to client	Matthew Hobbs	Principal Ecologist	02 June 2014
Updated	Anna Gundrey	Senior Ecologist	09 June 2014
4th Issue to client	Matthew Hobbs	Principal Ecologist	10 June 2014
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Any recommendation, opinion or finding stated in this report is based on circumstances and facts as they existed at the time that BSG Ecology performed the work.

Nothing in this report constitutes legal opinion. If legal opinion is required the advice of a qualified legal professional should be secured.

Contents

1 Summary

1.1 Abergelli Power Limited (APL) is promoting a new Power Generation Plant on agricultural land within Abergelli Farm north of Swansea in the City and County of Swansea (approximately at National Grid Reference 265284, 201431).

1.2 The Power Generation Plant would operate as a Simple Cycle Gas Turbine (SCGT) peaking plant and would be designed to provide an electrical capacity of up to 299 Megawatts (MW). It would be fuelled by natural gas, supplied by a new underground gas pipeline connecting the Power Generation Plant to the existing National Grid Gas (NGG) National Transmission System (NTS).

1.3 BSG Ecology has been appointed as the ecological consultant to undertake a preliminary ecological appraisal, which includes a desk study and Extended Phase 1 Habitat Survey. This preliminary survey will inform the subsequent need for further, targeted surveys of protected and otherwise notable species and habitats.

1.4 The preliminary ecological survey has identified two European designated sites within 10km, five statutory designated sites for ecology (four Sites of Special Scientific Interest (SSSIs) and one Local Nature Reserve (LNR)) within 5km, and twenty-three non-statutory designated Sites of Importance for Nature Conservation (SINC) within 2km of the Survey Site boundary. Three of the SINCs are partially within the Survey Site boundary, and a further two are adjacent. Much of the woodland on the Survey Site is also designated as Ancient Woodland. Direct impacts on SINCs and Ancient Woodland within and close to the Survey Site boundary could occur, depending on the final layout of the Power Generation Plant.

1.5 Three Section 42[1] habitats ('lowland mixed deciduous woodland', 'purple moor-grass and rush pasture' and 'ponds') are present within the Survey Site.

1.6 There is habitat in the Survey Site that has the potential to support European Protected Species (EPS) including bats, great crested newts *Triturus cristatus*, dormouse *Muscardinus avellanarius* and otter *Lutra lutra*. There are also habitats suitable for nationally protected species such as reptiles and water voles *Arvicola amphibius*. Information on badgers is contained in a confidential version of this report.

1.7 The following surveys are recommended to inform the ecology baseline chapter of the Environmental Statement and full details are provided in Section 5:

- Extended Phase 1 habitat survey of inaccessible land at the south-west end of the Survey Site and new land that has been identified since the survey was carried out – an access route to the west of the site.
- A National Vegetation Classification (NVC) botanical survey of marshy grassland and woodland that may be affected within the Survey Site as well as any areas identified as SINCs within or adjacent to the site;
- A survey of invasive plant species within the Survey Site;
- Roped access survey of trees identified as having potential to support bat roosts and internal and external building inspections, where trees/buildings may be affected directly or indirectly by the Project. Inspection surveys should include surveys for barn owls. Subsequent dusk emergence / dawn return to roost surveys should be undertaken if roosting potential or evidence of roosting is found;
- Bat activity surveys including walked transects and automated bat detector surveys;
- A survey for otter and water vole along water courses within the Survey Site;
- Dormouse surveys in areas of woodland and scrub within the Survey Site;

[1] Species referred to within The Natural Environment and Rural Communities Act 2006 (NERC 2006) as species of principal importance for the conservation of biodiversity in Wales which are listed on the Natural Resources Wales website. The Welsh Assembly Government must take steps to "further the conservation" of these species under Section 42 of the NERC ACT 2006.

- Great-crested newt surveys of all accessible ponds up to 250m from the Survey Site;
- Reptile surveys on suitable habitat across the Survey Site;
- A walkover breeding bird survey of all of the Survey Site plus a 50m buffer;
- Invertebrate surveys of woodland and marshy grassland for *Lepidoptera* (notably moths and marsh fritillary butterfly *Euphydryas aurinia*) and *Coleoptera* (beetles) within the Survey Site; and
- Invertebrate surveys of freshwater habitats (ponds and watercourses) may be needed where these habitats are to be affected within the Survey Site.

2 Introduction

Site Description

2.1 The Phase 1 Habitat Survey Site (hereafter referred to as the 'Survey Site'), in which the Project would be located, consists of approximately 150 ha of pastoral farmland primarily grazed by horses. The Survey Site is contained within the red line boundary shown in Figure 1 and is centred at National Grid Reference 265284, 201431. The nearest town is Felindre, which is located approximately 2 km to the north of the Survey Site, with Swansea approximately 5 km to the south.

2.2 The Survey Site is largely agriculturally improved pasture with several areas of marshy grassland, particularly in the north, south and north-western ends of the Survey Site. The fields are bounded by fences, running along the line of defunct hedgerows, and often accompanied by ditches. There is a block of broadleaved woodland on the eastern boundary of the Survey Site and areas around the marshy grassland to the west of the Survey Site, and around Felindre Gas Compressor Station and the two National Grid 400kV electrical substations that lie at the south-west end of the Survey Site. The habitats in the surrounding landscape are similar to those within the Survey Site boundary – a mixture of improved and marshy grassland interspersed with occasional patches of woodland.

2.3 The Survey Site boundary is shown on Figures 1a, 1b, 2a and 2b (photographs of the Survey Site are found in Appendix 2).

Description of Project

2.4 APL is promoting a new Power Generation Plant within Abergelli Farm. The Power Generation Plant would operate as a Simple Cycle Gas Turbine (SCGT) peaking plant and would be designed to provide an electrical capacity of up to 299 Megawatts (MW). It would be fuelled by natural gas, supplied by a new underground gas pipeline connecting the thermal generating station to the existing National Grid Gas (NGG) National Transmission System (NTS).

2.5 BSG Ecology has been appointed as the ecological consultant to undertake a preliminary ecology survey, which includes a desk study and Extended Phase 1 Habitat Survey. This preliminary ecological survey will inform the subsequent need for further, targeted surveys of protected and otherwise notable species and habitats. These baseline surveys will be included in an appendix to an ecology chapter of an Environmental Statement, which is presently intended for submission, as an integral part of the Development Consent Order (DCO) Application.

Aims of Study

2.6 BSG Ecology was commissioned to undertake a preliminary ecological appraisal of the Survey Site within which the Project would be located. The main aims of this report are to:

- present the findings of the desk study and site surveys;
- assess the potential for the Survey Site to support protected or otherwise notable species;
- set out the legislative and/or policy protection afforded to any habitats present or any species potentially associated with the Survey Site; and
- provide recommendations for any further surveys necessary to inform a subsequent ecology chapter for an Environmental Statement for the site.

3 Methods

Desk Study

3.1 Existing ecological information for the Survey Site and its surrounding area was requested from the South East Wales Biodiversity Records Centre (SEWBReC). Information on European designated sites was requested from within 10 km with information on national statutory designated sites was requested covering the Survey Site and land up to 5 km from the Survey Site boundary and information regarding non-statutory designated sites and records of protected[2] or notable species (particularly those identified as priority or Section 42 species and/or of local conservation importance or LBAP[3] species) was requested covering the Survey Site and land up to 2 km from the Survey Site boundary. Information on locally designated Sites of Importance for Nature Conservation (SINC) within 2 km of the Survey Site boundary was requested from the Swansea Council Ecologist. In addition, on-line resources including the Multi Agency Geographic Information for the Countryside (MAGIC, www.magic.gov.uk) website and aerial photography of the area were also reviewed.

Field Survey

Phase 1 Habitat Survey

3.2 The initial field survey was undertaken by Anna Gundrey MCIEEM and Matthew Hobbs MCIEEM on 24 February 2014. The Project Site boundary and therefore the Survey Site was subsequently extended after a design review, and a second field survey was carried out by Stephanie Boocock MCIEEM on 14 April 2014 of the additional area. Habitats within the Survey Site, and up to at least 50m from the Survey Site boundary, were identified and described following standard JNCC Phase 1 Habitat Survey methodology as detailed in the Phase 1 Habitat Survey Handbook (JNCC, 2010). This uses a system of codes to describe different habitat types based on the dominant vegetation present, which are recorded by means of habitat maps and target notes. All plant names in this report follow The New Flora of British Isles (Stace, 2010).

3.3 The survey was extended to give particular consideration to the potential of the habitats present to support protected species or species of local conservation importance; recorded as incidental information as part of the target notes.

3.4 It should be noted that species lists derived from the target notes are not necessarily an exhaustive inventory of all species occurring at a site. They are intended to illustrate the character of habitats present, general species richness of a particular area, and draw attention to any species that may be considered uncommon or unusual.

3.5 Weather conditions during both surveys were clear and largely dry.

Habitat Suitability Index

3.6 During the February field survey a Habitat Suitability Index (HSI) assessment (Oldham *et al*., 2000) of all ponds/water bodies within a 500m radius of the Survey Site (where access was possible) was undertaken. In the case of this survey, a wider buffer than 250m was used because of the high number of ponds within 250 and 500m of the Survey Site. The additional information collected is useful to provide context of how ponds within or in proximity to the Survey Site may connect with habitat available for newts in the surrounding landscape, and also to give greater confidence to the assessment carried out on each pond.

3.7 Information on the physical features and characteristics of each pond were collected in order to allow a great crested newt Habitat Suitability Index (HSI) score to be derived for each pond by applying the scoring system developed by the Herpetological Conservation Trust (HCT, 2008). The suitability index is calculated by allocating scores to features associated with each pond; these

[2] Wildlife and Countryside Act 1981 Schedules 1, 5 & 8; Conservation of Habitats and Species Regulations 2010; Protection of Badgers Act.
[3] Those listed under Local Biodiversity Action Plans for Swansea.

include features such as size, quality of surrounding habitat and presence of fish. These scores are then used to calculate the overall HSI for each pond as a number between 0 and 1, with 0 being the least suitable and 1 being the most suitable. The HSI score allows each pond to be placed in one of five categories defining its suitability for great crested newts as follows:

- <0.5 = poor
- 0.5 – 0.59 = below average
- 0.6 – 0.69 = average
- 0.7 – 0.79 = good
- >0.8 = excellent

Tree Assessment

3.8 All the trees on site were examined for their potential to support roosting bats, graded according to the scale provided in the Bat Conservation Trust survey guidelines (Hundt, 2012), and summarised in Table 1 below. Those that were rated Category 2 and above were described and their locations recorded on a GPS.

Table 1: Bat tree survey categories

Category	Description
1*	Tree with multiple highly suitable features for bats. Potential to support large numbers of bats.
1	Tree with some definite suitable features and potential to support low numbers of bats.
2	No obvious potential although tree is of a size and age that elevated surveys may reveal suitable cracks and crevices. Or, tree supports some limited features for bats.
3	No potential

Limitations to Methods

3.9 Although records secured through the desk study and supplied by third parties provide useful background information for initial ecological assessment, they often comprise individual records supplied by members of the public or are the result of ad hoc surveys. The data trawl information can therefore help to inform the likelihood of a particular species being present in the area, but should not be relied upon to definitively determine presence or absence of individual species.

3.10 The first site visit was undertaken at a sub-optimal time of year (February) for a survey of this type, being outside the main growing season, when the greatest variety of plants is in evidence. However the habitats on site are readily identifiable to an experienced botanist, and those that require further survey work in order to confirm their quality have been identified. In addition, a robust assessment of the Survey Site's potential to support protected species could also be made. Therefore, it is considered that the timing of the survey in this instance is not a significant constraint with regard to the findings of this assessment. The second survey on the 14th April was undertaken at a time when most plant species are evident and was less constrained in this respect.

3.11 Most parts of the Survey Site were accessed and surveyed. Some of the ponds outside of the Survey Site could not be accessed (see Figures 2a and 2b) as they were located on private land and access was denied to a number of them. Ponds within 250-500m of the Survey Site, where accessible, were inspected to gather contextual information and enough have been inspected to allow suitable additional background information to be gathered.

3.12 The extreme south-west end of the Survey Site could not be surveyed as the land here is in a separate ownership and access had not been granted by land owners at the time of survey. The route of the access track (that leads west to the B4489) was added to the Survey Site boundary after the April Phase 1 visit, so this was also not included in the survey. A recommendation has been made below to survey the remainder of the Survey Site as soon as access has been granted.

4 Results and Interpretation

4.1 In this section the results of the desk study and fieldwork are brought together. The implications of these results are then considered.

4.2 Figures 1a (the northern part of the site) and 1b (the southern part of the site) illustrate the results of the extended Phase 1 habitat survey. Numbers on the map and in the text below can be cross-referenced with Target Notes (TN) in Appendix 1. Photographs of the site can be found in Appendix 2. Figures 2a (the northern part of the site) and 2b (the southern part of the site) illustrate areas of the site that support, or have the potential to support, protected species.

Designated Sites

Statutory

4.3 There are two Special Areas of Conservation (SAC)[4] designated under the EC Habitats Directive within 10km. One of these, Camarthen Bay and Estuaries SAC, has has been afforded multiple designations and is referred to under the umbrella term European Marine Site (EMS)[5] which comprises the SAC, and is also split into two Special Protection Areas (SPA)[6] and two Ramsar Wetlands of International Importance (Ramsar)[7] the details of each designation are provided below. There are also four statutory protected Sites of Special Scientific Interest (SSSI) and one Local Nature Reserve (LNR) within 5km of the Survey Site. These are described in Table 2 below.

Table 2: Statutory designated sites within 5km of the Survey Site and European sites within 10 km.

Site name	Grid ref.	Distance and direction from site	Reason for Designation
Carmarthen Bay and Estuaries SAC	SS357991	7.2km W	Annex I habitats (primary reason for selection) – 'Sandbanks which are slightly covered by sea water all the time', 'Estuaries', 'Mudflats and sandflats not covered by water at low tide', 'Large shallow inlets and bays', '*Salicornia* and other annuals colonising mud and sand', 'Atlantic salt meadows. Annex II species (primary reason for selection) – twaite shad *Allosa fallax*. Annex II species (qualifying feature) – sea lamprey *Petromyzon marinus*, river lamprey *Lampetra fluviatilis*, allis shad *Alos alosa* and otter.
Burry Inlet SPA and Ramsar (within the boundary of the SAC above)		9.7km WSW	This area is designated as a SPA and Ramsar site due to its internationally important assemblage of wintering birds with qualifying populations of wintering oystercatcher *Haematopus ostralegus*,and northern pintail *Anas acuta* (SPA) and additionally of common redshank *Tringa totanus*, and red knot *Calidris canuta* (Ramsar).
Crymlyn Bog SAC and Ramsar (contiguous boundaries)	SS694947	7.3 km SE	Annex I habitats (primary reason for selection) – 'Transition mires and quaking bogs', 'Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*' ', Annex I habitats (qualifying feature) – Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*,*Alnion incanae*, *Salicion albae*). The site is selected as Ramsar as it supports a substantial population of the nationally-rare slender cotton-grass *Eriophorum gracile*, and

[4] Special Areas of Conservation (SACs) are strictly protected sites designated under the EC Habitats Directive. Article 3 of the Habitats Directive requires the establishment of a European network of important high-quality conservation sites that will make a significant contribution to conserving the 189 habitat types and 788 species identified in Annexes I and II of the Directive (as amended).

[5] The term 'European Marine Site' (EMS) (as defined by the Habitats Regulations) refers to those marine areas that area both Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). For management advice see http://www.severnestuary.net/asera/docs/Regulation%2033%20Advice.pdf

[6] Special Protection Areas (SPAs) are strictly protected sites classified in accordance with Article 4 of the EC Birds Directive, which came into force in April 1979. They are classified for rare and vulnerable birds (as listed on Annex I of the Directive), and for regularly occurring migratory species.

[7] Ramsar sites are wetlands of international importance designated under the Ramsar Convention.

			a rich invertebrate fauna including many rare and highly localised species. The site also suports 199 vascular plant species including 17 regionally-uncommon and one nationally rare species.
Glais Moraine SSSI	SN696005	4 km E	Designated for its geological interest.
Nant Y Crimp SSSI	SN623015	2.5 km W	Designated for its wet pastures, species-rich neutral grasslands and semi-natural woodland, which are host to several uncommon plant species. In addition, there is a colony of marsh fritillary butterfly on site.
Penllergaer Railway Cutting SSSI	SS622998	2.8 km NW	Designated for its geological interest.
Penplas Grasslands SSSI	SS634979	3.2 km NW	Designated for the eight different grassland types that have been identified on the site, including three types of purple moor-grass pasture, two of rush pasture, fen meadow, acid grassland and damp heath. Notable plant species recorded at Penplas include petty whin *Genista anglica* and royal fern *Osmunda regalis.*
Cadle Heath LNR	SS627966	4.5 km NW	Designated for wet heath, species-rich grassland, ponds, scrub and woodland. There is also a significant colony of wood bitter vetch.

4.4 Glais Moraine SSSI and Penllergaer Railway Cutting SSSI are both designated for their geological interest, which is unlikely to be impacted upon by the Project and will therefore not be considered further in this report.

Non-statutory

4.5 There are 23 Sites of Interest for Nature Conservation (SINC) within 2 km of the Survey Site. These are described in Table 3 below and their locations are shown on Figure 3. Three SINCs lie partially within the Survey Site boundary. Rhyd-Y-Pandy Valley Grasslands is a large SINC, which includes three fields that lie within the north-east corner of the Survey Site. Warn Garn Wen is also an extensive SINC which includes the marshy grassland that lies within the western boundary of the Survey Site. Llety Morfil SINC is a collection of three areas of ancient woodland with some areas of marshy grassland, that includes the woodland on the eastern boundary of the site and at the south-west end of the Survey Site.

4.6 There are two SINCs located adjacent to the boundary. Rhos Fawr SINC is a block of land immediately to the north of the Site boundary, and Felindre Grasslands SINC lies adjacent to the southern tip of the proposed access route.

4.7 Most of the woodland within the Survey Site is also designated as Ancient Woodland (See Figure 3).

Table 3: Non-statutory sites within 2km of the Survey Site. Citations for some of the SINC sites are not yet available and will be added when they are.

Site name	Grid ref.	Distance and direction from site	Site Description
Waun Garn Wen	SN645012	Onsite	Purple moor grass and rush pasture, wet woodland, scrub and watercourse habitats. Section 42 invertebrates and birds recorded.
Llety –Morfil	SN644006	Onsite	Wet and ancient semi-natural woodland, purple moor grass and rush pasture, and scrub habitats. Section 42 invertebrate species recorded.

Rhyd-Y-Pandy Valley and Grasslands	SN661022	Onsite	Wet woodland and woodland with assemblage of ancient woodland indicator species, scrub, purple moor grass and rush pasture, lowland meadow, neutral grassland, scrub, reed bed and water course habitats. Section 42 bird species recorded.
Rhos Fawr	SN652029	Adjacent N	Woodland containing assemblage of ancient woodland indicator species, scrub, purple moor grass and rush pasture, neutral grassland habitats. Section 42 bird species recorded.
Felindre Grasslands	SS638998	Adjacent SW	Wet woodland and lowland mixed deciduous woodland, purple moor grass and rush pasture and scrub habitats. Section 42 birds and invertebrates recorded.
Llangefelach Common SINC	SS648994	1.3 km SW	Common cotton grass *Eriophorum angustifolium*, ragged-robin *Lychnis flos-cuculi* , western gorse *Ulex gallii*, various orchid species, tormentil *Potentilla erecta* and whorled caraway *Carum verticillatum* are present along with adder, common lizard and slow worm.
Lower and Upper Lliw Reservoirs SINC	SN653035	1 km N	The lower and upper Lliw reservoirs are surrounded by a mosaic of habitats including bracken, scrub, broadleaved woodland and lowland acid grassland.
Cwm Nant-Ddu		2 km NW	Data not yet received
Middle Lliw		1 km NW & W	Data not yet received
Cilfaen	SN641021	0.5 km W	Wet woodland and woodland containing ancient woodland assemblage, and purple moor grass and rush pasture habitat.
Cefn Forest Stream	SS635997	1 km SW	Range of woodland types. Lowland meadow, heath and fen. Purple moor grass and rush pasture, ponds and watercourses.
Penllegaer Forest	SS627005	1 km SW	Range of woodland types. Purple moor grass and rush pasture, reedbeds watercourses. Section 42 birds and invertebrates recorded.
Penllegaer to Llangefelch Tunnel and Railway Line	SS632996	1 km S	Range of woodland types. Purple moor grass and rush pasture, scrub and watercourses. Section 42 birds recorded.
M4 Corridor		1.5 km S	Data not yet received
Mynydd Bach Common	SS652978	2km S	Woodland scrub and purple moor grass and rush pasture habitats.
Pant Lasau	SN652004	0.25 km S	Woodland, scrub, purple moor grass and rush pasture, and water course habitats
Middle Llan	SN659009	0.5 km S	Watercourse habitat
Cwm Rhydceinw to Birchgrove Railway		1.5 km SE	Data not yet received

Mynydd Gelli-wasted	SN677016	1.5 km E	Woodland, scrub, heath, purple moor grass and rush pasture habitats.
Ynysforgan Wood	SN677002	2 km SE	Ancient woodland habitat.
Lougher to Penllegaer Railway Line		2 km SW	Data not yet received
Banc Darren Fawr		2 km N	Data not yet received
Cwm Clydach		2 km NE	Data not yet received

Habitats

4.8 The Survey Site is roughly an 'L' shape, with the majority of the Survey Site running approximately north-south and the foot of the 'L' branching off to the south-west around either side of Felindre Gas Compressor Station and the two National Grid 400kV electrical substations. The topography drains the land to the south with the highest elevation in the Survey Site along the northern boundary (approximately 140m above ordnance datum (aod). The land slopes away to the south and the lowest elevation is around the Felindre Gas Compressor Station and the two National Grid 400kV electrical substations (approximately 80m aod). The land is predominantly pastoral farmland, mostly agriculturally improved but with significant areas of marshy grassland. The fields are grazed by horses and sheep and are largely bounded by fences with occasional trees, scrub and one defunct hedgerow. There are numerous water courses on site, mostly in the form of ditches along field boundaries, but also four streams; one which runs along the eastern boundary of the Survey Site; another that runs north-west from the woodland in the eastern part of the site; a stream that runs through the marshy grassland to the west; and another around Felindre Gas Compressor Station and the two National Grid 400kV electrical substations. There is a small woodland on the eastern boundary of the Survey Site and the land around Felindre Gas Compressor Station and the two National Grid 400kV electrical substations is also largely wooded. There are also copses and stands of mature trees around the edges of the marshy grassland in the north-western part of the site, as well as along field boundaries in the northern part of the site.

Improved grassland

4.9 The majority of the land on site is agriculturally improved grassland (Photo 1, 2a). This was all grazed short when surveyed, and consists of abundant perennial rye-grass *Lolium perenne*, and varying quantities of common grassland herbs such as white clover *Trifolium repens,* common mouse ear *Cerastium fontanum*, and dandelion *Taraxacum fontanum* agg.

Marshy grassland

4.10 There are marshy grassland fields at TN3, TN3a, TN4a, TN5, TN9a, TN13a and TN21a and a block of marshy grassland at the southern end of the Survey Site. Although all fit within the same Phase 1 category, the habitats in these fields vary across the Survey Site. The field at TN3 (Photo 2) had a short, close-grazed sward when surveyed. It has numerous tussocks of soft rush *Juncus effusus* and frequent sedge species. These include common sedge *Carex.nigra* and glaucous sedge *C. flacca*. Other species noted include creeping bent *Agrostis stolonifera*, a cinquefoil *Potentilla* sp., creeping buttercup *Ranunculus repens* and sharp-flowered and/or jointed rush *Juncus actutiflorus* / *J. articulatus*.

4.11 The field at TN5 (Photo 3) was also grazed extremely short, when surveyed, to the point where individual species are difficult to distinguish. Soft rush is frequent, along with purple-moor grass *Molinia caerulea,* sheep's fescue *Festuca ovina* and a sedge species (not possible to identify to

species level). Heather *Calluna vulgaris* and bilberry *Vaccinium myrtillus* plants are occasional and there are patches of sphagnum moss *Sphagnum* sp. present.

4.12 The fields marked TN3a, TN4a and TN13a, are wet semi-improved grassland, with marshy species such as lesser spearwort *Ranunculus flammula*, sedges, soft rush and water figwort *Scrophularia aquatica*.

4.13 The fields marked TN20 all have over 25% soft rush which places them in the 'marshy grassland' category, but the intervening grassland is agriculturally improved, with abundant perennial rye-grass and frequent white clover. The fields marked TN21 and TN22 (Photo 4) have a much higher cover of soft rush - approximately 75% in TN21 and 100% in TN22 and intervening species are more typical of wet grassland, such as creeping bent *Agrostis stolonifera*, creeping buttercup and Yorkshire fog *Holcus lanatus*.

4.14 Areas of purple-moor grass dominated vegetation, which also falls into the 'marshy grassland' category are present at TN14 (Photo 5), TN9a and TN21a where the purple moor grass is dominant with very occasional cross-leaved heath *Erica tetralix* and heather plants in evidence and scattered willow *Salix* sp. scrub. At TN9a additional species recorded include soft rush, bracken, common haircap moss *Polytrichum commune*, unidentified sphagnum moss, heather, cross-leaved heath and bilberry along the margins with some birch and willow regeneration in small scattered copses. TN21a (Photo 4a) is a large field which is superficially similar to that at TN9a but appears to have been managed. Purple moor-grass is not as dominant with numerous patches of bare earth and young ling and cross-leaved heath plants. In addition hare's-tail cotton grass *Eriphorum vaginatum*, (Photo 1a) deergrass *Trichophorum germanicum* and lousewort *Pedicularis* sp. are common.

Semi-improved Grassland

4.15 The field to the south of the woodland at TN10 appears to be slightly less agriculturally improved, having a lower cover of perennial rye-grass, and a wider range of grasses such as Yorkshire fog, crested dog's tail *Cynosurus cristatus* and creeping and common bent *Agrostis capillaris*. The field is nevertheless species-poor. There are also two species-poor semi-improved fields in the north-east corner of the site (TN3a, TN13a, Photo 3a).

Woodland and scrub

4.16 There is a block of broadleaved woodland along the eastern boundary of the Survey Site at TN10. The western end is on a hill, and is dry with widely-spaced trees and a grazed grassland ground flora including species such as Yorkshire fog, common mouse-ear and creeping buttercup. The trees here are small to medium-stemmed with very little understory, and include birch *Betula pendula*, crab-apple *Malus sylvestris*, holly *Ilex aquifolium* and pedunculate oak *Quercus robur*. The hill slopes down steeply to the east, where a stream delineates a lower, wetter area of woodland. Here the tree species composition is similar but the understorey is much thicker with bramble predominating. On wetter areas, where the bramble thins out, carpets of opposite-leaved golden-saxifrage *Chrysosplenium oppositifolium* are present. There are also extensive areas of purple moor-grass dominated ground flora with sphagnum moss species also present.

4.17 To the north of this woodland there is a thin strip of deciduous woodland running along the banks of a stream running north to south at TN42. The species composition includes occasional birch, willow, ash and holly. There is an understory made up largely of gorse with bramble scrub and soft rush grading into improved grassland to the east.

4.18 Another relatively extensive area of broad-leaved woodland is present at the south-west end of the Survey Site around Felindre Gas Compressor Station and the two National Grid 400kV electrical substations. This forms a strip to the south and a more continuous block to the north of Felindre Gas Compressor Station and the two National Grid 400kV electrical substations. The woodland is generally quite wet, with alder *Alnus glutinous* and willow species frequent along with pedunculate oak, birch and holly. The trees are growing close together and are generally small-stemmed and straggly. The understorey is dense bramble and ground flora was largely absent when surveyed, although where the woodland opens out, for example around the margins of Felindre Gas Compressor Station and the two National Grid 400kV electrical substations, soft-rush dominated marshy grassland is present.

4.19 There are also patches of deciduous woodland around the edges of the marshy grassland on the block of land to the west of the road that runs through the Survey Site. At TN6a there is a small wooded spur with tree species including oak, birch, holly, hawthorn and an understorey dominated by brambles and including ivy *Hedera helix*, creeping bent, Yorkshire fog, soft rush, hard fern *Blechnum spicant*, scaly male fern *Dryopteris affinis*, and bracken *Pteridium aquilinum*. AtTN23a there is a wooded copse comprised of young birch and willow with an understorey of bramble scrub. The ground flora incudes nettle, lady fern *Athyrium filix-femina,* scaly male fern *Dryopteris affinis* and wood false brome *Brachypodium sylvaticum*. A continuous area of scrub is present to the south of the woodland at TN10 and around the pond at TN15. These areas are quite wet and include willow species (including grey and goat willow *Salix cinerea, S. caprea*), alder and bramble. At TN15 the scrub merges into stands of purple moor grass that are present around the pond. There are also blocks of scrub to the south of Abergelli Farm, along the stream that runs along the eastern boundary, at the northernmost point of the Survey Site, and within the marshy grassland to the west. Scattered scrub (mostly common gorse *Ulex europaeus*) is present along some fence lines, and there is a bramble scrub-covered bund at TN4.

4.20 Many of the trees within the Survey Site are along site boundaries and are remnant hedgerow stools, as described in the section below.

Boundary features

4.21 All boundaries on site are fences, except one length of species-poor hedgerow running north of Abergelli Farm. The fences often run along the line of defunct hedges (Photo 1). These generally take the form of a degraded stone-faced hedge banks, with occasional small sections of overgrown hedge. The overgrown hedges include mature standard trees, large coppice stools and clumps of bramble and gorse scrub. Species present include pedunculate oak, holly, birch, ash *Fraxinus excelsior,* hazel *Corylus avellana* and hawthorn *Crataegus monogyna*.

4.22 Some of the fields on site have overgrown margins where the vegetation is less trampled and grazed along the fence line. For example the northern boundary of the improved field to the north of the field marked TN3 has a ditch lined with purple moor-grass and gorse, and further east along this boundary fence bracken is frequent. The western boundary of the field marked TN22 has purple moor-grass and heather growing along the fence.

Water Courses

4.23 There are numerous small water courses within the Survey Site. These are mostly ditches along field boundaries (TN22a, Photo 5a), but there is also some larger streams. The block of marshy grassland to the west is criss-crossed by numerous ditches, which were largely dry or with marshy bases when visited in April. There is also a stream that runs through this block of land – this is shaded by flanking woodland, with a stone bed and shallow banks. Another stream (Photos 8, 9 and 6a) runs south-east through the Survey Site and splits into smaller tributaries through the woodland at TN10. There are also small watercourses present around the margin of Felindre Gas Compressor Station and the two National Grid 400kV electrical substations. All features that were visited in February had flowing water, reflecting a period of prolonged wet weather preceding the survey. Aquatic vegetation is not apparent in any of the water courses, but marginal vegetation includes frequent soft rush, occasional purple moor-grass and scattered gorse and bramble.

Water Bodies

4.24 There are four water bodies within the Survey Site. The pond at TN15 (Pond17 – see 4.39) is approximately 10m in diameter, shallow, and completely covered in an unidentified sedge species. It has a small tree-covered island in the centre. The pond is ringed by small willow and alder trees. The surrounding vegetation is dominated by purple moor-grass with occasional heather and cross-leaved heath plants, with densely growing small trees and scrub (grey willow, bramble and alder). A small pond immediately to the south is shown on OS maps. This was not apparent amongst the scrub, but there were small patches of standing water (including wheel ruts) within purple moor grass in this area.

4.25 A small pond is present at TN19 (P18 – see 4.39) adjacent to an electricity pylon. The pond is approximately circular and 5m in diameter. It is in woodland and completely surrounded by small saplings. There was no evidence of marginal or emergent aquatic vegetation when surveyed.

4.26 Two ponds are also present immediately to the west of TN30a (Ponds 11 and 12). Pond 12 is approximately 10m in diameter, open and unshaded with both aquatic and marginal vegetation present. It appears to be an extension of two field drains that meet at this point. Pond 11 is a small wet depression containing no vegetation.

Invasive Species

4.27 Japanese knotweed *Fallopia japonica* was noted on at least two locations on the block of land to the west of the road that runs through the site. At Target Note 15a several stands of the species were noted on an embankment to a large raised area. At Target Note 18a a stand of the species was noted on a bend in the stream. There are also several stands of this species growing on the edge of the road that leads into Abergelli Farm from the west. These extend just beyond the western site boundary and into the Survey Site.

4.28 Himalayan balsam *Impatiens glandulifera* was also noted in two areas. Abundant seedlings of the species were noted in the wooded copse at Target Note 23a and on an area of deciduous woodland at Target Note 28a.

Protected Species and Species of Conservation Importance

4.29 This section presents the protected species records provided by SEWBReC along with any evidence of the species, or potential for it to be present gathered during the field survey. Where relevant it also evaluates the potential for the Survey Site to support Section 42 species identified within the desk study area. The legislation and policy relevant to each species or species group is described in Appendix 6.

Bats

4.30 There were 126 bat records provided by SEWBREC from the 2 km radius search area. Of these the majority were recorded during bat transects carried out to inform a separate unrelated development proposal, named 'Felindre development site in the records' approximately 1 km to the south west of the Survey Site boundary.

4.31 The bat species recorded from the desk study include brown long-eared bat *Plecotus auritus*, common pipistrelle *Pipistrellus pipistrellus*, Natterer's bat *Myotis nattereri*, noctule *Nyctalus noctula*, and whiskered bat *Myotis mystacinus*. There were also unidentified *Pipistrellus* sp. and records where the bat species was not specified.

4.32 There are four bat roosts amongst the records provided. The closest of these is a record of 50 unspecified bat species 1.8 km to the south-east of the Survey Site at Ynystawe, Swansea from 1992. The next closest is a night / feeding roost of an unspecified species 1.9 km south west of the Survey Site boundary in Tredegar-Fawr farm buildings from 1998. A record of a roost of 87 whiskered bats also comes from approximately 1.9 km to the north west of the Survey Site boundary in Felindre, Swansea from 1993. The fourth record is a roost of 70 bats of unspecified species, 2.5 km to the south east of the Survey Site in Ynysforgan, Swansea from 1993.

4.33 There are a number of buildings associated with Abergelli Farm that fall within the Survey Site. These are all situated along the road that runs between the Water Treatment Works to the north of the Survey Site and Felindre Gas Compressor Station and the two National Grid 400kV electrical substations to the south. Abergelli Farm consists of a rendered brick-built building (Photo 26) with a tiled pitched roof. It has overhanging eaves with wooden soffits. The associated stable block (Photo 27) is of the same construction with an 'L'-shaped footprint. Opportunities for roosting bats are fairly limited as the buildings appear to be in good condition, although gaps in the woodwork around the eaves would allow entry into the soffits.

4.34 At TN4 is a small concrete bunker (Photo 31) within an area of waste land. It is formed of 2 m high brick walls with a flat roof formed from concrete sleepers. There is an open doorway on the south elevation and a 30 cm x 30 cm hole at the top of the west-facing wall. This has some potential to support roosting bats.

4.35 Immediately to the north (Photo 29) and south (Photo 28) of Abergelli Farm are large barns constructed of corrugated metal and asbestos. Potential for roosting bats in these buildings is low.

There are also two brick-built sheds with corrugated metal/asbestos pitched roofs (Photo 30) adjacent to the northern barn which may have greater potential to support bats, having some gaps in the brickwork that could allow entry in to the buildings.

4.36 Further south, to the south of TN25a, is a pair of houses set within plots of hard-standing and amenity grassland. These are newly built and in good condition with no opportunities for roosting bats.

4.37 There are 21 trees on or within 50 m of the Survey Site that have the potential to support roosting bats. Of these two have been classed as Category 1 (with definite suitable features that may support larger roosts of bats – see Table 1), and the remainder are Category 2 (with some limited roost features – see Table 1). The locations of the trees (T1-21) are illustrated in Figures 2a and 2b and full details of the trees are provided in Appendix 3.

4.38 The northern end of the Survey Site offers limited foraging and commuting potential for bats. The boundaries are fences and short sections of remnant hedgerows and the fields are closely grazed. The block of marshy grassland, woodland and scrub to the west of the road that runs through the Survey Site, and the wooded stream that runs along the eastern boundary offer more potential, and both areas have good wooded connections with a network of hedgerows, tree-lines and marshy pastures off-site. The damp wooded area around Felindre Gas Compressor Station and the two National Grid 400kV electrical substations at the south-west end of the Survey Site also offers foraging potential and connects to off-site blocks of woodland to the north and south that may be good habitat for bats.

4.39 It is concluded that the Survey Site is likely to have moderate value for bats. There are a few potential roosting opportunities, and some areas (woodland and marshy grassland) of the Survey Site which offer foraging opportunities, but the Survey Site as a whole does not have good linear commuting features and the majority of the habitats (tightly grazed improved grassland) are of low foraging value.

Great crested newt

4.40 There were no records for great crested newts provided by SEWBREC within 2 km of the Survey Site.

4.41 Nineteen ponds have been identified within 500 m of the Survey Site boundary with the aid of aerial photographs and OS maps. Of these, two were identified within the Survey Site boundary (Pond 17 turned out to be a single pond when surveyed) and eight within 250 m of the Survey Site. An additional two on-site ponds (Ponds 11 and 12) were found during a reptile survey on 21 May 2014 in the marshy grassland in the north-west of the Survey Site that had not previously been seen during any other survey, as well as one within 100 m of the Survey Site boundary during the first February Phase 1 survey (Pond 18). An HSI assessment was carried out on the seven ponds that were accessible within 500 m of the Survey Site boundary during the first Phase 1 survey visit. This included the two on-site ponds (P17 and P18); one pond within 100 m of the Survey Site boundary (P16); and the remainder are those ponds within 500 m of the Survey Site boundary for which access was possible (P07, P08, P09 and P10). Figures 2a and 2b shows which ponds were surveyed and which were inaccessible, either on private land or not accessible given the presence of horses[8].

4.42 Table 4 below summarises the results of the HSI, and Appendix 4 gives more detailed results.

[8] The landowner requested that we do not access fields with horses in for our own safety.

Table 4: HSI Results

Pond	HSI	Value for great crested newts
P07	0.67	Average
P08	0.77	Good
P09	0.47	Poor
P10	0.64	Average
P16	0.66	Average
P17 on site	0.61	Average
P18 on site	0.53	Below average

4.43 The Survey Site lies in a part of the country where the distribution of great crested nested newts is patchy, with the species largely absent to the west of the Survey Site. Whilst this might reduce the probability that great crested newts would be present on site, it does not rule out their presence. There are a number of ponds in and around the Survey Site, and suitable habitat for newts in their terrestrial phase, including old hedge banks, marshy grassland and woodland within the Survey Site. Those ponds surveyed, whilst most did not have a 'good' or 'excellent' HSI score, do have potential to provide breeding habitat for great crested newts and the possible presence of the species on site should be considered further. In addition the cluster of inaccessible ponds within the grounds of the water treatment works (to the north-west of the Survey Site) are likely to be of similar 'good' quality as Pond 08 (which was visible through the gate).

Dormouse

4.44 SEWBReC did not provide any records of dormouse *Muscardinus avellanarius*. The woodland areas on the eastern boundary, at the south-west end and within the marshy grassland in the north-west of the Survey Site do not provide optimum dormouse habitat although they are suitable for the species. Most of the woodland consists of relatively immature trees with little hazel understorey, limited foraging opportunities for this species and a lack of connectivity in the canopy. However, these areas of woodland have good connections to a complex of woodland and thick hedgerows to the west, south and east, and consequently could potentially form part of a wider network of dormouse-supporting habitat. There are a number of recent examples of dormouse occurring in sub-optimal habitat, such as coniferous plantation and species-poor hedges, in south and mid-Wales and their presence should not be ruled out if the habitat is sub-optimal but still has clear potential to support the species, as in this case.

4.45 Figures 2a and 2b illustrate which areas of the Survey Site have the highest potential to support dormouse.

Otter

4.46 There are a number of water courses on site, most of which are ditches, but also a small stream running from north-west to south-east along the centre and eastern flank of the Survey Site and through the woodland in the centre of the Survey Site. SEWBReC provided 32 records of otter within the 2 km search radius, all recorded between 1991 and 2013. The closest record to the Survey Site is 0.5 km to the south west from the River Llan. At its closest point the River Llan is approximately 0.3 km south of the southern Survey Site boundary, and it links to the Survey Site via the stream running through the woodland in the centre of the Survey Site. None of the water courses on site are likely to provide good foraging opportunities because of their size, but they may offer lying up sites for otter, and it is possible that individuals might use the water courses to commute along from time to time.

Water Vole

4.47 No evidence of water voles was noted along the water courses on site when surveyed in February and April, although February is a time of low activity for the species, when field signs may not be evident. The water courses that were visited in February all had flowing water in them when

surveyed, following a prolonged period of extremely wet weather during the winter. It is likely that many of these are usually dry or hold only a small amount of water and this was confirmed during the April survey. As such they do not provide good habitat for water voles. The stream that runs along the eastern boundary of the site; however, does provide suitable habitat for water vole, particularly at TN41-43. At TN43, a number of vole tunnels and holes were seen along the western side of the bank in long tussocks of grass, although it was not possible to ascertain which species had made them.

4.48 Water voles have been present in the vicinity: SEWBReC provided three records of water vole from the River Llan approximately 1.9 km from the Survey Site boundary, all from 1996. This River is hydrologically linked to the Survey Site (see otter section above), so it is possible, if any of the water courses retain water, particularly those linked to the River Llan, that water voles could be present on site.

Reptiles

4.49 There were 12 records of reptiles provided by SEWBReC, between 1998 and 2010. These included records of all the common reptile species: adder *Vipera berus*, grass snake *Natrix natrix*, common lizard *Zootoca vivipara,* and slow worm *Anguis fragilis*. The closest record is of a common lizard, approximately 0.8 km to the west of the Survey Site boundary. Most records are from the south-west side of tinplate workings near to Bryn Whilach Farm, approximately 1 km to the southwest of the Survey Site boundary.

4.50 There are several areas of the Survey Site that provide suitable habitat for common reptile species (see Figures 2a and 2b). This includes areas of marshy grassland to the south of the Survey Site, mounds of wood to the south of the woodland at TN10 (Photo 11), scrubby woodland fringes (Photo 12) and overgrown field margins either along remnant hedge banks or ditch banks. In addition a common lizard was seen during the April Phase 1 survey in the marshy grassland area in the north-west of the site and this area is particularly suitable for reptiles providing high quality habitat for foraging, sheltering and basking.

Badger

4.51 Information on badgers is provided in a confidential version of this report.

Birds

4.52 During the Phase 1 survey a number of common woodland and farmland bird species were recorded and these are listed in Appendix 5. The trees and woodland on site may provide nesting habitat for a range of common bird species. The marshy grassland on site could also provide nesting habitat for ground-nesting bird species. The Survey Site does not appear to be of particular importance for wintering birds with no notable aggregations of common species or any rarer species recorded during the walkover survey, except for a red kite *Milvus milvus* seen in flight over the Survey Site (see below) in both February and April.

4.53 SEWBReC provided a number of records of ground nesting birds in the search area. These included records for Eurasian curlew *Numenius arquata*, northern lapwing *Vanellus vanellus* and skylark *Alauda arvensis*. The closest of these records are located at the tinplate workings site near to Bryn Whilach Farm, approximately 1 km to the southwest of the Survey Site boundary. There was one record of curlew, located at the Lliw reservoir, 1 km north of the Survey Site boundary.

Schedule 1 Birds

4.54 SEWBReC provided 21 records of barn owl *Tyto alba*. The closest of these records is 0.7 km to the west of the Survey Site boundary from 1997, with the nearest breeding record 3 km to the south west near Penllergaer Woods in 2000. It is possible that some of the farm buildings within the Survey Site may support breeding barn owl, although no trees were found that appear, from a ground level inspection, to have sufficiently large cavities to support nesting barn owls. The marshy fields at the southern end of the Survey Site, although probably sub-optimal, could provide habitat for field vole *Microtus agrestis* (a preferred prey species) given the thick, tussocky structure of some parts of the sward. The marshy grassland in the north-west of the Survey Site provides

optimal foraging habitat for barn owls due to its extensive areas of tussocky grassland that may support breeding field voles *Microtus agrestis*, their preferred prey species.

4.55 A red kite was noted circling above the field at TN3 and also over Abergelli Farm. Red kites generally breed in valley woodlands of which there is extensive habitat to 2-3 km to the east and west of the Survey Site. It is considered likely that the Survey Site is part of a much wider area of potential foraging habitat for the species. SEWBReC provided 54 records for red kite between 1999 and 2013.

Terrestrial Invertebrates

4.1 SEWBReC provided 40 records of Section 42 terrestrial invertebrate species. The species recorded are marsh fritillary, dingy skipper *Erynnis tages*, narrow-bordered bee hawk-moth *Hemaris tityus*, and small pearl-bordered fritillary *Boloria selene*. Twenty-nine of the records are of marsh fritillary; the closest of these is located approximately 0.7 km west of the Survey Site boundary in 2009. This location also contains the closest of the four dingy skipper records, as well as the closest of the five small pearl-bordered fritillary records and the only narrow-bordered bee hawk-moth record.

4.2 The marshy grassland to the west provides suitable habitat for marsh fritillaries, although the food plant devil's-bit scabious *Succisa pratensis* was not noted in any quantity during the April survey. Of the other Section 42 species recorded from the desk study, suitable habitat is present for narrow-bordered bee hawk-moth *Hemaris tityus*, which largely relies on devil's bit scabious, like marsh fritillary. For dingy skipper, there are few areas of bare ground, where this species prefers to bask and no areas where its usual food plant, bird's foot trefoil *Lotus corniculatus*, is found in any quantity. Small pearl-bordered fritillary is reliant on violets (*Viola* spp.) as its foodplant and violets have not been recorded during either Phase 1 survey (the April survey was well timed to record them in flower). It is unlikely that either of these latter two species is present.

4.3 Other habitats that may be suitable for diverse assemblages of terrestrial invertebrates include the areas of broad-leaved ancient woodland at Target Note 10, for example, which represents a fairly extensive area of semi-natural habitat that may be important for terrestrial invertebrates, particularly *Lepidoptera* (notably moths) and beetles (*Coleoptera*); which are both strongly represented in wooded habitats.

Aquatic Invertebrates

4.4 No records of Section 42 aquatic invertebrate species were provided by SEWBReC, and it is unlikely that any of the ponds on or close to the site support unusual or diverse assemblages of aquatic invertebrates.

5 Recommendations

5.1 For the purposes of this report it has been assumed at this stage that direct impacts will potentially occur across the Survey Site, and that indirect impacts will need to be considered beyond this, within the 'zone of influence' that will vary dependent on the receptor (habitat, protected species, designated site) concerned. The recommendations presented below are based on preliminary assumptions of the potential impacts and the corresponding requirement to confirm presence / absence, and where present the distribution and abundance of protected and otherwise notable species or habitats that may occur within the Survey Site and a zone of influence surrounding it.

Statutory Designated Sites

5.2 Nant Y Crimp SSSI, Penplas Grasslands SSSI and Cadle Heath LNR are located within 5 km of the Survey Site boundary. These sites are designated for their habitat interest and as all are over 2 km from the Survey Site, direct impacts resulting from the development are considered unlikely. Nant Y Crimp SSSI also has a colony of marsh fritillary butterflies. The larval food plant (devil's-bit scabious) for this species was found in small patches in the western area of marshy grassland during the Phase 1 survey, so this species may be present. However this assessment will need to be reviewed once a botanical survey (see below) of the western block of marshy grassland has been carried out.

Habitat Regulations Assessment

5.3 Consultation with the Planning Authority, Natural Resources Wales and PINS will determine the requirement for a screening exercise (under the Habitat Regulations) that considers the proximity of potentially sensitive ecological receptors (notably European protected sites, but potentially extended to SSSIs) within a search area that may extend to or beyond a 5 km radius of the Survey Site (for example, Camarthen Bay and Estuary SAC, Crymlyn Bog SAC, SPA and Ramsar, and Burry Inlet SPA and Ramsar all lie within 10 km of the Survey Site), and whether these could be affected by CO, NO_X and NO_2 emissions as well as nitrogen and acid deposition.

5.4 The requirement for further surveys or desk based investigation will be determined following review of the scoping opinion (and consultation) on this matter.

Non-statutory Designated Sites

5.5 Three SINCs lie partially within the site boundary and could therefore be directly affected by the proposed development. Indirect impacts could also potentially occur on those sites lying adjacent or close to the boundary.

5.6 The woodland on site that falls within Llety-Morfil SINC and the southern part of Waun Garn Wen SINC is also designated as Ancient Woodland and as such is irreplaceable. Direct impacts on this resource may therefore also occur as a result of the proposals.

Habitats

5.7 The marshy grasslands within the Survey Site potentially qualify as a Section 42 habitat 'purple moor-grass and rush pastures'. The area to the west of Abergelli Farm is also a SINC. These habitats require a NVC botanical survey at an appropriate time of year (June/July) to establish their ecological value and inform the level of mitigation required to compensate if they are to be lost or modified as a consequence of the Project. The marshy grassland in the north-west of the site is potentially of high ecological value, and this needs to be confirmed through botanical and other Phase 2 survey work. The semi-improved grasslands in the north-east corner of the site, whilst not having obvious high botanical value, are included within a larger SINC. As such it is recommended that a botanical survey is carried out on these areas to establish their value in the wider context of the SINC, and therefore the likely mitigation that would be required for their loss.

5.8 'Lowland mixed deciduous woodland' is also a Section 42 habitat. The woodland on site all falls into this category and the majority of the resource also falls within a SINC and is designated as

Ancient Woodland. A botanical survey of these areas in spring/early summer when the ground flora is in evidence would allow an evaluation of their ecological value to be made.

5.9 There are no other habitats on site of high intrinsic ecological value. The improved grassland habitat is common and widespread in south Wales and of minimal ecological value. In addition, all (bar one species poor example) of the hedgerows on the Survey Site are defunct.

Invasive species

5.10 Japanese knotweed and Himalayan balsam have both been noted on the Survey Site. It is recommended that a walkover survey of the Survey Site is carried out once access is available to all areas, including the proposed access route to map all locations where these species are growing. This should be done within the period June - July when both species are most in evidence.

5.11 If work is to take place in any areas where these species are present, a Management Plan will need to be drawn up detailing the methods that will be used to remove these species under controlled conditions as detailed by the Environment Agency (The Knotweed Code of Practice 2003 and guidance on Environment Agency website).

Protected Species and Species of Conservation Importance

Bats

Trees and Buildings

5.12 Twenty one trees within the Survey Site have been identified as having potential to support roosting bats. If these trees are to be removed or modified, it is recommended that a roped-access tree survey is carried out in order to confirm whether any of the features initially identified support roosting bats or have the potential to do so. Where the potential for bats to roost in the tree is confirmed then emergence/re-entry (at dusk and/or dawn) survey may need to be carried out to confirm the likely use of the tree by roosting bats, and the status of any roost present. If a bat roost is confirmed, either through emergence/re-entry survey or through roped-access survey a European Protected Species (EPS) Licence is likely to be required before the tree can be felled.

5.13 It is recommended that all buildings to be directly or indirectly affected by the Project (if any) should be inspected for signs of roosting bats and features with the potential to support roosting bats, where access allows.

5.14 If signs of roosting bats or features with the potential to be used by roosting bats are identified during these inspection surveys, further survey in the form of dusk emergence/ dawn re-entry surveys may be required. The level of survey effort required will depend on the potential that the building or tree has been assigned in these initial inspection surveys. These further surveys (if required) should be undertaken in accordance with current best practice guidance (Hundt, 2012) at a time of year when breeding roosts may be present (i.e. between mid-May and mid-August).

Activity Survey

5.15 The areas of marshy grassland, woodland and streams on site potentially provide good foraging habitat for bats. It is recommended that bat activity surveys are carried out in order to inform an assessment of the Survey Site's value for bats and to guide the evolution of the Project and mitigation accordingly. Following the guidance provided in Hundt (2012), this would involve two walked transect routes (given the size of the Survey Site) carried out monthly between April and October, as specified in the guidelines. An automated survey using four static bat detectors (two per transect route) recording for at least three nights would also be carried out. Rather than deploying detectors at four locations every month, it is recommended that surveys are carried out at four locations for three months and another four locations for the other four months so that half the locations would be surveyed in April, June, August and October and the other four in May, July and September. This would increase the spatial coverage of the Survey Site but ensure that sampling was undertaken at each location in spring, summer and autumn to allow a robust seasonal comparison to be made.

Great Crested Newt

5.16 The presence of four ponds on site with several more in the vicinity of the Survey Site, and the occurrence of suitable terrestrial habitat on site indicate that great crested newts could potentially be using the Survey Site. This should be established through further targeted survey work.

5.17 Section 5.4 of the GCN Mitigation Guidelines (English Nature, 2001) recommends that:

"*For a common situation, where a plot of land containing a pond is proposed for development, the pond itself should be surveyed, and other ponds up to 500m away should also be checked, if it is thought likely that great crested newt populations centred on these ponds would be affected by changes to the plot*."

5.18 Natural England guidance(2001) is further developed in the GCN Method Statement which states that:

'*The decision on whether to survey depends primarily on how likely it is that the development would affect newts using those ponds. For developments resulting in permanent or temporary habitat loss at distances over 250m from the nearest pond, carefully consider whether a survey is appropriate….. normally appropriate only when all of the following conditions are met*:

1. maps, aerial photos, walk-over surveys or other data indicate that the pond(s) has potential to support a large great crested newt population,

2. the footprint contains particularly favourable habitat, especially if it constitutes the majority available locally,

3. the development would have a substantial negative effect on that habitat, and

4. there is an absence of dispersal barriers.'

5.19 The second piece of guidance, which supersedes the first, specifies that all four conditions should be met for surveys to be required of ponds beyond 250m of the Survey Site boundary. In this case, condition 1. is not met as there is no indication from desk study data or the HSI assessment that any of the ponds is likely to support a large population of GCN or that they provide particularly suitable habitat (condition 2.) with no ponds within 250m of the Survey Site recording better than an 'average' score on the HSI assessment.

5.20 As a consequence, it is recommended that all ponds within 250m (not 250-500m) would need to be further surveyed. This would initially involve four surveys within the period mid-March to mid-June to establish presence/absence (with at least two surveys during mid-April to mid-May), with an additional two surveys (six in total) required to estimate population size if newts are found during the first four surveys.

Dormouse

5.21 If the woodland on the Survey Site is to be removed, damaged or significantly modified, it is recommended that dormouse surveys are carried out with the aim of establishing whether the species is present on site, and therefore whether a EPS Licence will be required before woodland can be cleared or significantly modified. It is recommended undertaking a dormouse survey, following methods based on those prescribed in best practice guidance (Bright *et al*. 2006). The surveys will involve the use of dormouse boxes in areas of woodland and nest tubes in cluttered environments where boxes cannot be used. The survey will be designed to detect the presence or absence of dormice rather than to provide an abundance estimate or monitor a population of the species. Surveys would be carried out monthly during April-November.

Otter and Water Vole

5.22 Otter usage of the Survey Site is likely to be occasional although there are suitable resting/lying up places present along the eastern stream corridor within the Survey Site. Mitigation measures to avoid potential killing or injury to individuals during the construction and decommissioning phases should be considered, for example covering open workings overnight.

5.23 A survey for water voles along the banks of the water courses on site should be carried out as a precautionary measure to establish whether the species is likely to be present on site and to design mitigation accordingly. This would involve one visit and should be carried out ideally in spring when field signs are likely to be most in evidence but the vegetation has not grown up to obscure them. It will also be possible to carry out additional checks for signs of otter at the same time as the water vole survey, for completeness. The survey would be carried out in accordance with best practice guidelines (Chanin (2003) and Strachan *et al*., (2011), respectively).

Reptiles

5.24 A reptile survey should be carried out on the Survey Site to establish the presence/absence of reptiles, the species present and the approximate population size. The survey will be conducted using artificial refuges (e.g. roofing felt and tin) to aid in the detection of reptiles and assessment of their distribution and abundance, following good practice guidance, including that set out in the Herpetofauna Worker's Manual (Gent & Gibson, 2003) and Reptile Survey Guidance (Froglife, 1999). This requires a minimum of seven visits conducted at an appropriate time of year (either spring/early summer and/or late summer/early autumn) during suitable weather conditions.

Badger

5.25 Information on badgers is provided in a confidential version of this report.

Breeding Birds

5.26 Breeding bird surveys of the Survey Site should be carried out with the aim of establishing the ecological value of the breeding bird population and to inform mitigation measures. Farmland birds (occurring both within the Survey Site and a buffer of up to 50m) would be the main target of the survey. Territory mapping surveys based on the British Trust for Ornithology's Common Bird Census (CBC) methodology will be undertaken. These would be conducted on three occasions during the breeding season. It is recommended that an initial visit is carried out in mid-April, followed by additional visits in May and June.

5.27 The Phase 1 survey was partly conducted in winter with an experienced ornithologist (Matt Hobbs) part of the survey team. As there was no evidence of notable aggregations of common species or habitat that may support rarer species it is considered that there is no justification for carrying out targeted wintering bird surveys.

Barn owls

5.28 It is recommended that all buildings and mature trees on site to be directly or indirectly affected by the Project (if any) should be inspected for signs of roosting or nesting. Signs to be searched for include: nest debris, barn owl pellets, white splashes from barn owl droppings and live or dead barn owls themselves (Barn Owl Trust, 2012). Barn owl roost inspections can be conducted all year round.

Terrestrial Invertebrates

5.29 The block of marshy grassland to the west, provides potential habitat for marsh fritillary butterflies due to the presence of their food plant, devil's-bit scabious. As such a survey of adults during late May/June and also the larval webs should be carried out in mid-August to mid-September. Both surveys would involve walking transects over the marshy grassland, the former noting adult marsh fritillary butterflies and the latter checking all patches of the food plant for larval webs and larvae and following standard methods[9].

5.30 The woodland at Target Note 10, for example represents a fairly extensive area of semi-natural habitat that may be important for terrestrial invertebrates; which are both strongly represented in wooded habitats. If the woodland at TN10 is to be affected by the Project it is proposed that further survey will be appropriate that targets both *Lepidoptera* (notably moths) and beetles (*Coleoptera*).

[9] http://www.ukbms.org/Downloads/UKBMS%20Ng2%20-%20Marsh%20Frit%20Webs%20guidance%20notes.pdf

A moth survey should also be undertaken of the marshy grassland area in the north-west of the site.

5.31 Survey of *Lepidoptera* should involve two night-time moth surveys to be undertaken in late spring and mid-summer. Trapping using Skinner or Robinson moth traps fitted with mercury vapour bulbs is most suitable in terms of attracting an extensive and variable moth fauna. Lights should be switched on at dusk and remain lit until dawn the following day. The traps should be checked periodically throughout the night to log any new arrivals. Any species hard to identify from external markings alone, and those requiring further confirmation, should be retained and dissected if necessary to ascertain their identity with the use of a stereoscopic microscope.

5.32 For beetles, a method should be developed that follows Natural England (ISIS) protocol (Drake et al., 2007) to sample beetle assemblages directed at woodland habitats, via hand searches, sweep netting and pitfall trapping. To align with the *Lepidoptera* surveys, this can be undertaken in late spring/early summer and mid/late summer/early autumn. Subsequent laboratory identification will be required for many of the specimens collected.

5.33 Analysis of the results should use the ISIS protocol to determine whether any broad or specialist assemblage types of *Lepidoptera* and / or *Coleoptera* are present. Consideration should also be given to any rare, scarce or nationally threatened species present, including Section 42 species.

Aquatic Invertebrates

5.34 On the assumption that watercourses will be affected by the Project, it may be appropriate to undertake an assessment of water quality, compliant with the Water Framework Directive (WFD). A main aim of the WFD is to prevent deterioration in the status of aquatic ecosystems, protect them and improve the ecological condition of waters. The requirement for such an assessment would be driven in consultation with Natural Resources Wales. Should such an assessment be required it may be appropriate to assess the ecological quality and surface water chemistry of watercourses to be affected.

5.35 To determine ecological quality kick-sampling for aquatic invertebrates should be undertaken at selected locations along the ditch / stream, and the Biological Monitoring Working Party (BMWP) score applied to inform an assessment of water quality and species present. This survey is best undertaken in spring or autumn in swift flowing waters, or in summer in stationary ditches or those with a slow flow. All macro-invertebrates should be identified to species level in order to determine the presence of any scarce or nationally notable species.

5.36 To determine water chemistry status a single water sample should be extracted at three locations; within the Survey Site and upstream and downstream of this. Samples should be dispatched to a UKAS accredited laboratory for subsequent analysis, to cover a standard range of parameters including: Biological Dissolved Oxygen, Total Suspended Solids, nutrient composition (e.g. nitrite as nitrogen, total oxidised nitrogen, total ammoniacal nitrogen, total phosphorus), hardness, calcium, alkalinity, conductivity and pH.

5.37 The condition of the watercourse can subsequently be analysed by recording and comparing the aggregated number of taxa, and average score per taxon from the sampling points along the watercourse within, upstream and downstream from the Survey Site. The statistical model (RICT) developed for WFD classification would be used to calculate the Ecological Quality Ratio (EQR) that compares observed with expected results for a watercourse of the same type. The EQR is then used to identify the Biological Status of the watercourse which is separated into five bands (Bad to High) required by the WFD.

5.38 It may also be necessary to undertake invertebrate surveys of any ponds that are likely to be affected by the development proposals. These are likely to involve surveys of aquatic beetles in June and August

Un-surveyed Land

5.39 There are a number of small parcels of land that have not yet been surveyed in the southern part of the site. These are indicated on Figure 1b and will be surveyed once access has been arranged. The Phase 1 report will be updated once these surveys are complete.

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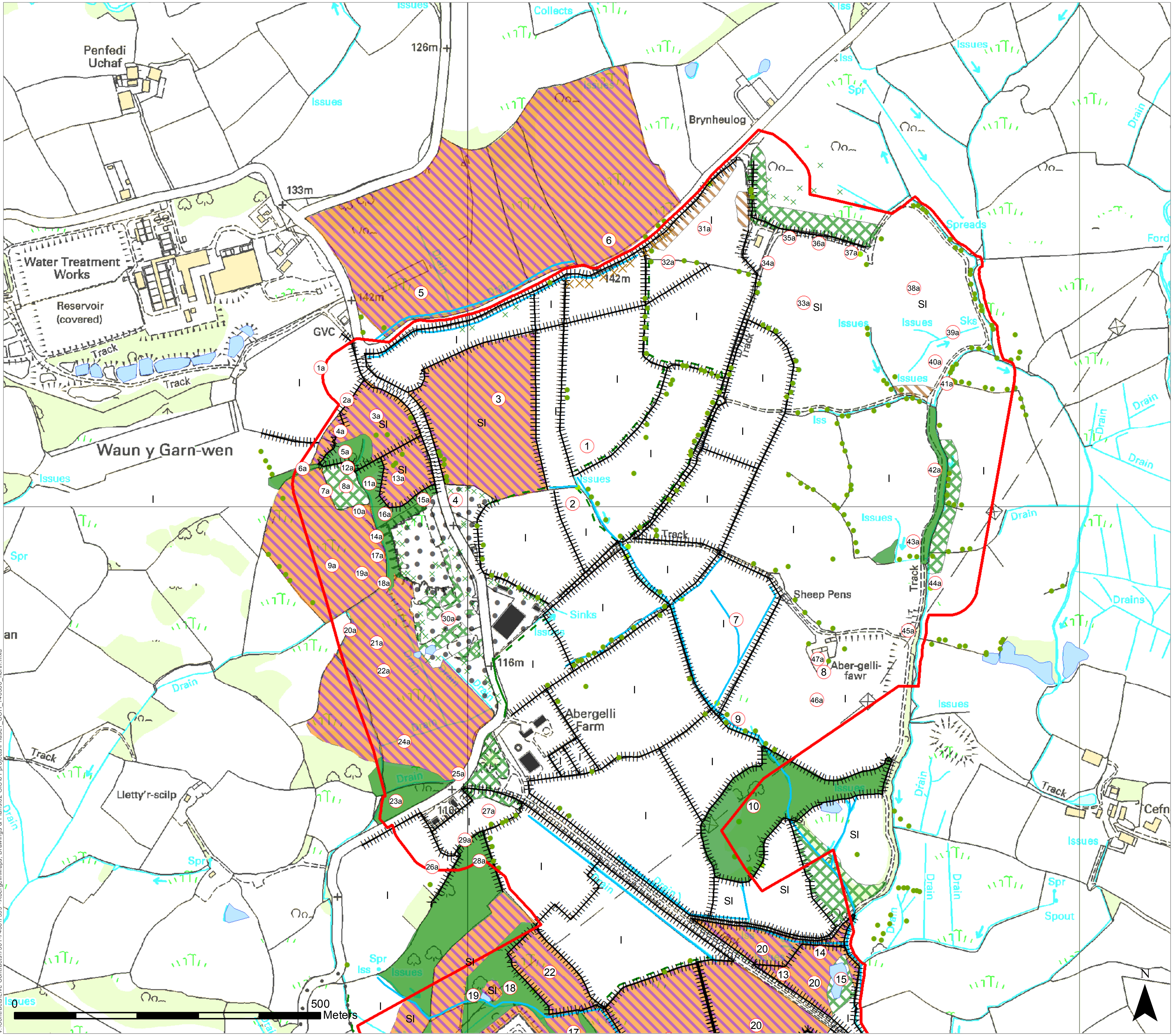
MAGIC: www.magic.gov.uk



LEGEND

- Site boundary
- Target notes
- Broadleaved woodland
- Dense scrub
- Improved grassland (I)
- Marshy grassland
- Semi-improved grassland (SI)
- Tall ruderal
- Bare ground
- Buildings
- Standing water
- Water course
- Species-poor intact hedge
- Species-poor defunct hedge
- Fence
- Scattered scrub
- Broadleaved tree
- Bracken

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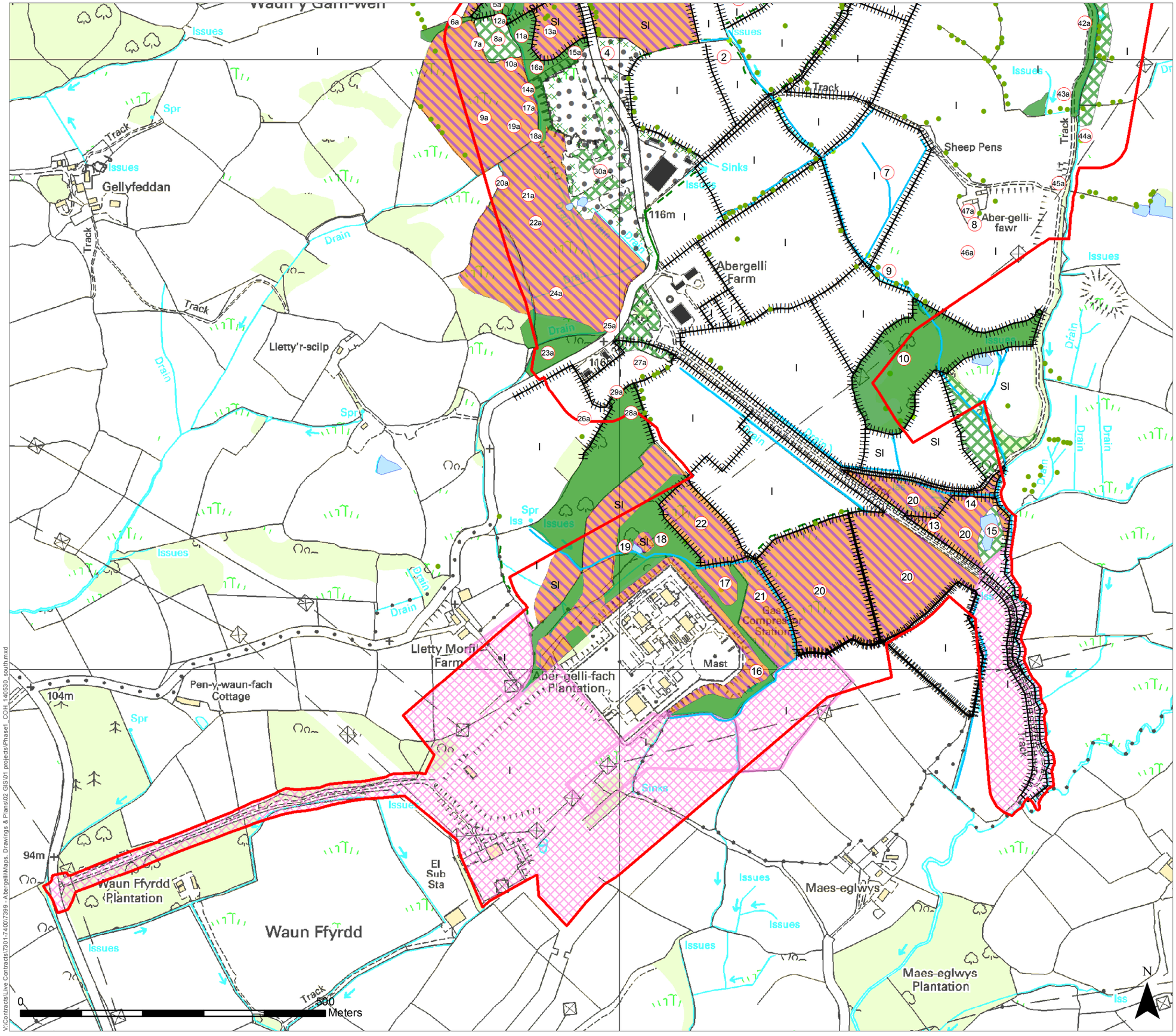
PROJECT TITLE
ABERGELLI POWER PLANT

DRAWING TITLE
Figure 1a - Phase 1 Habitat Survey North

DATE: 05.06.2014	CHECKED: MH	SCALE: 1:6,000
DRAWN: COH	APPROVED: MH	STATUS: FINAL

Sources: Ordnance Survey, BSG survey data



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LEGEND

- Site boundary
- Target notes
- Broadleaved woodland
- Dense scrub
- I — Improved grassland
- Marshy grassland
- SI — Semi-improved grassland
- Tall ruderal
- Bare ground
- Not surveyed
- Buildings
- Standing water
- Water course
- Species-poor intact hedge
- Species-poor defunct hedge
- Fence
- Scattered scrub
- Broadleaved tree
- Bracken

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PROJECT TITLE
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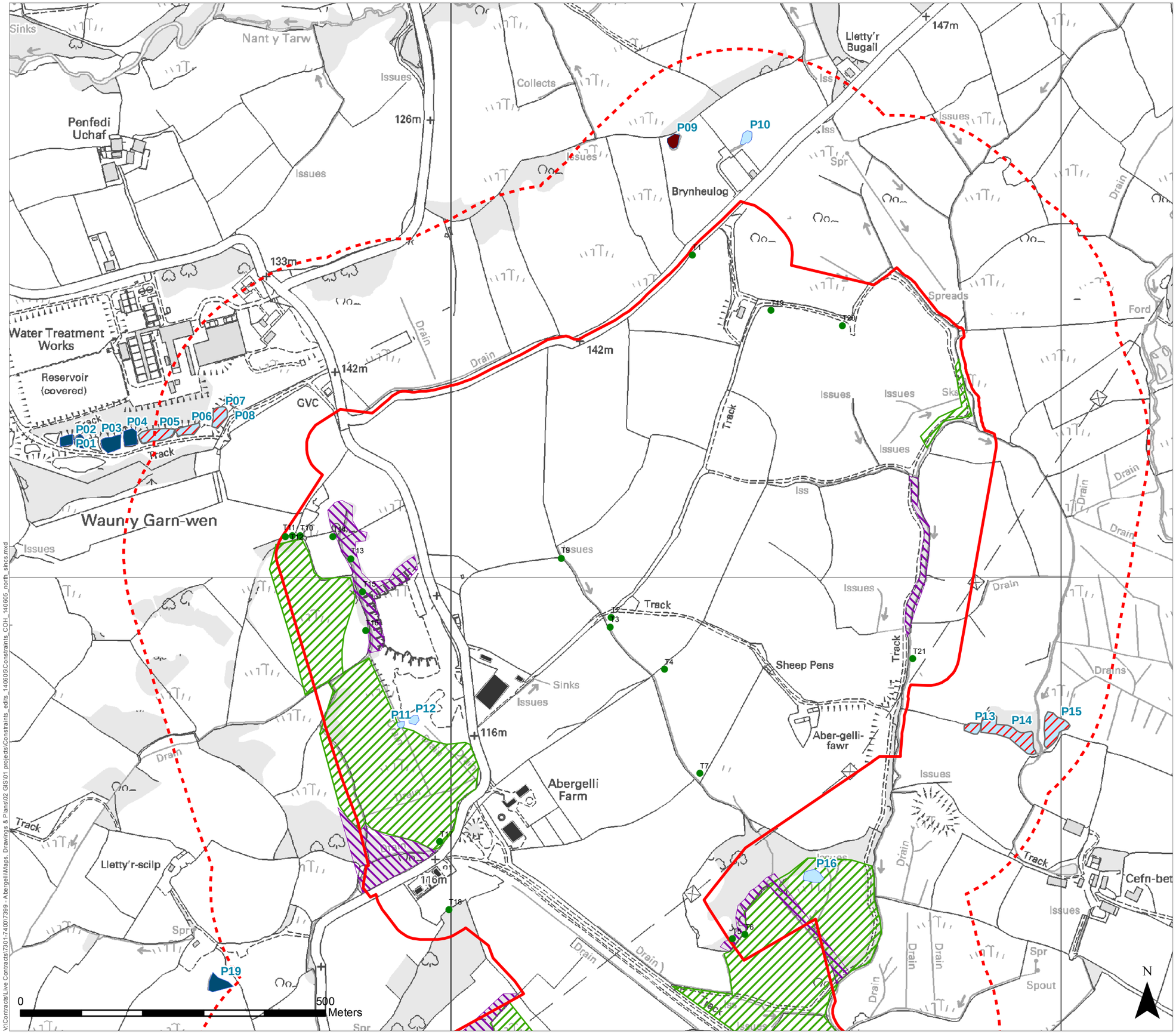
DRAWING TITLE
Figure 1b - Phase 1 Habitat Survey South

DATE: 05.06.2014 CHECKED: MH SCALE: 1:6,000
DRAWN: COH APPROVED: MH STATUS: FINAL



LEGEND

- Site boundary
- 250m buffer of survey site

Great crested newts

- Pond within 250m of Survey Site that should be surveyed for GCN
- Ponds within 250m of the Survey Site for which access was denied
- Ponds within 250m of the Survey Site that are unsuitable for amphibians
- Ponds within 250-500m of the Survey Site

Bats

- Buildings with potential to support roosting bats
- Trees with potential to support roosting bats

Dormice

- Areas with highest potential to support dormice

Reptile Potential

- Areas with highest potential to support reptiles

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PROJECT TITLE
ABERGELLI POWER PLANT

DRAWING TITLE
Figure 2a - Ecological Constraints Map North

DATE: 05.06.2014 CHECKED: MH SCALE: 1:6,000
DRAWN: COH APPROVED: MH STATUS: FINAL

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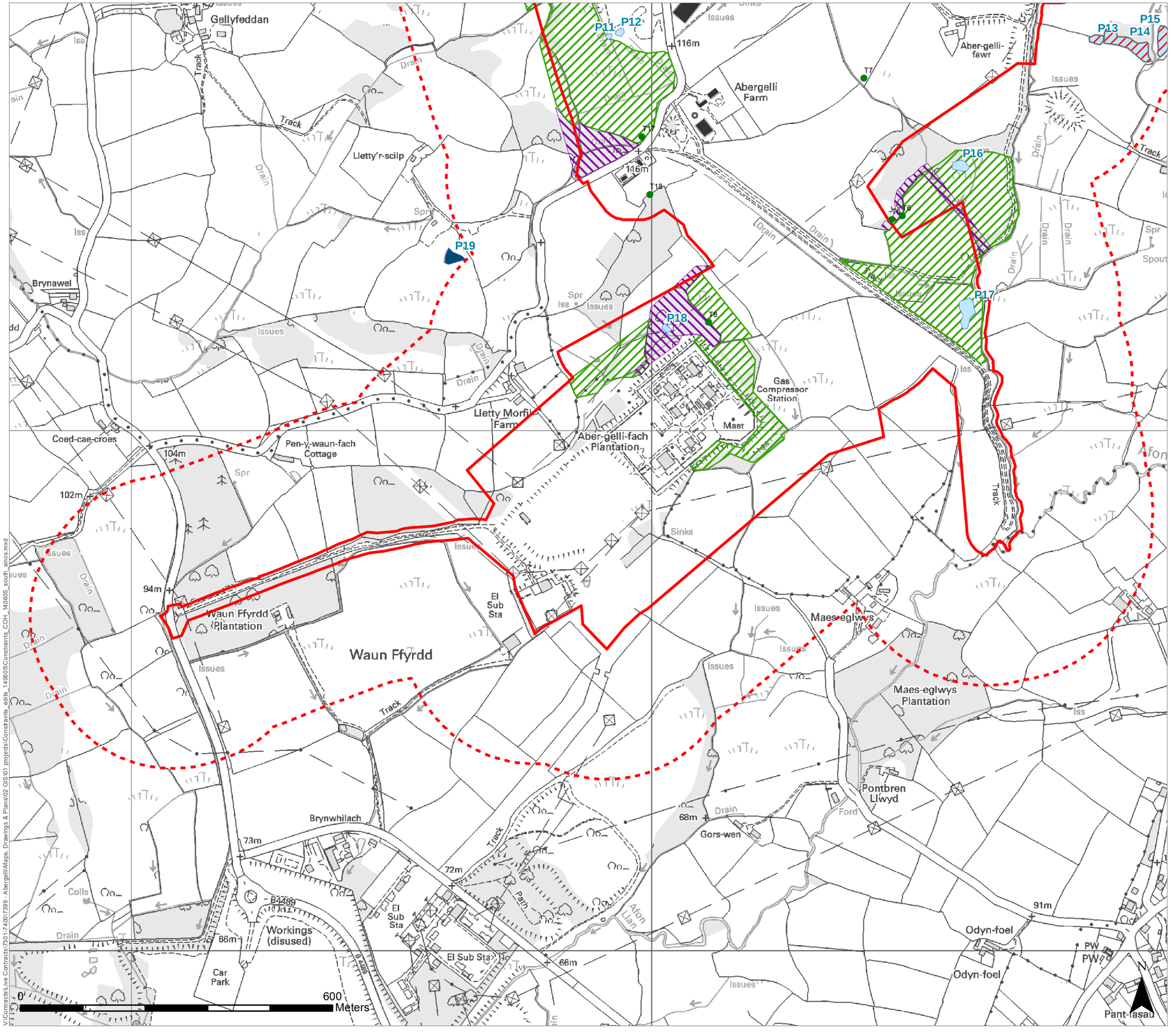

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LEGEND

- Site boundary
- 250m buffer of survey site

Great crested newts

- Pond within 250m of Survey Site that should be surveyed for GCN
- Ponds within 250m of the Survey Site for which access was denied
- Ponds within 250m of the Survey Site that are unsuitable for amphibians
- Ponds within 250-500m of the Survey Site

Bats

- Buildings with potential to support roosting bats
- Trees with potential to support roosting bats

Dormice

- Areas with highest potential to support dormice

Reptile Potential

- Areas with highest potential to support reptiles

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DRAWING TITLE

Figure 2b - Ecological Constraints Map South

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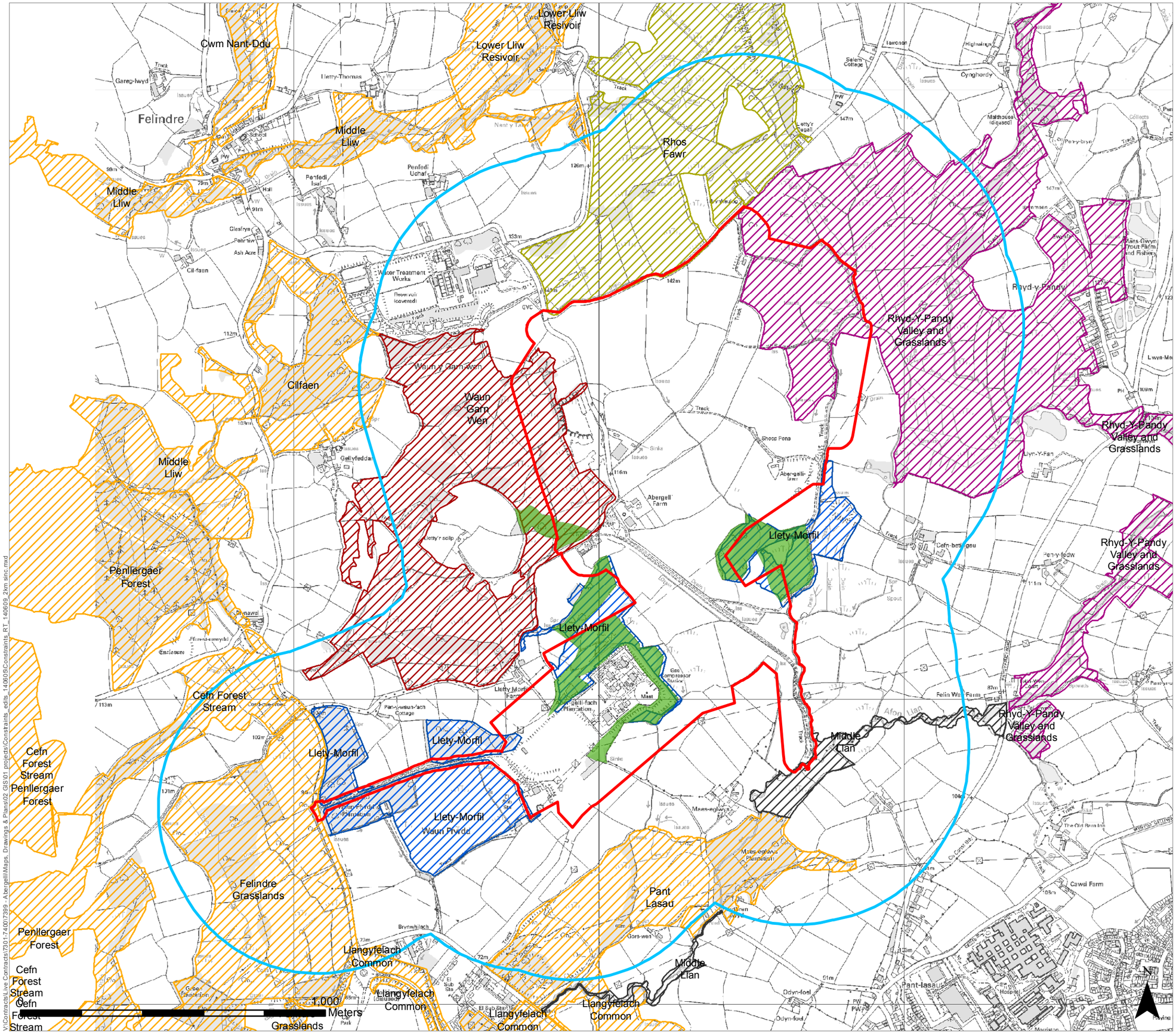
DRAWN: COH | APPROVED: MH | STATUS: FINAL



LEGEND

Site boundary

500m radius from site boundary

Site of Importance for Nature Conservation (SINC)

SINC: Llety-Morfil

SINC: Middle Llan

SINC: Rhos Fawr

SINC: Rhyd-Y-Pandy Valley and Grasslands

SINC: Waun Garn Wen

Other SINC location

Ancient Woodland

Ancient Woodland

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PROJECT TITLE

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DRAWING TITLE

Figure 3 - SINC and Ancient Woodland map

DATE: 16.06.2014 CHECKED: MH SCALE: 1:12,000

DRAWN: RT APPROVED: MH STATUS: FINAL

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Appendix 1: Target Notes

February Survey

1. A spring running into a wet ditch. The ditch has a muddy base with sweet-grass *Glyceria* sp. and soft rush the dominant plant species. Frog spawn was present.

2. A wet ditch fenced on either side. The ditch meets a spring which runs into it flowing southwards. The ditch has steeply sloping grassy banks, is open and unshaded with great willow herb *Epilobium hirstum* and soft rush present. A newly planted hedge runs along the south side – gapping up a defunct hedge. Also, occasional large coppices of holly were recorded.

3. Marshy grassland with abundant soft rush. The sward is grazed very short by horses. Frequent patches of sedge species were recorded including common sedge and glaucous sedge. Other species noted include sharp-flowered rush and/or jointed rush (difficult to separate in winter and when closely grazed), cinquefoil species, daisy and creeping bent.

4. A small concrete bunker with wasteland area. The concrete bunker is formed of 2m high brick walls with a flat roof formed from concrete sleepers. There is an open doorway on the south elevation and a 30cm x 30cm hole at the top of the west-facing wall. No evidence of bats was recorded. The surrounding land is compacted course aggregate which is becoming colonised with common grassland species. There is an earth bund around the south-east and north-east boundary, topped with dense bramble and gorse scrub.

5. An area of marshy grassland which is very closely grazed. Occasional heather and bilberry plants and patches of sphagnum moss were recorded. Purple moor grass is frequent and forms dominant tussocks at the north end of the field. Other species include sheep's fescue and a sedge species.

6. An area of marshy grassland dominated by soft rush. The field was not entered as it is outside the ownership boundary, but inspection from the roadside suggests that rushes are interspersed with agriculturally improved grassland.

7. A wet ditch running through the middle of the field containing fast flowing water with orange discolouration. The ditch is overgrown with bramble and joins another ditch on its eastern boundary, which is lined with purple moor grass, greater willowherb, and soft rush. The surrounding field is agriculturally improved with patches of soft rush.

8. A derelict stone farmhouse with only the bottom halves of walls still present. Patches of rubble and overgrown vegetation are present, which may provide good habitat for reptiles.

9. A stream lined with trees, which is fast-flowing with a stony substrate.

10. An area of broadleaved woodland. The western end is on a hill, which slopes steeply down to the east. This end (delineated by a stream running north-south) is dry with widely spaced trees and a grazed grassland ground flora (Yorkshire fog, common mouse-ear, and creeping buttercup were the most prominent species) and very little understorey was noted. The eastern end is much wetter, with carpets of opposite-leaved golden-saxifrage, extensive areas of purple moor-grass dominated ground flora with some sphagnum moss species. The understorey is thicker here and is predominantly bramble. Tree species include birch, crab-apple, holly and pedunculate oak. Most specimens are small-medium in size.

11 and 12. These Target Notes relate to evidence of badger activity and are provided in a confidential version of this report. They are also omitted from Figures.

13. A ditch along a line of small-medium trees (beech, holly, pedunculate oak) and a fence. Bilberry is growing along the fence.

14. A marshy grassland field with abundant soft rush tussocks. The area indicated by this target note is dominated by purple moor-grass with occasional cross-leaved heath and scattered small trees/scrub.

15. A shallow pond (less than 10cm deep), approximately 10m in diameter, completely covered in a sedge species (only dead leaves were evident so identification was not possible) and with a small tree-covered island in the centre. The pond is ringed by small trees. The surrounding vegetation includes purple moor-grass with occasional heather and cross-leaved heath and densely growing small trees and scrub (willow species, bramble and alder. A small pond immediately to the south is shown on OS maps. This consisted of small patches of standing water (including wheel ruts) within marshy (rushes, purple moor grass) vegetation.

16. A strip of land around the gas station, which is higher than the surrounding land. There is a gravel strip immediately surrounding the boundary fence then a steep slope covered in soft-rush dominated grassland. At the base of the slope is a mosaic of marshy rush-dominated grassland with dense bramble scrub and wet

woodland. The woodland consists of closely spaced, small and straggly trees composed largely of holly, pedunculate oak, birch, willow and alder.

17. A patch of marshy grassland almost totally dominated by soft rush. Small patch of bulrush were found towards centre of field. The field is surrounded by encroaching scrub and straggly woodland.

18. An area of wet woodland with dense bramble understorey. The species present and structure are as for Target Note 16. Wet underfoot.

19. A small pond within woodland fed by a stream. No emergent/marginal vegetation was in evidence and the pond is surrounded by small saplings.

20. Marshy grassland fields consisting of more than 25% soft rush. The intervening grassland is agriculturally improved, including perennial rye-grass *Lolium perenne*, common mouse-ear and white clover *Trifolium repens*.

21. An area of marshy grassland with approximately 75% soft rush cover. The intervening grassland is semi-improved.

22. An area of marshy grassland almost totally dominated by soft rush. The western boundary fence has heather and purple moor-grass growing along it.

April Survey

1a Improved grassland with short sward grazed by horses. Access to field restricted by presence of horses. Species observed from track include creeping thistle *Cirsium arvense*, perennial rye-grass, broad-leaved dock *Rumex obtusifolius* and creeping bent.

2a Species-poor hedge with hawthorn *Crataegus monogyna* and willow *Salix* sp., grading into old bank boundary with overgrown hedge with oak *Quercus* sp. and holly *Illex aquifolium* and drainage ditch along north side.

3a Semi-improved marshy grassland with very short sward, grazed by horses. Species recorded include soft rush *Juncus effusus*, Yorkshire fog *Holcus lanatus*, perennial rye-grass, creeping buttercup *Ranunculus repens,* silverweed *Potentilla anserina*, white clover *Trifolium repens*, dandelion *Taraxacum officinale* agg.., ribwort plantain *Plantago lanceolata*, lesser spearwort *Ranunculus flammula*, mouse-ear-hawkweed *Pilosella officinarum*, unidentified sedges *Carex* spp.

4a Marshy grassland with small copse of willow, oak and birch *Betula* sp., fenced off from horses with head of spring in centre. Potential for terrestrial phase amphibians and reptiles in sunny hedgebank and refugia provided by piles of dead wood and nesting birds in trees. Species recorded include common bent Agrostis capillaris, Yorkshire fog, soft rush, creeping bent, sweet grass *Glyceria* sp., wavy bittercress *Cardamine flexuosa*, creeping buttercup, curled dock *Rumex crispus*, broad-leaved willowherb *Epilobium montanum*, bird's-foot-trefoil *Lotus corniculatus*, lady fern *Athyrium felix-femina*.

5a Area of dense bramble *Rubus fruticosus* agg. scrub and willow regeneration immediately beneath power lines which links to wooded spur to west and marshy grassland copse to east.

6a Small wooded spur with tree species including oak, birch, holly, hawthorn with an understorey dominated by brambles and including ivy *Hedera helix*, creeping bent, Yorkshire fog, soft rush, hard fern *Blechnum spicant*, scaly male fern *Dryopteris affinis*, and bracken *Pteridium aquilinum*.

7a Bank feature delineating boundary of small field (see 8) with birch and willow regeneration and mature oak to southern end. Ground flora dominated by bracken and bramble with bluebell *Hyacinthoides non-scripta* and bilberry *Vaccinium myrtillus* to south.

8a Small field dominated by bramble scrub with bracken, broad-leaved willowherb and soft rush. Grades into copse of birch and willow regeneration to east with ephemeral ditch along south and east boundaries.

9a Large field of wet dwarf shrub heath, dominated by purple moor grass *Molinia caerulea* with soft rush, bracken, common haircap moss *Polytrichum commune*, unidentified sphagnum moss *Sphagnum* sp., ling *Calluna vulgaris*, cross-leaved heath *Erica tetralix* and bilberry along margins. Some birch and willow regeneration in small scattered copses.

10a Badger snuffle holes and intermittent trails.

11a Mature oak.

12a Mature alder *Alnus glutinosa*.

13a Semi-improved grassland with high proportion of herbs and low proportion of grass. Species recorded include soft rush, ribwort plantain, mouse-ear-hawkweed, dandelion, daisy *Bellis perennis*, self-heal *Prunella vulgaris*, white clover, creeping buttercup, broad-leaved willowherb, bird's-foot-trefoil, common mouse-ear *Cerastium fontanum*, yarrow *Achillea millefolium*, marsh thistle *Cirsium palustre* and with lesser spearwort, water figwort *Scrophularia aquatica* and horsetails *Equisetum* sp. in the southern corner.

14a Wooded stream corridor with oak, hawthorn, birch and occasional alder. Understorey dominated by bramble scrub.

15a Embankment of large raised area with mature trees on banks. Northern side with young willow, hawthorn, birch, elder *Sambucus nigra*, rowan *Sorbus aucuparia* and semi-mature / mature oak. Ground flora dominated by brambles but with hart's-tongue fern *Asplenium scolopendrium*, lady fern, hard fern, scaly male fern, unidentified polypody fern *Polypodium* sp., common nettle *Urtica dioica* and dog's mercury *Mercurialis perennis*. Several stands of Japanese knotweed Fallopia japonica identified.

16a Mature oak tree.

17a Mature oak tree.

18a Wooded stream corridor with willow and elder and intermittent bramble scrub. Species recorded include common nettle, broad-leaved willowherb, horsetails, water figwort, soft rush, hard fern, bracken, angelica *Angelica sylvestris*, herb Robert *Geranium robertianum* and pendulous sedge *Carex pendula*. Stand of Japanese knotweed at bend in stream.

19a Stand of bramble scrub within willow and birch regeneration with damp substrate supporting reed canary grass *Phalaris arundinacea*. Lots of piles of dead wood.

20a Irrigation ditch, occasional young birch and willow with purple moor-grass, soft rush and bracken. Ditch dry.

21a Large field superficially similar to 9a but appears to have been managed. Purple moor-grass not as dominant, lots of bare earth and young ling and cross-leaved heath plants. In addition hare's-tail cotton grass *Eriphorum vaginatum*, deergrass *Trichophorum germanicum* and lousewort *Pedicularis* sp.

22a Field drain holding water with common reed *Typha latifolia*, broad-leaved pondweed *Potamogeton natans* and water-plantain *Alisima plantago-aquatica*. Common lizard *Lacerta vivipara* directly observed on bank of ditch.

23a Wooded copse comprised of young birch and willow with understorey of bramble scrub and ground flora comprising common nettle, lady fern, scaly male fern, wood false brome *Brachypodium sylvaticum*. Himalayan balsam *Impatiens glandulifera* seedlings abundant. There is also a ditch with very shallow, ponded, oily water with no aquatic vegetation.

24a Drainage ditch holding water, and with dense stands of sphagnum moss in bottom of ditch. Steep sides with ling, cross-leaved heath and purple moor-grass.

25a Birch.

26a Improved grassland with very short sward, grazed by horses. Horses present, not surveyed in detail.

27a Area of partially colonised tipped spoil, being re-graded at time of survey. Bramble and willow scrub around margins / banks and horse training area to North. Species recorded in this area include bramble, gorse *Ulex europea*, curled dock, broad-leaved dock, common nettle, a brassica *Brassicaceae*, creeping thistle, colt's foot *Tussilago farfara*, foxglove *Digitalis purpurea*, wavy bittercress, bird's-foot trefoil, Yorkshire fog and white clover.

28a Area of deciduous woodland and scrub comprising occasional mature oak with hazel *Corylus avellana*, holly, birch, rowan, willow, a scrub layer of bramble and a ground flora including bluebells, hard fern, soft rush, creeping bent, common bent, a spurge *Euphorbiaceae*, wood false-brome and abundant Himalayan balsam seedlings. Area contains many piles of fallen deadwood and there is a bank feature along part of the northern boundary.

29a Mature ash *Fraxinus excelsior*.

30a Earth works with large percentage bare, waterlogged earth. In undisturbed marginal sloped areas gorse, willow and bramble scrub is present.

31a Improved grassland with very short sward, grazed by horses. Species recorded include perennial rye-grass, common bent, occasional soft rush, daisy, broad-leaved dock, mouse-ear hawkweed, white clover, dandelion, cocksfoot *Dactylis glomerata*, annual meadow grass *Poa annua* and couch grass *Elymus repens* with approximately 20% bare earth.

32a Bank field boundary with many mature but small holly trees and ground flora of grazed improved grassland.

33a Semi-improved grassland similar in composition to 38 but with very short sward, grazed by horses.

34a Stone wall / bank delineating eastern edge of domestic property.

35a Mature oak.

36a Treeline along track with mature / semi-mature oak, and scrub layer comprising gorse and bramble. There are many loose rocks and exposed tree roots with a wet ditch along the northern side fringed by soft rush. The water is ponded and shallow with no aquatic plants observed.

37a Mature oak.

38a Semi-improved grassland on a sloped field with a spring issuing in the centre. There are occasional scrub stands comprised of hawthorn, bramble, willow, gorse with common nettles and cleavers *Galium aparine*. The slope is not uniform and there are wetter areas indicated by stands of soft rush. Other species recorded include perennial rye-grass, creeping bent, common bent, Yorkshire fog, cocksfoot, creeping thistle, marsh thistle, broad-leaved dock, dandelion, daisy, yarrow, creeping buttercup.

39a Damp drainage ditch with soft rush, common reed, broad-leaved willowherb and occasional pendulous sedge. No visible standing water as vegetation very dense. Likely to be ephemeral.

40a Area where soft-rush dominant and very low percentage of grass. Herbs recorded include common sorrel *Rumex acetosa*, knotgrass *Polygonum aviculare*, common mouse-ear, creeping buttercup, wavy bitter-cress and cleavers.

41a Stream, flowing water approximately 30cm deep, good water quality, moderate flow. Bankside vegetation including lesser water-parsnip *Berula erecta*, horsetails *Equisetum* sp., reed canary-grass, angelica, broad-leaved willowherb, bramble, bracken, soft rush, common nettle, hard fern, common haircap moss, cuckoo pint and lesser celandine *Ranunculus ficaria*. Stream fringed by regenerating birch and willow scrub.

42a Tree-lined stream corridor with mature / semi-mature oak trees along Eastern edge with occasional birch, willow, ash and holly. Understory of gorse with bramble scrub and soft rush grading into improved grassland to east. Along western bank, grassland typical of wider area but with longer sward (low-density sheep-grazing) and also including sweet vernal grass *Anthoxanthum odoratum*, crested dog's tail *Cynosurus cristatus*, a fescue *Festuca* sp. and field wood rush *Luzula campestris*.

43a Large mammal slide and run to hole under bank / tree on eastern side of bank. Many vole tunnels along western side of bank in long tussocky grass.

44a Mature oak.

45a Drainage ditch and area of marshy grassland including species such as horsetails, flote-grass, lesser water-parsnip, angelica and soft rush.

46a Area of improved grassland with short sward, grazed by sheep. Contains piles of semi-colonised rubble with common nettles and gorse.

47a Curtilage of old barns containing a number of mature / dead ash trees.

Appendix 2: Photographs

Habitats

Photo 1: Improved grassland with defunct hedge.

Photo 2: Marshy grassland at TN3.

Photo 3: Marshy grassland at TN5.

Photo 4: Marshy grassland at TN22.

Photo 5: Marshy grassland at TN14.

Photo 6: Woodland at TN10.

Habitats – April Survey

Photo 1a: Hare's-tail cottongrass

Photo 2a: Improved grassland

Photo 3a: Semi-improved grassland at TN3a

Photo 4a: Marshy grassland at TN21a

Photo 5a: TN22a Field drain

Photo 6a: Stream corridor at TN42

Photo 7: Woodland at TN18.

Photo 8: Stream in woodland TN10.

Photo 9: Stream at TN9.

Ponds surveyed with HSI method

Photo 10: Pond P1 within water treatment works.

Photo12: Pond P3.

Photo 14: Pond P5.

Photo 11: Pond P1 within water treatment works.

Photo 13: Pond P4.

Photo 15: Pond P6.

Photo 16: Pond P7.

Trees with potential for roosting bats

Photo 17: T1

Photo 18: T2

Photo 19: T3

Photo 20: T4

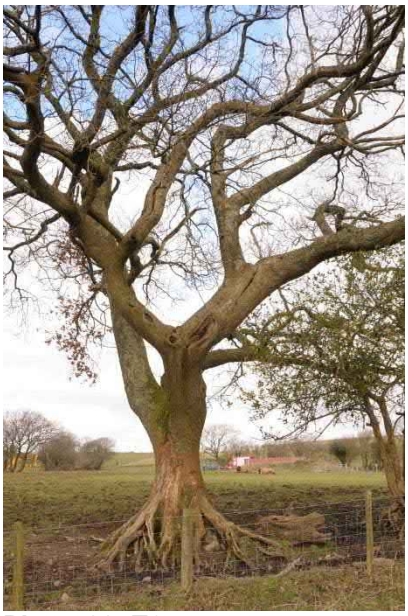

Photo 21: T5

Photo 22: T6

Reptiles – examples of suitable habitat.

Photo 24: Mounds of wood south of TN10.

Photo 25: Tussocky grassland suitable for reptiles.

Badger – images providing evidence of badgers are provided in a confidential version of this report.

Buildings

Photo 26: Abergelli Farm

Photo 27: Abergelli Farm Stables

Photo 28: Barn to south of Abergelli Farm

Photo 29: Barn to North of Abergelli Farm

Photo 30: Building adjacent to barn at Photo 4

Photo 31: Bunker at TN4

Appendix 3: Bat Tree Survey Results

6.1

ID	OSGR	Species	Category	Height	DBH (cm)	Type	Aspect	Extent	Height	Canopy	U-storey
T1	SN6539002532	Oak	2	12m	110	Extensive ivy cover on stem with lifted plates	N		4-8m	20	0
T2	SN6525601938	Birch	2	5m	40	Cavity- small hollows on both stems	E	0.4x0.2m	1-2m	0	0
T3	SN6530601421	Birch	2	8m	100	Woodpecker hole	SW		4m	0	0
T4	SN6534301853	Oak	1	10m	90	Two splits one open one less obvious	S		5 and 5 m	0	0
T5	SN6545501412	Birch	2	14m	160	Rot hole – extent unknown			4m	50	10
T6	SN6547501418	Birch	2	15m	80	Rot hole	NW	0.5m	2-3m	50	0
T7	SN6540101683	Oak	2	17m	80	Thick ivy and hollow trunk exposed	N		Throughout	0	0
T8	SN6509901209	Oak	2	17m	200	Recently cut limb has revealed rot hole within	S	0.1m	2m	50	25
T9	SN6517002031	Oak	2	15m	80	Split limb	N			0	0
1404-01	TN6 – N edge	Oak	2		30	WPH x 5	All	2-4m AGL	2-4m AGL	50	20
1401-02	TN6 – N edge	Oak	2		30	Hollow @ base	N	0.2 x 0.5	0-1m AGL	50	20
						Split in branch	?		8m AGL	50	20
1404-03	TN6 – N edge	Oak	2		100	Cavity / rot back			6m AGL		
						Split limb	E		6m AGL		
1404 - 04	TN11	Oak	2		50	Dense ivy	All	All	All	50	50
1404 -05	TN12	Alder	2		40	Hollow limb			6mAGL	50	50
1404 - 06	TN16	Oak	2		60	Multiple splits	N and E		4m AGL	50	50
1404 -07	TN17	Oak	2		40	WPH	S	10cm diameter	4mAGL	50	50
1404-07	TN 25	Birch	2		60	Dense ivy	All	All	All	50	50
1404-08	TN29	Ash	1		75	Rot hole	N		3mAGL	50	50
						Hollow limb	N		7mAGL		
1404-09	TN35	Oak	2		60	Hollow limb	N		5mAGL	50	50
						Cavity main stem	W		4mAGL		

						Split / hollow limb	W		5mAGL		
1404-10	TN37	Oak	2		40	Slit main stem	Up		6mAGL	50	50
						Rot hole /hollow	S		3mAGL		
1404-11	TN44	Oak	2		100	Dense ivy	All	All	All	50	50

Appendix 4: HSI Results

Pond	HSI	Value for great crested newts
P07	0.67	Average
P08	0.77	Good
P09	0.47	Poor
P10	0.64	Average
P16	0.66	Average
P17 on site	0.61	Average
P18 on site	0.53	Below average

Pond Ref.	Location	Pond Area M^2	Pond permanence	Water Quality	Pond Shading %	No. of waterfowl	Occurrence of fish	Pond density	Proportion of newt friendly habitat around pond within 500m – Any Barriers?	Macrophyte content (est % total of emergent and submerged macrphytes)	Notes
P08	SN6463502258	240	Never dries	Good	10	Minimal	Possible	Y	Good	30	Typha and rushes around edge. Close access not possible.
P07	SN6464602272	150	Never dries	Good	30	Minimal	Possible	Y	Good	0	Not well vegetated.
P10	SN6548702727	70	Sometimes dries	Good	5	Minimal	Possible	Y	Good	20	Small and shallow.
P09	SN6535602709	20	Annually dries	Moderate	30	Absent	No	Y	Good	0	Very shallow and unlikely to fill up – probably mostly dry.
P16	SN6558701536	25	Sometimes	Good	60	Absent	No	Y	Good	40	
P17	SN6559801237	100	Annually dries	Good	80	Absent	No	Y	Good	100	Water shallow and covered in Carex species. To south consists of patches of standing water within Molinia
P18	SN6503101199	50	Never	Moderate	100	Absent	No	Y	Moderate	0	Small pond within woodland – water dark and no aquatic vegetation in evidence.

Appendix 5: Bird species recorded during Phase 1 survey.

Latin Name	Common Name
Mallard	*Anas platyrhynchos*
Buzzard	*Buteo buteo*
Red kite	*Milvus milvus*
Woodpigeon	*Columba palumbus*
Great spotted woodpecker	*Dendrocopos major*
Meadow pipit	*Anthus pratensis*
Pied Wagtail	*Motacilla alba yarrellii*
Dunnock	*Prunella modularis*
Wren	*Troglodytes troglodytes*
Robin	*Erithacus rubecula*
Blackbird	*Turdus merula*
Song Thrush	*Turdus philomelos*
Mistle thrush	*Turdus viscivorus*
Redwing	*Turdus iliacus*
Blue Tit	*Parus caeruleus*
Great Tit	*Parus major*
Long tailed tit	*Aegithalos caudatus*
Magpie	*Pica pica*
Jackdaw	*Corvus monedula*
Carrion crow	*Corvus corone*
Rook	*Corvus frugilegus*
House sparrow	*Passer domesticus*
Chaffinch	*Fingilla coelebs*
Greenfinch	*Carduelis chloris*
Goldfinch	*Carduelis carduelis*
Reed bunting	*Emberiza schoeniclus*

Appendix 6: Summaries of Relevant Legislation, Policy and Other Instruments

National Planning Policy

6.2 Technical Advice Note (TAN) 5 provides Welsh Assembly Government advice about how the land use planning system in Wales should contribute to protecting and enhancing biodiversity and geological conservation.

6.3 It follows that the TAN provides guidance to local planning authorities on: the key principles of positive planning for nature conservation; nature conservation and Local Development Plans; nature conservation in development management procedures; development affecting protected internationally and nationally designated sites and habitats; and, development affecting protected and priority habitats and species.

6.4 Planning considerations with regard to habitats and species are of greatest relevance to the Abergelli Farm proposal. For a full account, the TAN should be referred to, but some of the key principles are summarised as follows:

i. When dealing with cases where a European protected species of plant or animal may be affected, a local planning authority needs to have regard to the requirements of the Habitats Directive in the exercise of its functions.

ii. The TAN refers to the Wildlife and Countryside Act 1981 (as amended), which makes it an offence (with certain limited exceptions and in the absence of a licence) to intentionally to kill, injure or take any wild bird, or to damage, take or destroy the nest of any wild bird whilst that nest is being built or in use, or to take or destroy its eggs. Further offences apply to species listed under Schedule 1 of the Act.

iii. The above Act also affords protection to wild animals of the species listed in Schedule 5, and to wild plants listed in Schedule 8, most of which are not European protected species. Actions that are likely to result in an offence are identified;

iv. With regard to badger, Meles meles, the TAN refers to the provisions of the Protection of Badgers Act, 1992;

v. The TAN makes reference to Sections 40 and 42 of the Natural Environment and Rural Communities Act 2006, which place a duty on the Welsh Assembly Government to have regard to the purpose of conserving biodiversity (see Section 1.10 of this report);

vi. In section 2.4 it is noted that when deciding planning applications that may affect nature conservation, local planning authorities should protect wildlife and natural features in the wider environment, with appropriate weight attached to priority habitats and species in Biodiversity Action Plans;

vii. When determining planning applications, planning authorities should ensure that all material considerations are taken into account, that decisions are informed by adequate information about the potential effects of development on nature conservation, and that the range and population of protected species is sustained;

viii. Planning applications should demonstrate a step-wise approach to avoid harm to nature conservation, minimise unavoidable harm by mitigation measures, offset residual harm by compensation measures and look for new opportunities to enhance nature conservation.

UK Post-2010 Biodiversity Framework

6.5 The Environment Departments of all four governments in the UK work together through the Four Countries Biodiversity Group. Together they have agreed, and Ministers have signed, a framework of priorities for UK-level work for the Convention on Biological Diversity. Published on 17 July 2012, the 'UK Post-2010 Biodiversity Framework' covers the period from 2011 to 2020.

6.6 Most work which was previously carried out under the UK Biodiversity Action Plan (UK BAP) is now focussed in the four countries of the UK through the new framework. The UK BAP partnership no longer operates but includes detailed Action Plans for priority habitats and species, which are still in use and of relevance. The list of priority habitats and species included within the UK BAP list is equivalent to the list of Section 42 habitats and species.

6.7 The UK BAP is supported by a series of Local Biodiversity Action Plans (LBAPs), usually set up on a local authority administrative boundary basis. Each LBAP identifies those habitats and species considered to be most important in that area (usually referred to as priority habitats and species). Commonly, an LBAP will identify a number of habitats and species for which "action plans" have been prepared. The Swansea LBAP is was created in 2005 but is unavailable as it is under review.

Wildlife Legislation

6.8 Legislation of most relevance to this assessment includes the following:

Natural Environment and Rural Communities (NERC) Act 2006

6.9 Section 40 of the Natural Environment and Rural Community Act (NERC) 2006 sets out the duty which public authorities have to conserve biodiversity. Section 40 States that: "every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity". The term Public Authority includes local authorities and local planning authorities.

6.10 Paragraph 40(3) goes on to state that "conserving biodiversity includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat".

6.11 Paragraph 42(1) states that "the Secretary of State must, as respects Wales, publish a list of the living organisms and types of habitat which in the Secretary of State's opinion are of principal importance for the purpose of conserving biodiversity". This replaces a similar reference to the list that was found in Section 74 of the Countryside and Rights of Way Act 2000 (the CRoW Act).

The Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000)

Protection afforded to birds

6.12 Section 1 of the Wildlife and Countryside Act 1981 (WCA) prohibits the intentional killing, injuring or taking of any wild bird and the taking, damaging or destroying of the nest (whilst being built or in use) or eggs. Section 1 also prohibits disturbing any bird listed on Schedule 1 of the Act whilst at or near the nest and prohibits disturbing the dependent young of such birds.

Protection afforded to other animals

6.13 Species listed on Schedule 5 that may be of relevance to this site include GCNs, bats, otter, water vole and all species of reptiles. The places of shelter used by otter and water vole are protected, but reptiles are protected from killing and injury only.

Protection afforded to Sites of Special Scientific Interest (SSSIs)

6.14 Section 28 allows for the creation of SSSIs by the government (through Natural Resources Wales in Wales) where Natural Resources Wales (NRW) "is of the opinion that any area of land is of special interest by reason of any of its flora, fauna, geological or physiographical features."

6.15 Section 28G specifies the duty of specific public authorities (including local authorities) to further the conservation and enhancement of the features by reason of which the site is designated and also to notify NRW of operations likely to damage such features in order that NRW may consent to or refuse permission for such operations.

The Conservation of Habitats and Species Regulations 2010

6.16 The Conservation of Habitats and Species (Amendment) Regulations 2012 consolidates the various amendments that have been made to the Regulations. The original (1994) Regulations transposed the EC Habitats Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Council Directive 92/43/EEC) into national law.

6.17 "European protected species" (EPS) are those which are present on Schedule 2 of the Conservation of Habitats and Species Regulations 2010. They are subject to the provisions of Regulation 41 of those Regulations. All EPS are also protected under the Wildlife and Countryside Act 1981 (as amended). Taken together, these pieces of legislation make it an offence to:

a) Intentionally or deliberately capture, injure or kill any wild animal included amongst these species;

b) Possess or control any live or dead specimens or any part of, or anything derived from a these species;

c) Deliberately disturb wild animals of any such species;

d) Deliberately take or destroy the eggs of such an animal; or

e) Intentionally, deliberately or recklessly damage or destroy a breeding site or resting place of such an animal, or obstruct access to such a place.

6.18 For the purposes of paragraph (c), disturbance of animals includes in particular any disturbance which is likely—

a) to impair their ability—

I. to survive, to breed or reproduce, or to rear or nurture their young, or

II. in the case of animals of a hibernating or migratory species, to hibernate or migrate; or

6.19 To affect significantly the local distribution or abundance of the species to which they belong.

6.20 Although the law provides strict protection to these species, it also allows this protection to be set aside (derogated) through the issuing of licences. The licences in England are currently determined by NE for development works. In accordance with the requirements of the Regulations (2012), a licence can only be issued where the following requirements are satisfied:

a) The proposal is necessary 'to preserve public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment';

b) 'There is no satisfactory alternative'; and

c) The proposals 'will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range'.

6.21 EPS that may be relevant to this proposal include GCNs, bats, dormouse and otter.

Invasive Species Legislation

6.22 Japanese knotweed and Himalayan balsam are both listed on Part 2, Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). Section 14 of the Act states that it is an offence for a person to plant or otherwise cause to grow in the wild any species listed on Part2, Schedule 9. The Environmental Protection Act 1990 contains a number of legal provisions concerning 'controlled waste'. Any soil or plant material contaminated with Japanese knotweed that is to be discarded is classified as controlled waste.

Appendix 8.14

Otter and Water Vole Survey Report 2014

BSG | ecology

Abergelli

Abergelli Power Project

Otter and Water Vole Survey Report

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Issuing office

Wyastone Business Park | Wyastone Leys | Monmouth | NP25 3SR
T: 01600 891576 | W: www.bsg-ecology.com | E: info@bsg-ecology.com

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	Name	**Position**	**Date**
Originated	Rachel Taylor	Ecologist	21 July 2014
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Approved for issue to client	Matt Hobbs	Principal Ecologist	24 July 2014
Issued to client	Matt Hobbs	Principal Ecologist	24 July 2014
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Contents

1 Summary

1.1 Abergelli Power Limited (APL) is promoting a new Power Generation Plant with its associated Gas and Electricity Connections (the 'Project') on agricultural land within Abergelli Farm, north of Swansea in the City and County of Swansea (approximately at National Grid Reference 265284, 201431).

1.2 The preliminary ecological appraisal[1] identified records of otter *Lutra lutra* and water vole *Arvicola amphibius* within 2 km of the Project Site boundary, and suitable habitat to support these species within the Project Site boundary at the time of the survey (hereafter referred to as the 'Survey Site'). APL commissioned BSG Ecology to undertake an otter and water vole survey of streams and wet ditches within the 150 ha of pastoral farmland at and around Abergelli Farm in June 2014 within the Survey Site, to inform and support an application for Development Consent for the Project.

1.3 All accessible ponds, streams and wet ditches within the Survey Site boundary were surveyed for field signs of use by otter and water vole.

1.4 There are water courses on Survey Site that could provide resting places and commuting routes for otter. A single fresh spraint was recorded during the survey. This was observed on a rock in the stream that runs along the eastern boundary of the Survey Site.

1.5 Holes, that were likely to be mammal burrows, were observed at six points along two streams within the Survey Site. The holes have the right dimensions to allow use by water voles, but did not show signs of current occupation. No latrines, footprints or grazing lawns were observed during the survey.

[1] BSG Ecology (2014). Abergelli Power Project: Preliminary Ecological Appraisal.

2 Introduction

2.1 Abergelli Power Limited commissioned BSG Ecology to undertake an otter and water vole survey in May/June 2014 to inform and support an application for Development Consent for the Project described below.

Site Description

2.2 The Survey Site consists of approximately 150 ha of pastoral farmland, primarily grazed by horses. The extent of the Survey Site is shown in (Figure 1, Appendix 1) and is centred at National Grid Reference 265284, 201431. The nearest settlement is Felindre, which is located approximately 2 km to the north of the Survey Site, with Swansea approximately 5 km to the south.

2.3 The Survey Site is largely agriculturally improved pasture with several areas of marshy grassland, particularly in the north, south and north-western ends of the Survey Site. The fields are bounded by fences, running along the line of defunct hedgerows, and often accompanied by ditches. There is a block of broadleaved woodland on the eastern boundary of the Survey Site and other areas of woodland around the marshy grassland to the west of the Survey Site, and around Felindre Gas Compressor Station and the two National Grid 400 kV electrical substations that lie at the south-west end of the Survey Site. The habitats in the surrounding landscape are similar to those within the Survey Site boundary – a mixture of improved and marshy grassland interspersed with occasional patches of woodland.

2.4 There are a number of water courses within the Survey Site as described below:

- A stream corridor with small tributaries fed by springs and surface runoff along the eastern boundary of the Survey Site, which feeds into the River Llan to the south.
- A wooded stream runs along the north western boundary.
- Several small streams and wet ditches run through the woodland surrounding the Felindre Gas Compressor Station and the two National Grid 400 kV electrical substations.
- Drainage ditches border many of the pasture fields.

Description of Project

2.5 APL is promoting a new Power Generation Plant with associated Gas and Electricity Connections within Abergelli Farm. The Power Generation Plant would operate as a Simple Cycle Gas Turbine (SCGT) peaking plant and would be designed to provide an electrical capacity of up to 299 Megawatts (MW). It would be fuelled by natural gas, supplied by a new underground gas pipeline connecting Power Generation Plant to the existing National Grid Gas (NGG) National Transmission System (NTS). It would also connect to the National Grid Electrical Transmission System (NETS) via underground cable or overhead lines.

2.6 BSG Ecology has been appointed as the ecological consultant to undertake an ecology survey, which includes a desk study and Extended Phase 1 Habitat Survey as well as a range of Phase 2 surveys, including an otter and water vole survey. These baseline surveys will be included in an appendix to an ecology chapter of an Environmental Statement, which is intended for submission in support of the application for Development Consent.

Aims of Study

2.7 The aims of the otter and water vole survey within the Survey Site were to:

- Assess where water courses within the Survey Site have the potential to support otter and water vole.
- Establish the likely presence/absence of each species and, if present, their distribution throughout the relevant watercourses.

3 Methods

Desk Study

3.1 Existing ecological information for the Survey Site and the surrounding area was requested from the South East Wales Biodiversity Records Centre (SEWBReC). Information on European and nationally protected[2] species, including otter and water vole, was requested covering the Survey Site and land up to 2 km from the Survey Site boundary. In addition, on-line mapping and aerial photography of the area was also reviewed in May 2014 to identify watercourses that might be present within the Survey Site.

Scoping Survey

3.2 A Phase 1 habitat survey was carried out by BSG Ecology in February 2014 and updated in April and July 2014[3]. During the Phase 1 habitat survey it was noted that a number of watercourses within the Survey Site had the potential to support otter and water vole, although no field signs were observed. The ponds within the Survey Site were also assessed at this time, and no field signs of otter or water vole were noted.

Field Survey

3.3 The otter and water vole survey included two visits to cover water courses within the Survey Site. The first visit covered the north of the Survey Site and was conducted on 20 May 2014 by Anna Gundrey MCIEEM and Rachel Taylor ACIEEM. The second visit covered the south of the Survey Site and was conducted on 26 June 2014 by Rachel Taylor ACIEEM and Caitlin McCann. All accessible water courses were inspected for field signs of otter and water vole. In addition, Rachel Taylor ACIEEM and Caitlin McCann surveyed the ponds within the Survey Site while undertaking great crested newt *Triturus cristatus* presence/absence surveys in May 2014[4].

Otter

3.4 The otter survey was carried out on all accessible water courses within the Survey Site. Survey methods followed those recommended in Chanin (2003)[5].

3.5 The water courses, including the channel and banks, were systematically surveyed for signs of otter such as droppings ('spraints'), runs and footprints. All areas that were accessible were surveyed, and particular attention was given to suitable sprainting areas such as large, flat rocks or areas where otters were likely to leave the water course. Otter spraint can be distinguished from other mammal droppings, such as mink, by its distinctive musky smell and the presence of fish bones. Mink scats tend to be twisted in appearance and are smaller.

3.6 Signs of, or potential for, permanent dwellings ('holts') or resting places for otters were also recorded. Holts and resting places include structures such as cavities in roots of bank side trees, piles of logs or flood debris, drains and caves. Otters can also use resting places above ground in reed beds and dense scrub such as bramble *Rubus fruticosa* and blackthorn *Prunus spinosa*.

Water Vole

3.7 All water courses that were accessible were surveyed within the optimal period for finding water vole (late April to early October). This is in line with survey standards set out in The Water Vole Conservation Handbook[6]. The water courses, including the channel and banks, were

[2] Wildlife and Countryside Act 1981 Schedules 1, 5 & 8; Conservation of Habitats and Species Regulations 2010; Protection of Badgers Act.
[3] BSG Ecology (2014). Abergelli Power Project: Preliminary Ecological Appraisal.
[4] BSG Ecology (2014). Abergelli Power Project: Great Crested Newt Survey Report
[5] Chanin P (2003). *Monitoring the Otter* Lutra lutra. Conserving Natura 2000 Rivers Monitoring Series No. 10, English Nature, Peterborough.
[6] Strachan, R. & Moorhouse, T. (2006) Water Vole Conservation Handbook 2nd Ed. WildCRU, Oxford.

systematically surveyed for signs of water vole such as latrines (a communal area of droppings), feeding stations and grazed lawns, burrows (wider than high, diameter 4-8 cm), runs and footprints.

3.8 In addition, an assessment was made of whether individual water courses have potential to support water vole. The Water Vole Conservation Handbook describes favourable water vole habitat as having: wide swathes of riparian vegetation to provide both food and shelter; easily penetrable earth banks; and slow flowing, relatively deep (over 1 m) slow flowing water courses. Factors such as shallow water or over-shading by trees are generally unfavourable to water voles.

Classification of Areas Surveyed for Otter and Water Vole

3.9 Target notes (TN) were used to describe the characteristics of the water courses surveyed and to record any field signs that were observed. These were mapped (Figure 1, Appendix 1) and the target notes included (Appendix 2). In order to further illustrate the findings of the survey, the streams and ditches were categorised as follows:

3.10 **Habitat considered unsuitable for use by otter/water vole** – water courses with some or all of the following characteristics: no/low water levels; shaded; little vegetation; poached banks; no suitable resting places; no field signs of otter or water vole.

3.11 **Habitat considered suitable for use by otter/water vole** – water courses with some or all of the following characteristics: permanent flow of water; vegetation on banks; minimal shading; suitable resting places present; signs of otter/water vole.

3.12 Photographs are included showing the characteristics of water courses within the Survey Site (Appendix 3).

4 Results

Otter

Desk Study

4.1 SEWBReC provided 32 records of otter within the 2 km search radius, all recorded between 1991 and 2013. The closest record to the Survey Site is 0.5 km to the south west of the River Llan. At its closest point the River Llan is approximately 0.3 km south of the southern Survey Site boundary, within the same surface water catchment, and it links to the Survey Site via the stream running through the woodland in the centre of the Survey Site.

Field Survey

4.2 A single fresh otter spraint was found in the stream that runs along the eastern boundary of the Survey Site (see TN3, Figure 1, Appendix 1; and Appendix 2). At this point the stream is approximately 15 cm deep and with a bed of mud, gravel and rocks, the eastern bank is approximately 2 m high and sheer with over hanging trees. The western bank has an approximately 45 degree grass slope and is approximately 1.5 m high.

4.3 No other signs were observed that confirm otter presence in the other water courses within the Survey Site.

4.4 The stream that runs along the eastern boundary of the Survey Site also had deep overhangs created by the root system of the mature hedge and trees on the east bank. These have potential to be used as resting places by otter (see Figure 1, Appendix 1). However, foraging opportunities for otters are likely to be limited due to the low water levels (20-30 cm), which would make the watercourse less suitable for fish, and therefore foraging otters.

Water Vole

Desk Study

4.5 SEWBReC provided three records of water vole, within a 2 km search radius. These records were from the River Llan approximately 1.9 km from the Survey Site boundary, all from 1996. This River is in the same surface water catchment as watercourses present in the Survey Site, so it is possible that water voles could move along water courses that are linked to the River Llan (see section 4.1 above).

Field Survey

4.6 During the surveys many of the ditches that had contained water during the first Phase 1 habitat survey (in February after a very wet winter) had completely dried out by the time of the otter and water vole surveys in May and June 2014. The remaining water courses were fast running and shallow. The banks of the streams were often over-shaded with encroaching bramble and gorse or had steep, bare banks.

4.7 No field signs were observed during the surveys that clearly establish the presence of water vole. Some burrows were noted that had dimensions suitable for use by water vole and/or bank vole *Myodes glareolus* and rats, but did not exhibit signs of current use (see TNs 1. 2, 4, 5 and 7). However, no associated latrines, footprints or grazing lawns were observed at any of these locations, Figure 1, Appendix 1; Appendix 2). There was also no evidence of associated burrows below the water line, which is typical of water vole burrows. The holes were therefore considered unlikely to be used by water vole and are more likely to have been created by another species of small mammal, such as bank vole *Myodes glareolus*, or been created by water vole but subsequently abandoned.

4.8 No water vole field signs were observed at the ponds within the Survey Site during the great crested newt presence/absence surveys in May 2014[7].

Incidental Sightings

In addition to signs of otter and water vole presence recorded during the survey, some signs of badger activity were also noted and are included here for completeness. A single hole badger sett was found at TN9, with digging and a fresh latrine recorded at TN8.

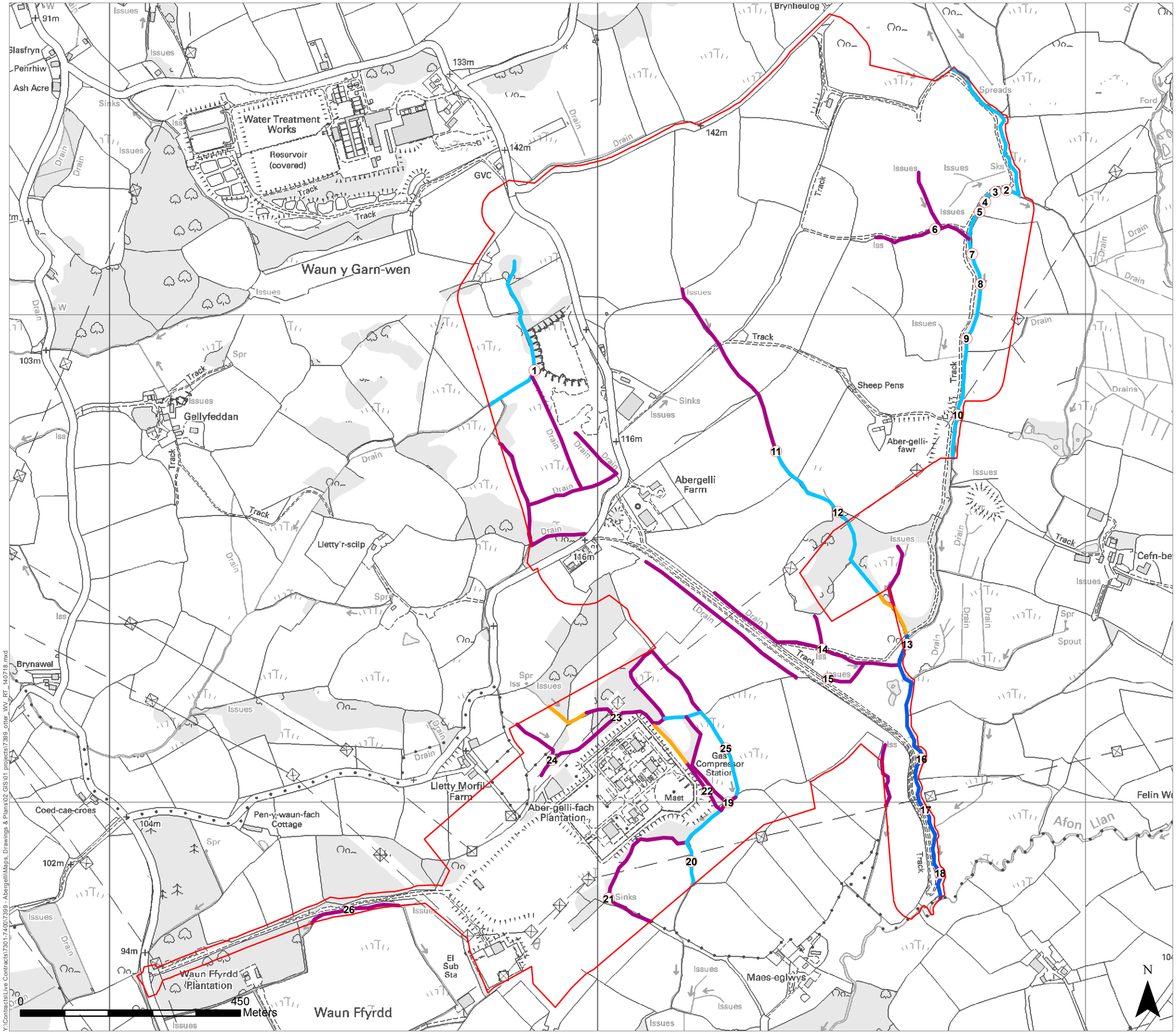
Limitations of Study

4.9 Some of the southern stretch of the stream along the eastern boundary of the Survey Site had extensive bramble and scrub along the banks, with low over-hanging branches and debris in the stream itself. This impeded the view of the surveyors along this stretch. However, a large stretch of the northern section of the same stream was also surveyed without issue, and therefore this limitation should not affect the overall results of the survey. Areas that were inaccessible, or for which the visibility was limited due to extensive scrub, are also indicated on the map (Figure 1, Appendix 1).

[7] BSG Ecology (2014). Abergelli Power Project: Great Crested Newt Survey Report.

Appendix 1: Figure 1

(see overleaf)



LEGEND

- Survey Site boundary
- Target notes

Classification of areas surveyed for otter and water vole

- Habitat considered unsuitable for use by otter / water vole
- Habitat considered suitable for use by otter / water vole
- Habitat considered suitable for use by otter but survey constrained by dense vegetation
- Inaccesible

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OFFICE: Monmouth
T: 01600 891576

JOB REF: 7399.00

PROJECT TITLE
ABERGELLI POWER PLANT

DRAWING TITLE
Figure 1 - Otter and Water Vole Survey

DATE: 11.08.2014 CHECKED: MH SCALE: 1:7,500
DRAWN: RT APPROVED: JG STATUS: Final

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Appendix 2: Target Notes (TN)

Stream at TN1 - The stream is wooded, mostly shaded with shallow bramble covered banks. The stream bed is stony, water fast moving and shallow. This provides a sheltered corridor through which otter may commute, but no obvious resting places or signs of otter use were observed.

1. At TN 1 there is a vertical 1m high bare mud bank on the western side of the stream. The stream is approximately 10 cm deep at this point. There is a hole 1 m above the water which had dimensions suitable for use by water vole and/or bank vole/rat. No other field signs were observed.

To the south of TN1 is a marshy field with a network of ditches - At the time of survey (May) these ditches were dry or contained very little water and had steep banks with very little or no vegetation.

Stream at TN2 to TN10 – The stream is relatively unshaded, with a bed of mud, gravel and rocks. The water depth ranges from approximately 10 cm to 20 cm where pools form. It is fast flowing and appears clean. The eastern bank is approximately 2 m high and sheer. It is topped by a mature hedge the root system of which form a number of deep overhangs by the side of the stream. The west bank has an approximately 45 degree grassed slope.

2. A hole was found in the vertical east bank, approximately 20 cm above the waterline, which had dimensions suitable for use by water vole and/or bank vole/rat. No other field signs were observed.
3. A fresh otter spraint was found on a large, flat stone in the middle of the stream.
4. A pair of holes was found in the east bank approximately 1.5 m from the water line, which had dimensions suitable for use by water vole and/or bank vole/rat. No other field signs were observed.
5. A possible otter resting place on east bank. No otter field signs were observed. A 15 cm diameter hole was found leading into a cavity under the tree root bole, approximately 2 m above the water line. Approximately 3 m to the south of this there are three further holes, 1 m above the waterline on the eastern bank with dimensions that would allow use by water vole and/or bank vole/rat. No water vole field signs were observed.
6. Tributary of the main stream, this is a narrow brook that has dried out at its northern end. It is over shaded by scrub, no field signs for otter or water vole were observed.
7. There is a particularly deep over-hang in the east bank under a root bole. Basal rocks are moss free on top suggesting that it may be regularly accessed; however no field signs of otter were observed. This has good potential as a resting place for otter. On the west bank, above a culvert pipe that runs into the stream from the brook at TN6 there are two holes with dimensions that would allow use by water vole and/or bank vole/rat. No other field signs of water vole were observed.
8. A deep cavity in the eastern bank along the waterline good provides a potential resting place for otter. No otter field signs were observed. On the top of the west bank opposite the cavity are a number of fresh patches of badger digging and a fresh badger latrine.
9. A hole was found in the east bank 2 m above the water line; dimensions suggest that this is a badger sett. There is a mammal run into the field to the east.
10. The stream becomes very shaded at this point, and the eastern bank is largely undercut providing several potential resting places for otter. No field signs were observed.

Damp ditch/brook at TN11 to TN12 – to the north of TN11 this is a dry to damp ditch that has mainly bare banks, with some areas over-grown by bramble. It is open to horses and sheep and the land around the ditch is poached. No signs of otter or water vole were observed and this section is considered unsuitable for use by either species. To the south of TN11 the amount of water in the ditch gradually becomes greater until it forms a narrow brook, approximately 10 cm in depth.

11. The brook is very over-grown with gorse and bramble, the banks are approximately 1 m high and the water is quick moving and shallow. There is a fenced culvert 10 m to the north which is partially blocked by debris from a fallen tree on the eastern bank. No field signs of otter or water vole were observed.
12. The brook is shallow and fast moving with low grassy banks, over grown by bramble and nettle in large sections. No signs of otter or water vole were observed. South of this location the stream runs through woodland and connects to the stream along the eastern boundary of the Survey Site.

Stream at TN13 to TN18 – The southern section of the stream previously described in TN2 to TN10. The banks are lined with trees and a scrub understorey of predominantly bramble, the stream is approximately 10 cm – 20 cm deep with a rocky bed. The bank is approximately 1 – 2 m high and undercut in places. The extensive scrub impeded the surveyors' ability to access the stream, however the length was walked and notes made when a good view was available.

13. The stream is narrow, with a bare bank approximately 1 m on each side. It is encroached by bramble and gorse and is largely over shaded. No signs of otter or water vole were observed.
14. A shallow ditch extending north-west of the stream, it is dry at the northern end, the banks and low and poached by horses. The south end contains a small amount of slow moving water and is overgrown with bramble.
15. A similar ditch to TN14, this is dry to the north and the banks are poached by horses. No signs of otter or water vole were observed.
16. The stream is wide, and fast moving, approximately 10 cm in depth. The banks are approximately 1 m high and covered by bramble. There is some undercutting of the bank, although not deep enough to provide resting opportunities for otter. No signs of otter or water vole were observed.
17. The stream is narrow and fast moving, approximately 15cm deep, banks are steep and bare topped with bramble. No signs of otter or water vole were observed.
18. The stream is wide and fast flowing, approximately 20 cm deep. Root boles of trees along the western bank provide resting opportunities for otter. The eastern bank is low with a stone beach where the stream bends. No signs were observed however access was limited due to bramble and a fence on the western bank.

Ditches and stream at TN19 to TN21 – ditches run along the edge of sheep pasture, most of these are dry with bare banks. A small brook runs from the edge of the woodland through the pasture and extends south outside of the site boundary.

19. This is a dry sheep poached ditch. No signs of otter or water vole were observed.
20. A shallow brook, approximately 10cm in depth with a 50cm high grassy bank to the west and trees along the eastern bank. There are fox runs along the western side. No signs of otter or water vole were observed.
21. A nearly dry ditch, small trickle of water runs over a muddy bed. The banks are low and bare, the ditch is over shaded by trees which line each side. No signs of otter or water vole were observed.

Water courses in and around wet woodland and National Grid land at TN22 to TN26 – There are shallow ditches along the edges of the woodland, with small streams running in the interior of the woodland. The streams are approximately 10 cm deep, containing leaf litter and debris. The banks are steep with little vegetation other than nettle.

22. Very narrow, over-shaded steam with fast moving, shallow water. There is bramble encroaching on both banks. No signs of otter or water vole were observed.
23. Slow flowing woodland ditch with little water, and a large amount of leaf litter and debris. The banks are low with no vegetation. No signs of otter or water vole were observed. The ditch to the north of this point becomes inaccessible.
24. Similar to the ditch at TN23 this ditch is shallow with slow moving water and completely over shaded by the woodland, with large amounts of leaf litter. No otter or water vole signs were observed.
25. Small stream along the east edge of the field to the east of the Felindre Gas Compressor Station. Fast flowing, shallow (15 cm) with gravel and rock bed. Wide mammal run down to the stream at this point, though to be used by the sheep resident in the field. No signs of otter or water vole were observed.
26. A dry ditch at the time of survey, shaded by trees and full of leaf litter.

Appendix 3: Photographs showing characteristics of water courses within Survey Site

Photograph 1 : Damp ditch in field to the south of TN1

Photo 2: Stream along eastern boundary (TN10)

Photo 3: Dry/overgrown ditch north of TN11, arrow indicates ditch.

Photo 4: Stream south of TN12.

Photo 5: Ditch running from a field boundary into the woodland surrounding the Gas Compressor Station.

Photograph 6: Ditch in woodland north of TN 22 (taken February 2014)

Appendix 8.15

Final Dormouse Survey Report 2014

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Final Dormouse Survey Report

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Issuing office

Wyastone Business Park | Wyastone Leys | Monmouth | NP25 3SR
T: 01600 891576 | W: www.bsg-ecology.com | E: info@bsg-ecology.com

Client	Stag Energy
Job	Abergelli Power Project
Report title	Final Dormouse Survey Report
Draft version/final	FINAL
File reference	7399_R_Dormouse_Final_APPR (2)_241114

	Name	**Position**	**Date**
Originated	Niall Lusby	Senior Ecologist	17 November 2014
Reviewed	Matt Hobbs	Principal Ecologist	18 November 2014
Approved for issue to client	Matt Hobbs	Principal Ecologist	18 November 2014
Issued to client	Matt Hobbs	Principal Ecologist	18 November 2014
Updated and 2nd issue to client	Matt Hobbs	Principal Ecologist	24 November 2014

Contents

1 Summary

1.1 Abergelli Power Limited (APL) is promoting a new Power Generation Plant with associated Gas and Electricity Connections (the 'Project') on agricultural land within Abergelli Farm north of Swansea in the City and County of Swansea (approximately at National Grid Reference 265284, 201431).

1.2 The Preliminary Ecological Appraisal (PEA) (BSG Ecology, 2014) did not identify records of dormouse *Mucardinus avellanarius* within 2 km of the Project Site boundary, but habitat suitable for supporting dormouse was found within the Project Site boundary at the time of the Extended Phase 1 Habitat survey (referred to as the 'Survey Site').

1.3 APL commissioned BSG Ecology to undertake a presence/absence survey for dormouse in suitable woodland, hedgerow and scrub habitats within 150 ha of pastoral farmland within the Survey Site, to inform and support an application for Development Consent for the Project. The dormouse survey was undertaken between June and November 2014.

1.4 The survey did not record any dormouse in the areas surveyed. Sufficient visits were undertaken to determine the likely absence of this species from the Survey Site in line with best practice guidance for survey.

1.5 All accessible woodland, hedgerow and scrub habitats within the Survey Site boundary were included in the survey.

2 Introduction

2.1 Abergelli Power Limited (APL) commissioned BSG Ecology in May 2014 to undertake a dormouse survey to inform an application for Development Consent for the Project described below.

2.2 APL is promoting a new Power Generation Plant with its associated Gas and Electricity Connections (the 'Project') on agricultural land within Abergelli Farm, north of Swansea in the City and County of Swansea (approximately at National Grid Reference 265284, 201431).

Site Description

2.3 The Survey Site consists of approximately 150 ha of pastoral farmland, primarily grazed by horses. The extent of the Survey Site is shown in Figure 1 in Appendix 1 and is centred at National Grid Reference 265284, 201431. The nearest settlement is Felindre, which is located approximately 2 km to the north of the Survey Site, with Swansea approximately 5 km to the south.

2.4 The Survey Site is largely agriculturally improved pasture with several areas of marshy grassland, particularly in the north, south and north-western extents of the Survey Site. The fields are bounded by fences, running along the line of defunct hedgerows, and often accompanied by ditches. There is a block of broadleaved woodland on the eastern boundary of the Survey Site and other areas of woodland around the marshy grassland to the west of the Survey Site, and around Felindre Gas Compressor Station and the two National Grid electrical substations that lie at the south-west end of the Survey Site. The habitats in the surrounding landscape are similar to those within the Survey Site boundary which comprise a mixture of improved and marshy grassland interspersed with occasional patches of woodland.

Description of Project

2.5 APL is promoting a new Power Generation Plant with associated Gas and Electricity Connections within Abergelli Farm. The Power Generation Plant would operate as a Simple Cycle Gas Turbine (SCGT) peaking plant and would be designed to provide an electrical capacity of up to 299 Megawatts (MW). It would be fuelled by natural gas, supplied by a new underground gas pipeline connecting Power Generation Plant to the existing National Grid Gas (NGG) National Transmission System (NTS). It would also connect to the National Grid Electrical Transmission System (NETS) via underground cable or overhead lines.

2.6 BSG Ecology has been appointed as the ecological consultant to undertake ecology surveys, which include a desk study and Extended Phase 1 Habitat Survey as well as a range of Phase 2 surveys, including a dormouse survey. These baseline surveys will be included in an appendix to the ecology chapter of an Environmental Statement, which is intended for submission in support of the application for Development Consent.

Aims of Study

2.7 The aims of the dormouse survey were to identify whether dormouse are present in woodland, hedgerow and scrub habitats within the Survey Site boundary using standard survey methods (as specified in Section 3).

3 Methods

Desk Study

3.1 Existing ecological information for the Survey Site and its surrounding area was requested from the South East Wales Biodiversity Records Centre (SEWBReC). Information on protected[1] species, including dormouse, was requested covering the Survey Site and land up to 2 km from the Survey Site boundary. In addition, on-line mapping and aerial photography of the area were also reviewed to identify areas of suitable habitat that might be present outside of the Survey Site that could be connected to habitats within the Survey Site, or support off-site populations that maintain linkages through habitats in the Survey Site.

Scoping Survey

3.2 A Preliminary Ecological appraisal (PEA) was carried out by BSG Ecology in February 2014 and updated in April and July 2014 (BSG Ecology, 2014). As part of the PEA woodland, hedgerow and scrub habitats were assessed with regard to their suitability to support dormouse in terms of woody species diversity and structure. The connectivity of woodland habitats within the wider landscape was also considered.

Field Survey

3.3 The survey was undertaken in accordance with the best practice survey guidance as set out in English Nature's Dormouse Conservation Handbook (English Nature, 2006). Under this guidance it is stated that to determine presence/absence within a woodland that a minimum of 50 nest tubes at a spacing of 15-20 m intervals need to be put out in suitable habitats for several months, and these tubes then need to be checked monthly for indications of use by dormouse. The indications of use include finding animals in residence within the tube during the survey or finding a nest characteristic of the species. Dormouse typically make neat nests comprising tightly woven honeysuckle bark (or similar), along with green leaves, normally hazel, though other species are used. This differs from the nest of other small mammals which are typically much messier and lack a distinct structure.

3.4 Each month receives a score based on the probability of dormouse occupying the tubes in that month. For a survey to be considered valid a total of 20 or more points are required. The score per month is illustrated in Table 1 below.

[1] Wildlife and Countryside Act 1981 Schedules 1, 5 & 8; Conservation of Habitats and Species Regulations 2010; Protection of Badgers Act.

Table 1: Monthly index of probability for tube occupation.

Month	Index of Probability
April	1
May	4
June	2
July	2
August	5
September	7
October	2
November	2

3.5 A total of 143 tubes were deployed in woodland, scrub, and hedgerow habitats across the Survey Site with 110 tubes deployed in May and June. Due to difficulties in gaining access permission for the access road the deployment in this area was undertaken later in June. The tubes were deployed as follows:

- 55 tubes were deployed on 9 May 2014, the locations of which are shown in red on the Plan provided as Figure 1:
- A further 55 tubes were deployed on 4 June with the locations shown in green on Figure 1; and
- When access to the National Grid land was obtained, a further 33 tubes were deployed along the access road on 24 June. The locations of these tubes are shown in blue on Figure 1.

Limitations of study

3.6 The Survey Site was surveyed with a sufficient number and density of tubes to comply with best practice guidance on dormouse survey. Most tubes were deployed within the Survey Site between June to November inclusive, which scores 20 points under best practice guidance. 20 points is the minimum number of points required for a survey to be considered valid.

3.7 Some of the tubes (33) were not deployed until 24 June. This was due to late permission to survey the National Grid Access road margins. This led to the areas of suitable dormouse habitat adjacent to the National Grid access road being surveyed from July, rather than June. This area is a small part of the wider habitat within the Survey Site that was identified as having the potential to support dormouse. The road margins here are connected to other blocks of woodland and scrub in the western and, to a lesser extent (as habitat connections are fragmented in the middle part of the Survey Site) the eastern part of the Survey Site and are considered to be contiguous with these areas and therefore part of the same dormouse survey area. The results of the survey are clear and robust enough to conclude that dormouse is likely to be absent from the Survey Site, regardless of the lack of one month of data from a small section of the site, and this is not considered to be a significant constraint.

4 Results

Desk Study

4.1 There were no records of dormouse provided by SEWBREC within 2 km of the Survey Site.

4.2 The lack of records in the immediate surrounds of the Survey Site does not necessarily indicate the absence of dormouse. A lack of records can be due to a lack of survey, which in turn could be a based on former assumptions of dormouse habitat requirements. In recent years dormice have been recorded in habitats previously discounted as unsuitable, meaning that survey for this species in sub-optimal habitats is currently recommended.

Scoping Survey

4.3 The Survey Site was assessed for its suitability to support dormouse during the PEA survey. It was found to support numerous fragments of woodland, some of which are designated as Ancient Woodland, as well as several treelines that follow stream corridors or are remnants of former wooded areas that have been cleared historically.

4.4 The habitats within the Survey Site were assessed as being sub-optimal for dormouse for the following reasons:

- There is a very low occurrence of hazel *Corylus avellana* within the Survey Site, along with a low diversity of other woody species present on the Survey Site. Dormice typically require a variety of woody species to ensure, year round availability of food;
- Many of the woodlands have been grazed and lack a well-developed understorey, typically required by dormouse; and
- The Survey Site lacks hedgerows, with most of the field boundaries comprising post and wire fences. Some tree lines are present, where hedgerows have become defunct though a lack of active management. Some small areas of hedgerow are present along the National Grid access road and these were included in the survey. The lack of hedgerows reduces the suitability of the Survey Site as hedgerows typically serve to provide habitat linkages between small woodlands such as those found on the Survey Site and its wider surrounds.

Field Survey

4.5 The first survey was carried out on 25 June which excluded the 33 tubes put out the day before along the National Grid Access Road. The 33 tubes not included on 25 June were first surveyed on 9 July after having been left to "bed in"[2]. The second survey (on 9 July included all the tubes and was undertaken on 23rd and 24 of July. The surveys were carried out by Niall Lusby CMIEEM (licence number 53084:OTH:SA:2014) and Gareth Lang (licence number (44285:OTH:SA:2013).

4.6 The survey results are summarised in Table 2 below.

Table 2: Survey results.

Visit number	Survey Date	Tubes covered	Result	Probability index points per 50 tubes
1	25/06/14	1st and 2nd deployment	No evidence of dormouse found	June: **2 points** over 143 tubes
	9/07/14	3rd deployment	No evidence of dormouse found	
2	23/07/14 and 24/07/14	All deployments	No evidence of dormouse found	July: **2 points** over 143 tubes
3	19/08/14	All deployments	No evidence of dormouse found	August: **5 points** over 143 tubes
4	23/09/14	All deployments	No evidence of dormouse found	September: **7 points** over 143 tubes
5	16/10/14	All deployments	No evidence of dormouse found	October: **2 points** over 143 tubes
6	14/11/14	All deployments	No evidence of dormouse found	November: **2 points** over 143 tubes
Total Score				**20**

[2] Bed in – this phrase is used to describe a period of time that the tubes are left before the first survey is carried out. During this time the scent of humans disappears from the tube, and dormice are more likely to use them.

5 References

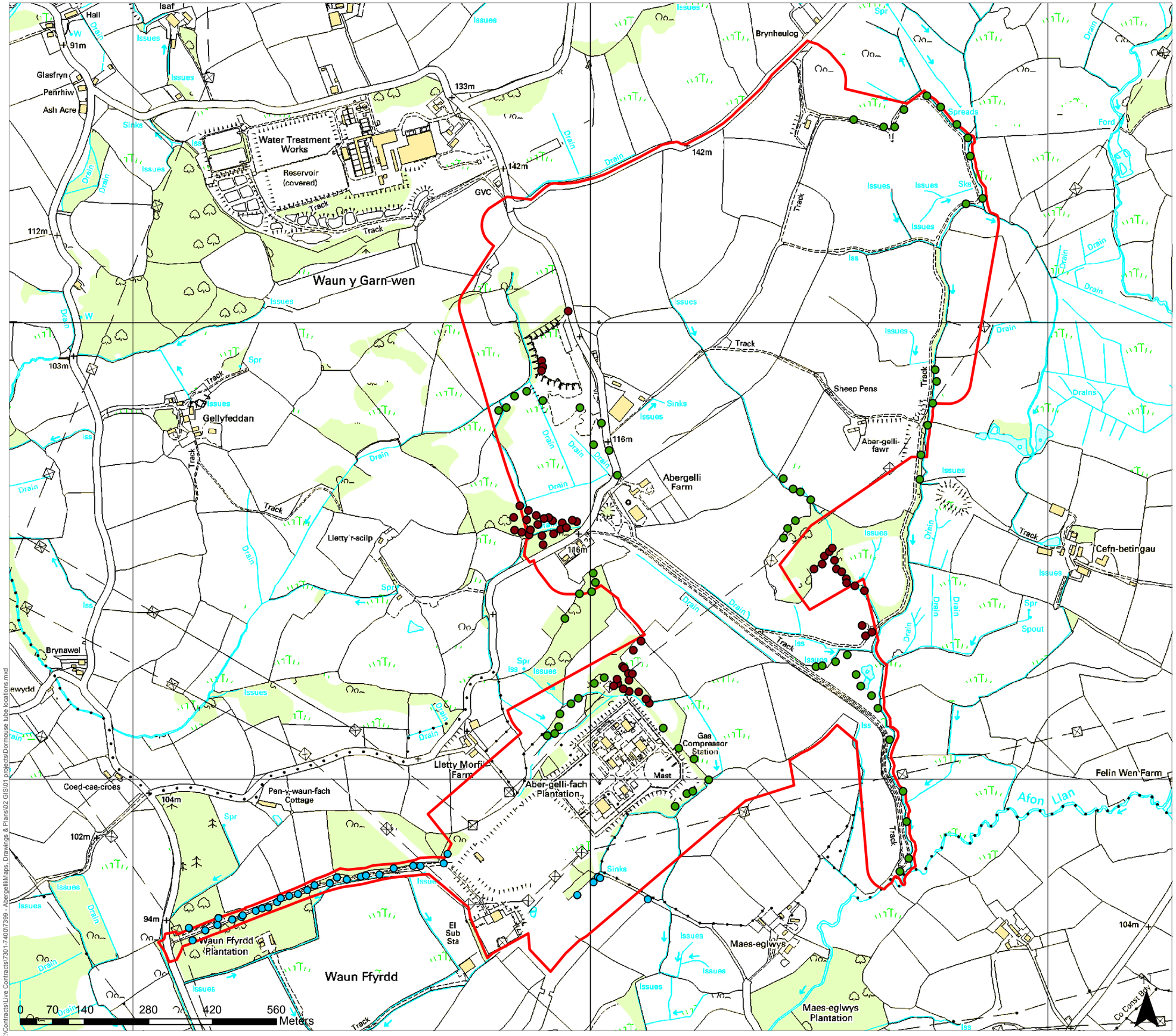
BSG Ecology (2014). Abergelli Power Project: Preliminary Ecological Appraisal.

English Nature 2006. The Dormouse Conservation Handbook (2nd edition).

Natural England (2011). Interim Natural England Advice note: Dormouse Surveys for Mitigation Licensing, Best Practice and Common Misconceptions.

Appendix 1: Figures

(overleaf)



LEGEND

- Survey Site Boundary
- Dormouse Deployment 1
- Dormouse Deployment 2
- Dormouse Deployment 3

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OFFICE: Monmouth
T: 01600 891576

JOB REF: 7399

PROJECT TITLE
ABERGELLI POWER PLANT

DRAWING TITLE
Figure 1 - Dormouse tube locations

DATE: 17.11.2014 CHECKED: MH SCALE: 1:8,000
DRAWN: NL APPROVED: MH STATUS: FINAL

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Appendix 8.16

Breeding Bird Survey Report 2014

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Breeding Bird Survey Report

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Wyastone Business Park | Wyastone Leys | Monmouth | NP25 3SR
T: 01600 891576 | W: www.bsg-ecology.com | E: info@bsg-ecology.com

Client	Stag Energy
Job	Abergelli
Report title	Breeding Bird Survey Report
Draft version/final	FINAL
File reference	7399_R_Breeding Bird_APPR (4)_10032015

	Name	**Position**	**Date**
Originated	Gareth Lang	Ecologist	11 August 2014
Reviewed	Owain Gabb	Director	11 August 2014
Revised	Gareth Lang	Ecologist	18 August 2014
Reviewed	Owain Gabb	Director	18 August 2014
Approved for issue to client	Owain Gabb	Director	18 August 2014
Issued to client	Jim Gillespie	Partner	18 August 2014
2nd issue to client	Matthew Hobbs	Principal Ecologist	08 September 2014
3rd issue to client	Matthew Hobbs	Principal Ecologist	12 September 2014
4th issue to client	Matthew Hobbs	Principal Ecologist	10 March 2015

Contents

1 Summary

1.1 Abergelli Power Limited (APL) is promoting a new Power Generation Plant with its associated Gas and Electricity Connections (the 'Project') on agricultural land within Abergelli Farm north of Swansea in the City and County of Swansea (approximately at National Grid Reference 265284, 201431).

1.2 APL commissioned BSG Ecology to undertake a breeding bird survey within 150 ha of pastoral farmland at and around Abergelli Farm in 2014, to inform and support an application for Development Consent for the Power Generation Plant.

1.3 Breeding birds were surveyed by walking along field boundaries and tracks within the Survey Site at a slow pace to enable all birds detected to be located, identified and recorded. Frequent stops were made to listen and scan for singing and calling birds. The Survey Site was visited on three occasions, once during each of April, May and June. A constant search effort was employed during each survey visit, with all habitat types being approached to within approximately 50 m.

1.4 Nine bird species of principal importance for nature conservation' as referred to in S42 of the NERC Act 2006 (S42)[1] (cuckoo *Cuculus canorus*, grasshopper warbler *Locustella naevia* dunnock *Prunella modularis*, house sparrow *Passer domesticus*, linnet *Carduelis cannabina*, lesser redpoll *Carduelis cabaret*, skylark *Alauda arvensis*, song thrush *Turdus philomelos*, and tree pipit *Anthus trivialis*) were considered likely to breed on site. All nine S42 species recorded within the Survey Site are also red-listed species of conservation concern in Wales (RSPB, 2009), with the exception of dunnock (which is amber-listed). An additional seven amber-listed species, bullfinch *Pyrrhula pyrrhula*, mistle thrush *Turdus viscivorus*, meadow pipit *Anthus pratensis*, reed bunting *Emberiza schoeniclus*, common redstart *Phoenicurus phoenicurus*, whitethroat *Sylvia communis* and willow warbler *Phylloscopus trochilus* were also considered to have bred.

1.5 No territories of species listed under Schedule 1 Part 1 of the Wildlife & Countryside Act 1981 (as amended) (Schedule 1 species) were recorded, although two Schedule 1 species were recorded during the surveys, as follows. A pair of red kite *Milvus milvus* was recorded mobbing a peregrine falcon *Falco peregrinus* over the Felindre Gas Compressor Station land during survey in May. A pair of kites was also recorded flying over the eastern boundary in the northern compartment of the Survey Site during the same survey day. Given the timing of the records, and that at least one pair were recorded during survey it is likely that red kite breed locally but that the single record of peregrine referred to a transient bird. No evidence was found to suggest breeding of either species occurred within the Survey Site during 2014.

[1] The Natural Environment and Rural Communities Act 2006 (NERC 2006) required the Welsh Assembly Government (WAG), based on advice from the Countryside Council for Wales (now part of Natural Resources Wales), to identify species and habitats of principal importance for the conservation of biodiversity in Wales. Section 42 of The NERC Act requires the WAG to take steps to "further the conservation" of these species/habitats.

2 Introduction

2.1 Abergelli Power Limited (APL) commissioned BSG Ecology to undertake a breeding bird survey to inform and support an application for Development Consent for the Project described below.

Site Description

2.2 The Survey Site consists of approximately 150 ha of pastoral farmland primarily grazed by horses. The extent of the Survey Site is shown in Figure 1 and is centred at National Grid Reference 265284, 201431. The nearest settlement is Felindre, which is located approximately 2 km to the north of the Survey Site, with Swansea approximately 5 km to the south.

2.3 The Survey Site is largely agriculturally improved pasture with several areas of marshy grassland, particularly in the north, south and north-western ends of the Survey Site. The fields are bounded by fences, running along the line of defunct hedgerows, and often accompanied by ditches. There is a block of broadleaved woodland on the eastern boundary of the Survey Site and other areas of woodland around the marshy grassland to the west of the Survey Site, and around Felindre Gas Compressor Station and the two National Grid 400 kV electrical substations that lie at the south-west end of the Survey Site. The habitats in the surrounding landscape are similar to those within the Survey Site boundary – a mixture of improved and marshy grassland interspersed with occasional patches of woodland.

Description of Project

2.4 APL is promoting a new Power Generation Plant with associated Gas and Electricity Connections within the Survey Site. The Power Generation Plant would operate as a Simple Cycle Gas Turbine (SCGT) peaking plant and would be designed to provide an electrical capacity of up to 299 Megawatts (MW). It would be fuelled by natural gas, supplied by a new underground gas pipeline connecting the Power Generation Plant to the existing National Grid Gas (NGG) National Transmission System (NTS). It would also connect to the National Grid Electrical Transmission System (NETS) via underground cable or overhead lines.

2.5 BSG Ecology has been appointed as the ecological consultant to undertake an ecological survey, which includes a desk study and Extended Phase 1 Habitat Survey as well as a range of Phase 2 surveys, including a breeding bird survey. These baseline surveys will be included in an appendix to an ecology chapter of an Environmental Statement, which is intended for submission, as an integral part of the application for Development Consent.

Aims of Study

2.6 The survey work undertaken at Abergelli Farm between April and June 2014 aimed to establish:

- The number of species present on the Survey Site or the immediate surrounding habitat;
- The number of territories held by each species, and
- Whether the Survey Site or the immediate surrounding habitat is used by bird species of high conservation interest, including:
    a. Species protected under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended);
    b. Species listed on Annex 1 of the Council Directive 79/409/EEC on the Conservation of Wild Birds;
    c. Species listed in Section 42 of the Natural Environment and Rural Communities Act (NERC 2006) as species of principal importance for the conservation of biodiversity in Wales;
    d. Species listed in the Swansea Local Biodiversity Action Plan (LBAP); and

e. Species listed as having a Red or Amber population status[2] (RSPB, 2009).

[2] Seven quantitative criteria are used to assess the population status of each bird species and to categorise it on the red, amber or green list of conservation concern (species that are red-listed are of greatest conservation concern whereas those that are green-listed are not considered to be of particular conservation priority or (in a few cases) have insufficient data to be robustly categorised). Criteria considered are: global conservation status; evidence of recent decline; evidence of historical decline; an unfavourable European conservation status; rarity (in terms of breeding numbers); restricted (localised) distribution; and whether a species is considered to be of international conservation importance (featuring in the list of birds in Annex 1 of the Birds Directive 1979). When considering whether a species is added to the red or the amber list, factors such as the extent of decline and range contraction are considered.

3 Methods

Desk Study

3.1 Existing ecological information for the Survey Site and its surrounding area was requested from the South East Wales Biodiversity Records Centre (SEWBReC). Information on designated sites was requested from within 10 km for European sites, 5 km for nationally designated sites and 2 km of the Survey Site for non-statutory sites. The latter search radius was also used for information on protected[3] or notable species (particularly those identified as S42 species and/or of local conservation importance or LBAP[4] species), including birds. In addition, an initial study of on-line aerial photographs, topographical, and Ordnance Survey maps was made using web-based resources including: Where's the path?[5], Google Maps[6] and Google Earth Version 6 (Google Inc, 2010). This, together with the results from a preliminary ecological appraisal[7] carried out in February 2014 and updated in April 2014, resulted in a detailed understanding of the habitats and features on the Survey Site along with an indication of the bird community potentially present.

Field Survey

3.2 The method used was adapted from the British Trust for Ornithology (BTO) Common Bird Census (CBC) as described by Gilbert *et al.* (1998), Although eight to ten visits are usually undertaken for CBC sites being monitored over the long term, it is generally accepted that for the purposes of assessing potential environmental impacts, three visits are sufficient to describe the value of a Survey Site for breeding birds and give an approximation of the number of breeding bird territories present within a Survey Site (e.g. SNH, 2005[8]). Breeding birds were surveyed by walking along field boundaries and tracks within the Survey Site at a slow pace to enable all birds detected to be located, identified and recorded. Frequent stops were made to listen and scan for singing and calling birds. All habitat features were approached to within approximately 50 m, except in horse pasture fields. Transects were not walked across closely grazed pasture fields, as it was possible to easily view birds by scanning from field boundaries (due to the lack of vegetation and small field sizes) and to avoid disturbing horses that were kept in many of them at the time of the survey. Bird locations were mapped using standard two-letter British Trust for Ornithology (BTO) codes, and bird activity was recorded using standard BTO behaviour codes (Marchant 1983).

3.3 The breeding status of birds recorded was categorised as either 'holding territory' or 'showing other evidence of breeding'. Birds presumed to be holding territory were those recorded in song. Other evidence of breeding included observations of:

- Distraction display or injury feigning;
- Used nests or eggshells found (occupied or laid within the survey period);
- Recently fledged young or downy young;
- Adults entering or leaving a nest site in circumstances indicating an occupied nest or an adult sitting on nest;
- Adults carrying food for young or faecal sacs;
- Nest containing eggs; and
- Nest with young seen or heard.

3.4 The presence of house sparrow near a suitable nesting building was also taken as evidence for breeding in this species.

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[3] Wildlife and Countryside Act 1981 Schedules 1, 5 & 8; Conservation of Habitats and Species Regulations 2010; Protection of Badgers Act.
[4] Those listed under Local Biodiversity Action Plans for Swansea.
[5] http://mortimermaps.appspot.com/wtp3/wtp3.htm
[6] https://maps.google.co.uk/
[7] BSG Ecology (2014). Abergelli Power Project: Preliminary Ecological Appraisal.
[8] See Section 6.9.1. Although this reference describes methods appropriate for surveying at onshore wind farms this method is also appropriate for most walkover breeding bird surveys of lowland and/or farmland sites.

3.5 The results of the three breeding bird territory mapping surveys were combined to create a single map showing all birds considered to be holding territory (Figures 1a and 1b in Appendix 1). BTO codes for each species illustrated in Figure 1a and 1b are provided in Table 2 (below). Where a bird was observed in the same location during more than one survey visit, and this is judged to be the same individual bird, only one registration of that bird is shown on the map. Where more than one individual of the same species is shown in close proximity, these are individual birds seen simultaneously during a single survey. Note the locations of presumed territories do not represent specific nest locations.

3.6 The Survey Site was divided into two survey compartments due to its size; the first covered the north of the Survey Site (the land north of the gallops that runs from the houses at Abergelli Farm to the south-east corner of the Survey Site), and the second covered the south of the Survey Site (the land south of the gallops). Three survey visits were made to each compartment; one in each of late April, late May and mid-June. Table 1 below provides details of the duration and weather conditions during surveys.

Table 1: Details of breeding bird surveys.

Compartment	Date	Time	Weather conditions
North	25/04/2014	06:30 – 10:15	Wind E 1-2, cloud 8/8, dry, dull
South	25/04/2014	06:40 – 11:00	Wind E 1-2, cloud 8/8, dry, dull
North	24/05/2014	06:00 – 09:00	Wind W 1-2, cloud 6/8, dry, sunny
South	24/05/2014	07:00 – 10:00	Wind W 1-2, cloud 6/8, dry, sunny
North	19/06/2014	06:30 – 10:00	Wind NW 1-3, cloud 1/8, dry, sunny
South	19/06/2014	06:45 – 10:00	Wind NW 1-3, cloud 1/8, dry, sunny

3.7 The Felindre Gas Compressor Station and the National Grid electrical substation compounds to the south-west of the Survey Site were not entered, due to lack of access. The compounds can be viewed adequately from the fence and there is very little suitable habitat for breeding birds within these compounds. The land immediately beyond the northern and eastern Survey Site boundaries was also not entered. The surveyor(s) scanned areas of adjacent habitat by walking paths and field edges and made use of local vantage-points to record species present around the access restricted areas. This enabled the entire site to be sampled without trespassing.

3.8 In late June, all buildings within the Survey Site, with the exception of those within the National Grid compounds referred to above, were inspected for barn owl *Tyto alba* presence or other evidence of presence, such as pellets, nests, or faecal matter. The buildings were primarily visited to inspect for bat roosts and the methods are described in detail in the bat roost inspection report. Anecdotal evidence from the land owner prior to inspection suggested that none of the buildings were in use or had historically been used by barn owl. All trees within the Survey Site were also inspected from ground level for evidence of use by bats and barn owl. A sub-set of these trees were identified for further roped-access (tree-climbing) survey that involved internal and external inspection of these trees. Full details of these surveys are provided in the bat survey report.

3.9 The maps from the three visits were combined. For species where definitive evidence of breeding was not obtained, professional judgement (based on a range of factors including knowledge of habitat requirements, local status and/or repeat sightings) was used to conclude whether breeding was likely. A precautionary approach was taken, with species suspected to have bred being plotted as having done so.

Survey Limitations

3.10 It was not possible to gain access to the access road to the south-west of the Felindre Gas Compressor Station and the two National Grid 400 kV electrical substations and also the land immediately surrounding these areas during the breeding bird surveys, as shown in Figure 1b. It is unlikely that this is a significant constraint to the surveys as the areas that could not be surveyed contain similar habitats to those within the areas that were surveyed and it is unlikely that they support any additional species that are protected or notable.

4 Results

Desk Study Data

4.1 A full list of the European designated sites within 10 km, national statutory designated sites within 5 km, and non-statutory designated sites within 2 km of the Survey Site boundary is provided in the preliminary ecological appraisal. Sites that include a cited ornithological interest are described below.

Statutory Sites of Nature Conservation Importance

4.2 Carmarthen Bay and the tidal estuaries that extend from it, approximately 7.2 km west of the Survey Site, has been afforded multiple designations and is referred to under the umbrella term European Marine Site (EMS[9]) which includes the Carmarthen Bay area and Estuaries Special Area of Conservation (SAC[10]), and the Burry Inlet Special Protection Area (SPA[11]). This area also contains a Ramsar Wetland of International Importance (Ramsar[12]). The boundaries of each of these sites are not contiguous but all fall within the EMS site. The details of each designation are provided below.

4.3 The Burry Inlet SPA and Ramsar, located approximately 9.7 km west south-west of the Survey Site, is classified for large numbers of overwintering wildfowl and waders that feed in the saltmarshes and on the intertidal mud and sand.

4.4 The SPA has been classified as it supports important overwintering populations of eleven migratory species of waterfowl and an assemblage of 34,962 wintering water fowl including common shelduck *Tadorna tadorna*, Eurasian wigeon *Anas penelope*, Eurasian teal *Anas crecca*, northern pintail *Anas acuta*, shoveler *Anas clypeata*, Eurasian oystercatcher *Haematopus ostralegus*, grey plover *Pluvialis squatarola*, red knot *Calidris canutus*, dunlin *Calidris alpina alpina*, Eurasian curlew *Numenius arquata,* and common redshank *Tringa totanus*. The SPA includes extensive areas of intertidal sand and mud-flats, large sand dune systems and the largest continuous area of saltmarsh in Wales.

4.5 The spring and autumn population of common redshank, and wintering population of northern pintail, Eurasian oystercatcher, and red knot are qualifying features for the Burry Inlet Ramsar designation.

4.6 The Carmarthen Bay and Estuaries SAC, located approximately 7.2 km to the west, is designated for its 'Sandbanks which are slightly covered by sea water all the time', 'Estuaries', 'Mudflats and sandflats not covered by water at low tide', 'Large shallow inlets and bays', 'Salicornia and other annuals colonising mud and sand', and 'Atlantic salt meadows'.

Non-Statutory Sites

4.7 There are 23 Sites of Interest for Nature Conservation (SINC) within 2 km of the Survey Site. These are described in detail in the preliminary ecological appraisal. Three SINCs lie partially within the Survey Site boundary, of which two have cited ornithological interest.

4.8 Rhyd-Y-Pandy Valley Grasslands is a large SINC, which includes three fields that lie within the north-east corner of the Survey Site. The site is designated for its wet woodland and woodland with

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[9] The term 'European Marine Sites' (EMS) collectively describes Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) that are covered by tidal waters and protect some of our most important marine and coastal habitats and species of European importance.

[10] SACs are strictly protected sites designated under the EC Habitats Directive in order to conserve the 189 habitat types and 788 faunal species identified in Annexes I and II of the Directive (as amended). They do not afford protection to birds directly (although are often subject to various other designations that do have an ornithological component and often offer protection to habitats of value to a range of bird species).

[11] SPAs are internationally important sites classified in accordance with Directive 79/409/EEC on the conservation of wild birds (commonly referred to as the Bird Directive).

[12] Ramsar sites are wetlands of international importance designated under the Ramsar Convention.

assemblage of ancient woodland indicator species, scrub, purple moor grass and rush pasture, lowland meadow, neutral grassland, scrub, reed bed and water course habitats. Species of bird listed on the SINC form include sky lark, tree pipit, reed bunting, common kestrel *Falco tinnunculus*, herring gull *Larus argentatus*, red kite, house sparrow, common starling *Sturnus vulgaris*, song thrush and barn owl. It is unclear what the status of these species on the SINC is.

4.9 Warn Garn Wen is also an extensive SINC which includes the marshy grassland that lies within the western boundary of the Survey Site. The site is designated for purple moor grass and rush pasture, wet woodland, scrub and watercourse habitats. Species of bird listed on the SINC form include herring gull, lesser black-backed gull *Larus fuscus*, house sparrow, stonechat *Saxicola rubicola*, common starling and song thrush. It is unclear what the status of these species on the SINC is.

4.10 There are two SINCs located adjacent to the boundary. Rhos Fawr SINC is a block of land immediately to the north of the Survey Site boundary, and Felindre Grasslands SINC lies adjacent to the southern tip of the proposed access route. Both have cited ornithological interest.

4.11 The Rhos Fawr SINC is designated for its woodland containing an assemblage of ancient woodland indicator species, scrub, purple moor grass and rush pasture, and neutral grassland habitats. Species of bird listed on the SINC form include tree pipit and common cuckoo *Cuculus canorus.* It is unclear what the status of these species on the SINC is.

4.12 The Felindre Grasslands SINC is designated for its wet woodland and lowland mixed deciduous woodland, purple moor grass and rush pasture, and scrub habitats. Species of bird listed on the SINC form include northern goshawk *Accipiter gentilis*, tree pipit, lesser redpoll, common linnet, reed bunting, common kestrel, common snipe *Gallinago gallinago*, herring gull, house sparrow, green woodpecker *Picus viridis*, willow tit *Poecile montanus*, common bullfinch, water rail *Rallus aquaticus*, stonechat, Eurasian woodcock *Scolopax rusticola*, common starling, song thrush, barn owl, and northern lapwing *Vanellus vanellus*. It is unclear what the status of these species on the SINC is.

4.13 Two additional SINCs have cited ornithological interest. These are; Penllergaer Forest, located approximately 1 km south-west of the Survey Site, and Penllergaer to Llangyfelach Tunnel and Railway Line, located approximately 1 km south of the Survey Site.

4.14 The Penllergaer Forest SINC is designated for its range of woodland types, purple moor grass and rush pasture, reedbeds and watercourses. Species of bird listed on the SINC form include Northern goshawk, common kingfisher *Alcedo atthis*, lesser redpoll, common cuckoo, lesser spotted woodpecker *Picoides minor*, common grasshopper warbler, common crossbill *Loxia curvirostra*, red kite, house sparrow, wood warbler *Phylloscopus sibilatrix*, green woodpecker, willow tit, common bullfinch, common starling and song thrush. It is unclear what the status of these species on the SINC is.

4.15 Penllegaer to Llangyfelach Tunnel and Railway Line SINC is also designated for its range of woodland types, purple moor grass and rush pasture, scrub and watercourses. Species of bird listed on the SINC form include tree pipit, lesser redpoll, common bullfinch, and song thrush. It is unclear what the status of these species on the SINC is.

4.16 Most of the woodland within the Survey Site is also designated as Ancient Woodland.

Species Data

4.17 SEWBReC provided 21 records of barn owl. The closest of these records is 0.7 km to the west of the Survey Site boundary from 1997, with the nearest breeding record 3 km to the south west near Penllergaer Woods in 2000. The most recent record is from approximately 3.7 km north-west of the Survey Site in April 2013. An additional 5 records were provided for the last 10 years, the nearest of which was recorded in 2007, approximately 2 km south-west of the Survey Site,

4.18 A red kite was noted circling above a field in the north-west corner of the Survey Site and also over Abergelli Farm during the Phase 1 Survey in April 2014. SEWBReC provided 54 records for red kite between 1999 and 2013, the record nearest the Survey Site being approximately 150 m to the east.

4.19 SEWBReC provided a number of records of ground nesting birds in the search area. These included records for Eurasian curlew, northern lapwing and skylark. A total of 63 records of lapwing were provided from between 2000 and 2009, all south of the Survey Site. The closest of these records are located at the tinplate workings site near to Bryn Whilach Farm, approximately 1 km to the south-west of the Survey Site boundary. There was one record of curlew from 2011, located at the Lliw Reservoir, 1 km north of the Survey Site boundary.

4.20 A full list of species, returned from the data search can be found in **Table 3** in **Appendix 2**.

Breeding Bird Survey (2014)

4.21 A total of 53 species were recorded on the Survey Site during the breeding bird survey in 2014. Of these, 46 were passerines (including near-passerines) and seven non-passerines.

Breeding passerines

4.22 The bird community was passerine dominated. Those observed holding territories and considered to have bred on the Survey Site are presented in Table 2 below. A full list of species, including non-breeding birds, recorded during the breeding bird survey can be found in Table 4 in Appendix 2.

Table 2: Estimated numbers of passerine territories recorded.

Species	BTO species code	Number of territories	Other evidence of breeding[13]	S42 species	Red (R) or Amber (A) listed species
Blackbird *Turdus merula*	B.	8	6		
Blackcap *Sylvia atricapilla*	BC	10			
Bullfinch *Pyrrhula pyrrhula*	BF	4	2		A
Blue Tit *Cyanistes caeruleus*	BT	9	9		
Chiffchaff *Phylloscopus collybita*	CC	19			
Chaffinch *Fringilla coelebs*	CH	22	3		
Cuckoo *Cuculus canorus*	CK	3		□	R
Coal Tit *Periparus ater*	CT	1			
Dunnock *Prunella modularis*	D.	15	1	□	A
Goldcrest *Regulus regulus*	GC	2	1		
Grasshopper Warbler *Locustella naevia*	GH	2		□	R
Goldfinch *Carduelis carduelis*	GO	3	1		
Great Tit *Parus major*	GT	4	5		
House Sparrow *Passer domesticus*	HS		3	□	R
Linnet *Carduelis cannabina*	LI	2	1	□	R
Mistle Thrush *Turdus viscivorus*	M.	2			A
Meadow Pipit *Anthus pratensis*	MP	7	1		A
Nuthatch *Sitta europaea*	NH	1	2		
Lesser Redpoll *Acanthis cabaret*	LR		1	□	R
Robin *Erithacus rubecula*	R.	27	8		
Reed Bunting *Emberiza schoeniclus*	RB	3			A

[13] The number of territories where other evidence was found to confirm breeding is indicated. Other evidence of breeding was considered to include observations of adults carrying nesting material or food, adults being repeatedly alarmed or engaging in territorial disputes, and families including juveniles accompanied by adults. The presence of house sparrow near a suitable nesting building was also taken as evidence for breeding in this species.

Species	BTO species code	Number of territories	Other evidence of breeding[13]	S42 species	Red (R) or Amber (A) listed species
Redstart *Phoenicurus phoenicurus*	RT	6			A
Skylark *Alauda arvensis*	S.	4		□	R
Stonechat *Saxicola torquata*	SC	2	2		
Song Thrush *Turdus philomelos*	ST	18		□	R
Sedge Warbler *Acrocephalus schoenobaenus*	SW	1			
Tree Pipit *Anthus trivialis*	TP	3	2	□	R
Whitethroat *Sylvia communis*	WH	12	1		A
Wren *Troglodytes troglodytes*	WR	34			
Willow Warbler *Phylloscopus trochilus*	WW	49	2		A

4.23 Twenty eight species of passerine were noted holding breeding territories on the Survey Site. An additional two species, lesser redpoll and house sparrow, were observed showing other evidence of breeding.

4.24 No passerine species listed under Schedule 1 Part 1 of the Wildlife & Countryside Act 1981 (as amended)[14] were recorded.

4.25 Nine S42 species (cuckoo, dunnock, grasshopper warbler, house sparrow, linnet, lesser redpoll, skylark, song thrush, and tree pipit) were considered likely to breed on the Survey Site. All nine S42 species recorded within the Survey Site are also listed in the Swansea LBAP[15], and are red-listed species of conservation concern in Wales (RSPB Undated), with the exception of dunnock (which is amber-listed). An additional seven amber-listed species, bullfinch, mistle thrush, meadow pipit, reed bunting, redstart, whitethroat and willow warbler were also considered to have bred.

4.26 Willow warbler was the most abundant breeding species on the Survey Site. Large numbers of territories were also held by other passerines typical of a lowland farmland mosaic habitat including chiffchaff, chaffinch, robin and wren. Of the S42 species recorded, dunnock and song thrush were most abundant, with territories widely distributed across the Survey Site. The abundance of willow warbler, dunnock and song thrush on the Survey Site may be attributed to the relatively wide-ranging habitat preferences of these generalist species (and the tendency of the former two species to breed in scrub).

4.27 The presence of ground nesting species (skylark and meadow pipit) within the Survey Site reflects the fact that much of the Survey Site is grazed pasture. However, the distribution of these species was localised, only being recorded in the pasture fields in the north-west of the Survey Site. Other species recorded on the pasture habitat during survey in April include stonechat, for which two territories were recorded, and northern wheatear *Oenanthe oenanthe* which were likely to have been on passage and not remained to breed on site (see Incidental Records below). Stonechat and wheatear were not recorded during breeding bird surveys in May and June.

4.28 Grasshopper warbler was associated with marshy areas in the north-western part of the Survey Site which reflect the species' breeding habitat preferences. The species was only recorded during survey in April. No further records were made during dusk bat surveys or moth trap surveys carried out on the Survey Site during 2014. All registrations of cuckoo were beyond the Survey Site boundary. These were recorded near Lletty'r Bugail, approximately 300 m north of the Survey Site and at Waun y Garn-wen, and approximately 100 m west of the Survey Site, during survey in April

[14] Schedule 1 birds receive full protection under the Wildlife and Countryside Act 1981 (as amended), In addition to the protection from killing or taking that all birds, their nests and eggs have under the Act, Schedule 1 birds and their young must not be disturbed at the nest.
[15] Based on the 2005 consultation draft of the Swansea LBAP. The forthcoming replacement to this plan will be expected to reflect Section 42 Species and Habitats more closely.

and near a pond, north of Cefn-betingau, approximately 100 m east of the Survey Site during survey in May.

4.29 House sparrow colonies were recorded at the barn north of Abergelli Farm during all survey visits and at the Abergelli Farm buildings during the survey in May and June. The individual count was 26 during the visit in April, 20 during the survey in May and 18 during the survey in June. Therefore, the number of breeding pairs within the Survey Site is likely to be between nine and 13.

4.30 A family of lesser redpoll were observed in scrub bordering the marshy grassland to the west of the Survey Site during the survey in June. Two birds were also recorded in this area during the survey in April. No further evidence of breeding in this species was recorded. Observations of single individuals were made near the Felindre Gas Compressor Station and National Grid electrical substation during survey in May and June.

4.31 Three tree pipit territories were recorded during survey. These were recorded immediately south of the gallops at the centre of the Survey Site in May and around the fringes of marshy grassland in the western part of the Survey Site and in the scrub line on the north-east corner of the Survey Site in June. Tree pipit were recorded during all survey visits, with flocks of up to 14 observed over the marshy grassland in the western part of the Survey Site during survey work in May. A family of tree pipit were recorded on a field boundary in the south-east corner of the Survey Site in June. Two pairs of tree pipit were observed immediately south of the gallops at the centre of the Survey Site in June. It is likely that these records are of breeding pairs.

4.32 Indicative central territory locations are shown on **Figures 1a** and **1b** in **Appendix 1**.

Non-Passerines

4.33 Red kite were recorded during surveys in April and May. A bird was noted flying over the houses at Abergelli Farm and over the pasture in the northern part of the Survey Site during the survey in April. Two red kites were recorded mobbing a peregrine falcon over the Felindre Gas Compressor Station land during the survey in May. An apparent pair was also recorded flying over the eastern boundary in the northern compartment of the Survey Site during the same survey day. Given the timing of the records, and that at least one pair was recorded during the survey in May it is likely that red kite breed locally. However, no evidence was found to suggest breeding occurred within the Survey Site during 2014.

4.34 Red kite are listed under Schedule 1 Part 1 of the Wildlife & Countryside Act 1981 (as amended) and Annex 1 of the Council Directive 79/409/EEC on the Conservation of Wild Birds making it an offence to intentionally or recklessly disturb birds at, on or near an 'active' nest, or to directly threaten birds, such as deliberately kill or capture birds, destroy their nests or take their eggs.

4.35 A peregrine falcon was observed flying over the Felindre Gas Compressor Station and National Grid electrical substation during survey in May. There is limited suitable breeding habitat within the Survey Site for peregrine falcon, and therefore this species is only likely to visit the Survey Site to forage on an occasional basis. Electricity pylons within the Survey Site were scanned from the ground for the presence of peregrine (and corvid) nests. No evidence of crow nests, which are sometimes appropriated by peregrine were found. Peregrine falcon is listed under Schedule 1 Part 1 of the Wildlife & Countryside Act 1981 (as amended).

4.36 It is possible that some of the farm buildings within the Survey Site may support breeding barn owl, although no trees were found that appear, from a ground level inspection, to have sufficiently large cavities to support nesting barn owls. The marshy fields in the north-west and at the southern end of the Survey Site could provide habitat for field vole *Microtus agrestis* (a preferred prey species) given the thick, tussocky structure of some parts of the sward. There was no evidence that barn owl breed within the Survey Site, and are unlikely to have done so in the recent past due to lack of droppings in the buildings and anecdotal evidence to this effect from the landowner. No signs of barn owl presence were found during building inspections and no birds were recorded during the breeding bird surveys.

Incidental Records

4.37 Species recorded during other survey work in the bird breeding season but not recorded during breeding bird surveys are described below.

4.38 Ten male and two female wheatear were observed on the horse pasture in the northern part of the Survey Site during a bat transect recce on 24 April 2014, and were presumably transient migrant birds.

4.39 Young tawny owls *Strix aluco* were heard calling near the houses in the western part of the Survey Site during a moth survey on 16 June, with birds of unknown age heard during a second survey on 13 August 2014. This suggests that tawny owl bred on the Survey Site in 2014, presumably in the woodland block immediately to the south-west of Abergelli Farm, although much of the woodland within the Survey Site is suitable nesting habitat for this species. No further observations of tawny owl were made. A goshawk (female) was observed flying over the Survey Site at dusk on 16 June, and a sparrowhawk *Accipiter nisus*, was recorded roosting in a tree near the aforementioned houses on 13 August.

4.40 Red kite were observed flying over the marshy grassland in the western part of the Survey Site during a dormouse survey on 29 May, and near Abergelli Farm during bat transect surveys on 22 May and 17 July 2014.Single red kites flying over the Survey Site were also recorded during Phase 1 habitat surveys on 24 February 2014 and 14 April 2014.

4.41 A spotted flycatcher *Muscicapa striata* was recorded in the hedge-line near the two houses on 17 June 2014. Spotted flycatcher is a S42 species of principal importance in Wales, is listed in the Swansea LBAP and is a red-listed species of conservation concern in Wales (RSPB, 2009).

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Appendix 1: Figures

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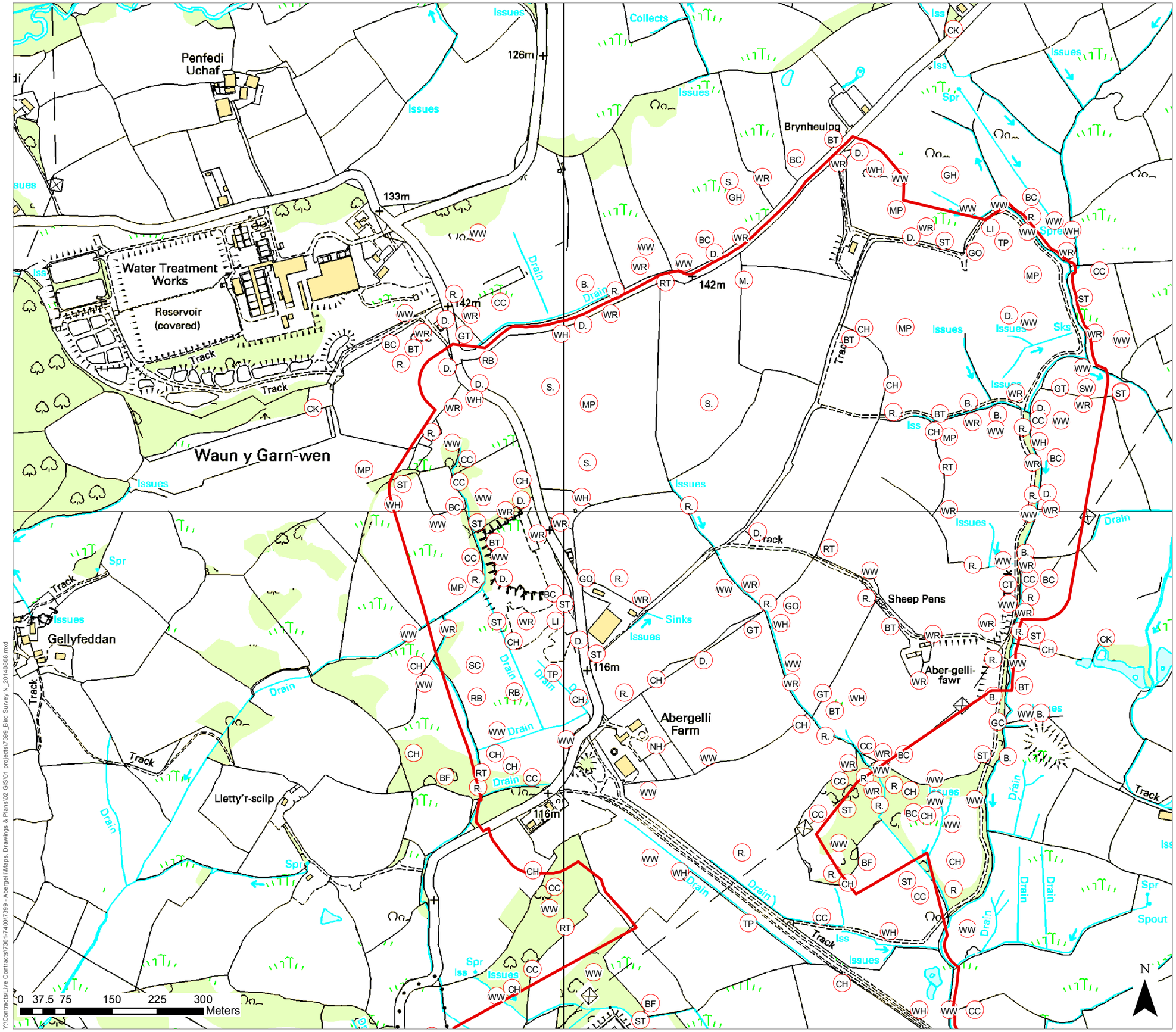

LEGEND

Survey Site Boundary

Breeding Bird Territories

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JOB REF: 7399

PROJECT TITLE

ABERGELLI BREEDING BIRD SURVEY 2014

DRAWING TITLE

Figure 1a - Breeding BirdTerritories - North

DATE: 11.08.2014 CHECKED: OG SCALE: 1:6,000

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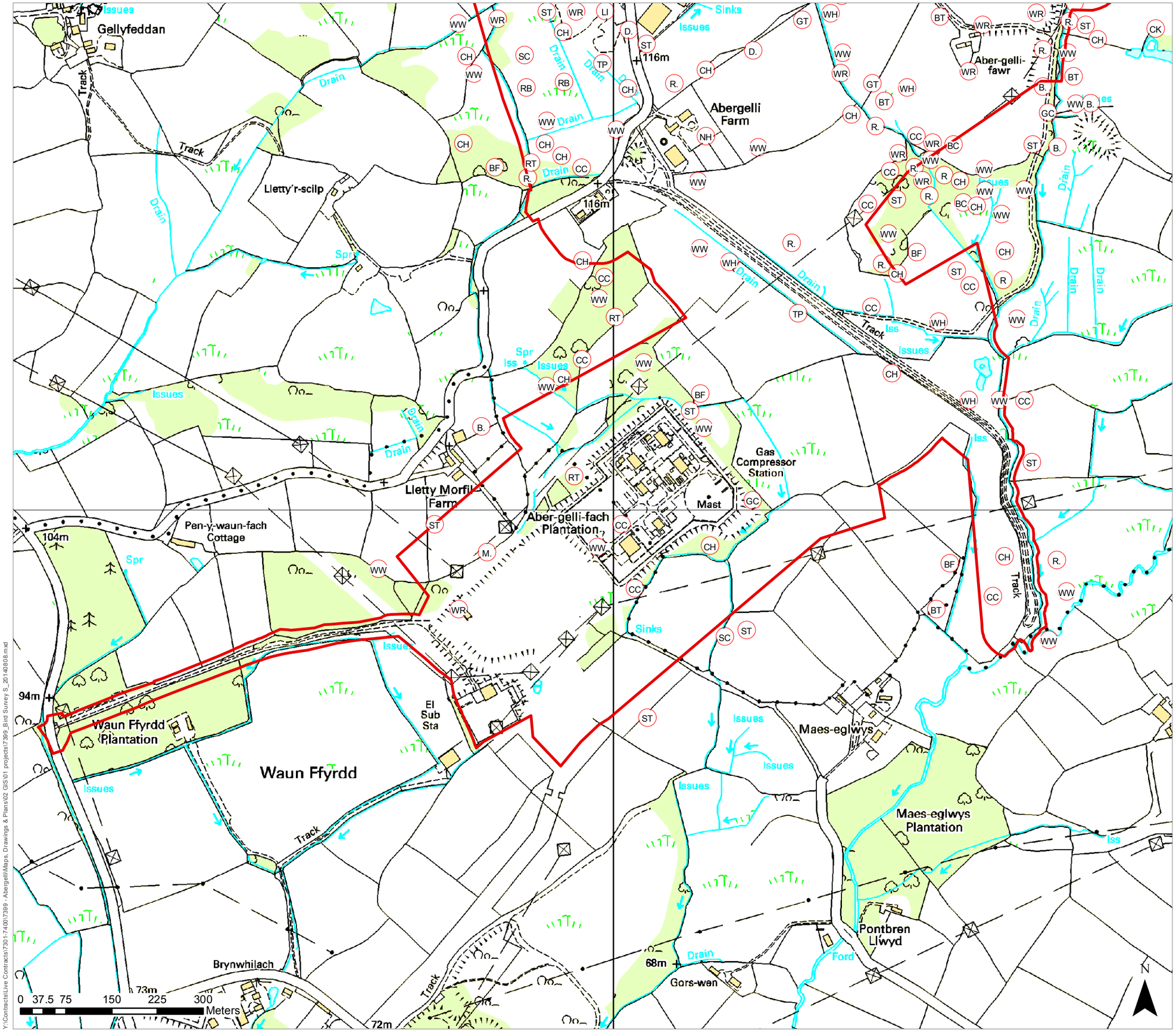

LEGEND

Survey Site Boundary

Breeding Bird Territories

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PROJECT TITLE
ABERGELLI BREEDING BIRD SURVEY 2014

DRAWING TITLE
Figure 1b - Breeding BirdTerritories - South

DATE: 11.08.2014 CHECKED: OG SCALE: 1:6,000
DRAWN: GL APPROVED: OG STATUS: FINAL

Sources: Ordnance Survey, BSG survey data

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Appendix 2: Species Tables

Table 3. List of species and count of records within 2 km of the Survey Site obtained from the SEWBReC data search.

Species	Count of records
Barn Owl *Tyto alba*	21
Black-headed Gull *Chroicocephalus ridibundus*	11
Common Bullfinch *Pyrrhula pyrrhula*	94
Common Crossbill *Loxia curvirostra*	3
Common Cuckoo *Cuculus canorus*	17
Common Goldeneye *Bucephala clangula*	2
Common Grasshopper Warbler *Locustella naevia*	6
Common Kestrel *Falco tinnunculus*	22
Common Kingfisher *Alcedo atthis*	6
Common Linnet *Carduelis cannabina*	17
Common Starling *Sturnus vulgaris*	55
Corn Crake *Crex crex*	1
Eurasian Curlew *Numenius arquata*	1
Eurasian Hobby *Falco subbuteo*	1
Fieldfare *Turdus pilaris*	6
Hedge Accentor *Prunella modularis*	145
House Sparrow *Passer domesticus*	33
Lesser Redpoll *Carduelis cabaret*	22
Lesser Spotted Woodpecker *Dendrocopos minor*	4
Little Plover *Charadrius dubius*	42
Marsh Tit *Poecile palustris*	7
Merlin *Falco columbarius*	2
Northern Goshawk *Accipiter gentilis*	4
Northern Lapwing *Vanellus vanellus*	63
Osprey *Pandion haliaetus*	1
Peregrine Falcon *Falco peregrinus*	14
Pied Flycatcher *Ficedula hypoleuca*	3
Red Kite *Milvus milvus*	54
Redwing *Turdus iliacus*	45
Reed Bunting *Emberiza schoeniclus*	23
Ring Ouzel *Turdus torquatus*	1
Ringed Plover *Charadrius hiaticula*	31
Sky Lark *Alauda arvensis*	13
Song Thrush *Turdus philomelos*	140
Spotted Flycatcher *Muscicapa striata*	12
Tree Pipit *Anthus trivialis*	7
Willow Tit *Poecile montanus*	11

Species	Count of records
Wood Warbler *Phylloscopus sibilatrix*	8
Yellowhammer *Emberiza citrinella*	15

Table 4. List of all species recorded during the 2014 breeding bird surveys

Species	BTO species code	Species count			Schedule 1 species	Section 42 species	Red (R) or Amber (A) listed species
		April	May	June			
Blackbird *Turdus merula*	B.	22	29	29			
Blackcap *Sylvia atricapilla*	BC	9	6	5			
Blue Tit *Cyanistes caeruleus*	BT	20	20	26			
Bullfinch *Pyrrhula pyrrhula*	BF	8	3	5			A
Buzzard *Buteo buteo*	BZ	2	0	3			
Canada Goose *Branta canadensis*	CG	10	1	1			
Carrion Crow *Corvus corone*	C.	38	18	27			
Chaffinch *Fringilla coelebs*	CH	24	18	30			
Chiffchaff *Phylloscopus collybita*	CC	15	11	17			
Coal tit *Periparus ater*	CT	3	0	1			
Cuckoo *Cuculus canorus*	CK	3	0	1			R
Dunnock *Prunella modularis*	D.	12	6	6			A
Feral Pigeon *Columba livia*	FP	0	0	4			
Goldcrest *Regulus regulus*	GC	2	2	1			
Greenfinch *Carduelis chloris*	GF	0	0	2			
Goldfinch *Carduelis carduelis*	GO	9	10	16			
Grasshopper Warbler *Locustella naevia*	GH	2	0	0			R
Great Spotted Woodpecker *Dendrocopos major*	GS	3	1	6			
Garden Warbler *Sylvia borin*	GW	1	0	0			
Great Tit *Parus major*	GT	16	10	13			
Herring Gull *Larus argentatus*	HG	2	0	2			R
House Sparrow *Passer domesticus*	HS	34	19	22			R
Jackdaw *Corvus monedula*	JD	9	30	29			
Jay *Garrulus glandarius*	J.	4	1	1			
Lesser Black-backed Gull *Larus fuscus*	LB	2	2	1			A
Linnet *Carduelis cannabina*	LI	14	15	10			R
Magpie *Pica pica*	MG	11	23	6			
Mallard *Anas platyrhynchos*	MA	1	0	0			
Meadow Pipit *Anthus pratensis*	MP	2	12	9			
Mistle Thrush *Turdus viscivorus*	M.	3	2	12			A
Nuthatch *Sitta europaea*	NH	1	3	0			
Peregrine *Falco peregrinus*	PE	0	0	1			
Pied Wagtail *Motacilla alba*	PW	1	1	2			
Red Kite *Milvus milvus*	KT	2	0	5			A

Species	BTO species code	Species count			Schedule 1 species	Section 42 species	Red (R) or Amber (A) listed species
		April	May	June			
Redpoll (Lesser) *Carduelis cabaret*	LR	1	7	5			R
Redstart *Phoenicurus phoenicurus*	RT	3	5	8			A
Reed Bunting *Emberiza schoeniclus*	RB	3	1	1			A
Robin *Erithacus rubecula*	R.	30	24	23			
Rook *Corvus frugilegus*	RO	1	18	0			
Sand Martin *Riparia riparia*	SM	0	0	1			A
Sedge Warbler *Acrocephalus schoenobaenus*	SW	0	1	0			
Skylark *Alauda arvensis*	S.	6	6	1			R
Song Thrush *Turdus philomelos*	ST	14	19	13			R
Starling *Sturnus vulgaris*	SG	3	6	15			R
Stonechat *Saxicola torquata*	SC	2	6	6			
Swallow *Hirundo rustica*	SL	21	7	17			A
Swift *Apus apus*	SI	0	7	0			A
Tree Pipit *Anthus trivialis*	TP	19	8	18			R
Whitethroat *Sylvia communis*	WH	13	12	15			A
Willow Warbler *Phylloscopus trochilus*	WW	41	18	21			A
Woodpigeon *Columba palumbus*	WP	8	15	20			
Wren *Troglodytes troglodytes*	WR	22	26	31			
Northern wheatear *Oenanthe oenanthe*	W.	2	0	0			A

Appendix 8.17

Great Crested Newt Survey Report 2014

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Great Crested Newt Survey Report

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Issuing office

Wyastone Business Park | Wyastone Leys | Monmouth | NP25 3SR
T: 01600 891576 | W: www.bsg-ecology.com | E: info@bsg-ecology.com

Client	Stag Energy
Job	Abergelli Power Project
Report title	Great Crested Newt Survey Report
Draft version/final	FINAL
File reference	7399_R_GCN_APPR (5) MH 011014.docx

	Name	**Position**	**Date**
Originated	Caitlin McCann	Ecologist	18 June 2014
Reviewed	Matthew Hobbs	Principal Ecologist	10 July 2014
Approved for issue to client	Matthew Hobbs	Principal Ecologist	11 July 2014
Issued to client	Matthew Hobbs	Principal Ecologist	11 July 2014
2nd issue to client	Matthew Hobbs	Principal Ecologist	11 August 2014
3rd issue to client	James Gillespie	Partner	29 August 2014
4th issue to client	Matthew Hobbs	Principal Ecologist	02 September 2014

Contents

1 Summary

1.1 Abergelli Power Limited (APL) is promoting a new Power Generation Plant with its associated Gas and Electricity Connections (the 'Project') on agricultural land within Abergelli Farm north of Swansea in the City and County of Swansea (approximately at National Grid Reference 265284, 201431).

1.2 A Habitat Suitability Index (HSI) assessment for great crested newts *Triturus cristatus* (GCN) was carried out at accessible ponds as part of the preliminary ecological appraisal of the Project Site at the time of the survey (hereafter referred to as the 'Survey Site'). The results of the HSI assessment are set out in the Preliminary Ecological Appraisal (BSG, June 2014). APL subsequently commissioned BSG Ecology to undertake a presence/absence survey for GCN of ponds within 150 ha of pastoral farmland at and around Abergelli Farm in May 2014, to inform and support an application for Development Consent for the Project.

1.3 Owing to the size and nature of the Survey Site, and the lack of GCN records in the desk study search area, it was recommended that a survey for GCNs be conducted for all ponds within the Survey Site boundary and within 250 m of the Survey Site boundary. A total of five ponds were surveyed including three within the Survey Site and a further two within 250 m of the Survey Site boundary. It was not possible to access a number of ponds, which included:

- seven ponds outside of the Survey Site but within 250 m of the Survey Site boundary; and
- a further four ponds between 250m and 500m from the Survey Site boundary that formed part of a cluster of ponds, the remainder of which were within 250m of the Survey Site boundary.

1.4 The survey did not record any GCNs in the ponds surveyed, although palmate newts *Lissotriton helveticus* were recorded in three ponds and smooth newts *Lissotriton vulgaris* were recorded in two ponds. As a consequence, further surveys to establish the population size class of GCN were not necessary and were not undertaken.

2 Introduction

2.1 Abergelli Power Limited commissioned BSG Ecology to undertake a presence/absence GCN survey in May 2014 to inform and support an application for Development Consent for the Project described below.

Site Description

2.2 The Survey Site consists of approximately 150 ha of pastoral farmland primarily grazed by horses. The extent of the Survey Site is shown in Figure 1 in Appendix 1 and is centred at National Grid Reference 265284, 201431. The nearest settlement is Felindre, which is located approximately 2 km to the north of the Survey Site, with Swansea approximately 5 km to the south.

2.3 The Survey Site is largely agriculturally improved pasture with several areas of marshy grassland, particularly in the north, south and north-western ends of the Survey Site. The fields are bounded by fences, running along the line of defunct hedgerows, and often accompanied by ditches. There is a block of broadleaved woodland on the eastern boundary of the Survey Site and other areas of woodland around the marshy grassland to the west of the Survey Site, and around Felindre Gas Compressor Station and the two National Grid 400 kV electrical substations that lie at the south-west end of the Survey Site. The habitats in the surrounding landscape are similar to those within the Survey Site boundary – a mixture of improved and marshy grassland interspersed with occasional patches of woodland.

Description of Project

2.4 APL is promoting a new Power Generation Plant with associated Gas and Electricity Connections within Abergelli Farm. The Power Generation Plant would operate as a Simple Cycle Gas Turbine (SCGT) peaking plant and would be designed to provide an electrical capacity of up to 299 Megawatts (MW). It would be fuelled by natural gas, supplied by a new underground gas pipeline connecting the Power Generation Plant to the existing National Grid Gas (NGG) National Transmission System (NTS). It would also connect to the National Grid Electrical Transmission System (NETS) via underground cable or overhead lines.

2.5 BSG Ecology has been appointed as the ecological consultant to undertake an ecology survey, which includes a desk study and Extended Phase 1 Habitat Survey as well as a range of Phase 2 surveys, including presence / absence survey for GCNs. These baseline surveys will be included in an appendix to an ecology chapter of an Environmental Statement, which is intended for submission, in support of the application for Development Consent.

Aims of Study

2.6 The aims of the GCN survey were to identify whether GCNs are present in the ponds within the Survey Site and those within 250 m of the Survey Site boundary using standard survey methods (as specified in Section 3).

3 Methods

Desk Study

3.1 Existing ecological information for the Survey Site and its surrounding area was requested from the South East Wales Biodiversity Records Centre (SEWBReC). Information on protected[1] species, including GCNs, was requested covering the Survey Site and land up to 2 km from the Survey Site boundary. The National Biodiversity Network Gateway[2] was also checked for records for 1 x 1 km grid squares in which GCN records have occurred. In addition, on-line mapping and aerial photography of the area were also reviewed to identify ponds that might be present within the Survey Site and 500 m of the boundary based on recommendations made in the Natural England (formerly English Nature) GCN Mitigation Guidelines[3] (the selection of an appropriate buffer distance for survey is explained in more detail below).

Scoping (HSI) Survey

3.2 A Preliminary Ecological Appraisal was carried out by BSG Ecology in February 2014 and updated in April 2014[4]. As part of this survey, all accessible ponds within 250 m of the Survey Site were visited and assessed against the criteria of Oldham *et al*. (2000)[5]. This was to establish the likelihood of their use by GCNs using a Habitat Suitability Index (HSI), and to identify the scope of the GCN presence/absence field survey described below.

3.3 The information collected during the HSI assessment provides context of how ponds within or in proximity to the Survey Site may connect with habitat available for newts in the surrounding landscape, and also to give greater confidence to the assessment carried out on each pond.

3.4 Information on the physical features and characteristics of each pond within 250 m of the Survey Site was collected, to enable an HSI score to be derived for each pond, by applying the scoring system developed by the Herpetological Conservation Trust (HCT, 2008)[6]. Where a cluster of ponds was found (P01-P08; see Figure 1) with some ponds within 250 m of the Survey Site and some ponds beyond this distance, the intention was to carry out an HSI on all ponds within the cluster (although lack of access prevented this in this case).

3.5 The HSI is calculated by allocating scores to features associated with each pond including features such as size, quality of surrounding habitat and presence of fish. These scores are then used to calculate the overall HSI for each pond as a number between 0 and 1, with 0 being the least suitable and 1 being the most suitable. The HSI score allows each pond to be placed in one of five categories defining its suitability for GCNs as follows:

- <0.5 = poor
- 0.5 – 0.59 = below average
- 0.6 – 0.69 = average
- 0.7 – 0.79 = good
- >0.8 = excellent

3.6 In addition, there are a number of wet ditches present within the Survey Site and within 250 m of the Survey Site boundary. All of the wet ditches are narrow (<1 m width) and did not hold more than a few centimetres of water during February – June 2014 despite an exceptionally wet winter.

[1] Wildlife and Countryside Act 1981 Schedules 1, 5 & 8; Conservation of Habitats and Species Regulations 2010; Protection of Badgers Act.
[2] http://www.nbn.org.uk/
[3] English Nature (2001). The Great Crested Newt Mitigation Guidelines. English Nature, Peterborough.
[4] BSG Ecology (2014). Abergelli Power Project: Preliminary Ecological Appraisal.
[5] Oldham, R.S., Keeble, J., Swan, M.J.S., and Jeffcote, M (2000) Evaluating the Suitability of Habitat for the Great Crested Newt (*Triturus cristatus*). Herpetological Journal, Vol. 10, pp. 143-155.
[6] Herpetological Conservation Trust (HCT) (2008). Habitat Suitability Index – Guidance Notes. National Amphibian and Reptile Recording Scheme.

They are not thought to provide suitable habitat for GCNs and presence / absence surveys are not considered to be required for these waterbodies.

Field Survey

3.7 Following the initial HSI assessment (see above) four GCN survey visits were undertaken within the period mid-March to mid-June to establish presence/absence (with at least two surveys during mid-April to mid-May), with an additional two surveys (six in total) required to estimate population size if GCN were found during the first four surveys. The GCN field survey work was undertaken in 2014 and was completed in accordance with the Natural England (2001) GCN Mitigation Guidelines.

3.8 In determining the distance at which presence/absence survey of ponds would take place, Natural England guidance has been considered and an approach developed that is proportionate to the likelihood of encountering GCNs (Note that where a survey is conducted in Wales, Natural Resources Wales advise that the Natural England guidance is consulted.)

3.9 Natural England guidance on geographical limits of survey is discussed in Section 5.4 of the GCN Mitigation Guidelines which recommends that:

"*For a common situation, where a plot of land containing a pond is proposed for development, the pond itself should be surveyed, and other ponds up to 500 m away should also be checked, if it is thought likely that great crested newt populations centred on these ponds would be affected by changes to the plot*."

3.10 Natural England guidance is further developed in the GCN Method Statement[7] which states that:

"*In keeping with a proportionate and risk-based approach, surveys need reasonable boundaries. The great crested newt mitigation guidelines explain that surveys of ponds up to around 500m from the development might need to be surveyed. The decision on whether to survey depends primarily on how likely it is that the development would affect newts using those ponds. For developments resulting in permanent or temporary habitat loss at distances over 250m from the nearest pond, carefully consider whether a survey is appropriate. Surveys of land at this distance from ponds are normally appropriate when all of the following conditions are met: (a) maps, aerial photos, walk-over surveys or other data indicate that the pond(s) has potential to support a large great crested newt population, (b) the footprint contains particularly favourable habitat, especially if it constitutes the majority available locally, (c) the development would have a substantial negative effect on that habitat, and (d) there is an absence of dispersal barriers*."

3.11 The approach that has been taken for these field surveys is consistent with the above guidance and advice from Natural England. Where access was available, presence/absence surveys for GCN were carried out on all ponds within 250 m of the Project Site. The exception to this were pond clusters that are interconnected to each other (less than 250 m apart) and which therefore could be considered to be part of the same population (should GCN be found). However, no such ponds (P01-P08 and P012-P014) were accessible as shown on Figure 1. As explained in the limitations section below, it is not considered to be a significant constraint to the findings of the survey that some ponds could not be accessed.

Limitations of study

3.12 The GCN field surveys were undertaken within the recommended survey period and in suitable weather conditions apart from the torchlight survey and egg search on 19/05/2014 where heavy rain occurred leaving some ponds turbid, making survey less effective for a short period. Nevertheless, the surveys were considered to be effective despite the reduced visibility.

3.13 Two ponds (P07 and P08) located within the Water Treatment Works to the northwest of Project Site that were classified during the HSI assessment as being of 'average' or 'good' value for GCNs could not be surveyed due to access not being granted by landowners. In addition, access was not granted by landowners to Ponds P01, P02, P03, P04, P05, P06, P12, P13 and P14, which would have been surveyed for presence/absence of GCN, had access been possible.

[7] Available at www.naturalengland.org.uk/Images/wml-a14-2_tcm6-4103.xls

3.14 In considering the significance of not surveying the inaccessible ponds both within and beyond 250 m from the Project Site, it is useful to examine the results of the presence / absence surveys for those ponds that could be surveyed, as well as the results of the desk study, which places the Survey Site into a wider context (see 4.1). The presence/absence survey did not reveal the presence of GCNs in any of the five ponds surveyed, although three of the ponds supported smooth and /or palmate newts and were also thought to provide suitable habitat for GCNs. This included all ponds within the Survey Site, three of which were of 'average' suitability as derived from the Habitat Suitability Assessment. The Survey Site is on the edge of the known range of GCN and the lack of desk study records within 2 km of the Survey Site is consistent with this, as is a search of the National Biodiversity Network website where the closest record of GCN was approximately 7.5 km from the Survey Site.

3.15 The conclusion that may be drawn is that since suitable ponds within the Survey Site were not occupied by GCNs, and no GCN records have been located within 7 km of the Survey Site, it is unlikely that GCNs are present in the inaccessible ponds. Notwithstanding this, if any of the ponds that were not surveyed (most are beyond 250 m from the Survey Site) did indeed support GCNs, it is likely that they would be present in such low numbers and at a sufficient distance from the Survey Site as to be unaffected by the Project. A Natural England funded research report into trapping efficiency on sites where GCNs are present (Cresswell and Whitworth, 2004) supports this assertion. It arrives at the conclusion that very few animals were captured at distances greater than 100 m from a breeding pond. As a consequence, it is not considered to be a significant constraint to the findings of the survey that some ponds could not be surveyed.

4 Results

Desk Study

4.1 No records of GCNs within 2 km of the Survey Site were returned by SEWBReC. The closest 1 x 1 km Grid Square in which GCN records have occurred is ca. 7.5 km to the south-east of the Survey Site, near Llandarcy[8].

Scoping survey

4.2 Twelve ponds were identified within 250 m of the Survey Site boundary with the aid of aerial photographs and OS maps. Of these, two (P16 and P17) were identified within the Survey Site boundary, 10 (P05, P06, P07, P08, P09, P10, P12, P13, P14, and P15) were located within 250 m of the Survey Site and another four (P01, P02, P03, and P04) beyond 250m of the Survey Site but forming part of a cluster of ponds (with P05-P08) within the Water Treatment Works to north-west of the Survey Site. An additional on-site pond (P11) was found whilst carrying out other survey work on 21 May 2014 in the marshy grassland in the north-west of the Survey Site. An HSI assessment was carried out on the seven ponds that were accessible within 250 m of the Survey Site boundary during the first Phase 1 survey visit (in February). This included: the two on-site ponds (P16 and P17); one pond within 100 m of the Survey Site boundary (P15); and ponds within 250 m of the Survey Site boundary for which access was possible (P07, P08, P09 and P10). An HSI assessment was also carried out on P11 following its discovery in May 2014.

4.3 Figure 1 shows which ponds were surveyed and which were inaccessible on private land.

4.4 Table 1 below summarises the results of the HSI, and detailed results are provided in Appendix 3.

Table 1: HSI Results

Pond	HSI	Value for GCNs
P07	0.67	Average
P08	0.77	Good
P09	0.47	Poor
P10	0.64	Average
P11 on site	0.39	Poor
P15	0.66	Average
P16 on site	0.61	Average
P17 on site	0.53	Below average

4.5 The Survey Site lies in a part of Wales where the distribution of GCNs is patchy, with the species largely absent to the west of the Survey Site. Whilst this reduces the probability that GCNs would be present within the Survey Site, it does not rule out their presence. There are a number of ponds in and around the Survey Site, and suitable habitat for newts in their terrestrial phase, including old hedge banks, marshy grassland and woodland within the Survey Site. Accordingly, whilst the ponds surveyed did not have a 'good' or 'excellent' HSI score, they did have potential to provide breeding habitat for GCNs.

4.6 The scoping exercise concluded that surveys should be carried out on all ponds within 250 m of the Survey Site boundary, except P09, which was a small recession with a small amount of water in February and completely dry in April. In addition the cluster of inaccessible ponds within the grounds of the water treatment works (to the north-west of the Survey Site) are likely to be of similar 'good' quality as Pond 08 (which was visible through the gate) and it was concluded that surveys of this cluster of ponds (including P01, P02, P03 and P04) should also be carried out following the rationale explained in Section 3.7.

[8] https://data.nbn.org.uk/imt/#3-4.231,51.507,-3.293,51.781!091EHm!081EHm

Field Survey

4.7 GCN presence-absence surveys were carried out on Ponds P10, P11, P15, P16, and P17. P15 dried out completely between the first and second visits and was only surveyed once. The ponds within the Water Treatment Works (P01-P08), including four ponds beyond 250m from the Survey Site could not be surveyed: access to these ponds was denied on grounds of Health & Safety. In addition, access was denied to the cluster of three ponds (P12-P14) to the east of the Survey Site. The land surrounding these ponds contains Japanese Knotweed *Fallopia japonica* (an invasive species) and is subject to an exclusion and treatment programme which precludes access to third-parties due to the risk of spreading the plant.

4.8 Surveys between May 12th and May 22nd were carried out by Stephanie Boocock MCIEEM under the class licence (WML-CL08) with assistance from Caitlin McCann, Owain Waters and Rachel Taylor. For Pond 11, which was identified late during other surveys, the third and fourth visits were carried out by Matthew Hobbs MCIEEM under license number (52219:OTH:SA:2014) with assistance from Rachel Taylor and Gareth Lang. On each visit, weather conditions, including air temperature were recorded. Table 1 gives details of the surveys.

Table 1: Details of GCN surveys. BT= Bottle trapping, TL- torchlight survey, ES= Egg search, N= Netting. Surveyors: SB = Stephanie Boocock, OW= Owain Waters, RT= Rachel Taylor, CMc = Caitlin McCann, MH = Matthew Hobbs, and GL = Gareth Lang.

Visit no.	Date	Surveyors	Survey methods	*Air temp °C		Weather Conditions
				BT	TL/ES	
1	12-13/05/2014	SB + OW	BT, TL, ES	14	8-3	Showers, light wind
2	15-16/05/2014	SB + OW	BT, TL, ES	19	13	No precipitation, light wind
3	19-20/05/2014	SB + RT	BT, TL, ES	18	13	Dry during BT deployment with rain, light wind and thunder during TL/ES
4	22-23/05/2014	SB + CMc	BT, TL, ES	16.3	13	Rain during day, dry and no wind during survey.
3 (for P11)	3-4/06/2014	MH + GL	BT, TL, N	19	14	Light wind, dry.
4 (for P11)	16-17/06/2014	MH + RT	BT, TL, N	21	18	Light wind, dry.

4.9 The survey results are summarised in Table 2. Pond P15 dried out between the first and second surveys and only one survey visit to this pond was possible.

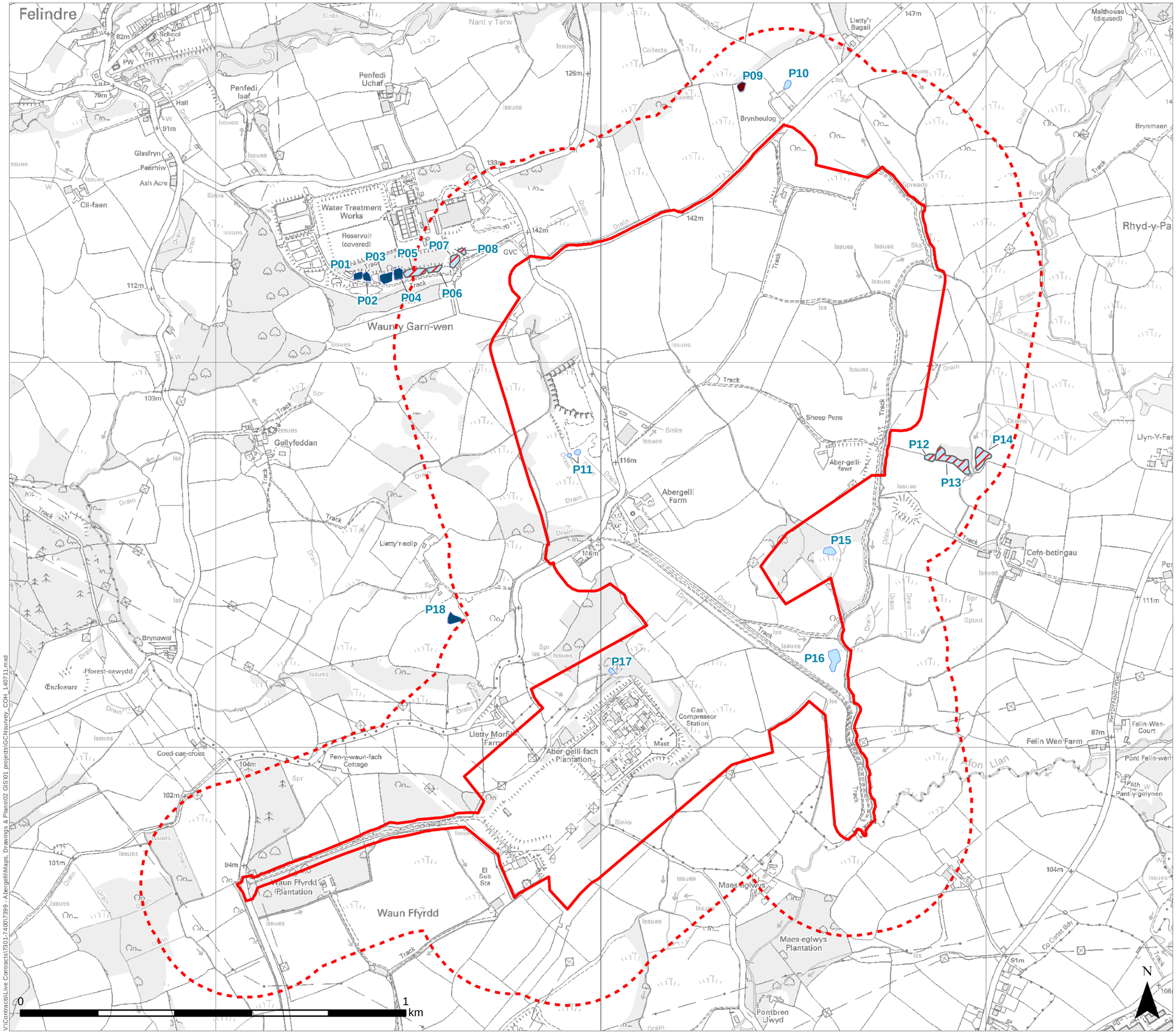
4.10 The likely absence of GCNs was established for all five ponds surveyed in 2014 the four presence / absence surveys. Additional surveys to make a population size class assessment were not required (following Natural England 2001).

Table 2: GCN survey results. Key: Tc = GCN; Lv = smooth newt; Lh = palmate newt; Lv/Lh = smooth or palmate newt; juv = juvenile; ♂ = male; ♀ = female.

Pond and	Bottle Trap				Torchlight				Egg Search			Netting			
Date of Survey	Tc	Lv	Lh	Lv/Lh	Tc	Lv	Lh	Lv/Lh	Tc	Lv/Lh		Tc	Lv	Lh	Lv/Lh
P10															
12-13/05/2014															
15-16/05/2014															
19-20/05/2014										P					
22-23/05/2014															
P11															
19-20/05/2014			4♂ 3♀					4							
22-23/05/2014			1♀				2♂	5							
3-4/06-2014			1♂					1♀						2♂	4juv , 4eft
16-17/06/2014							1♂	13♂						1♂, 2♂	
P15															
12-13/05/2014															
15-16/05/2014	Dried														
19-20/05/2014	Dried														
22-23/05/2014	Dried														
P16															
12-13/05/2014			2♂				2♂	12♀							
15-16/05/2014						2♂, 2♀									
19-20/05/2014			1♀			4♂									
22-23/05/2014			5♀, 10♂				3♂	1							
P17															
12-13/05/2014							4♂	3♀							
15-16/05/2014						6♂, 2♀									
19-20/05/2014			5♂ 2♀			4♂ 1♀									
22-23/05/2014			1♂ 2♀				2♂ 1♀	1							

Appendix 1: Figures

(overleaf)



LEGEND

- Survey Site boundary
- 250m buffer from Survey Site

Great crested newts

- Pond within 250m of Survey Site that have been surveyed for GCN
- Ponds within 250m of the Survey Site for which access was denied
- Ponds within 250m of the Survey Site that are unsuitable for amphibians
- Ponds within 250-500m of the Survey Site

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PROJECT TITLE

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Figure 1: Great Crested Newt Survey Map

DATE: 11.07.2014 CHECKED: MH SCALE: 1:9,500

DRAWN: COH APPROVED: MH STATUS: FINAL

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Appendix 2: Photographs of Ponds

Photo 1: Pond P08.

Photo 2: Pond P07.

Photo 3: Pond P10.

Photo 4: Pond P09.

Photo 5: Pond P11.

Photo 6: Pond P15.

Photo 7: Pond P16.

Photo 8: Pond P17

Appendix 3: HSI results.

Pond ref.	Location	Pond Area m^2	Pond permanence	Water Quality	Pond Shading %	No. of waterfowl	Occurrence of fish	Pond density	Proportion of newt friendly habitat around pond within 500 m – Any Barriers	Macrophyte content (est. % total of emergent and submerged macrophytes)	Notes
P07	SN6464602272	150	Never dries	Good	30	Minimal	Possible	Y	Good	0	Not well vegetated
P08	SN6463502258	240	Never dries	Good	10	Minimal	Possible	Y	Good	30	Typha and rushes around edge. Close access not possible
P09	SN6535602709	20	Annual dries	Moderate	30	Absent	No	Y	Good	0	Very shallow and unlikely to fill up- probably mostly dry
P10	SN6548702727	70	Sometimes dries	Good	5	Minimal	Possible	Y	Good	20	Small and shallow
P11	SN6494401748		Never dries	Good		Minimal	Possible	Y	Good	35	Very well vegetated
P16	SN6558701536	25	Sometimes	Good	60	Absent	No	Y	Good	40	
P17	SN6569801237	100	Annually dries	Good	80	Absent	No	Y	Good	100	Water shallow and covered in Carex species. To south consists of patches of standing water within Molinia
P18	SN6503101199	50	Never dries	Moderate	100	Absent	No	Y	Moderate	0	Small pond within woodland – water dark and no aquatic

											vegetation in evidence

Appendix 8.18

Reptile Survey Report 2014

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Abergelli Power Project

Reptile Survey Report

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Issuing office

Wyastone Business Park | Wyastone Leys | Monmouth | NP25 3SR
T: 01600 891576 | W: www.bsg-ecology.com | E: info@bsg-ecology.com

Client	Stag Energy
Job	Abergelli Power Project
Report title	Reptile Survey Report
Draft version/final	DRAFT
File reference	7399_R_Reptile_APPR (3)_20-11-2014.docx

	Name	**Position**	**Date**
Originated	Niall Lusby	Senior Ecologist	30 October 2014
Reviewed	Matt Hobbs	Principal Ecologist	03 November 2014
Approved for issue to client	Matt Hobbs	Principal Ecologist	03 November 2014
Issued to client	Matt Hobbs	Principal Ecologist	03 November 2014
Updated and 2nd Issue to client	Matt Hobbs	Principal Ecologist	19 November 2014
Updated and 3rd Issue to client	Matt Hobbs	Principal Ecologist	10 March 2015

Contents

1 Summary

1.1 Abergelli Power Limited (APL) is promoting a new Power Generation Plant with its associated Gas and Electricity Connections (the 'Project') on agricultural land within Abergelli Farm, north of Swansea in the City and County of Swansea (approximately at National Grid Reference 265284, 201431).

1.2 A desk study undertaken as part of the Preliminary Ecological Appraisal (PEA) returned records of the common reptile species: adder *Vipera berus*, grass snake *Natrix natrix*, common lizard *Zootoca vivipara* and slow worm *Anguis fragilis* within 2 km of the Project Site boundary. Suitable habitat to support these species was identified within the Project Site boundary at the time of the survey (hereafter referred to as the 'Survey Site').

1.3 APL commissioned BSG Ecology to undertake a reptile survey of all suitable habitat for reptiles within the Survey Site boundary. Habitats selected for survey included marshy grassland areas, scrubby woodland edges, overgrown field margins either along remnant hedge or ditch banks.

1.4 Seven surveys visits were carried out during August and September 2014, during which the presence of common lizard and grass snake was confirmed within the Survey Site.

1.5 317 refugia were deployed in 33 ha of habitat identified as being suitable to support reptiles within the Survey Site, achieving a density of 9.6 refugia per ha. The Survey Site was split into four Areas in order to describe the distribution of reptile records

1.6 A peak count of 50 common lizard was recorded on 26 August 2014; common lizard was recorded in all areas surveyed, with highest numbers recorded in Areas 1 and 3 in the marshy grassland areas in the north-west of the Survey Site and the east of the Survey Site respectively. The presence of juveniles and gravid females confirms breeding on the Survey Site.

1.7 A peak count of five grass snake was recorded during the survey on 26 August 2014. All observations of grass snake were made in Area 3, in the marshy grassland close to the pond in the east of the Survey Site. The presence of juvenile animals suggests that a breeding population is present on the Survey Site.

2 Introduction

2.1 Abergelli Power Limited (APL) commissioned BSG Ecology to undertake a reptile survey in May/June 2014 to inform and support an application for Development Consent for the Project described below.

Site Description

2.2 The Survey Site consists of approximately 150 ha of pastoral farmland, primarily grazed by horses. The extent of the Survey Site is shown on Figures 1a and 1b, Appendix 1 as illustrated by the red line boundary. It is centred at National Grid Reference 265284, 201431. The nearest settlement is Felindre, which is located approximately 2 km to the north of the Survey Site, with Swansea approximately 5km to the south.

2.3 The Survey Site is largely agriculturally improved pasture with several areas of marshy grassland particularly in the north, south and north-western extents of the Survey Site. The fields are bounded by fences, running along the line of defunct hedgerows, and often accompanied by ditches. There is a block of broadleaved woodland on the eastern boundary of the Survey Site and other areas of woodland around the marshy grassland to the west of the Survey Site, and around Felindre Gas Compressor Station and the two National Grid 400kV electric substations that lie at the south-west end of the Survey Site. The habitats in the surrounding landscape are similar to those within the Survey Site boundary – a mixture of improved and marshy grassland interspersed with occasional patches of woodland.

Description of Project

2.4 APL is promoting a new Power Generation Plant with associated Gas and Electricity Connections within Abergelli Farm. The Power Generation Plant would operate as a Simple Cycle Gas Turbine (SCGT) peaking plant and would be designed to provide an electrical capacity of up to 299 Megawatts (MW). It would be fuelled by natural gas, supplied by new underground gas pipelines connecting the Power Generation Plant to the existing National Grid Gas (NGG) National Transmission System (NTS). It would also connect to the National Grid Electrical Transmission System (NETS) via underground cables or overhead lines.

2.5 BSG Ecology has been appointed as the ecological consultant to undertake ecology surveys, which include a PEA as well as a range of Phase 2 surveys, including a reptile survey. These baseline surveys will be included in an appendix to an ecology chapter of an Environmental Statement, which is intended for submission in support of the application for Development Consent.

Aims of Study

2.6 The aims of the reptile survey within the Survey Site were to:

- Assess where habitats within the Survey Site have the potential to support reptiles; and
- Establish the likely presence/absence of each species and, if present, their distribution within the Survey Site.

3 Methods

Desk Study

3.1 Existing ecological records for European and nationally protected[2] species, including reptiles was requested from the South East Wales Biodiversity Records Centre (SEWBReC). Records were provided for the Survey Site and a 2km buffer area beyond the Survey Site boundary. On-line mapping and aerial photography of the area was also reviewed in May 2014 to identify potential reptile habitat present within the Survey Site.

Scoping Survey

3.2 During the PEA carried out by BSG Ecology in February 2014, which was subsequently updated in April and July 2014, habitats within the Survey Site that had the potential to support common species of reptile were identified. The following areas were identified as containing habitats suitable to support reptiles:

- **Area 1**: An extensive area of marshy grassland / wet modified bog in the north-west of the Survey Site and a smaller area of road verge on the edge of semi-improved marshy grassland;
- **Area 2**: Areas of overgrown grassland, open ground and scrub as well as overgrown field margins along either remnant hedge banks or ditches in the north-east of the Survey Site;
- **Area 3**: Wood piles, overgrown banks, scrubby woodland fringes and marshy grassland areas in the east of the Survey Site, as well as dry grassland and scrub bordering the gallops in the centre of the Survey Site; and
- **Area 4**: Dry grassland and scrub along the periphery of the Felindre Gas Compressor Station and the two National Grid 400kV electric substations, as well as areas of marshy grassland on the periphery of these habitats, in the south-west extent of the Survey Site.

3.3 The areas assessed as being suitable for reptiles are shown on Figures 1a and 1b in Appendix 1.

Field Survey

3.4 The reptile survey was undertaken in accordance with best practice guidance, as set out in the Herpetofauna Worker's Manual (Gent *et al*., 2003) and guidelines for reptile survey published by Froglife (1999). A total of seven visits were made to each refugia during late August and September 2014. This period is within the optimum survey period for reptiles.

3.5 A survey was carried out to establish the likely presence/absence of each reptile species and, if present, their distribution through the Survey Site. This included the placement of 317 artificial refugia comprising of 50 x 50 cm roofing felt sections, which were placed within suitable habitats within the Survey Site (shown on Figures 1a and 1b in Appendix 1). In total approximnately 33 ha (approximately 22% of the total Survey Site area) of suitable reptile habitat was identified within the Survey Site, this means that the survey attained a refugia density of 9.6 refugia per hectare which approaches the upper limit of the guideline density of 5-10 refugia per hectare of suitable reptile habitat (Froglife, 1999).

3.6 Best practice guidance recommends that refugia are allowed to "bed in" for a minimum of one week before the survey commences. The "bedding in" period allows vegetation to die back beneath the refugia creating a close fit to the ground and allowing the development of suitable humidity and temperature conditions. It also allows time for reptiles to locate and become accustomed to the refugia. Refugia in Area 1 were deployed on 16 April 2014, and the remainder of the refugia deployed on 11 August 2014. The first survey visit was undertaken on 22 August giving a minimum bedding in period of 11 days.

3.7 During each survey, refugia were approached carefully so that any reptiles basking on top of them could be observed before they were disturbed by the surveyor. Once the

refugia had been inspected for basking reptiles, the refugia were carefully lifted and checked for any reptiles sheltering underneath.

3.8 Some areas initially assessed as being suitable for reptiles were not included in the refugia survey either due to a change in landuse such as ploughing or due to the regular grazing by horses as the presence of horses means that the refugia were at risk of trampling, with an inherant risk of injury to reptiles sheltering underneath, Figures 1a and 1b reflect this with some areas of suitable habitat not containg artificial refugia as part of the survey.

Direct Observation

3.9 The surveyors made visual searches whilst on site by slowly walking between refugia and watching for signs of movement. Any existing refugia (e.g. pieces of wood, stones) were also checked where appropriate. A supplimentary direct observation survey aims to eliminate bias towards recording those reptile species more likely to use refugia.

Reptile Survey Details

3.10 Surveys were conducted during optimum weather conditions, generally dry, with low wind, lightly overcast or hazy sunshine, and a temperature range of 9-18°C (Froglife, 1999; Gent & Gibson, 2003[1]). This temperature range includes the optimum temperature ranges for recording most of the widespread UK species of reptile (see Table 1, below).

3.11 Due to the large number of refugia and the extent of the Survey Site, surveys were often completed by two surveyors in one day or by one surveyor over two days (subsequent days where weather was permitting).

Table 1 - Survey period for widespread reptile species and associated temperature ranges. Information taken from Gent & Gibson (2003).

Common Name	Latin Name	Survey period	Optimal temperatures
Adder	*Vipera berus*	Early March – late September	8-16 °C
Grass snake	*Natrix natrix*	April – early October	12-20 °C
Common lizard	*Zootoca vivipara*	Early March – early August (adults) August – September (juveniles)	9-18 °C
Slow worm	*Anguis fragilis*	Early March – early August	9-18 °C

Limitations to Methods

3.12 The survey method is designed to identify the presence or likely absence of common reptile species and to provide an indication of the abundance of reptiles present within the Survey Site. However it is possible that the survey may have only recorded a small sample of the populations present, and that if a reptile species occurs at a low density, it may have been missed.

3.13 On two survey visits (Visit 4 on 3 September and Visit 5 on 11 September) the average temperature for the survey was slightly higher than is recommended (both averaged 18.5 °C) for surveying. It is not considered to have affected the overall result of the survey, as the common species of reptile that were recorded on site are known to bask at higher temperatures (Gent & Gibson, 2003). In addition, the numbers of reptiles recorded were similar to numbers recorded during the other surveys, with the 4th and 6th highest total counts of reptiles recorded during these surveys.

[1] Gent & Gibson (2003) recommends a temperature range of 10-17°C

4 Results

Desk Study

4.1 SEWBReC provided 12 records of reptiles, between 1998 and 2010. These included records of all the common reptile species: adder, grass snake, common lizard, and slow worm. The closest record is of a common lizard, approximately 0.8 km to the west of the Survey Site boundary. Most records are from the south-west side of the tinplate working near to Bryn Whilach Farm, approximately 1 km to the southwest of the Survey Site boundary.

Field Survey

4.2 Reptiles were recorded during refugia checks and visual searches on site. Details of the timing of surveys and weather conditions are provided in Table 2.

Table 2 – Details of Reptile Surveys

Visit No.	Area surveyed	Date	Surveyors*	Average Air Temperature (°C)	Average Wind Speed (Beaufort)	Average Cloud Cover (Oktas)
1a	1,2,3	21/08/2014	CMc	15.1	2-3	7
1b	4	22/08/2014	CMc + RT	13.4	1	5
2	all	26/08/2014	CMc + RT	17.1	2	2-3
3	all	28/08/2014	CMc + GL	17.2	2	2-3
4	all	03/09/2014	GL + NL	18.5	1	3
5a	1,4	05/09/2014	CMc	17.6	3	3
5b	2,3	11/09/2014	CMc	18.5	0	0
*6a	3,4	09/09/2014	GL	16.5	0	0
C6b	1,2	10/09/2014	GL	15.0	2	0
a7a	2,4	12/09/2014	CMc	17.0	1	1-2
i 7b	1,3	15/09/2014	CMc	17.7	0	1

t

*Caitlin McCann MSc (CMc), Gareth Lang GCIEEM (GL), Niall Lusby MCIEEM (NL) and Rachel Taylor ACIEEM (RT).

4.3 A summary of the survey results is provided in Table 3 below and the full results are presented in Appendix 2. The locations where reptiles were recorded is presented in Figures 1a and 1b in Appendix 1. Two common species of reptile were recorded at the Survey Site; common lizard and grass snake. No other reptile species were recorded. The majority of records were associated with artificial refugia and where direct observation of reptiles were made during the surveys, the closest refugia number was used to indicate the sighting location.

Common Lizard

4.4 A total of 163 adult and juvenile common lizard observations were recorded during the seven survey visits, with a peak count of 50 recorded during the second visit on 26 August 2014 (Survey No. 2).

4.5 Area 1 was surveyed with 38 refugia and the highest numbers of common lizard were recorded from this area, with 58 recorded over the seven visits, and a peak count of 22 on 28 August 2014 (Survey No. 3). All of these records were from the extensive area of marshy grassland / wet modified bog with no observations of any reptiles made along the road verge also included in Area 1.

4.6 Area 2 was surveyed with 65 refugia and a total of 36 common lizard observations were recorded during the seven visits, with a peak count of 15 on 28 August 2014 (Survey No. 3). The animals recorded were fairly evenly distributed across the habitats included in this area, although most records were from the eastern half of this area.

4.7 Area 3 was surveyed with 89 refugia and a total of 51 common lizard observations were recorded during the seven survey visits with a peak count of 23 on 26 August 2014 (Survey No. 2). The majority of the records were from the marshy grassland on the eastern boundary of the Survey Site, with occasional records along the gallops track.

4.8 Area 4 was surveyed with 125 refugia and a total of 18 common lizard observations were recorded during the seven surveys with a peak count of seven on 26 August 2014 (Survey No. 2).

4.9 During the course of the survey both male and female common lizard were recorded with some of the females being gravid, which confirms that there is a breeding population present on the Survey Site.

Grass snake

4.10 In total ten observations were recorded for grass snake during the course of the survey with a peak count of five recorded on 26 August 2014 (Survey No. 2). All observations of grass snake were made in Area 3 in the marshy grassland close to the pond.

4.11 Juvenile grass snake were recorded along with adults which is suggestive that a breeding population is present on the Survey Site, however as grass snake are a wide ranging species and the location of the animals recorded on site was close to the Survey Site boundary; the presence of juveniles does not necessarily confirm that breeding takes place on site.

Other species

4.12 Common toad *Bufo bufo* was found across the Survey Site with a total of 51 records made for this species and a peak count of 17 recorded on 28 August 2014 (Survey No. 3).

4.13 Common frog *Rana temporaria* was recorded once on 26 August 2014 (Survey No. 2). Large numbers of recently emerged juvenile common frog were observed during the refugia collection on 16 September 2014. These sightings were made in the areas of marshy grassland and were not associated with the artificial refugia.

Table 3: Numbers of reptiles and amphibians recorded during each survey.

	Common Lizard					**Grass Snake**					**Other**	
Survey no.	Male	Female	Adult (no sex)	Juvenile	Adult Total	Male	Female	Adult (no sex)	Juvenile	Adult Total	Toad	Frog
1a and 1b	1	1	0	21	2	0	0	0	0	0	10	0
2	7	9	4	30	20	0	0	2	3	2	14	1
3	3	5	0	40	8	0	0	1	3	1	17	0
4	1	3	1	4	5	0	0	0	0	0	9	0
5a and 5b	2	5	0	11	7	0	0	1	0	1	0	0
6a and 6b	0	1	1	1	2	0	0	0	0	0	1	0
7a and 7b	1	3	0	8	4	0	0	0	0	0	0	0
Total	**15**	**27**	**6**	**115**	**48**	**0**	**0**	**4**	**6**	**4**	**51**	**1**

5 References

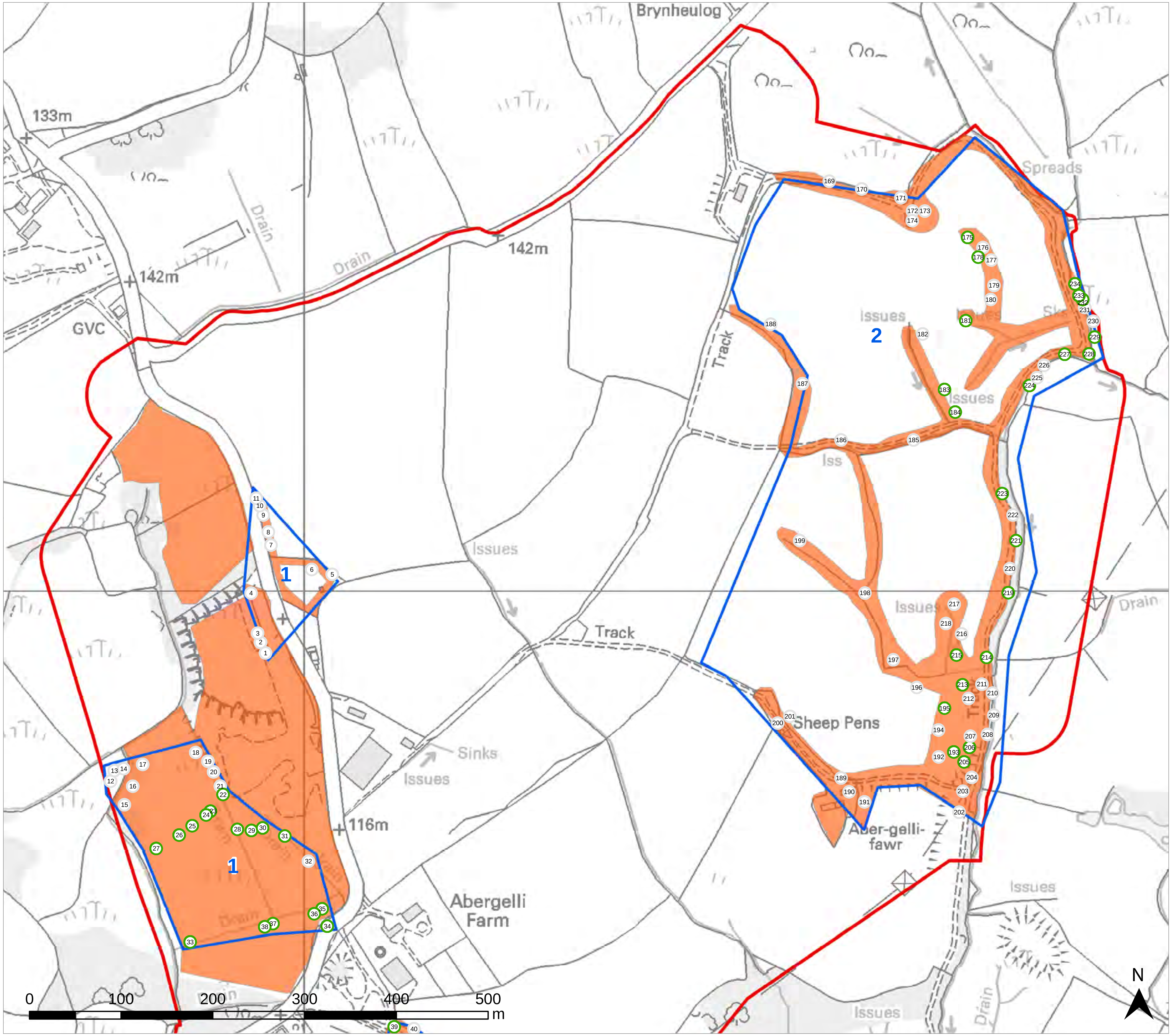
Frog*life* (1999) Advice Sheet 10: Reptile Survey. An introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Frog*life*, Suffolk

BSG Ecology (2014). Abergelli Power Project: Preliminary Ecological Appraisal.

Gent, T and Gibson, S (2003) *Herpetofauna Workers' Manual*. JNCC, Peterborough.

Appendix 1: Figures

(Overleaf)



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LEGEND

Survey site boundary

1a Reptile survey area

Area of habitat most suitable for reptiles

Reptile mats

Common lizard recorded

No reptile presence recorded

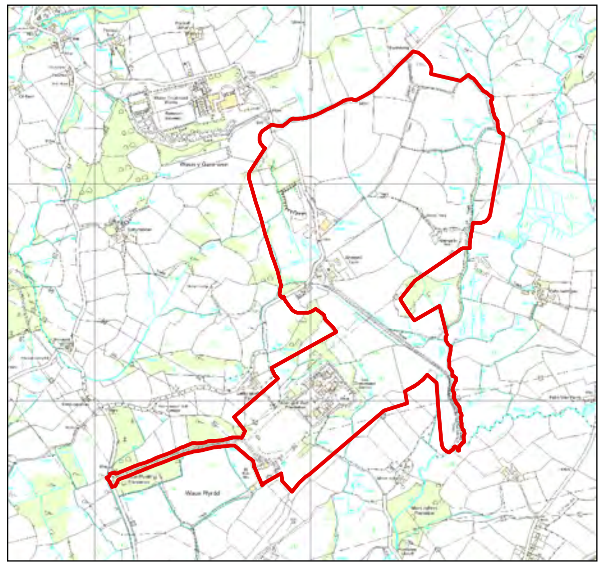

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Figure 1a: Reptile Survey Results - North

DATE: 07.11.2014 CHECKED: CMcC SCALE: 1:4,000

DRAWN: COH APPROVED: MH STATUS: FINAL

Sources: BSG Ecology survey data

LEGEND

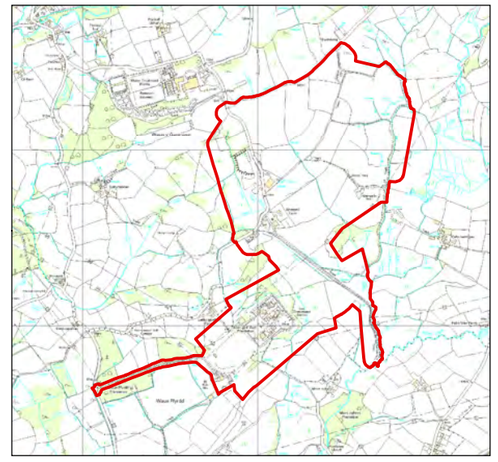
Survey site boundary

1a Reptile survey area

Area of habitat most suitable for reptiles

Reptile mats

- Common lizard recorded
- Grass snake recorded
- Common lizard and grass snake recorded
- No reptile presence recorded



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PROJECT TITLE

ABERGELLI POWER PROJECT

DRAWING TITLE

Figure 1b: Reptile Survey Results - South

DATE: 07.11.2014 CHECKED: CMcC SCALE: 1:4,000

DRAWN: COH APPROVED: MH STATUS: FINAL

Sources: BSG Ecology survey data

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0 100 200 300 400 500 m

N

Appendix 2: Reptile Survey Results

Full Survey Results

Visit	Surveyor	Date	Mat No.	Area	Time	Species	No.	M/F/J/or 'Adult'
1a	CMc	21/08/2014	227	2	10:44 - 11:55	Common lizard	1	J
1a	CMc	21/08/2014	205	2	10:44 - 11:55	Common lizard	3	J
1a	CMc	21/08/2014	36	1	12:17 - 13:40	Common lizard	1	M
1a	CMc	21/08/2014	37	1	12:17 - 13:40	Common lizard	2	J, M
1a	CMc	21/08/2014	31	1	12:17 - 13:40	Common lizard	2	J
1a	CMc	21/08/2014	30	1	12:17 - 13:40	Common lizard	2	J, F
1a	CMc	21/08/2014	29	1	12:17 - 13:40	Common lizard	1	J
1a	CMc	21/08/2014	27	1	12:17 - 13:40	Common lizard	1	J
1a	CMc	21/08/2014	26	1	12:17 - 13:40	Common lizard	1	J
1a	CMc	21/08/2014	25	1	12:17 - 13:40	Common lizard	1	J
1a	CMc	21/08/2014	24	1	12:17 - 13:40	Common lizard	1	J
1a	CMc	21/08/2014	101	3	15:20 - 15:59	Common lizard	1	J
1a	CMc	21/08/2014	100	3	15:20 - 15:59	Common lizard	1	J
1a	CMc	21/08/2014	104	3	15:20 - 15:59	Common lizard	1	J
1a	CMc	21/08/2014	105	3	15:20 - 15:59	Common lizard	2	J
1a	CMc	21/08/2014	110	3	15:20 - 15:59	Common lizard	1	J
1a	CMc	21/08/2014	112	3	15:20 - 15:59	Common lizard	1	J
1a	CMc	21/08/2014	95	3	15:20 - 15:59	Common lizard	1	J
2	CMc	26/08/2014	35	1	10:37	Common lizard	3	J
2	CMc	26/08/2014	28	1	10:52	Common lizard	3	F
2	CMc	26/08/2014	26	1	10:54	Common lizard	2	J
2	CMc	26/08/2014	25	1	10:59	Common lizard	1	F
2	CMc	26/08/2014	24	1	11:01	Common lizard	1	J
2	CMc	26/08/2014	23	1	11:03	Common lizard	1	Adult
2	CMc	26/08/2014	127	3	11:49	Common lizard	1	J
2	CMc	26/08/2014	116	3	11:54	Common lizard	1	J
2	CMc	26/08/2014	95	3	11:56	Common lizard	1	M
2	CMc	26/08/2014	95	3	11:56	Grass Snake	1	J
2	CMc	26/08/2014	94	3	11:58	Common lizard	1	J
2	CMc	26/08/2014	115	3	11:59	Common lizard	1	Adult
2	CMc	26/08/2014	113	3	12:03	Grass Snake	1	Adult
2	CMc	26/08/2014	112	3	12:04	Common lizard	4	J
2	CMc	26/08/2014	111	3	12:05	Common lizard	1	J
2	CMc	26/08/2014	110	3	12:07	Common lizard	1	J
2	CMc	26/08/2014	109	3	12:09	Common lizard	1	M
2	CMc	26/08/2014	105	3	12:13	Grass Snake	1	Adult
2	CMc	26/08/2014	104	3	12:14	Grass Snake	1	J
2	CMc	26/08/2014	102	3	12:17	Common lizard	1	J
2	CMc	26/08/2014	93	3	12:31	Common lizard	1	J
2	CMc	26/08/2014	89	3	12:37	Common lizard	2	1 M, 1 F
2	CMc	26/08/2014	86	3	12:40	Common lizard	1	M
2	CMc	26/08/2014	83	3	12:43	Grass Snake	1	J

Visit	Surveyor	Date	Mat No.	Area	Time	Species	No.	M/F/J/or 'Adult'
2	CMc	26/08/2014	81	3	12:45	Common lizard	1	M
2	CMc	26/08/2014	68	3	12:51	Common lizard	2	J
2	CMc	26/08/2014	58	3	13:12	Common lizard	1	J
2	CMc	26/08/2014	56	3	13:20	Common lizard	1	J
2	CMc	26/08/2014	39	1	13:31	Common lizard	1	J
2	CMc	26/08/2014	165	4	14:05	Common lizard	1	J
2	CMc	26/08/2014	167	4	14:07	Common lizard	1	J
2	CMc	26/08/2014	139	4	14:32	Common lizard	2	F
2	CMc	26/08/2014	184	2	16:09	Common lizard	2	F
2	CMc	26/08/2014	219	2	16:19	Common lizard	1	M
2	CMc	26/08/2014	214	2	16:22	Common lizard	1	J
2	CMc	26/08/2014	215	2	16:23	Common lizard	1	J
2	CMc	26/08/2014	195	2	16:41	Common lizard	1	J
2	CMc	26/08/2014	193	2	16:43	Common lizard	1	J
2	CMc	26/08/2014	205	2	16:52	Common lizard	1	J
2	CMc	26/08/2014	206	2	16:55	Common lizard	1	J
2	CMc	26/08/2014	272	4	16:55	Common lizard	1	Adult
2	CMc	26/08/2014	274	4	16:58	Common lizard	1	Adult
2	CMc	26/08/2014	275	4	17:00	Common lizard	1	M
3	CMc	28/08/2014	175	4	12:26	Common lizard	1	F
3	CMc	28/08/2014	178	4	12:31	Common lizard	3	J
3	CMc	28/08/2014	181	4	12:40	Common lizard	1	J
3	CMc	28/08/2014	224	2	12:51	Common lizard	2	J
3	CMc	28/08/2014	228	2	12:59	Common lizard	1	M
3	CMc	28/08/2014	229	2	13:01	Common lizard	1	J
3	CMc	28/08/2014	234	2	13:15	Common lizard	1	J
3	CMc	28/08/2014	223	2	13:34-14:13	Common lizard	1	F
3	CMc	28/08/2014	221	2	13:34-14:13	Common lizard	1	J
3	CMc	28/08/2014	214	2	13:34-14:13	Common lizard	1	J
3	CMc	28/08/2014	213	2	13:34-14:13	Common lizard	1	J
3	CMc	28/08/2014	193	2	13:34-14:13	Common lizard	1	J
3	CMc	28/08/2014	76	3	14:15-14:54	Common lizard	1	J
3	CMc	28/08/2014	101	3	15:01-16:20	Common lizard	3	J
3	CMc	28/08/2014	99	3	15:01-16:20	Common lizard	1	J
3	CMc	28/08/2014	104	3	15:01-16:20	Grass snake	1	J
3	CMc	28/08/2014	105	3	15:01-16:20	Grass snake	1	J
3	CMc	28/08/2014	109	3	15:01-16:20	Common lizard	1	J
3	CMc	28/08/2014	110	3	15:01-16:20	Common lizard	1	J
3	CMc	28/08/2014	112	3	15:01-16:20	Grass snake	1	Adult
3	CMc	28/08/2014	95	3	15:01-16:20	Common lizard	1	J
3	CMc	28/08/2014	95	3	15:01-16:09	Grass snake	1	J
3	CMc	28/08/2014	23	1	17:01 - 17:40	Common lizard	3	J
3	CMc	28/08/2014	24	1	17:01 - 17:40	Common lizard	2	J
3	CMc	28/08/2014	25	1	17:01 - 17:40	Common lizard	4	J
3	CMc	28/08/2014	26	1	17:01 - 17:40	Common lizard	1	F
3	CMc	28/08/2014	28	1	17:01 -	Common lizard	1	M

Visit	Surveyor	Date	Mat No.	Area	Time	Species	No.	M/F/J/or 'Adult'
					17:40			
3	CMc	28/08/2014	31	1	17:01 - 17:40	Common lizard	3	J x2, F
3	CMc	28/08/2014	35	1	17:01 - 17:40	Common lizard	2	J
3	CMc	28/08/2014	37	1	17:01 - 17:40	Common lizard	2	J
3	CMc	28/08/2014	38	1	17:01 - 17:40	Common lizard	2	F
3	CMc	28/08/2014	34	1	17:01 - 17:40	Common lizard	2	J
3	RT	28/08/2014	235	4	11:20-12:20	Common lizard	1	M
3	RT	28/08/2014	280	4	11:20-12:20	Common lizard	1	J
3	RT	28/08/2014	282	4	11:20-12:20	Common lizard	1	J
4	GL	03/09/2014	272	4	10:30	Common lizard	1	J
4	GL	03/09/2014	275	4	10:35	Common lizard	1	Adult F
4	GL	03/09/2014	305	4	10:55	Common lizard	1	Adult F
4	GL	03/09/2014	108	3	11:33	Common lizard	1	Adult M
4	GL	03/09/2014	99	3	11:55	Common lizard	1	J
4	NL	03/09/2014	232	2	11:55-17:00	Common lizard	1	J
4	NL	03/09/2014	233	2	11:55-17:00	Common lizard	1	J
5a	CMc	05/09/2014	25	1	8:00-13:00	Common lizard	1	J
5a	CMc	05/09/2014	26	1	8:00-13:00	Common lizard	2	J
5a	CMc	05/09/2014	28	1	8:00-13:00	Common lizard	1	Adult F
5a	CMc	05/09/2014	35	1	8:00-13:00	Common lizard	1	J
5a	CMc	05/09/2014	37	1	8:00-13:00	Common lizard	1	J
5a	CMc	05/09/2014	272	4	8:00-13:00	Common lizard	1	Adult F
5a	CMc	05/09/2014	275	4	8:00-13:00	Common lizard	1	Adult M
5a	CMc	05/09/2014	281	4	8:00-13:00	Common lizard	1	J
5b	CMc	11/09/2014	181	2	13:30-17:00	Common lizard	1	J
5b	CMc	11/09/2014	229	2	13:30-17:00	Common lizard	1	J
5b	CMc	11/09/2014	232	2	13:30-17:00	Common lizard	1	Adult M
5b	CMc	11/09/2014	193	2	13:30-17:00	Common lizard	1	Adult F
5b	CMc	11/09/2014	76	3	13:30-17:00	Common lizard	1	J
5b	CMc	11/09/2014	75	3	13:30-17:00	Common lizard	1	Adult F
5b	CMc	11/09/2014	99	3	13:30-17:00	Common lizard	1	J
5b	CMc	11/09/2014	104	3	13:30-17:00	Common lizard	1	J
5b	CMc	11/09/2014	105	3	13:30-17:00	Grass snake	1	Adult
5b	CMc	11/09/2014	95	3	13:30-17:00	Common lizard	1	J
6a	GL	09/09/2014	56	3	12:10	Common lizard	1	J
6b	GL	10/09/2014	33	1	09:45	Common lizard	1	A
6b	GL	10/09/2014	183	2	11:15	Common lizard	1	F
7a	CMc	12/09/2014	242	4	08:00-	Common lizard	1	F

Visit	Surveyor	Date	Mat No.	Area	Time	Species	No.	M/F/J/or 'Adult'
					13:00			
7a	CMc	12/09/2014	236	4	08:00-13:00	Common lizard	1	J
7b	CMc	15/09/2014	112	3	13:00-17:00	Common lizard	2	J
7b	CMc	15/09/2014	101	3	13:00-17:00	Common lizard	1	M
7b	CMc	15/09/2014	95	3	13:00-17:00	Common lizard	1	F
7b	CMc	15/09/2014	22	1	13:00-17:00	Common lizard	1	J
7b	CMc	15/09/2014	25	1	13:00-17:00	Common lizard	1	J
7b	CMc	15/09/2014	26	1	13:00-17:00	Common lizard	3	J
7b	CMc	15/09/2014	27	1	13:00-17:00	Common lizard	1	F

Appendix 8.19

Invasive Plant Species Survey Report

BSG | ecology

Abergelli

Abergelli Power Project

Invasive Plant Species Survey Report

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BSG | ecology

Issuing office

Wyastone Business Park | Wyastone Leys | Monmouth | NP25 3SR
T: 01600 891576 | W: www.bsg-ecology.com | E: info@bsg-ecology.com

Client	Stag Energy
Job	Abergelli Power Project
Report title	Invasive Plant Species Survey Report
Draft version/final	FINAL
File reference	7399_InvasiveSpecies_APPR (4)_011014.docx

	Name	**Position**	**Date**
Originated	Niall Lusby	Senior Ecologist	23 July 2012
Reviewed	Jim Gillespie	Partner	28 July 2014
2nd Draft	Niall Lusby	Senior Ecologist	28 July 2014
Approved for issue to client	Jim Gillespie	Partner	15 August 2014
Issued to client	Jim Gillespie	Partner	15 August 2014
2nd issue to client	Matt Hobbs	Principal Ecologist	02 September 2014
3rd issue to client	Matt Hobbs	Principal Ecologist	08 September 2014

Contents

1 Summary

1.1 Abergelli Power Limited (APL) is promoting a new Power Generation Plant with its associated Gas and Electricity Connections (the 'Project') on agricultural land within Abergelli Farm, north of Swansea in the City and County of Swansea (approximately at National Grid Reference 265284, 201431).

1.2 The preliminary ecological appraisal[1] identified that invasive species of plants, as listed under Part II of Schedule 9 of the Wildlife and Countryside Act (WCA), 1981 (as amended) (specifically Japanese Knotweed *Fallopia japonica* and Himalayan balsam *Impatiens glandulifera*), are present on the Survey Site in a number of areas. The report recommended that a detailed survey to map the distribution of any invasive species should be carried out to inform any management measures that would need to be implemented to remove or control the spread of these species during the construction and operation of the Project.

1.3 APL commissioned BSG Ecology to undertake an invasive survey of streams and wet ditches within the 150 ha of pastoral farmland at and around Abergelli Farm in June 2014 within the Survey Site, to inform and support an application for Development Consent for the Project.

1.4 The Survey Site was surveyed in July 2014 by an ecologist from BSG Ecology. All accessible areas of the Survey Site were walked with areas of dense scrub assessed from the perimeter of the scrub, and the presence of five species included under Part II were recorded within the Survey Site: Japanese knotweed, Himalayan balsam, rhododendron *Rhododendron ponticum,* floating pennywort *Hydrocotyle ranunculoides* and montbretia *Crocosmia x crocosmiiflora.*

1.5 Of the five species Himalayan balsam and Japanese knotweed were the most widespread within the Survey Site.

[1] BSG Ecology (2014). Abergelli Power Project: Preliminary Ecological Appraisal.

2 Introduction

2.1 APL commissioned BSG Ecology to undertake an invasive species survey in May 2014 to inform and support an application for Development Consent for the Power Generation Plant.

Site Description

2.2 The Survey Site consists of approximately 150 ha of pastoral farmland, primarily grazed by horses. The extent of the Survey Site is shown in Figure 1 in Appendix 1 and is centred at National Grid Reference 265284, 201431. The nearest settlement is Felindre, which is located approximately 2 km to the north of the Survey Site, with Swansea approximately 5 km to the south.

2.3 The Survey Site is largely agriculturally improved pasture with several areas of marshy grassland, particularly in the north, south and north-western ends of the Survey Site. The fields are bounded by fences, running along the line of defunct hedgerows, and often accompanied by ditches. There is a block of broadleaved woodland on the eastern boundary of the Survey Site and other areas of woodland around the marshy grassland to the west of the Survey Site, and around Felindre Gas Compressor Station and the two National Grid 400 kV electrical substations that lie at the south-west end of the Survey Site. The habitats in the surrounding landscape are similar to those within the Survey Site boundary – a mixture of improved and marshy grassland interspersed with occasional patches of woodland.

Description of Project

2.4 APL is promoting a new Power Generation Plant with associated Gas and Electricity Connections within Abergelli Farm. The Power Generation Plant would operate as a Simple Cycle Gas Turbine (SCGT) peaking plant and would be designed to provide an electrical capacity of up to 299 Megawatts (MW). It would be fuelled by natural gas, supplied by a new underground gas pipeline connecting Power Generation Plant to the existing National Grid Gas (NGG) National Transmission System (NTS). It would also connect to the National Grid Electrical Transmission System (NETS) via underground cable or overhead lines.

2.5 BSG Ecology has been appointed as the ecological consultant to undertake an ecology survey, which incorporates a desk study and Extended Phase 1 Habitat Survey as well as a range of Phase 2 surveys, including a survey for invasive species. The methods and results of baseline surveys will be provided as appendices to an ecology chapter of an Environmental Statement, which is intended for submission, in support of the application for Development Consent.

Background to Survey

2.6 For the purposes of this survey, invasive plant species are defined as those species of non-native plants included in part II of Schedule 9 of the WCA 1981 (as amended).

2.7 Since its creation in 1981, part II of Schedule 9 of the WCA (as amended) 1981, pertaining to invasive plants, has undergone many revisions, to the extent that the original four species has now been expanded to include over 30 invasive plant species.

2.8 The Phase 1 survey of the Survey Site was carried out in three phases, in February 2014 and updated in April 2014, and July 2014. The timing of the first two surveys during the winter and early spring meant that the presence of some of the Schedule 9 species was missed as the vegetative parts of the plants (growing above ground) can be absent during the colder months of the year, with the plant persisting, over winter, below ground as rhizomes or lying dormant in the seed bank. Because of this it was recommended in the Phase 1 survey report that a dedicated invasive species survey should be undertaken within the main botanical survey season (May to September) to attempt to map the distribution and extent of Schedule 9 species within the Survey Site.

Aims of Study

2.9 The aim of the survey is to confirm the presence and identify the locations of species of plant included under Schedule 9 of the WCA (as amended) 1981.

3 Methods

3.1 No standard method exists for invasive plant species survey; and the survey was based on an ecological walkover survey approach, whereby all accessible areas of the Survey Site were walked by the surveyor in daylight hours, with a visual search for the target species undertaken.

3.2 Particular focus was also given to areas where the target species were most likely to be found, for example water courses, areas of disturbed ground and tracks where imported material may have been used or where fly-tipping or movements of vehicles or machinery could have led to the spread of these species.

3.3 Where found to be present, the species and location were recorded using a handheld GPS. The locations of individual plants, small clusters and large clusters of plants found during the walkover survey are provided in Figure 1. The locations are representative and do not necessarily provide mapping of the exact extent of each species or the precise location of each individual plant.

Limitations of Study

3.4 The scale of the Survey Site and the presence of dense areas of scrub or woodland understorey in some areas mean that it is possible that small stands or individual plants of invasive species could have been missed during the walkover survey. In addition, the presence of horses in some fields restricted access to some areas of the Survey Site although these areas were assessed using binoculars and it is likely, given the heavily grazed nature of these fields, that most invasive plant species would have been visible using binoculars. It is considered that the majority of the Survey Site was surveyed adequately and that overall the distribution of invasive species across the Survey Site has been mapped accurately.

3.5 The mapping produced in support of the report is based on point locations taken using a handheld GPS device which is subject to varying degrees of accuracy depending on satellite coverage and other factors. Further to this the GPS locations recorded were for the main aggregation of each plant species at each location. Each point therefore does not represent full coverage of the species at each point. Any invasive plant management plan should take account of this with up to date, detailed surveying by a qualified land surveyor undertaken to provide accurate extents of species coverage. The distribution of each invasive plant species will, inevitably, change from year to year to a greater or lesser extent and these locations should be re-checked as necessary.

4 Results

4.1 Five species of plant included on Part II of Schedule 9 of the WCA 1981 were recorded during the survey: Japanese knotweed; Himalayan balsam; rhododendron; floating pennywort; and montbretia. The locations and extents of these species are shown on Figure 1.

4.2 The most frequently recorded species were Japanese knotweed and Himalayan balsam.

4.3 Japanese knotweed was found to be strongly associated with roads and trackways on the Survey Site as well as the area of inert landfill in the north-west half of the Survey Site. This perennial species is typically spread through the movement of contaminated soils or through spreading of vegetative parts through flailing of hedges or movement of other machinery.

4.4 Himalayan balsam is an annual plant that is typically found in wetter habitats, although it will tolerate drier conditions. It is strongly associated with woodland, stream corridors and ditches across the Survey Site.

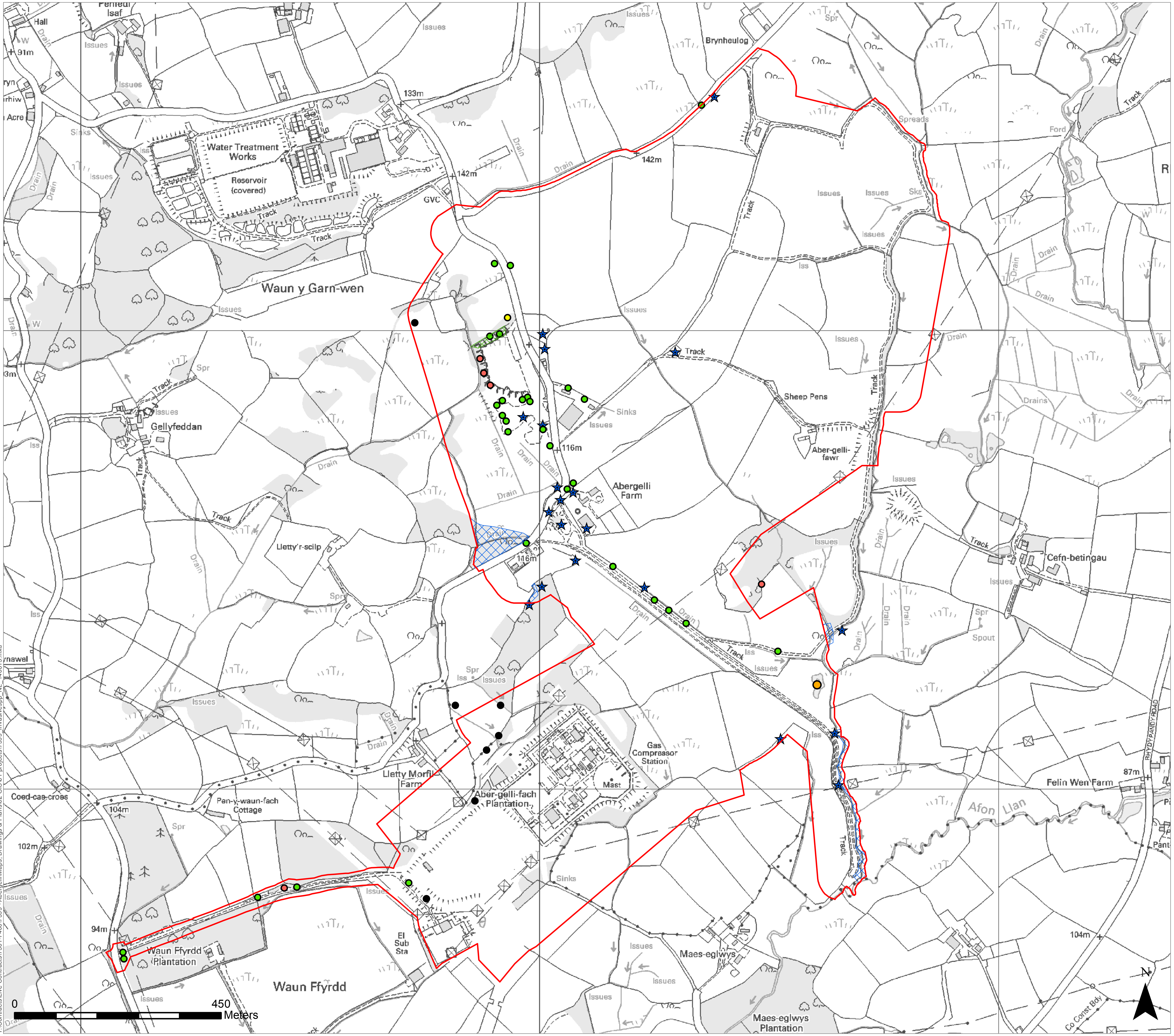
4.5 Rhododendron is restricted to woodlands with a small patch occurring in the marshy grassland area in the north-west of the Survey Site. Montbretia was recorded in two locations alongside roads, which is a typical location for this species to be found in given that it is often spread from the fly tipping of garden waste.

4.6 Floating pennywort was found in one of the Survey Site ponds in the south-east of the Survey Site[2].

[2] Pond 16 as referred to in the great-crested newt survey report.

Appendix 1: Figures

(overleaf)



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LEGEND

Survey site boundary

Larger area of invasive species

Himalayan Balsam

Japanese knotweed

Small area of invasive species

Floating Pennywort

Himalayan Balsam

Japanese knotweed

Montbrecia

Montbrecia and Japanese knotweed

Rhodendron

BSG | ecology

OFFICE: Monmouth
T: 01600 891576 JOB REF: 7399.00

PROJECT TITLE
ABERGELLI POWER PLANT

DRAWING TITLE
Figure 1 - Invasive Plant Species Survey

DATE: 22.07.2014 CHECKED: MH SCALE: 1:8,000
DRAWN: RT APPROVED: JG STATUS: Final

APPENDIX 8.12 - SPECIES SPECIFIC LEGISLATION

1.1 Badgers

1.1.1 Badgers are protected under the Protection of Badgers Act (1992) on animal welfare grounds rather than nature conservation value. It is an offence to wilfully take, kill, injure or ill-treat a badger, or possess a dead badger or any part of a badger. Under the Act their setts are also protected against obstruction, destruction or damage.

1.2 Otters

1.2.1 Otters are fully protected under Schedule 2 of the Habitats Regulations which define “European protected species of animals” and also receive partial protection under the WCA.

1.2.2 Taken together the Act and Regulations make it illegal to: deliberately kill, injure, capture, disturb otters (whether in a resting place or not); damage, destroy or obstruct access to a resting place used by an otter; possess or transport an otter or any part of an otter, unless acquired legally; sell, barter or exchange or advertise for such purposes an otter

1.2.3 Activities that could result in impacts on otters should be modified to avoid/minimise the likelihood of an impact occurring in the first instance. If impacts are unavoidable then the works may need to be carried out under a European Protected Species development licence, granted under the Habitats Regulations.

1.2.4 Otters are also a Species of Principal Importance in Wales as identified under Section 42 of the NERC Act 2006.

1.3 Water voles

1.3.1 Water voles are fully protected under the WCA. It is an offence to possess, control or sell water voles or to intentionally or recklessly kill, injure or take water voles. It is also an offence to intentionally or recklessly damage, destroy or obstruct access to a place that water voles use for shelter or protection or disturb water voles whilst using such a place. No licensing regime exists for development activities that may result in an infringement of the legislation.

1.3.2 Current guidance from NRW states that where development activities may result in unavoidable impacts on water voles, developers will need to be confident that their activities are “the incidental result of an otherwise lawful operation”, and that all steps that could reasonably be taken to avoid, minimise, mitigate and (if necessary) compensate for impacts have been taken.

1.4 Dormice

1.4.1 Dormice are protected under the WCA (in respect of section 9(4)(b) and (c) and (5) only) and are listed in Schedule 2 of the Habitats Regulations. Under the current legislation it is illegal to intentionally or deliberately kill, injure or capture dormice, deliberately disturb dormice (whether in a nest or not); or to damage, or destroy dormouse breeding sites or resting places.

1.4.2 Any activity that would result in a contravention of the above legislation would likely require a European Protected Species (EPS) licence from the relevant statutory body (NRW).

1.5 Bats

1.5.1 All native UK bat species are protected by UK law under Schedule 5 and 6 of the WCA, and under Schedule 2 of the Habitats Regulations. It is illegal to deliberately capture, injure or kill a bat or to intentionally or recklessly disturb bats. It is also illegal to damage, destroy or intentionally or recklessly obstruct access to a breeding or resting place used by a bat. Under Part 2 of the Habitats Regulations, SACs can be designated to further protect barbastelle (Barbastella barbastellus), Bechstein's (Myotis bechsteinii), lesser horseshoe (Rhinolophus hipposideros) and greater horseshoe bats (Rhinolophus ferrumequinum).

1.5.2 Several species of bats are listed under Section 42 of the NERC Act 2006 as Species of Principal Importance. Species include the greater horseshoe bat, lesser horseshoe bat, barbastelle, common pipistrelle (Pipistrellus pipistrellus), soprano pipistrelle (Pipistrellus pygmaeus), noctule (Nyctalus noctula), Bechstein's bat and brown long-eared bat (Plecotus auritus). Furthermore, five bat species (common pipistrelle, barbastelle, Bechstein's bat, greater horseshoe bat, lesser horseshoe bat) are listed as priority species in the Swansea BAP.

1.6 Breeding birds

1.6.1 All birds, their nests and eggs are protected by the WCA. It is an offence to intentionally kill, injure, or take any wild bird, or take or destroy an egg of any wild bird. It is also an offence to damage or destroy the nest of any wild bird (whilst being built, or in use).

1.6.2 Birds listed under Schedule 1 of the WCA are afforded additional protection with regard to intentional or reckless disturbance while nest building, or at a nest containing eggs or young, and disturbance of the dependent young of such a bird is also an offence away from the nest.

1.7 Great crested newts

1.7.1 GCN are fully protected under Schedule 2 of the Habitats Regulations, and receive partial protection under the WCA Schedule 5. It is illegal to deliberately capture, injure or kill GCN, to intentionally disturb GCN or to otherwise disturb them in their place of shelter, or to deliberately take or destroy the eggs of GCN. It is also illegal to damage, destroy or intentionally or recklessly obstruct access to a breeding site or resting place used by GCN. All life stages of GCN are afforded the same level of protection. The legislation also makes it an offence to possess, transport, sell or exchange, or offer to sell or exchange GCN.

1.8 Reptiles

1.8.1 The four common reptile species, adder, grass snake (Natrix natrix), common lizard and slow worm, are protected under Schedule 5 of the Wildlife and Countryside Act (1981, as amended) against intentional killing, injuring and trade. All species of reptile are listed as Species of Principal Importance in Wales.

1.8.2 The natural range of the rarer species (smooth snake (Coronella austriaca) and sand lizard (Lacerta agilis) does not include this part of South Wales, and thus they are not considered further in this assessment. Sand lizard is listed as priority species under the Swansea BAP (coastal areas).

1.9 Terrestrial and Aquatic Invertebrates

1.9.1 The WCA lists around 70 invertebrate species on Schedule 5 with various levels of protection according to the rarity of the species. Species with full protection under the Act include the marsh fritillary butterfly, southern damselfly, mole cricket, fairy shrimp, medicinal leech and freshwater pearl mussel, amongst many others. Three invertebrate species are protected under the Conservation of Habitats and Species Regulations (2010, as amended) large blue butterflies, Fisher's estuarine moths and little whirlpool ramshorn snails. Section 42 of the NERC Act (2006) also lists several invertebrate species as species of principal importance in Wales.