

Appendix 8.13

Preliminary Ecological Appraisal 2014

**Abergelli**

Abergelli Power Project

Preliminary Ecological Appraisal



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# 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<sup>1</sup> 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;

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<sup>1</sup> 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 (SEWBRc). 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<sup>2</sup> or notable species (particularly those identified as priority or Section 42 species and/or of local conservation importance or LBAP<sup>3</sup> 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](http://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

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<sup>2</sup> Wildlife and Countryside Act 1981 Schedules 1, 5 & 8; Conservation of Habitats and Species Regulations 2010; Protection of Badgers Act.

<sup>3</sup> 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**

<b>Category</b>	<b>Description</b>
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 14<sup>th</sup> 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)<sup>4</sup> designated under the EC Habitats Directive within 10km. One of these, Carmarthen Bay and Estuaries SAC, has been afforded multiple designations and is referred to under the umbrella term European Marine Site (EMS)<sup>5</sup> which comprises the SAC, and is also split into two Special Protection Areas (SPA)<sup>6</sup> and two Ramsar Wetlands of International Importance (Ramsar)<sup>7</sup> 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’, ‘ <i>Salicornia</i> and other annuals colonising mud and sand’, ‘Atlantic salt meadows. Annex II species (primary reason for selection) – twaite shad <i>Allosa fallax</i> . Annex II species (qualifying feature) – sea lamprey <i>Petromyzon marinus</i> , river lamprey <i>Lampetra fluviatilis</i> , allis shad <i>Alosa alosa</i> 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 <i>Haematopus ostralegus</i> , and northern pintail <i>Anas acuta</i> (SPA) and additionally of common redshank <i>Tringa totanus</i> , and red knot <i>Calidris canuta</i> (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 <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> ’, Annex I habitats (qualifying feature) – Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ).  The site is selected as Ramsar as it supports a substantial population of the nationally-rare slender cotton-grass <i>Eriophorum gracile</i> , and

<sup>4</sup> 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).

<sup>5</sup> The term ‘European Marine Site’ (EMS) (as defined by the Habitats Regulations) refers to those marine areas that are 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>

<sup>6</sup> 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.

<sup>7</sup> 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 supports 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 <i>Genista anglica</i> and royal fern <i>Osmunda regalis</i> .
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 SINC 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 SINC 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 <i>Eriophorum angustifolium</i> , ragged-robin <i>Lychnis flos-cuculi</i> , western gorse <i>Ulex gallii</i> , various orchid species, tormentil <i>Potentilla erecta</i> and whorled caraway <i>Carum verticillatum</i> 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.
Penlleger Forest	SS627005	1 km SW	Range of woodland types. Purple moor grass and rush pasture, reedbeds watercourses. Section 42 birds and invertebrates recorded.
Penlleger 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 Penlleagaer 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 acutiflorus* / *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 ryegrass 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 *Eriophorum 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 ryegrass, 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 glutinosa* 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*. At TN23a there is a wooded copse comprised of young birch and willow with an understorey of bramble scrub. The ground flora includes 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 Ynysforan, 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<sup>8</sup>.
- 4.42 Table 4 below summarises the results of the HSI, and Appendix 4 gives more detailed results.

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<sup>8</sup> 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 SEWBRc 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. SEWBRc 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: SEWBRc 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 other 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 SEWBRc, 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 tinsplate 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 SEWBRc 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 tinsplate 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 SEWBRc 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. SEWBRc provided 54 records for red kite between 1999 and 2013.

#### **Terrestrial Invertebrates**

- 4.1 SEWBRc 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 SEWBRc, 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<sub>x</sub> and NO<sub>2</sub> 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 SINC's 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<sup>9</sup>.
- 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*).

<sup>9</sup><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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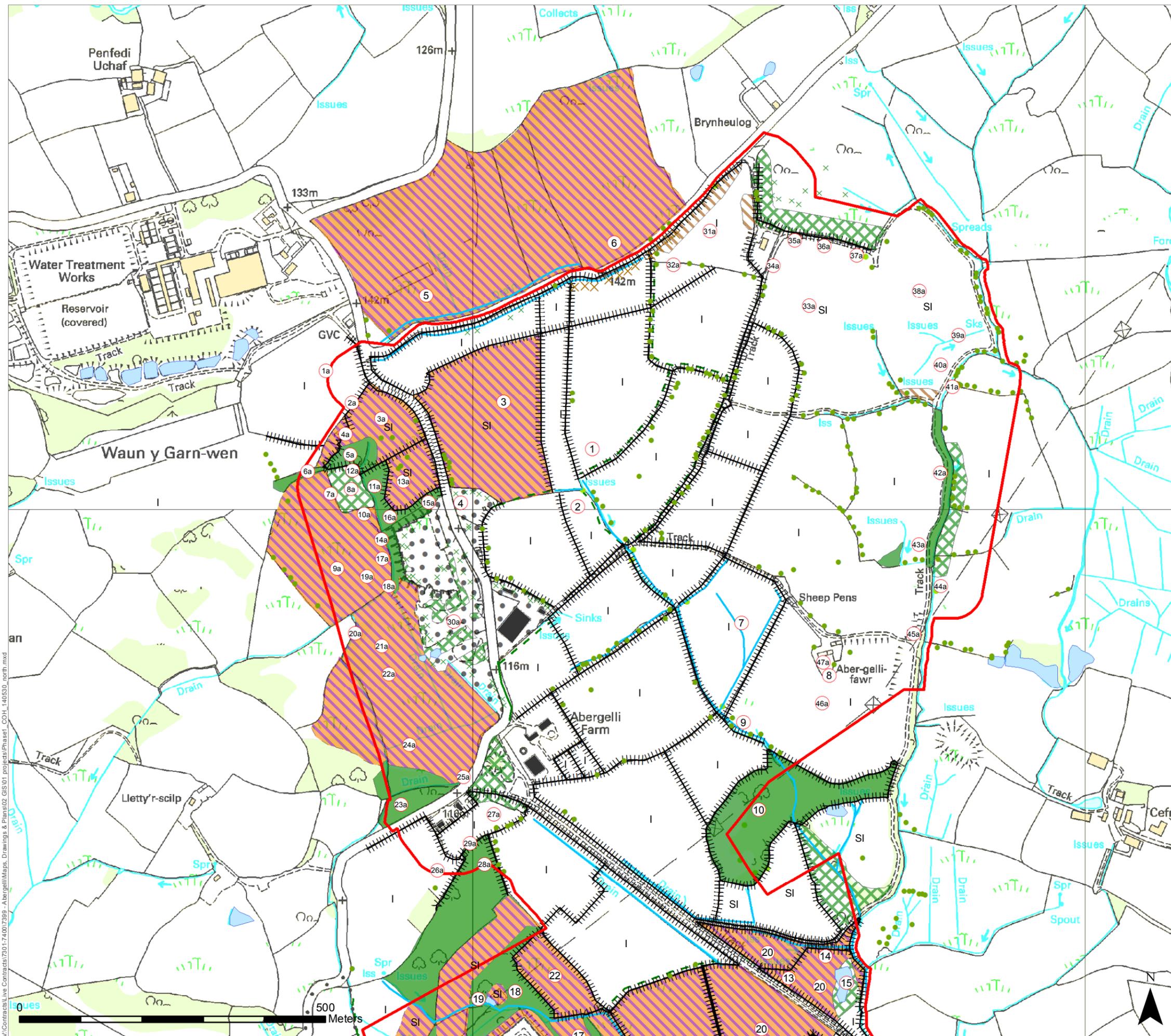
### Websites

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<https://www.gov.uk/japanese-knotweed-giant-hogweed-and-other-invasive-plants>

MAGIC: [www.magic.gov.uk](http://www.magic.gov.uk)





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

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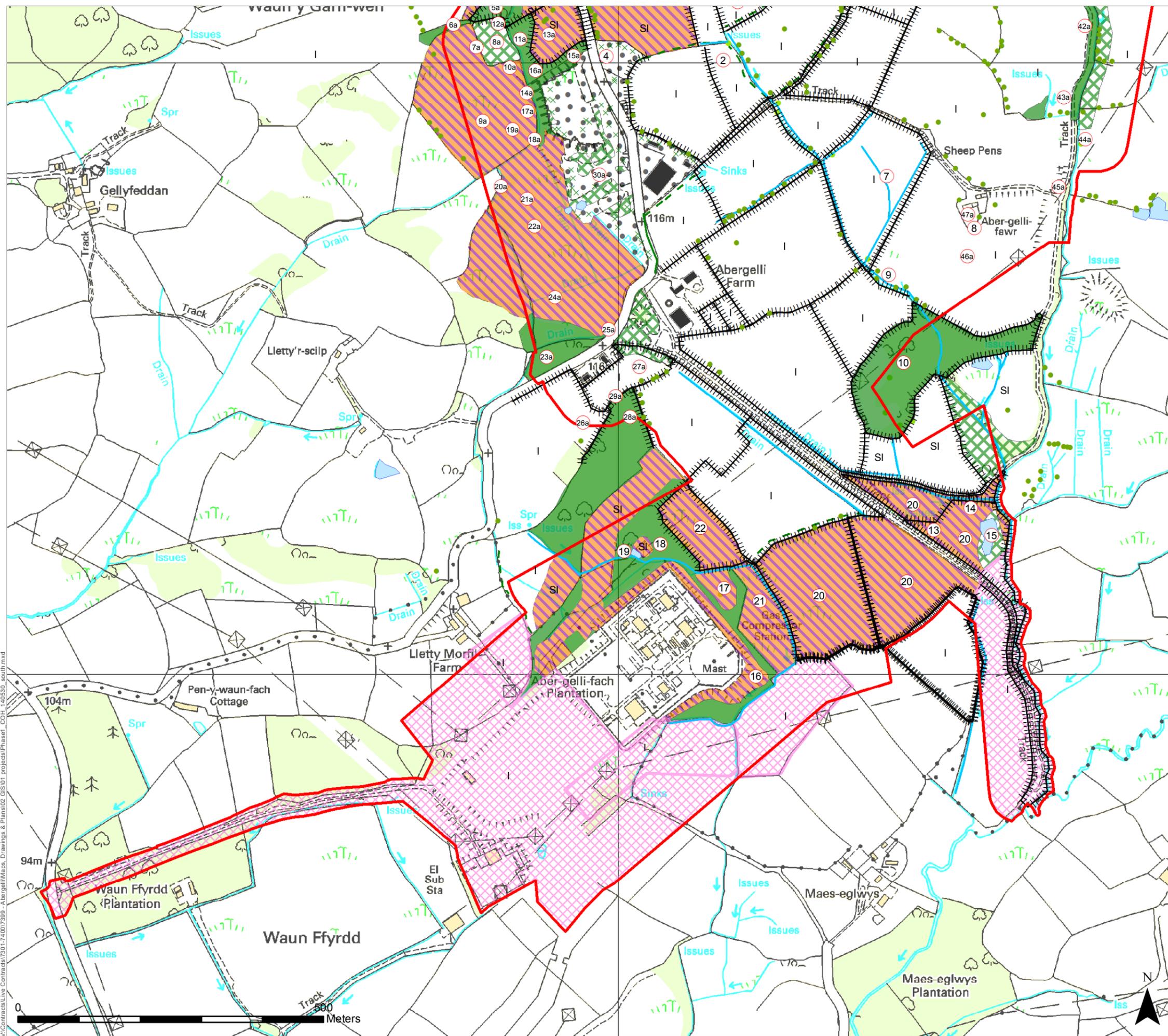
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**LEGEND**

- Site boundary
- Target notes
- Broadleaved woodland
- Dense scrub
- 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
- x Scattered scrub
- Broadleaved tree
- x Bracken

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PROJECT TITLE  
**ABERGELLI POWER PLANT**

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

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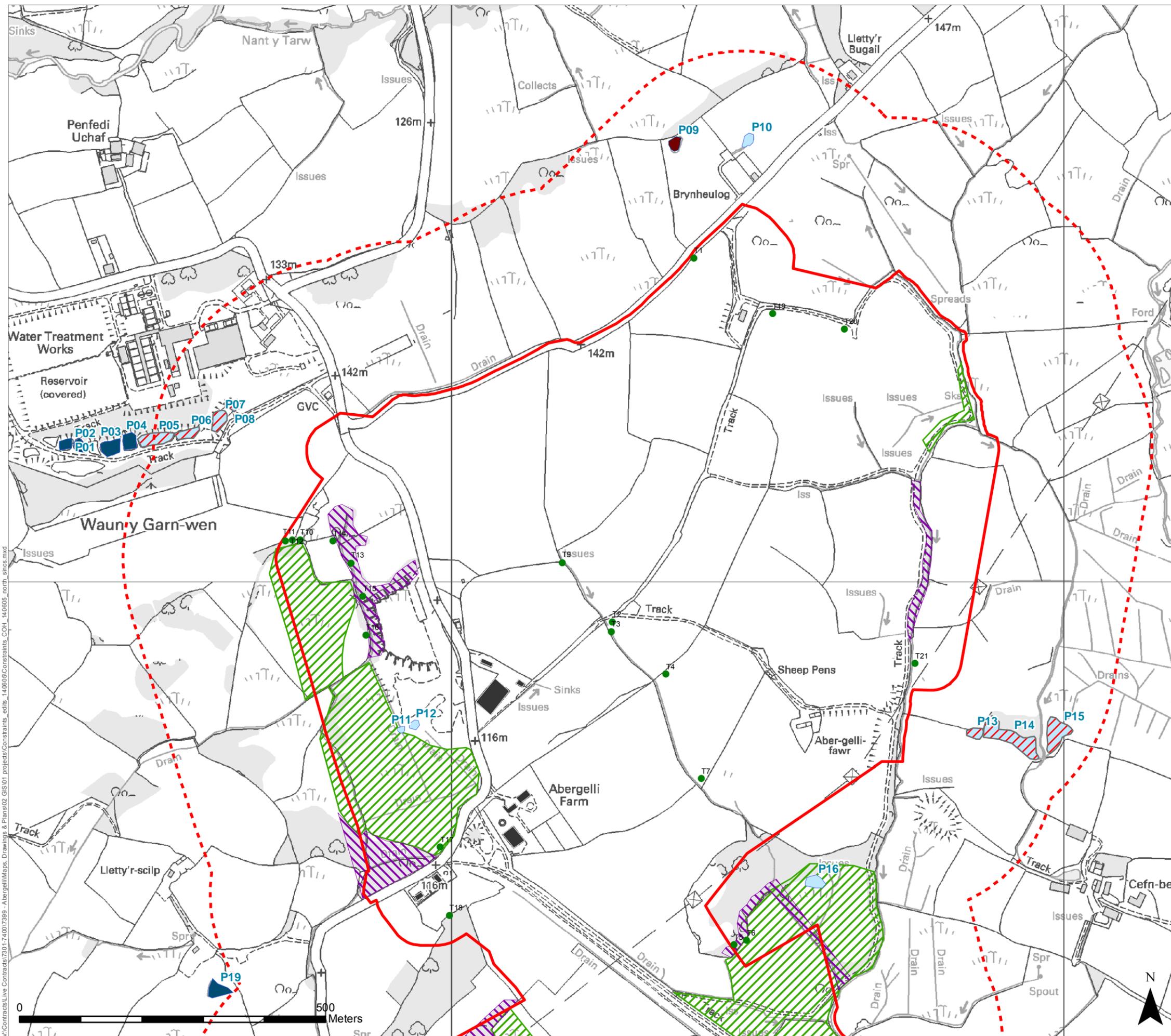
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**LEGEND**

- 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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PROJECT TITLE  
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DRAWING TITLE  
**Figure 2a - Ecological Constraints Map North**

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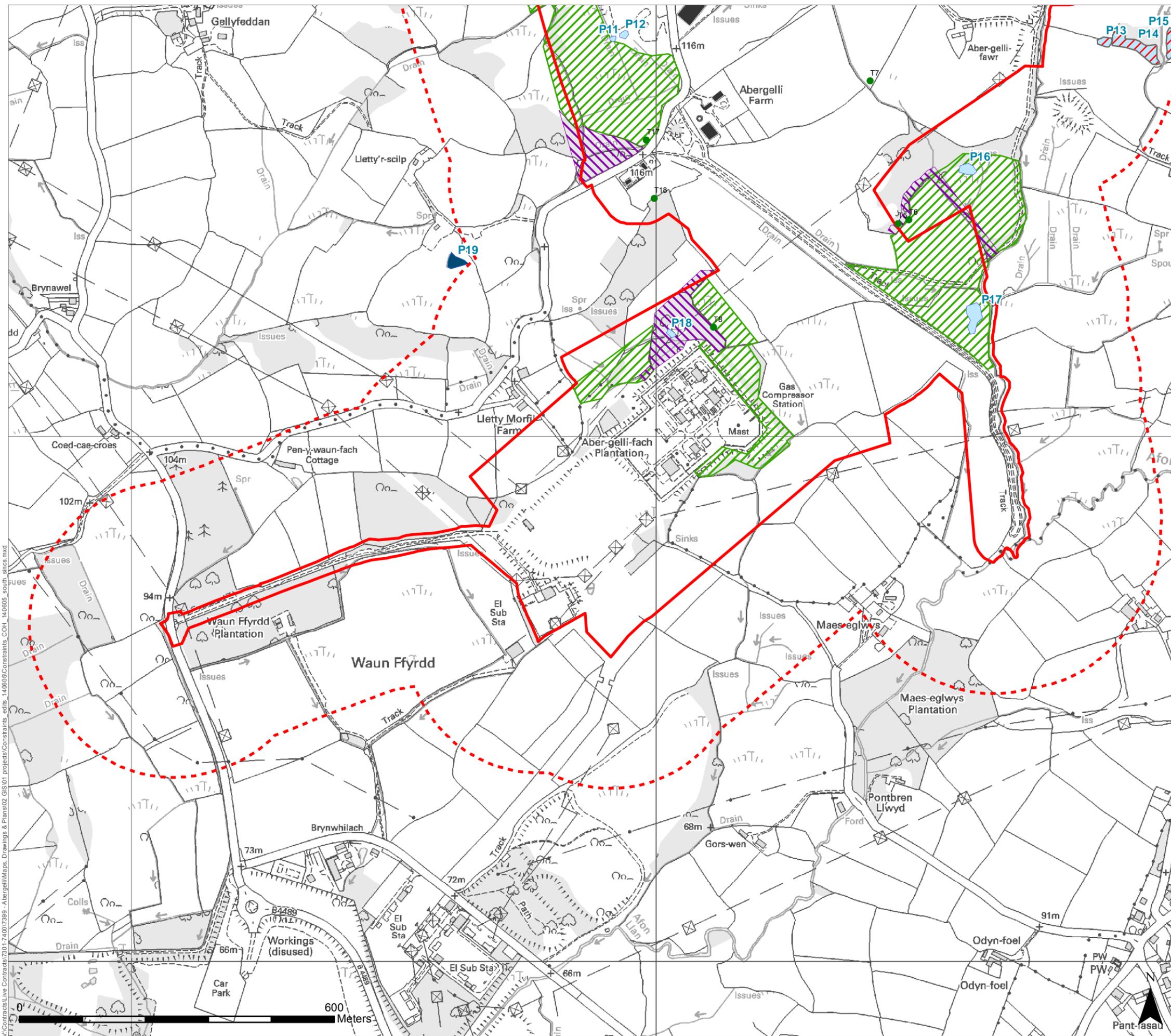
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**LEGEND**

- 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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PROJECT TITLE  
**ABERGELLI POWER PLANT**

DRAWING TITLE  
**Figure 2b - Ecological Constraints Map South**

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 DRAWN: COH      APPROVED: MH      STATUS: FINAL

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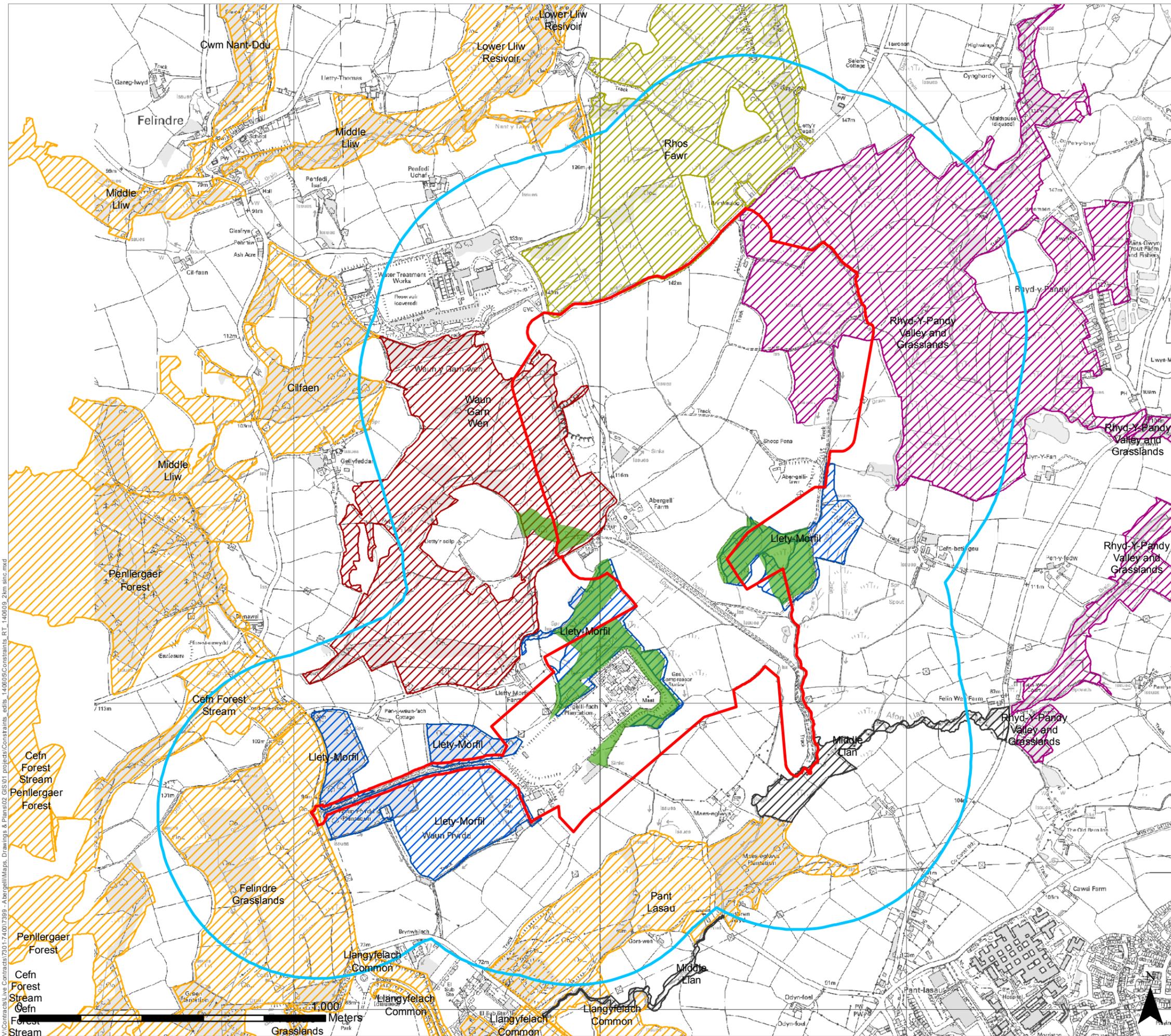
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**LEGEND**

- 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  
**ABERGELLI POWER PLANT**

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**Figure 3 - SINC and Ancient Woodland map**

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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 hirtum* 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 coarse 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 filix-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 *Eriophorum 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 *Alisma 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.**



**Photo 11: Pond P1 within water treatment works.**



**Photo12: Pond P3.**



**Photo 13: Pond P4.**



**Photo 14: Pond P5.**



**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**

<b>Pond</b>	<b>HSI</b>	<b>Value for great crested newts</b>
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 <sup>2</sup>	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 macrophytes)	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	<i>Anas platyrhynchos</i>
Buzzard	<i>Buteo buteo</i>
Red kite	<i>Milvus milvus</i>
Woodpigeon	<i>Columba palumbus</i>
Great spotted woodpecker	<i>Dendrocopos major</i>
Meadow pipit	<i>Anthus pratensis</i>
Pied Wagtail	<i>Motacilla alba yarrellii</i>
Dunnock	<i>Prunella modularis</i>
Wren	<i>Troglodytes troglodytes</i>
Robin	<i>Erithacus rubecula</i>
Blackbird	<i>Turdus merula</i>
Song Thrush	<i>Turdus philomelos</i>
Mistle thrush	<i>Turdus viscivorus</i>
Redwing	<i>Turdus iliacus</i>
Blue Tit	<i>Parus caeruleus</i>
Great Tit	<i>Parus major</i>
Long tailed tit	<i>Aegithalos caudatus</i>
Magpie	<i>Pica pica</i>
Jackdaw	<i>Corvus monedula</i>
Carrion crow	<i>Corvus corone</i>
Rook	<i>Corvus frugilegus</i>
House sparrow	<i>Passer domesticus</i>
Chaffinch	<i>Fingilla coelebs</i>
Greenfinch	<i>Carduelis chloris</i>
Goldfinch	<i>Carduelis carduelis</i>
Reed bunting	<i>Emberiza schoeniclus</i>



## 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.