

# **HYBONT GREEN HYDROGEN PROJECT, BRIDGEND, SOUTH WALES**

## **Preliminary Ecology Appraisal, 2022**

ECO02701  
HyBont Green Hydrogen  
Project, Bridgend –  
Preliminary Ecology  
Appraisal, 2022

15/11/2022

REPORT

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**Quality Management**

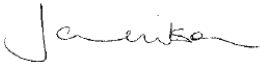
Version	Status	Produced by	Date
01	Issue	Joanne Wilson	15/11/2022

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**Issued by**

Joanne Wilson  15 November 2022

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# 1. INTRODUCTION AND BACKGROUND

- 1.1.1 RPS were commissioned to undertake a Preliminary Ecology Appraisal (PEA) of a proposed development site in Bridgend, South Wales (centred around approximate Ordnance Survey grid reference SS 91007 84379).
- 1.1.2 The proposed development, known as the HyBont Green Hydrogen Project, comprises:
- A green hydrogen production facility with electrolyzers, hydrogen storage, hydrogen refuelling station, administration building, substation and hydrogen pipeline 'off-take' connecting to the Coleg Cymunedol Y Dderwen; with access, circulation, parking, lighting, security fencing, hard and soft landscaping, drainage infrastructure and temporary construction compound, on land at Brynmenyn, Bridgend;
  - A solar photovoltaic electricity generating station (solar farm), comprising ground-mounted solar panels, inverters, transformer units, switch gear, a substation, and private wire connecting to the hydrogen production site (overhead and/or underground); with access, circulation, parking, lighting, security fencing, hard and soft landscaping, drainage infrastructure, and temporary construction compound, on land at Bryncethin, Bridgend;
- 1.1.3 The purpose of a PEA is to identify:
- the likely ecological constraints associated with developing the site;
  - additional surveys that may be required to inform an impact assessment and the mitigation strategy; and where possible,
  - mitigation measures likely to be required; and
  - potential opportunities to deliver ecological enhancement.
- 1.1.4 This PEA has been informed by the results of a:
- desk study of designated sites and historic records of protected or otherwise notable species in the area; and
  - Phase 1 habitat survey of the proposed hydrogen and solar sites, undertaken to classify and undertake an initial assessment of the ecological condition and importance of habitats present, and their potential value to protected or otherwise notable species.
- 1.1.5 This report describes the methods and results of the desk study and Phase 1 habitat survey (sections 2 and 3), and recommendations for further surveys that may be required to inform an impact assessment and mitigation strategy are provided at section 4. A discussion of likely implications of the survey results with regard to development proposals, potential mitigation requirements and possible opportunities for ecological enhancement, is provided at section 5.

## 2. METHOD

### Desk Study

- 2.1.1 The Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017) do not set prescribed desk study search areas, but state that they should be based on professional judgement. However, the guidance does suggest a search area of 1-2 kilometres (km) is usually considered to be of greatest relevance within most studies.
- 2.1.2 Therefore, the search area for the study encompassed the proposed development site (including the proposed solar and hydrogen sites, and the connecting private wire and pipeline), and the following surrounding buffer zones.
- 2.1.3 Designated sites:
- 10 km for international designated sites
  - 2 km for national and local designated sites
- Species:
- 2 km for protected or otherwise notable species
- 2.1.4 The locations of statutory designated sites were confirmed using the Welsh Government's and Natural Resources Wales' (NRW) Lle Geo-portal (available at <https://lle.gov.wales/home?lang=en>), and the 'MAGIC' website managed by Natural England (MagicMap, 2016, available at: <https://magic.defra.gov.uk/home.htm>).
- 2.1.5 Locations of local designated sites and historic records of protected and otherwise notable species were requested from the South East Wales Biodiversity Records Centre (SEWBRc) in September 2022.

### Phase 1 Habitat Survey

- 2.1.6 The Phase 1 habitat survey was completed in accordance with the methodology described in The Handbook for Phase I Habitat Survey (Joint Nature Conservation Committee, 2010).
- 2.1.7 The survey was undertaken on the 23rd and 24th September 2022, by an appropriately experienced ecologist from Acer Ecology Ltd., working on behalf of RPS.
- 2.1.8 The survey area focussed on the proposed solar and hydrogen development sites.
- 2.1.9 Habitats within the survey area were classified, mapped and described in terms of their structure and broad floristic composition.
- 2.1.10 In addition, the habitats were assessed for their potential to support legally protected or otherwise notable flora and fauna, and any field signs that could confirm the presence of such species were recorded, such as burrows or other resting and potential breeding sites, paths, droppings, feeding signs, footprints and hairs.

- 2.1.11 Where species are not specifically mentioned, this indicates that no habitat of potential value for these species, or field signs of these species were identified during the survey.

## Limitations

### Desk Study

- 2.1.12 The desk study data is third party controlled data, purchased for the purposes of this report only. RPS cannot vouch for its accuracy.
- 2.1.13 Whilst the records show where a species has been recorded, they do not show where a species is absent. A lack of records in a particular area may be due to no surveys having been undertaken or results of surveys and incidental sightings having been reported. Therefore, the findings of the desk study should not be relied upon alone to determine species presence or absence, but should be used to help inform where further detailed surveys are required for a particular species.
- 2.1.14 The majority of ecology data remain valid for only short periods due to the inherently transient nature of the subject.

### Phase 1 habitat survey

- 2.1.15 It should be noted that whilst every effort has been made to provide a comprehensive description of the site, the Phase 1 habitat survey is designed as a first phase survey and not to provide a detailed characterisation of the habitats and species activity on site.
- 2.1.16 The survey was completed in late September, which is near to the end of the most suitable time of year for this type of survey (JNCC 2010). Considering the purpose of the survey, i.e. to identify broad habitat types and inform an assessment of phase 2 survey requirements, the time of year was not considered to be a limitation to the effectiveness of the survey.

## 3. RESULTS

### Desk Study

#### International and National Designated Sites

- 3.1.1 The proposed development site does not form part of any international or national statutory designated site; however, three international designated sites are located within 10 km from the site, namely the Blackmill Woodlands and Cefn Cribwr Grasslands Special Areas of Conservation (SAC), which are also designated at national level as Sites of Special Scientific Interest (SSSI), and Kenfig / Cynffig SAC.
- 3.1.2 The locations of these sites are shown on Figure 1, and descriptions are provided in Table 3.1 below.

#### Local Designated Sites

- 3.1.3 Several Local Wildlife Sites (LWS) or Sites Important for Nature Conservation (SINC) are located within 2 km from the proposed development site.
- 3.1.4 The locations of these sites are shown on Figure 2, and descriptions are provided in Table 3.1 below.

**Table 3.1: Designated sites within up to 10 km of the proposed development site**

Site name	Designation	Distance from central point (m)	Description
<b>International and national designated sites up to 10 km (international) and 2 km (national) from the site</b>			
Blackmill Woodlands	SAC, SSSI	Approximately 760 m to the north-east of the Bryncethin site	An Ancient Woodland Site. Old sessile oak woodland, with Ilex and Blechnum, at the southern extreme of the habitat's range in Wales. The ground flora is restricted by the relative dryness, but the main habitat is a sessile oak canopy, acidic ground flora of Vaccinium myrtillus and wavy hair-grass Deschampsia flexuosa, and moderate fern and bryophyte cover are present.
Cefn Cribwr Grasslands	SAC, SSSIs	Approximately 2,600 m to the west of the site	One of four sites selected to represent Molinia meadows in south and central Wales. Extensive stands of Molinia – Cirsium dissectum fen-meadow (M24), including the heathy sub-type with crossleaved heath Erica tetralix as well as other forms with a stronger representation of native grasses, rushes and small sedges. Transitions to stands of more acidic Molinia and Juncus pasture, dry neutral grassland and wet scrub vegetation are well represented. Uncommon and declining species associated with the Molinia meadows at this site include the nationally rare viper's-grass Scorzonera humilis and the nationally scarce soft-leaved sedge Carex montana. The SSSIs are also important for marsh fritillary butterflies.

Site name	Designation	Distance from central point (m)	Description
Kenfig	SAC	More than 7km to the south-west of the site	Annex I habitats - primary reason for designation: Fixed dune vegetation with red fescue <i>Festuca rubra</i> and lady's bedstraw <i>Galium verum</i> and semi-fixed dune grassland with marram <i>Ammophila arenaria</i> and red fescue. Includes a relatively large area of more acidic vegetation dominated by sand sedge <i>Carex arenaria</i> , sheep's-fescue <i>Festuca ovina</i> and common bent <i>Agrostis capillaris</i> fixed vegetated dunes (grey dunes). The site contains one of the largest series of dune slacks in Wales, species-rich and including <i>Salix repens</i> ssp. <i>argentea</i> , slacks. Also present is the most important example of Humid dune slacks in the UK, amongst the most species-rich in the UK, including communities of mosses and rare plants, notably Fen orchid <i>Liparis loeselii</i> and petalwort <i>Petalophyllum ralfsii</i> . Kenfig Pool is a shallow alkaline lake with a moderate nutrient status and species-rich plant community.
<b>Local designated sites within 2 km from the site</b>			
Tyncoed Farm, Bryncethin	SINC	Within site boundary	River corridor, with wet grassland and woodland.
Coed Caehelyg	SINC	416	Broad-leaved semi-natural woodland
Cefn Hirgoed	SINC	408	Acidic marshy grassland. Continuous bracken. Scattered bracken. Scattered scrub
Brynmenyn	SINC	686	Marshy grassland, dense continuous bracken, broad-leaved semi-natural woodland, semi-improved neutral grassland, unimproved acid grassland, tall ruderal.
Pant Farm/Hirwaun Common	SINC	887	Acidic marshy grassland, continuous bracken, scattered scrub
Bryngarw Park East	SINC	1152	Broad-leaved semi-natural woodland, marshy grassland, semi-improved neutral grassland, dense continuous scrub and bracken
Rifle Range Wood	SINC	1172	Broad-leaved semi-natural woodland, semi-improved neutral grassland.
Coed Tondu	SINC	1622	Broad-leaved semi-natural woodland, unimproved neutral grassland, dry heath/acid grassland mosaic
Derwen Wood	SINC	1718	Broad-leaved plantation woodland. Broad-leaved scattered trees. Small area of unimproved neutral grassland to the south of the site.
Penyfai Common	SINC	1786	Semi-improved and unimproved acidic grassland, acidic marshy grassland, continuous bracken, dense and scattered scrub, broad-leaved semi-natural woodland, and upland species-rich ledges.
Coed Coytrahen	SINC	1857	Broad-leaved semi-natural woodland
Junction 36, Heath	SINC	1858	An area of common land beside the A4061 highway roundabout. Most of the area is grazed, and supports a mosaic of marshy grassland, semi-improved acid grassland and scattered scrub. The land nearest to the highway also supports marshy grassland with scattered heath and scrub, but this is a much taller sward, dominated by tussocky Purple Moor-grass, which has been planted with trees and fenced to exclude livestock.



Site name	Designation	Distance from central point (m)	Description
Penylan Farm Wood	SINC	1942	Broad-leaved semi-natural woodland
Pennsylvania Wood	SINC	1954	Coniferous plantation woodland. Broad-leaved seminatural woodland along eastern edge. Small area of marsh/marshy grassland to the south.
Aberkenfig West	SINC	1982	A matrix of habitats comprising a stream corridor with broad-leaved woodland, seasonally wet grassland and areas of scrub and marshy vegetation.

## Ancient Woodland

- 3.1.5 There are several Ancient Woodland Sites scattered throughout the 2 km study area, as shown on Figure 3.
- 3.1.6 The proposed hydrogen pipeline is located adjacent to the northern limit of an Ancient Woodland Site located along the east bank of the River Ogmore.
- 3.1.7 Other Ancient Woodland Sites located within 1 km from the proposed development site include one parcel situated approximately 400 m to the north-west of the western limit of the proposed hydrogen pipeline, one parcel situated approximately 400 m to the south-east of the proposed Brynmenyn hydrogen site and around 660 m to the north-west of the proposed Bryncethin solar site, and one parcel, the Blackmill Woodland Ancient Woodland Site, SAC and SSSI (described in Table 3.1) situated approximately 760 m to the north-east of the proposed Bryncethin solar site.

## Protected or Otherwise Notable Species

- 3.1.8 Due to the high number of species records provided by SEWBRc for the 2 km search area, records from within approximately 1 km of the site (or approximately 3 km from the centre of the site) are provided at Appendix 1. Records of Japanese knotweed are not provided at Appendix 1, and other records of more common and widespread species have been grouped to summarise the data. However, all records provided for the 2 km search area have been considered in the summary of results provided below.

### Birds

- 3.1.9 Swallow, green woodpecker and grey wagtail are all recorded from the proposed development site at Bryncethin but no records were reported from Brynmenyn.
- 3.1.10 Good numbers of bird records were reported for within the surrounding search area. The records indicate an assemblage of species typical of the habitats present. Notable passerine species recorded include song thrush, willow warbler, chiffchaff, wood warbler, spotted flycatcher and redstart. Lapwing were also recorded.
- 3.1.11 Birds of prey included kestrel, goshawk, male hen harrier, and barn owl.

3.1.12 A number of migrant birds have also been recorded including a bittern at Parc Slip Nature Reserve located to the east of the site.

### **Bats**

3.1.13 Records of bats were reported very close to the Bryncethin site; species included common, soprano pipistrelle bats, noctule and brown long-eared. In the wider search area, lesser horseshoe, serotine, Natterer's and whiskered bats have been recorded along with several records of Myotis species.

### **Other Terrestrial Mammals**

3.1.14 No records of other terrestrial mammal species were reported from within the proposed development site; however, for the surrounding search area, records of the following mammal species were reported:

- Eurasian otter - reported from Hirwaun Common to the south of the Bryncethin solar site, and in the wider search area, including along the Afon Garw to the north of the site and the Ogmore River;
- hazel dormouse - single record of a hibernating dormouse from Parc Slip Nature Reserve;
- badger - several records of badger;
- stoat; and
- hedgehog.

### **Herpetofauna**

3.1.15 Grass snake and common frog have been recorded from the Bryncethin site and several amphibia records were reported in the surrounding search area, including seven records of great crested newt, all from Parc Slip Nature Reserve located approximately 2 km to the west and separated from the sites by a sizable urban area and associated infrastructures. Both palmate and smooth newts are recorded from the surrounding search area as are good numbers of records for common frog and common toad.

3.1.16 There is an abundance of reptile records, mainly from Parc Slip Nature Reserve with notable adder records there along with grass snake, common lizard and slow worm. There are further records of these species from the wider search area.

### **Invertebrates**

3.1.17 No invertebrate records were reported for the proposed development site; however, records for the surrounding area included records of species associated with grassland, woodland/hedgerow/scrub, wetland, urban and semi-urban habitats, which could occur along or alongside the site.

### Plants

- 3.1.18 Records included plants associated with grassland, wet heath, woodland, scrub and wetland, several records of Red Data Book mosses were included.
- 3.1.19 Japanese knotweed and Himalayan balsam have been recorded on the periphery of the Bryncethin site and across the wider search area.


### Phase 1 Habitat Survey



- 3.1.20 The results of the Phase 1 habitat survey of the proposed solar and hydrogen sites are shown on the Phase 1 Habitat Plans (Figures 4 and 5). Descriptions of the habitats recorded, and Target Notes (TN) shown on Figures 4 and 5 are provided in Tables 3.2 and 3.3 below.
- 3.1.21 The habitats recorded are defined by broad habitat types described in the survey guidelines published by the Joint Nature Conservation Committee (2010).

### Limitations




- 3.1.22 Grassland at the Bryncethin proposed solar site had been cut / grazed short before the survey visit; therefore, it is considered that not all plant species present would have been evident. However, it was possible to assess the degree of potential species diversity and identify indicator plants to enable an assessment of grassland type. Therefore, considering the purpose of the survey, this limitation was not considered to have significantly impacted upon the effectiveness of the survey.

**Table 3.2: Bryncethin proposed solar site – Phase 1 habitat descriptions**





Habitat type, Figure 4	Description, Target Notes shown on Figure 4	Photograph
Broadleaved Semi-natural woodland	<p>The north-most section of the site comprised an area of woodland (TN5 and TN7). Tree species included grey willow <i>Salix cinerea</i>, oak <i>Quercus robur</i>, holly <i>Ilex aquifolium</i>, common hazel <i>Corylus avellana</i>, and common hawthorn <i>Crataegus monogyna</i>. Ground flora included bramble <i>Rubus fruticosus</i>, bracken <i>Pteridium aquilinum</i>, common nettle <i>Urtica dioica</i>, Himalayan balsam <i>Impatiens glandulifera</i>, broad leaved dock <i>Rumex obtusifolius</i>, English ivy <i>Hedera helix</i>, and ground ivy <i>Glechoma hederacea</i>.</p> <p>There were areas of broadleaved woodland along a ditch, to the south-east of the main field (TN11). Tree species included oak, common hazel, silver birch <i>Betula pendula</i>, holly, and grey willow. Ground flora consisted of bramble, bracken, common bent <i>Agrostis capillaris</i>, sheep’s fescue <i>Festuca ovina</i>, soft rush <i>Juncus effusus</i>, creeping buttercup <i>Ranunculus repens</i>, field thistle <i>Cirsium arvense</i>, English ivy, and ground ivy.</p> <p>To the south-west was a section of woodland on a steep bank to a watercourse (TN20). Species included grey willow, oak, common hawthorn, sycamore <i>Acer psudeoplatanus</i>, Alder <i>Alnus glutinosa</i>, gorse <i>Ulex sp.</i>, bramble, Himalayan honeysuckle <i>Leycesteria Formosa</i>, and common bent.</p>	
Semi-improved acid grassland	<p>The fields had been mown very short, so not all vegetation was identifiable.</p> <p>The central main field (TN25) was in a valley created by the sloping acid grassland and wet heathland surrounding it on all sides. There were ditches on the slopes that drain into the ditch around the field (TN24), causing it to be fairly wet. The field had been recently cut and was being grazed at the time of the survey. Species recorded included soft rush, common bent, perennial rye grass <i>Lolium perenne</i>, sheep’s sorrel, and creeping buttercup.</p>	

Habitat type, Figure 4	Description, Target Notes shown on Figure 4	Photograph
Tall ruderal vegetation	<p>In the north-west corner of the site there were patches of common nettle, bramble, and field thistle, together with gorse and rush species <i>Juncus sp.</i>.</p>	
Wet heath/acid grassland mosaic	<p>The majority of the site comprised a mosaic of heavily grazed semi-improved acid grassland and wet dwarf shrub heath. The sections of acid grassland were dominated in places by soft rush. Some areas had an abundance of sphagnum species. The wet dwarf shrub heath consisted of dense gorse patches that were quite wet in sections. Species included gorse, heather <i>Calluna vulgaris</i>, rush species including soft rush, sheep's sorrel, wavy hair grass <i>Deschampsia flexuosa</i>, heath bedstraw <i>Galium saxatile</i>, perennial rye grass, marsh thistle <i>Cirsium palustre</i>, white clover <i>Trifolium repens</i>, vetch species <i>Vicia sp.</i>, sheep's fescue, common bent, creeping buttercup, mint species <i>Mentha sp.</i>, and mouse-ear hawkweed <i>Pilosella officinarum</i>. Waxcap fungi was recorded throughout the grassland.</p>	

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Habitat type, Figure 4	Description, Target Notes shown on Figure 4	Photograph
Wet dwarf shrub heath	<p>Small patches of shrubby gorse (with occasional heather) were found throughout the acid grassland.</p> <p>There was a large section of wet dwarf shrub heath at the south-east corner of the site (TN13). The vegetation bordered the semi-improved neutral grassland. Species included gorse, soft rush, bramble, Himalayan balsam, heather, common bent, purple moor-grass <i>Molinia caerulea</i>, and sphagnum species. There were occasional scattered silver birch, grey willow, and rowan trees.</p> <p>A stream (TN14) flowed south and west from here.</p>	
Marginal vegetation	<p>There was a steep bank with vegetation leading to a pond (TN22). The pond became very shallow in parts, with <i>Typha sp.</i> abundant.</p> <p>Species recorded included oak, grey willow, common hawthorn, <i>Typha sp.</i>, soft rush, sedge species <i>Carex sp.</i>, common nettle, common bent, and cock's foot <i>Dactylis glomerata</i>.</p>	
Earth bank	<p>There was an earth bank/ditch running along the broadleaved woodland to the south-east (TN11). There was also a bank/slope to the south-west within the acid grassland (TN17).</p>	



Habitat type, Figure 4	Description, Target Notes shown on Figure 4	Photograph
<p>Standing and running water</p>	<p>Throughout the site there were drainage ditches with slow flowing water. Most of the ditches drained into a pond to the west (TN22). Along the southern boundary of the site there was a stream flowing west (TN18), which connected to a channel flowing south, along the western section of the site (TN20). A stream (TN14) also flowed along the south of the site.</p> <p>-----</p> <p>-</p> <p>Additional Photographs:</p> <div style="display: flex; justify-content: space-around;"> <div data-bbox="539 608 1084 858">  <p data-bbox="1104 660 1352 722">Standing water/pond (TN22)</p> </div> <div data-bbox="539 866 1084 1114">  <p data-bbox="1104 954 1330 1016">Stream to the south (TN14):</p> </div> </div>	<p data-bbox="1397 308 2022 370">Drainage ditch along the west side of the main field (TN24).</p>  <p data-bbox="1397 660 1895 691">Ditch along north of the main field (TN24)</p> 
<p><b>Habitats recorded along the proposed private wire</b></p>		
<p>Heath Grassland (semi-improved and improved/amenity) broadleaved trees, hedgerows,</p>	<p>The overhead option for the private wire line crosses a limited area of heath with dwarf shrub and acid grassland immediately to the north-west of the solar site, before then crossing or traveling alongside a mature hedge with trees, and grassland (semi-improved/improved), hedgerows and mature tree lines. It enters the</p>	


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broadleaved woodland and hard-standing	hydrogen site across east boundary, which is lined with broadleaved and mixed woodland. The underground installation option is located along/alongside avoid roads for much of the distance, avoiding much of the potential to disturb areas of open grassland and mature tree lines. It crosses onto the proposed hydrogen site at the same eastern location as the proposed overhead option.	
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Target Note reference, Figure 4	Description	Photograph
TN1	A patchy section of common nettle, bramble, and field thistle together with gorse and rush species.	
TN2	Area of unvegetated ground.	
TN3	A line of trees on a small bank along the fence line. Species included oak, common hawthorn, silver birch, grey willow, holly, and common hazel.	








Target Note reference, Figure 4	Description	Photograph	
TN4	Drainage ditch along the slope, dry at the time of survey.		
TN5	<p>Broadleaved woodland north of the site. Himalayan balsam was present.</p> <p>Tree species included grey willow, oak, holly, and common hawthorn. Ground flora includes bramble, bracken, common nettle Himalayan balsam, broad leaved dock, English ivy, and ground ivy. There are also patches of gorse.</p>		
TN6	<p>There were dense sections of wet shrub heath within the semi-improved acid grassland. Some areas were very wet with an abundance of sphagnum species, others relatively drier.</p> <p>Species recorded included gorse <i>Ulex sp.</i>, meadowsweet <i>Filipendula ulmaria</i>, heather, bog pimpernel <i>Anagallis tenella</i>, and greater bird's-foot trefoil.</p>		




Target Note reference, Figure 4	Description	Photograph	
TN8	Two areas of stored gravel along sloping land.		
TN9	A large concrete pipe (approximately 1 m diameter) was present along the fence line.		
TN10	<p>The broadleaved woodland along the fence line consisted of silver birch and oak, together with gorse, bramble, and bracken. Ground vegetation included common bent, soft rush, field thistle, and creeping buttercup.</p> <p>Small patches of the fungi <i>Amanita muscaria</i> were present here.</p>		

Target Note reference, Figure 4	Description	Photograph
TN11	<p>The broadleaved woodland from TN10 continued south along a ditch/earth bank.</p> <p>Species included silver birch, oak, common hazel, grey willow, rush species, bracken, bramble, common bent, perennial rye grass, and sheep's fescue.</p>	
TN12	<p>Most of the trees in the woodland contained low numbers of potential bat roost features. However, between the two fields was an oak tree with moderate bat roost potential. The tree contained dense ivy (more than 5mm thick) and multiple overlapping limbs, suitable for bats.</p>	






Target Note reference, Figure 4	Description	Photograph
TN13	<p>A dense section of gorse, heather, purple moor-grass, bracken, and rush species along the south-west border of the site.</p> <p>The stream (TN14) flowed south-west out of the vegetation. There were a few scattered grey willow, silver birch, and rowan trees.</p>	
TN14	<p>A slow flowing stream was present in the southern-end of the site. Vegetation included gorse, bramble, common bent, Himalayan balsam, and brooklime <i>Veronica beccabunga</i>.</p>	
TN15	<p>There was a woodland in the south of the survey area. The ground was very wet, with an abundance of mosses. Tree species included oak, hawthorn, and grey willow. Ground flora consisted mainly of mosses, but also bracken, rushes, and Himalayan balsam.</p>	


Target Note reference, Figure 4	Description	Photograph	
TN16	Large patches of <i>Mentha sp.</i> were recorded.		
TN17	A bank/slope on the southern section of the site that contained areas of scattered bracken, gorse, hawthorn, false oat grass <i>Arrhenatherum elatius</i> , bent grass, common nettle, and field thistle.		
TN18	A wet ditch/stream that flowed west along the southern border of the survey area. Vegetation included gorse, heather, rush species, common bent, false oat grass, mouse-eared pilosella, and field thistle.		

Target Note reference, Figure 4	Description	Photograph	
TN19	An old brick wall with common nettle and <i>Mentha sp.</i> growing out of it.		
TN20	To the south-west there was a section of woodland on the steep bank of a watercourse. Species included grey willow, oak, common hawthorn, sycamore, alder, gorse, bramble, Himalayan honeysuckle, common bent and sheep's fescue.		
TN21	A wooded area comprising hawthorn in the west of the site. The ground was uneven with several old concrete pipes and cut branches of potential value for reptiles.		





Target Note reference, Figure 4	Description	Photograph
TN22	A steep bank that sloped down to a pond. The water was discoloured (brown/orange). Surrounding bankside scrub included oak, grey willow, common hawthorn, <i>Typha</i> species, common nettle, rush species, and perennial rye grass.	
TN23	A small fenced area with trees along a ditch/earth bank. The ditch was wet with <i>Typha</i> species growing along it.	
TN24	The main field (TN25) contained a drainage system surrounding it that connected to a standing body of water (TN22).	
TN25	The central main field was in a valley created by the sloping acid grassland and wet heathland surrounding it on all sides. There were ditches on the slopes that drain into the ditch/stream at TN24, causing it to be fairly wet.	

**Table 3.3: Brynmenyn proposed hydrogen site – Phase 1 habitat descriptions**



Habitat type, Figure 5	Description	Photograph
<p>Broadleaved woodland and scattered broadleaved trees</p>	<p>An area of broadleaved woodland bordered the eastern side of the survey area. The majority of these trees were semi-mature with no obvious potential bat roost features.</p> <p>There was a fence along the east side of the woodland, along the site boundary.</p> <p>Species included oak <i>Quercus robur</i>, ash <i>Fraxinus excelsior</i>, holly <i>Ilex aquifolium</i>, Portuguese laurel <i>Prunus lusitanica</i>, common hawthorn <i>Crataegus monogyna</i>, common hazel <i>Corylus avellana</i>, and English ivy <i>Hedera helix</i>.</p> <p>Ground flora was sparse, and included bramble <i>Rubus fruticosus</i>, Rosebay willowherb <i>Epilobium angustifolium</i>, Himalayan balsam <i>Impatiens glandulifera</i>, field thistle <i>Cirsium arvense</i>, broadleaved dock <i>Rumex obtusifolius</i>, ribwort plantain <i>Plantago lanceolata</i>, and creeping buttercup <i>Ranunculus repens</i>.</p> <p>Along the north-west boundary of the site there were scattered broadleaved trees. Species include oak, grey willow <i>salix cinerea</i>, common hazel, and sycamore <i>Acer pseudoplatanus</i>. There were also patches of European gorse <i>Ulex europaeus</i> near the tree line.</p>	




REPORT

Habitat type, Figure 5	Description	Photograph
Mixed woodland	Species included Scots pine <i>Pinus sylvestris</i> , cedar species <i>Cedrus sp.</i> , oak, ash, holly, Portuguese laurel <i>Prunus lusitanica</i> , common hawthorn, common hazel, and English ivy.	
Semi-improved neutral grassland	<p>The south-western area of site was semi-improved grassland with some scattered shrubs.</p> <p>Species included common bent <i>Agrostis capillaris</i>, meadow fescue <i>Festuca pratensis</i>, perennial ryegrass <i>Lolium perenne</i>, bracken <i>Pteridium aquilinum</i>, gorse, common nettle <i>Urtica dioica</i>, bramble, dog rose <i>Rosa canina</i>, red clover <i>Trifolium pratense</i>, white clover <i>Trifolium repens</i>, yarrow <i>Achillea millefolium</i>, ribwort plantain, ragwort <i>Jacobaea vulgaris</i>, Apiaceae species <i>Apiaceae sp.</i>, horseweed <i>Erigeron canadensis</i>, vetch species <i>Vicia sp.</i>, Rosebay willowherb, bird's-foot trefoil <i>Lotus corniculatus</i>, and Himalayan balsam.</p> <p>There were also a few tree saplings, approximately 1m in height. Species included oak, hawthorn, common hazel, sycamore, and grey willow.</p>	
Tall ruderal herb	<p>A large section of the site consisted of tall ruderal herbs.</p> <p>Species here included Rosebay willowherb, Himalayan balsam, and broadleaved dock.</p>	

REPORT

Habitat type, Figure 5	Description	Photograph
Woodchip/bark area with sparse vegetation	East of the tall ruderal herb was an area of woodchip/bark that contained some vegetation. The woodchips continued underneath the broadleaved woodland area to the east. Species included grey willow, bramble, rush species <i>Juncus sp</i> , meadow fescue, Rosebay willowherb, Himalayan balsam, field thistle, broadleaved dock, ribwort plantain, bracken, and creeping buttercup.	
Himalayan Balsam	Himalayan balsam had spread throughout the tall ruderal herb and had formed some large patches in areas. There were also patches near the broadleaved and mixed woodland, and within the woodchips.	
<b>Habitats recorded along the proposed hydrogen pipeline</b>		
Woodland and mixed scrub areas, with associated semi-improved and rough grassland, the River Ogmore with bankside habitat (including mature tree line and woodland), and amenity grassland on the college grounds.	The pipeline crosses several high value habitat areas, or runs close to these, including areas of mature woodland / scrub mosaic, an Ancient Woodland Site and the River Ogmore.	
TN1	An ash tree with moderate potential for bats. Some ivy growing up the tree and crossed branches that could form crevices suitable for bats.	

Habitat type, Figure 5	Description	Photograph
TN2	Brash piles/ cut logs (likely from recent vegetation clearance) suitable for reptiles, small mammals, and birds.	 The photograph section contains two images stacked vertically. The top image shows a pile of cut logs and branches in a wooded area with green foliage. The bottom image shows a similar pile of brash and logs, but with more dense, low-lying vegetation and ferns in the foreground.

## 4. RECOMMENDATIONS FOR PHASE 2 SURVEYS

### Introduction

- 4.1.1 Results of the desk study and Phase 1 habitat survey are summarised below, along with recommendations for phase 2 surveys that are considered necessary to inform an assessment of likely ecology impacts and potential mitigation requirements.

### Habitats and Plants

- 4.1.2 Habitats of high ecological value, or with the potential to support protected species are discussed below; habitats of low ecological value and/or with no or negligible potential to support protected species are excluded.

### Grassland and Heathland

- 4.1.3 Botanical surveys of the areas of semi-improved grassland and heathland within both the proposed solar and hydrogen sites, and at the proposed pylon locations (and associated working areas) along the private wire route, that could be directly affected by the development, are recommended to identify the communities and species present, map areas of particular importance.
- 4.1.4 Surrounding habitat areas on the proposed solar and hydrogen sites, that would not be directly impacted could be included in the survey, to identify potential opportunities for restoration or enhancement as part of a mitigation strategy.
- 4.1.5 The optimum time of year for the surveys would be during the summer months.

### Grassland Fungi

- 4.1.6 The grassland, heathland and woodland / scrub habitats at both the solar and hydrogen, but in particular the proposed solar site have the potential to support a diverse range of fungi. An assessment of the potential value of areas that could be impacted by the works should be undertaken and further surveys made where deemed necessary.
- 4.1.7 The aim of the surveys should be to identify and map species, and assess the potential conservation value of the surveyed areas, to inform micro-siting the working areas and any potential method statement to minimise impacts.
- 4.1.8 The survey should be undertaken in the autumn and may require several visits to identify species that fruit at different times of the year. eDNA analysis of soil samples may be considered a suitable option in targeted locations.

### Scattered Trees and Broadleaved Woodland

- 4.1.9 Individual mature broadleaved trees, within fields and along hedgerows, may be protected under Tree Protections Orders (TPOs). A review of TPOs should be undertaken.

- 4.1.10 Semi-mature and mature trees are of potential value to a diversity of species, including bat and bird species and lower plants, and are of conservation importance as potential future veteran / ancient trees, which provide valuable dead wood habitat used by a diversity of often rare or endangered specialist invertebrates. (Species-specific surveys are considered below.)
- 4.1.11 Where construction works are to take place close to trees, it is recommended that a survey be undertaken by an appropriately experienced professional, to identify tree root protection zones and any signs of disease (e.g. Ash Dieback) or instability that could present a risk of tree fall / limb break and subsequent damage to the adjacent development.
- 4.1.12 Areas of woodland could be surveyed to assess their current ecological condition and value, and the potential to enhance as part of a mitigation strategy.

### **Invasive Plants**

- 4.1.13 Himalayan Balsam is currently widespread across both the proposed solar and hydrogen sites, and is particularly dominant in the proposed hydrogen site.
- 4.1.14 Japanese knotweed is known to be in the wider area. The species are listed as an invasive plant species under Schedule 9 of the Wildlife and Countryside Act 1981, which makes it an offence to facilitate the spread of these species.
- 4.1.15 Therefore, it is advised that an invasive plant survey be undertaken prior to the commencement of any work on site (including along the private wire and hydrogen pipeline) to ensure that appropriate measures can be set in place to help prevent further spread of such species.

### **Protected Species**

#### **Breeding Birds**

- 4.1.16 Breeding birds are protected under the Wildlife and Countryside Act 1981 (as amended) (see Appendix 2 for a summary of the implications / requirements of this legislation).
- 4.1.17 Woodland and trees, scrub and hedgerows, large areas (>5 ha) and areas of open grassland, areas of rough grassland, and heathland, all provide suitable nesting opportunities and foraging resources / hunting territory for breeding birds.
- 4.1.18 As such, a breeding bird survey is recommended. These surveys should aim to identify and map any birds of conservation concern that may be using the sites. The results of the surveys should be used to locate breeding territories and assess the value of the sites for breeding birds.
- 4.1.19 The survey should be undertaken between April and early July.

## Bats

- 4.1.20 Bats are protected by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, and the Wildlife and Countryside Act 1981 (as amended) (see Appendix 2 for a summary of the implications / requirements of this legislation).
- 4.1.21 If a semi-mature to mature tree could require felling, or could be located within approximately 10 m from a working area, a daytime ground-level assessment of the tree should be undertaken to identify features of potential value to roosting bats that could need further inspection and/or dusk emergence / dawn re-entry surveys to confirm the presence / likely absence of a bat roost.
- 4.1.22 The surveys should be undertaken in accordance with the guidelines described in Collins (ed.) 2016. The daytime assessment can be undertaken at any time of year; however, it can be easier to locate potential roost features in trees during the winter months when the leaves have fallen.
- 4.1.23 Tree climbing surveys to assess any features could also be undertaken, the results of which are often most beneficial with regard to confirming the unsuitability of a feature. The dusk / dawn surveys should be undertaken between (late April/)May and September/(October), with a focus on June – August inclusive to locate possible breeding sites.
- 4.1.24 Should a bat roost be recorded, a licence from NRW under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 would be required to enable the roost to be removed or significantly disturbed. The licence application would need to be supported by the results of the above surveys and an appropriate method statement and mitigation strategy.
- 4.1.25 If clearance of trees/vegetation is required along an existing well-connected habitat corridor and the subsequent gap in connectivity would be greater than 10 m in length, or if for any reason, light spill between dusk and dawn will likely impact existing habitat corridors or woodland edge, bat activity surveys of the area affected may be required to determine the importance of the habitat for foraging and commuting bats, and likely impacts and mitigation required.
- 4.1.26 Bat activity surveys should be undertaken in accordance with Collins (ed) 2016, or subsequent update, between April/May and September/October. Surveys could combine the use of static bat detectors installed for at least five consecutive nights during each survey month, and walked transect surveys undertaken around dusk and/or dawn.

## Hazel Dormouse

- 4.1.27 Hazel dormouse is protected under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. The loss of any habitat used by dormice would require a licence issued under the Regulations.
- 4.1.28 A single record of hazel dormouse was reported from within the desk study search area (approximately 1.8 km to the west of the site). Although the proposed development site is relatively isolated from surrounding significant parcels of woodland, including the parcel where dormice have



been recorded in the past, there is some linear woodland and hedgerow connectivity between areas of woodland in the surroundings and the development site.

- 4.1.29 Therefore, if woodland, scrub or hedgerow clearance is required, it is advised that an assessment of the area to be affected should be undertaken by an appropriately experienced ecologist to determine whether a dormouse survey is required to confirm presence or absence. Much of the woodland on the solar and hydrogen sites are considered of low value due to the limited scrub understorey; however, dense scrub areas could be of value, in particular along the hydrogen pipeline.
- 4.1.30 It is recommended that this be scoped with the Local Authority and/or NRW if possible.
- 4.1.31 If a survey is considered necessary, it should be undertaken in accordance with guidelines published in the Dormouse Conservation Handbook (Bright *et al.* 2006), and should include nest tube surveys between April and November.

### Otter

- 4.1.32 Otter is protected under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. A licence under the Regulations 2019 would be required for any loss of a holt or resting site, or significant disturbance to any otter using the site.
- 4.1.33 Considering the results of the desk study that report otter close to site, an otter survey of suitable habitat areas should be undertaken (i.e. watercourses of potential value to otter and connecting areas of woodland and dense scrub that could be used by breeding or resting otter) within 100-200 m of the proposed working area. An appropriately ecologist should confirm the locations of the survey areas, following a review of the potential working areas; however, these should include the woodland alongside the banks of the Ogmore River.
- 4.1.34 The survey should comprise up to four visits of suitable habitat, spread throughout the year if possible.

### Great Crested Newt

- 4.1.35 Great crested newt receives protection under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, and the Wildlife and Countryside Act 1981 (as amended) (see Appendix 2 for a summary of the implications / requirements of this legislation).
- 4.1.36 The desk study data search reported no historic records of great crested newts from the site, or from within 500 m of the site. However, this does not rule out the presence of great crested newt and as such, surveys of the pond and very slow-flowing water within the proposed solar area at Bryncethin are recommended, and if accessible and not separated from the site by significant barriers to the movement of newts, any potential ponds that are discovered within 250 m from the proposed solar site and private wire working areas (no additional ponds are shown on OS base maps).

- 4.1.37 Water samples should be collected from the waterbodies and analysed for great crested newt eDNA in accordance with the methodology described in Biggs *et al.*, 2014, or any subsequent updates. If eDNA is confirmed present, or if eDNA surveys cannot be undertaken, a standard presence / absence, or if present, population class size survey should be completed in accordance with guidelines published in English Nature, 2001.
- 4.1.38 If confirmed present, the results of the surveys should inform the impact assessment and mitigation strategy. The surveys should also inform a potential licence application to NRW to permit the loss and damage of habitat, and disturbance of any great crested newts that might be present. The planning application should provide evidence to confirm that suitable mitigation required for a licence would be achievable.

### Reptiles

- 4.1.39 All common UK reptile species (Adder, Grass Snake, Common Lizard and Slow Worm) are protected through part of Section 9(1 and 5) of the Wildlife and Countryside Act 1981 (as amended).
- 4.1.40 Records of all of the above species were included in the results of the desk study, and in particular, close to the Bryncethin site.
- 4.1.41 It is recommended that any significant areas of high value habitat that would be lost or damaged should be surveyed (i.e. areas of heath, rough grassland and mosaics of scrub/woodland/rough grass and heath) across the two sites, to identify species present and assess population size classes.
- 4.1.42 The surveys should comprise 7 survey visits completed between late April and September (the optimum months being April, May and September).

### Invertebrates

- 4.1.43 The mosaic of habitats across the whole site (including the proposed solar and hydrogen areas) are of value to a diversity of invertebrate species. Of particular potential value is the mosaic of acid grassland, heath, woodland and wet habitats across the Bryncethin site.
- 4.1.44 It is assumed that the proposed solar development will be located in areas of drained lower interest semi-improved grassland in the centre of the Bryncethin site; however, should significant areas of acid grassland and heath be lost due to the proposal, an assessment of invertebrate value could be considered necessary.
- 4.1.45 An invertebrate survey may also be considered suitable to inform a potential enhancement strategy. It is advised that the Local Authority ecologist be consulted with regard to this.

### Badger

- 4.1.46 Badgers are protected under the Protection of Badgers Act 1992 (see Appendix 2 for a summary of the implications / requirements of this legislation).



- 4.1.47 Surveys of the final private wire and hydrogen pipeline should be undertaken, to include the proposed working area and a 100 m buffer zone.
- 4.1.48 Although no setts or signs of badger activity were recorded during the Phase 1 habitat survey of the proposed solar and hydrogen sites, both sites do provide potential for foraging and commuting. There is also the possibility that a dormant sett may be discovered during further surveys or during works, which may become 'active' at any time. Therefore, the potential presence of badgers on site should be considered during future site visits and in any mitigation strategy.
- 4.1.49 A licence under the Protection of Badgers Act 1992 would be required to undertake any works that could damage or prevent access to a sett, or displace a badger that might otherwise utilise the sett result.

### Summary of Recommended Phase 2 Surveys

- 4.1.50 Taking into account the results of the ecology desk study and Phase 1 habitat survey, the following phase 2 surveys are recommended to inform the development proposal, and any impact assessment and mitigation strategy.

#### Habitats and plants

- Botanical surveys of semi-improved grassland and heathland within the solar and hydrogen sites, and along the proposed private wire and hydrogen pipeline, that could be lost or damaged. Potential to include possible mitigation areas. To assess ecological condition/value, map areas of greater conservation importance, and identify areas that could form part of an enhancement strategy. To be completed in late spring/summer.
- Grassland fungi survey of grassland areas. To identify species and map presence to inform potential avoidance areas, a method statement, and a possible enhancement / management strategy. To be completed in autumn.
- Woodland survey of areas of woodland that could be affected by the works, and surrounding retained areas that could be incorporated into any potential mitigation strategy. To assess ecological condition, map areas of greater conservation value, and potential enhancement areas. To be completed late spring-summer.
- Arboricultural survey. To map tree root protection zones and identify risks of tree/limb fall.

#### Potential survey for application, and post-consent, pre-construction survey:

- Invasive / alien plant survey. To identify the locations and extent of invasive/alien plant species to inform the construction method statement and potential eradication plan.

#### Protected species (fauna)

- Breeding bird survey. To identify species breeding on the solar and hydrogen sites and at targetted locations along the private wire and hydrogen pipeline if significant habitat loss is likely.

To identify and map species and territories, and assess the value of surveyed areas for breeding birds. To complete April – early July (up to six visits).

- Otter survey of suitable watercourses, waterbodies and connecting terrestrial habitat of value (i.e. areas of woodland and dense scrub) within around 100-200 m from the proposed working areas (distance depending on the works proposed in the area). To complete up to 4 visits through the year to confirm presence and usage.
- Great crested newt survey of waterbodies and very slow flowing ditches on site and within 250 m of the working area, to confirm presence / likely absence, and if present, assess the size and importance of the population. To complete between mid-March and June.

### Potential species surveys

- Bat roost surveys of mature trees to be felled or within approximately 10 m of working areas, to assess the potential value to roosting bats and the potential need for further inspection and/or dusk emergence / dawn re-entry surveys to confirm the presence / likely absence of a bat roost. To be undertaken in accordance with Collins (ed.) 2016. between (late April/)May and September/(October), with a focus on June – August inclusive to locate possible breeding sites.
- Bat activity survey if potential severance of existing habitat corridors (i.e. woodland, scrub, lines of connecting trees, and hedgerows, would result in gaps in connectivity greater than 10 m in length. To be undertaken in accordance with Collins (ed) 2016 – could include dusk/dawn surveys and static detector surveys, or subsequent update, between April/May and September/October.
- Hazel dormouse survey of suitable woodland, scrub and hedgerows to confirm presence/absence. To undertaken in accordance with guidelines published in Bright *et al.* 2006, between April and November.
- Reptile survey of considerable areas of high potential value (e.g. heathland, rough grassland and grassland and scrub mosaic) that could be lost or significantly damaged or disturbed during construction, to confirm species presence/likely absence and if present, the approximately size and importance of any populations present. To complete April-September (optimal months April, May and September).
- Invertebrate surveys of significant areas of high value habitat that could be lost (or potentially retained areas, to inform an enhancement strategy.

## Assumptions

- 4.1.51 It is assumed that the method for installing the hydrogen pipeline across the River Ogmores, and the locations of associated construction working areas, would ensure that there would be no direct impact on the watercourse (its channel and banks). It is also assumed that best practice measures to ensure no significant impact from potential pollutants during both the construction and operation phases would be set in place.

## Consultation

- 4.1.52 It is advised that the Local Authority ecologist and if possible, NRW, be consulted upon with regard to the scope and methodology of phase 2 surveys.

## 5. EVALUATION AND POTENTIAL MITIGATION REQUIREMENTS AND ENHANCEMENT OPPORTUNITIES

### Local Planning Policy

5.1.1 The following Bridgend Council planning policies and guidance should be taken into account in any development proposal and mitigation strategy.

Planning Policies:

- SP4: Natural Environment, which states that development proposals that will conserve and, where possible, enhance the natural environment will be favoured.
- ENV4: Local/Regional Nature Conservation Sites, which states that *an adverse impact on [Local Nature Reserves and SINCs] will not be permitted unless the benefits associated with the development can be demonstrated to outweigh the harm and/or the harm can be reduced or removed by appropriate mitigation and/or compensation measures.*
- ENV5: Green infrastructure and corridors, which includes the requirement to protect and enhance existing wide habitat corridors.
- ENV6: Nature Conservation, which requires that developments aim to retain, conserve, restore and enhance, wherever possible, natural features. The guidance provides a list of wildlife habitats that should be retained, managed and enhanced, including through the use of buffer zones, as well as guidance on species protection. Developers are required to confirm how habitats are to be retained and protected, including how ongoing management will be undertaken.
- ENV7: Natural Resource Protection and Public Health, which requires that development does not cause any new, or exacerbate an existing, unacceptable risk of harm to biodiversity.

Supplementary Planning Guidance (SPG):

- SPG 7 Trees and Development provides guidance on measures to retain and protect trees, and the planting of new trees, on and adjacent to development sites.
- SPG 19 Biodiversity and Development, includes requirements to: provide sufficient biodiversity information to support an impact assessment; protect and enhance sites that would be affected; demonstrate that every attempt has been made to minimise impacts and/or provide compensatory or mitigation measures for loss of a site, its biodiversity or its scientific interest; include measures for longer term maintenance of a site to ensure that the site remains sustainable.
- SPG 20 Renewables in the Landscape, was developed to *echo the emerging principles of Natural Resources Wales: promoting the strategic management and planning of landscapes to deliver multiple (social, economic and environmental) benefits.*

## Potential Mitigation Requirements and Opportunities

### Mitigation Hierarchy Approach

- 5.1.2 The mitigation strategy should follow the mitigation hierarchy approach of avoid – mitigate – compensate.
- 5.1.3 Mitigation is considered to mean measures to avoid or reduce the negative impacts of a project, and compensation is taken to mean measures taken to offset residual effects resulting in the loss of, or permanent damage to, ecological features despite mitigation. As a general rule, compensation focuses on the same type of ecological features as those affected and the objective is to achieve the equivalent levels of ecological 'functionality'.
- 5.1.4 Opportunities to enhance should be included where practicable and appropriate to ensure an overall ecology / biodiversity benefit.
- 5.1.5 The results of the desk study, Phase 1 habitat survey and any phase 2 surveys, should be taken into account in the final proposal.

### Avoidance

- 5.1.6 The results of the desk study and Phase 1 habitat survey suggest the following potential requirements or opportunities for avoidance.
- Habitats to avoid any damage to:
    - Ancient Woodland Sites and associated root protection zones (15 m wide) (see *Ancient Woodland Sites* below).
    - Ogmore River
  - Habitats to avoid as far as is practicable (see measures to avoid below):
    - Broadleaved / mixed woodland and scrub mosaics (and associated root protection zones)
    - Mature trees (and associated root protection zones)
    - Heathland
    - Acid and neutral grassland, semi-improved neutral grassland
    - Waterbodies

Less species-diverse areas of semi-improved grassland and ruderals, areas dominated by Himalayan balsam and woodchip on the proposed hydrogen site, should be favoured for working areas over the above habitat areas.

#### Measures to avoid impacts:

- Locate the construction sites and operational footprint to avoid ecologically high value habitats (listed above) as far as is practicable.
- Consider the use of directional drilling where this could avoid significant impacts, in particular beneath areas of mature / established broadleaved woodland / scrub mosaic, mature tree lines.

- Ensure that the methodology for installing the hydrogen pipeline across the Ogmore River does not result in any direct impact on the watercourse and its banks (both during construction and operation).
- Align pylons and the overhead private wire to reduce the need to clear trees beneath the line. The potential below ground installation along/alongside existing roads appears favourable as this would considerably reduce impacts on trees, woodland and scrub, and heath.
- Construction works should be undertaken in accordance with a detailed Construction Environment Management Plan (CEMP), which should include but not be limited to the following good practice measures:
  - Appropriate works-free buffer zones around retained habitats, including tree root protection zones and wide buffers around Ancient Woodland (see *Ancient Woodland* below).
  - As above, use of directional drill beneath high value habitat where practicable (e.g. beneath broadleaved woodland).
  - Measures to reduce the risk and significance of any potential pollution event (from run-off and airborne pollutants) that could impact retained habitats on and off-site, in particular areas of woodland, including ancient woodland sites.
  - Ground protection measures and a Soil Management Plan to minimise impacts on soils and retained vegetation, in particular across heath and acid grassland at the proposed solar site.
  - Wherever practicable, make use of existing vehicle access routes to prevent the need to clear vegetation for temporary access.
  - If lighting is required during construction, lighting should be installed in accordance with best practice guidance to minimise impacts of light spill on bats and other light sensitive species that may be active on site and in the surrounding area between dusk and dawn. (Light fittings should be directional and enable the prevention of unnecessary light spill.).
  - Measures to control the spread of any invasive / alien plant species (including Himalayan balsam and Japanese knotweed), and a potential elimination strategy where practicable.
  - Biosecurity Safe Systems of Work, where applicable, e.g. for working in / near water, or dealing with diseased plants.
  - Reference to all species and habitat protection and mitigation measures that are required.
  - The requirement to attend Toolbox Talks, which should include ecology measures required.
  - Ecology pre-construction update surveys.
  - Ecology Clerk of Works – including to supervise / undertake site clearance, pre-works surveys (including those below), and potential ecology licensed works.
  - Pre-site clearance ecology surveys for active bird nests, if clearance works are to take place during the bird breeding season (considered to be between mid-February and August inclusive)
  - If considered necessary, clearance of potential amphibian and reptile hibernacula outside of the hibernation period (e.g. October – February/early March, depending on local weather conditions) and habitat management to displace reptiles from the working area ahead of the works.

- Should any protected species be recorded on site, and a species mitigation licence be required, the need to work in accordance with the licence should be referenced in the CEMP. An appropriately experienced ecologist should confirm that there are no conflicts between the CEMP and the licence requirements.

### Ancient Woodland Sites

- 5.1.7 Considering the age and complexity of ancient woodland, the habitat is considered to be irreplaceable in ecological terms. This is recognised in planning policy, i.e. Planning Policy Wales (Edition 11, February 2021) states that *Ancient woodland and semi-natural woodlands ... are irreplaceable natural resources, and have significant ... biodiversity ... value. Such trees and woodlands should be afforded protection from development which would result in their loss or deterioration unless there are significant and clearly defined public benefits; this protection should prevent potentially damaging operations and their unnecessary loss. In the case of a site recorded on the Ancient Woodland Inventory, authorities should consider the advice of NRW. Planning authorities should also have regard to the Ancient Tree Inventory.*
- 5.1.8 Due to the proximity of the proposed hydrogen pipeline to an area of Ancient Woodland alongside the Ogmor River (Figure 3), the mitigation strategy should include measures necessary to prevent a significant impact. These should include works-free root protection zones (as advised by an appropriately experienced professional), and pollutant control measures.

## Mitigation and Compensation

### Designated Sites

- 5.1.9 Considering the distance between the proposed development site and the international and national designated sites shown on Figure 1, no significant impact on the integrity of these sites would be expected as a result of the proposed development.

### Tyncoed Farm Bryncethin SINC

- 5.1.10 The proposed Brynmenyn hydrogen site overlaps the Tyncoed Farm Bryncethin SINC boundary; therefore, there is the potential for significant loss of habitat and adverse impacts on the site and habitat features present.
- 5.1.11 Any impact on a designated site would need to be fully assessed. Measures to minimise impacts on the SINC should be incorporated at an early design stage. Taking into account the survey findings to date, it is considered that these measures should include:
- restricting the working area to the minimum necessary; and
  - locating the working area in lower value habitats, and/or using measures such as directional drilling to avoid impacts on higher value habitat (i.e. avoid areas of woodland and semi-improved neutral grassland where practicable); and
  - ecology contribution to the CEMP and detailed method statements.

- 5.1.12 Opportunities to significantly enhance retained habitats to compensate for impacts on the SINC, and where possible, provide a long-term gain in overall ecological value should be incorporated into the strategy. Enhancement measures should include:
- the control and potential elimination of Himalayan balsam (as far as is practicable);
- 5.1.13 Additional enhancement should be informed by the results of phase 2 surveys, but could include the:
- restoration / creation of species-rich grassland across areas of open ground (i.e. areas of ruderals and woodchip shown on Figure 4);
  - planting of additional woodland habitat on areas of low value grassland / ruderals, including woodland edge / scrub to enhance the value of the existing narrow corridors of woodland; and
  - potential thinning of canopy trees in existing woodland, to enable sunlight to reach ground-level and encourage the development of a richer ground flora, and understorey.
- 5.1.14 It is advised that the proposed mitigation strategy should be consulted upon with the Local Authority ecologist. Consultation should be carried out at an early stage of the design process to enable proposals to be amended to take into account Local Authority requirements.

### **All other SINCS**

- 5.1.15 Considering the distance between the proposed development site and the remaining local designated sites, no significant adverse impact on the remaining designated sites would be expected. However, if off-site mitigation is required, to prevent a significant adverse ecological impact on the local area, there could be the potential to contribute to enhancement measures at these sites. This potential requirement and opportunities should be consulted on with the Local Authority.

### **Grassland and Heathland**

- 5.1.16 It is assumed that that measures to reduce the loss of, or significant disturbance to areas of heath and acid and neutral grassland would be set in place; however, some impacts could occur. Therefore, opportunities to enhance the retained undisturbed areas, and/or create new areas of species-rich grassland and heath where low value habitat is currently present (i.e. areas dominated by woodchip or Himalayan balsam on the proposed hydrogen site) should be considered as part of the mitigation and compensation strategy.
- 5.1.17 A contribution to off-site enhancement measures may also be considered appropriate, if they could achieve a significant benefit.

### **Woodland, Scrub and Trees**

- 5.1.18 To mitigate impacts of any potential loss of woodland, scrub and trees, proposals should include woodland / woodland edge, tree and scrub planting in retained areas of low ecological value, i.e. excluding areas of semi-improved neutral and acid grassland and heath.



- 5.1.19 As above, a contribution to off-site enhancement measures may also be considered appropriate if they could achieve a significant benefit.

### Enhancement

- 5.1.20 Enhancements may be achieved through habitat measures described above, as well options such as:

- The installation of bat roost / bird nest boxes

Bat roost boxes, and breeding bird nest boxes could be installed at suitable locations in mature trees on site. The design of boxes should take into account the results of any relevant phase 2 bird or bat surveys, to ensure that they are suitable for the species most likely to be present on site.

### Protected Species Licences (Potential)

- 5.1.21 Should phase 2 surveys confirm the presence of protected species within the survey area, these species should be considered fully in the mitigation strategy. If mitigation licences would be required to undertake the works, likely licence requirements should also be included in the proposals.

### Ecology / Habitat Management Plan

- 5.1.22 An Ecology / Habitat Management Plan should be produced to provide detailed guidance on the pre, during and post-construction ecology measures to be undertaken, including habitat management methods and timings. The Plan should include confirmation of funding sources, responsibilities, monitoring and reporting requirements. The Plan should be considered a 'live' document, that can be amended as necessary e.g. in response to any potential changes in environmental conditions on site or the results of monitoring.
- 5.1.23 The CEMP should refer to pre-construction and construction measures required by the Ecology / Habitat Management Plan.

### Consultation

- 5.1.24 It is advised that consultation on the mitigation proposal, in particular that designed to mitigate / compensate impacts on the SINC on the Brynmenyn hydrogen site, be undertaken with the Local Authority ecologist as early as practicable ahead of an application submission.

## REFERENCES

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

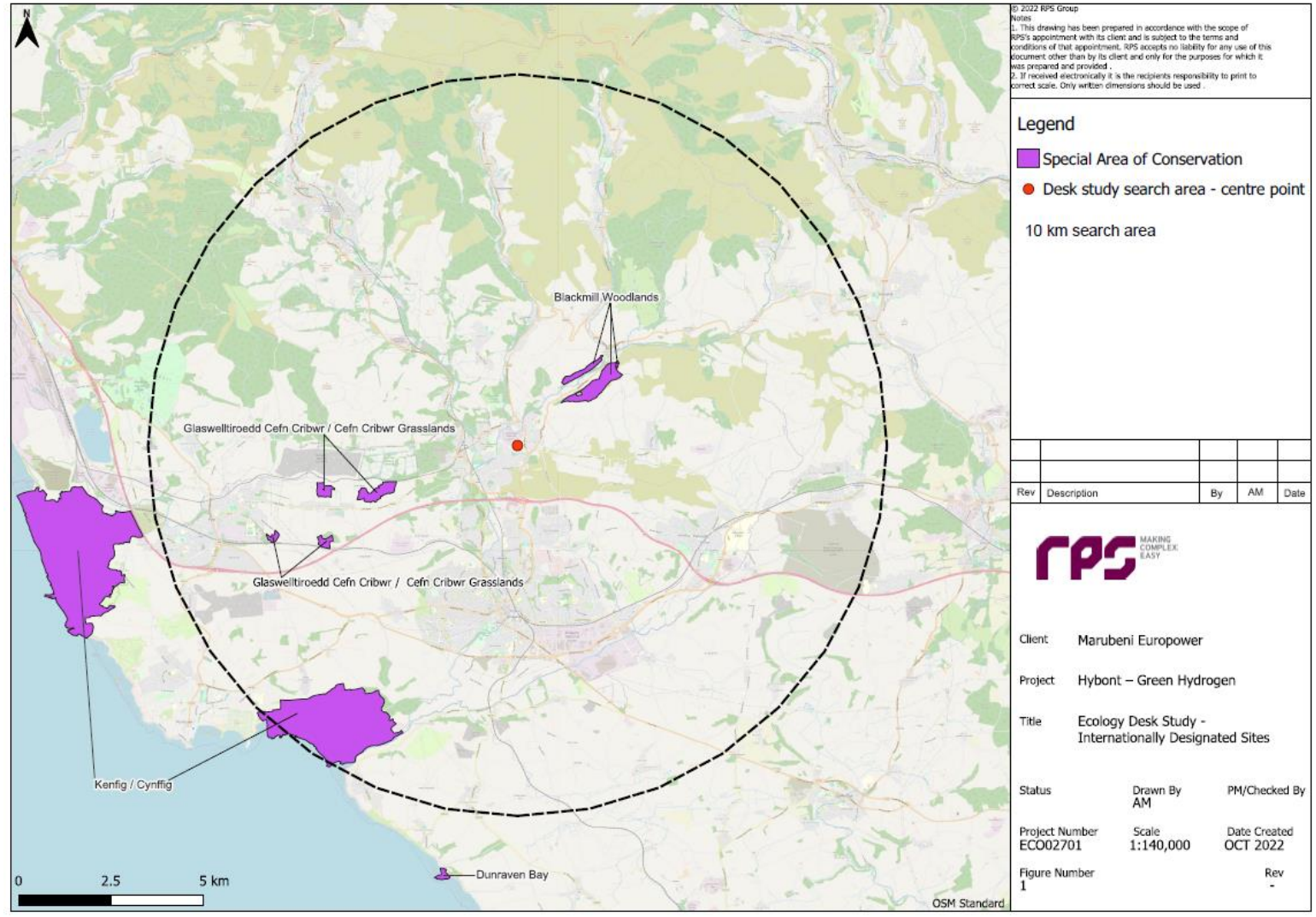
English Nature (2001) Great Crested Newt Mitigation Guidelines. English Nature: Peterborough.

Joint Nature Conservation Committee JNCC (2010). Handbook for Phase 1 Habitat survey: a technique for environmental audit (revised reprint). Joint Nature Conservation Committee, Peterborough.



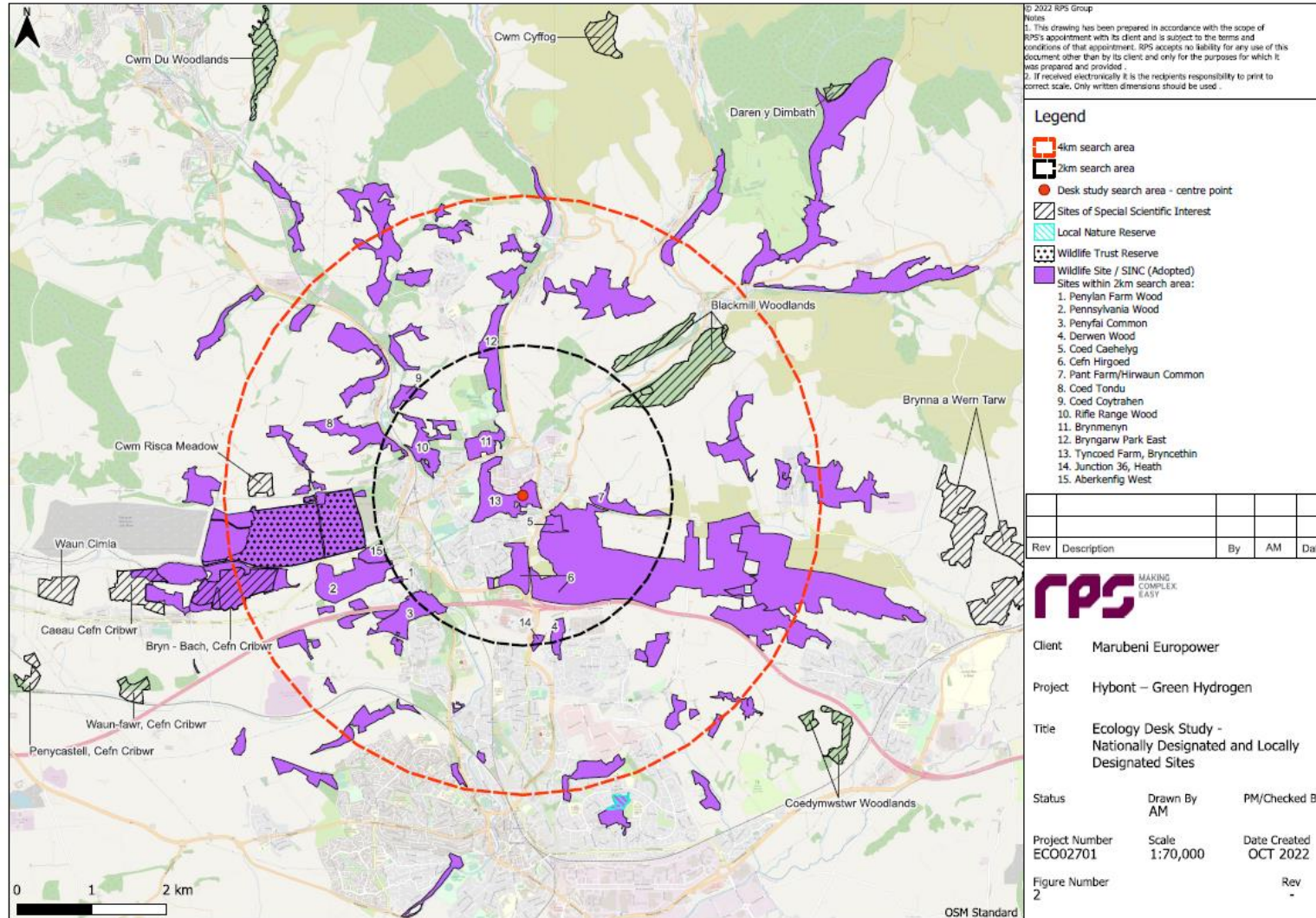
**FIGURES**

# FIGURE 1: INTERNATIONAL DESIGNATED SITES



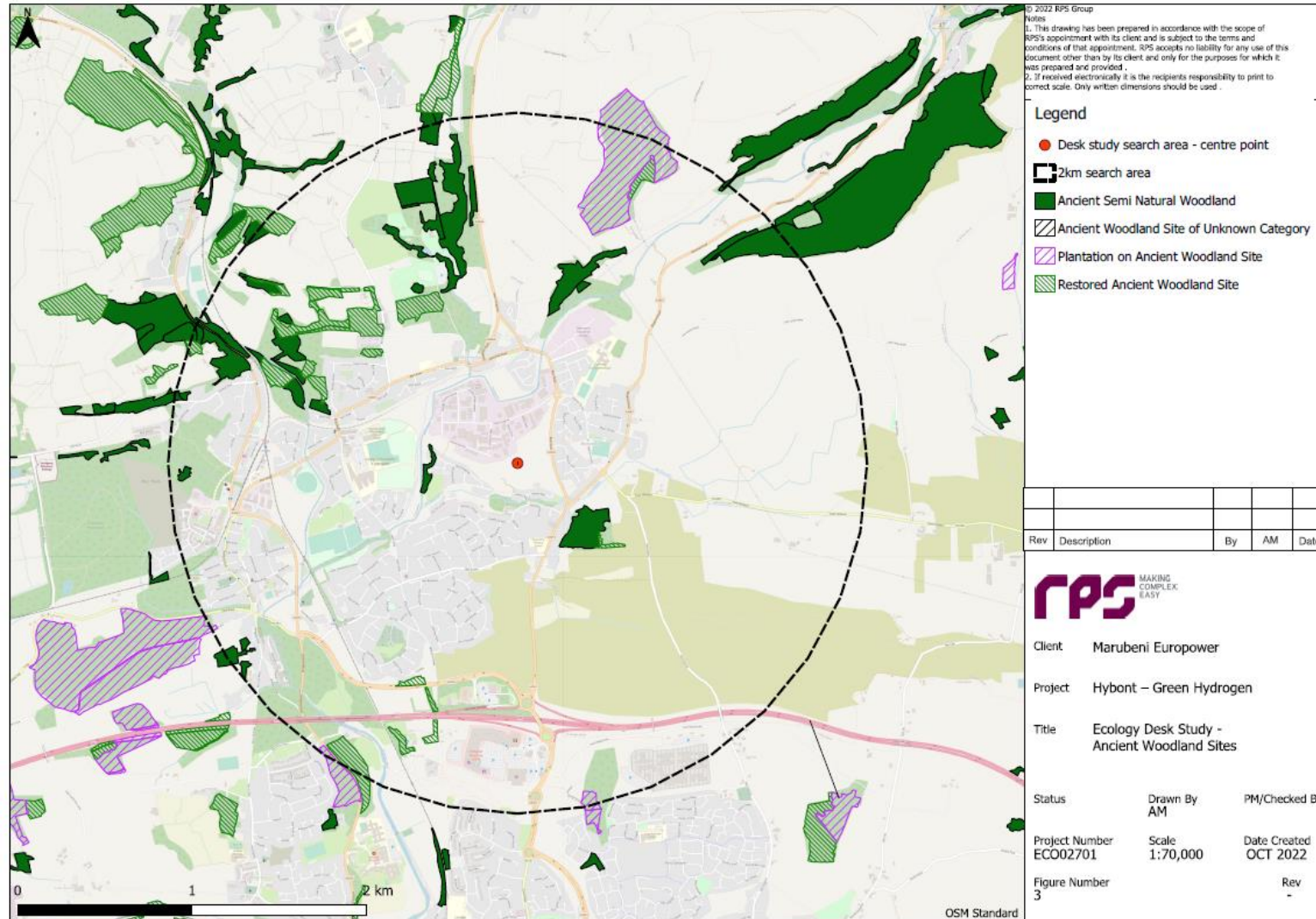


## FIGURE 2: NATIONAL AND LOCAL DESIGNATED SITES



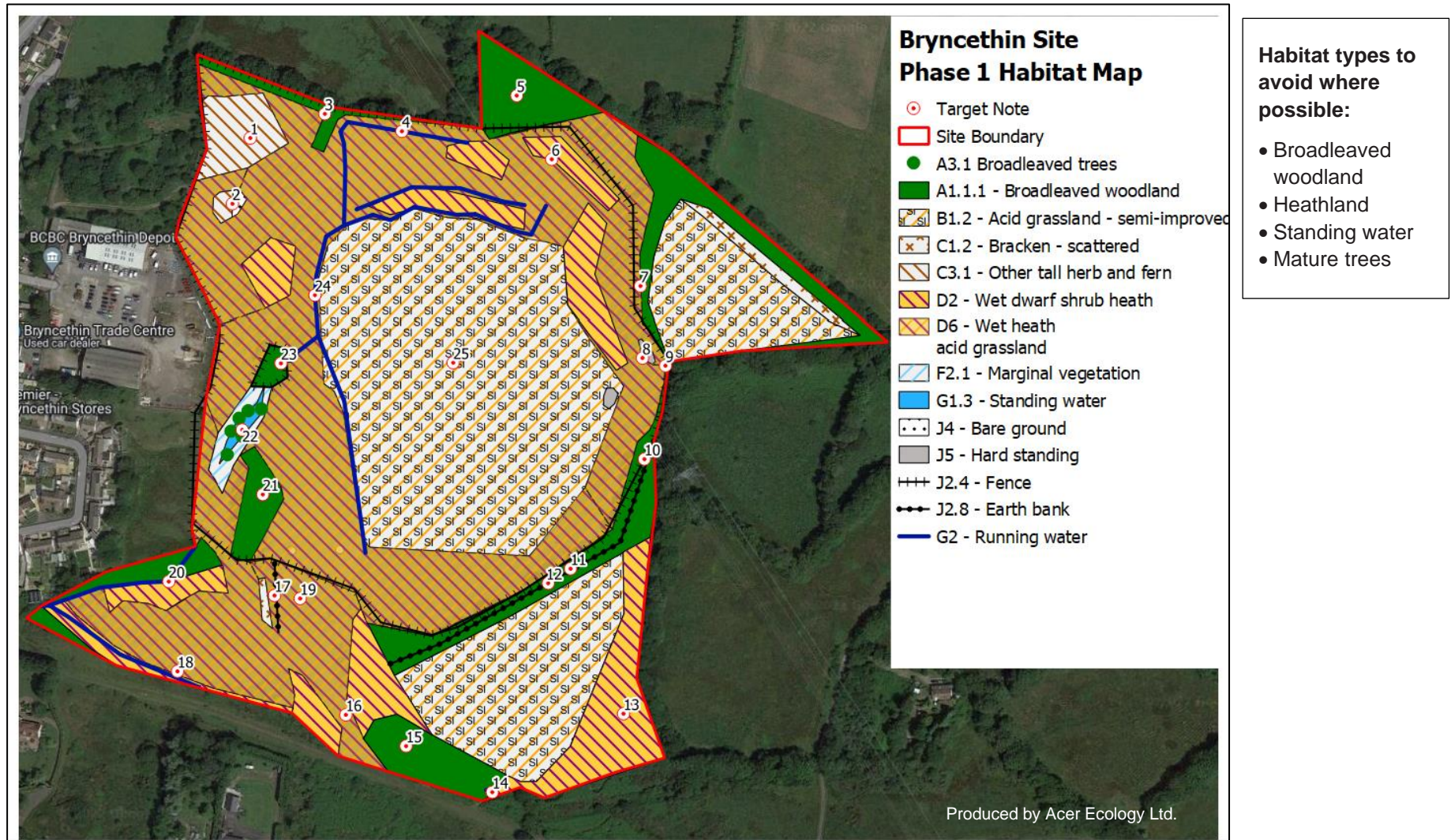


## FIGURE 3: ANCIENT WOODLAND SITES



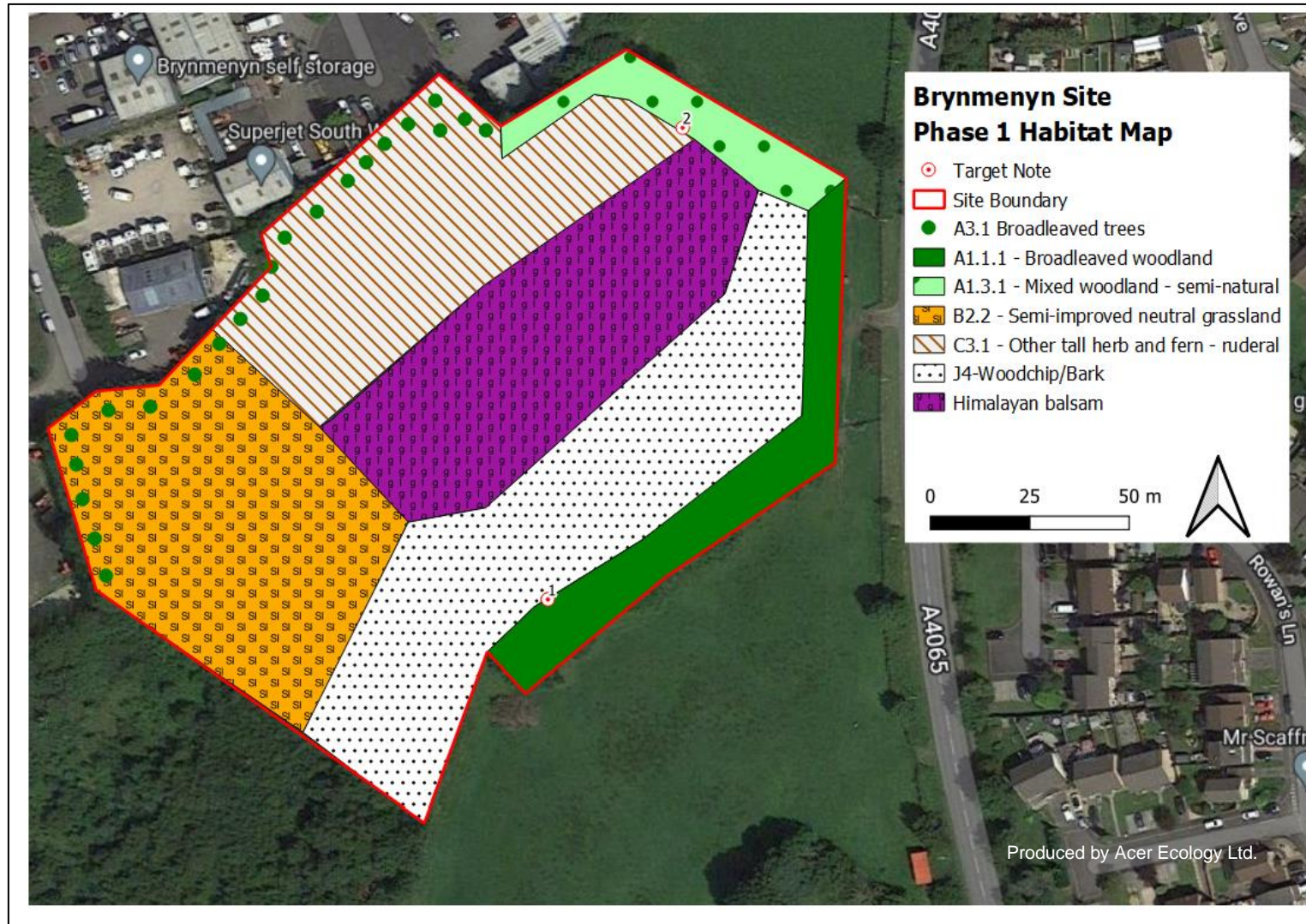


**FIGURE 4: BRYNCETHIN - PHASE 1 HABITAT PLAN**





**FIGURE 5: BRYNMENYN - PHASE 1 HABITAT PLAN**



**Habitat types to avoid where possible:**

- Broadleaved and mixed woodland
- Semi-improved neutral grassland

## APPENDIX 1: **CONFIDENTIAL** DESK STUDY RECORDS

Confidential data excluded – for statutory stakeholder information only

## APPENDIX 2: LEGISLATION PERTAINING TO PROTECTED SPECIES REFERRED TO IN THIS REPORT

### BIRDS

All birds, their nests and eggs are afforded protection under the Wildlife and Countryside Act 1981 (as amended). It is an offence to:

- intentionally kill, injure or take any wild bird;
- intentionally take, damage or destroy the nest of any wild bird while it is in use or being built; and
- intentionally take or destroy the egg of any wild bird.

Schedule 1 birds cannot be intentionally or recklessly disturbed when building, on or near a nest and their young are protected against disturbance. There are increased penalties for these offences.

Licences can be issued to visit the nests of such birds for conservation, scientific or photographic purposes but not to allow disturbance during a development even in circumstances where that development is fully authorised by consents such as a valid planning permission.

In addition, the Conservation of Habitats and Species Regulations 2017 places a duty upon all competent authorities to provide and protect habitat for wild birds.

### BATS

All British bat species are fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). All species are also protected under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, which make it an offence to:

- intentionally or recklessly kill, injure or capture bats;
- deliberately or recklessly disturb bats (whether in a roost or not); and
- damage, destroy or obstruct access to bat roosts

A roost is defined as 'any structure or place which [a bat] uses for shelter or protection'. As bats tend to reuse the same roosts, legal opinion is that a roost is protected whether or not bats are present at the time of survey.

A licence will therefore be required by those who carry out any operation that would otherwise result in offences being committed.

Bat species are also of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales under Section 7 of the Environment (Wales) Act 2016, and as such measures should be set in place to maintain and enhance these species and their habitats.

### HAZEL DORMOUSE

Hazel Dormouse *Muscardinus avellanarius* is fully protected under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, which prohibit:

- Intentionally, recklessly or deliberately kill, injure or take a Dormouse;
- The deliberate disturbance of this species in such a way as to be significantly likely to affect:



- Their ability of to survive, hibernate, migrate, breed, or rear or nurture their young; or;
- The local distribution or abundance of Dormice.
- Damage or destruction of a breeding site or resting place (nest);
- The possession or transport of Dormice or any other part of.

Dormice are also protected under the Wildlife and Countryside Act 1981 (as amended), which protects against:

- Intentional or reckless disturbance (at any level);
- Obstruction of access to any place of shelter, breeding or rest;
- Selling, bartering or exchange of these species, or parts of.

Hazel dormouse is also a species of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales under Section 7 of the Environment (Wales) Act 2016.

## BADGER

Badgers are protected under the Protection of Badgers Act 1992. This act is based on the conservation need to protect badgers deliberate harm or injury. The act makes it an offence to:

- Wilfully kill, injure, take, possess or cruelly ill-treat a badger, or attempt to do so;
- Intentionally or recklessly interfere with a sett. Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access routes.

A sett is defined as “any structure or place that displays signs indicating current use by a badger”.

## GREAT CRESTED NEWTS

Great Created Newt *Triturus cristatus* is listed in Schedule 5 of the Wildlife and Countryside Act 1981 (and as amended), which affords the species protection under Section 9. The species is also protected under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. In combination, this legislation makes it an offence to:

- intentionally kill, injure or take (capture etc.) a Great Crested Newt;
- possess a Great Crested Newt;
- intentionally or recklessly damage, destroy, obstruct access to any structure or place used by Great Crested Newt for shelter or protection, or disturb any animal occupying such a structure or place; and sell, offer for sale, possess or transport for the purpose of sale (live or dead animal, part or derivative) or advertise for buying or selling such things.

Great Crested Newt is also a species of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales under Section 7 of the Environment (Wales) Act 2016.

## REPTILES

All common UK reptile species (Adder *Vipera berus*, rass Snake *Natrix Helvetica*, Common Lizard *Zootoca vivipara* and Slow Worm *Anguis fragilis*) are listed in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and as such are protected under Section 9 (1-5) of the Act against:

- Intentional or reckless injuring or killing;
- Selling, offering or exposing for sale, or having in possession or transporting for the purpose of sale, any live or dead wild animal or any part of, or anything derived from, such an animal; or
- Publishing or causing to be published any advertisement likely to be understood as conveying buying or selling, or intending to buy or sell, any of those things.