Environmental Statement: Technical Appendix 8.1 – Ecological Appraisal

ES TA 8.1

Development of National Significance

Alaw Môn Solar Farm

Land west of the B5112, 415m south of Llyn Alaw, 500m east of Llantrisant and 1.5km west of Llannerch-y-Medd, Anglesey

February 2024

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Alaw Môn Solar Farm

Ecological Appraisal

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Contents

1. Introduction

Site Description

1.1 Alaw Môn Solar Farm (the 'Site') is located in the centre of Anglesey, to the west of the B5112, to the south of Llyn Alaw, 500m to the east of the small hamlet of Llantrisant, and 1.5km to the west of the village of Llannerch-y-medd. The Site is centred at Ordnance Survey (OS) grid reference SH 38304 83896.

1.2 The Site is approximately 268 hectares in extent[1]. It supports mainly improved grassland; with some areas of species-poor semi-improved grassland and localised patches of marshy grassland. Fields are typically separated by hedgerows with field boundary trees and fences; ditches and walls are also present. At the western boundary of the Site is an area of fen, marshy grassland and scrub that forms part of the Cors-y-Bol Local Wildlife Site (LWS). Within the Site boundary is the Nantanog Site of Special Scientific Interest (SSSI), a geological SSSI; and to the north of the Site is Llyn Alaw SSSI, which is a large mesotrophic open waterbody. Ponds are present within the Site and in the surrounding landscape. The Site is considered to be typical of the farmland in the surrounding area.

Proposed Works

1.3 The Development is ground-mounted solar photovoltaic (PV) farm and battery energy storage system facility, together with associated infrastructure. The project, named Alaw Môn Solar Farm, will have a generating capacity of approximately 160 Mega-Watt (MW).

1.4 The Development's layout has been devised to take account of ecological constraints including designated sites (see below) and existing habitat features including hedgerows, scrub, ponds and watercourses.

Aims of Study

1.5 BSG Ecology was commissioned by Wylfa Green in April 2020 to carry out a preliminary ecological appraisal of the Site. The objectives of the initial survey work were to:

- Identify the existing habitats within the Site;
- Assess the potential for protected species to be present within the Site and adjacent area;
- Identify potential ecological impacts relating to the proposed works;
- Identify any further survey work that may be required;
- Provide data to inform initial recommendations for ecological mitigation, compensation, and enhancement measures, to feed into an Environmental Impact Assessment (EIA).

1.6 Further survey work has subsequently been carried out:

- Breeding bird survey spring and summer 2020; repeated in spring and summer 2023;
- Wintering bird survey in winter 2020/21;
- Great crested newt eDNA survey in in 2020 and 2021; repeated 2023. Population class assessment of one pond (Pond 7) in spring/early summer 2021; repeated in 2023; with additional assessment of other ponds;
- Otter/water vole surveys along watercourses in early summer 2021, repeated in July 2023;
- Further Phase 1 habitat survey (verification of previous work) in early summer 2021; repeated again in July 2023.

[1] NB For the purposes of this report, the 'Site' relates to the proposed solar farm area and excludes the grid connection cable route; this be provided by underground cabling located within the adopted highway and will not affect vegetated areas.

1.7 The survey methods and results are detailed within this report. The results of the bird survey and great crested newt reported separately; these reports are referred to where relevant.

2. Methods

Desk study

2.1 BSG Ecology obtained data from Cofnod, the North Wales Environmental Information Service, relating to nationally designated statutory sites, such as Sites of Special Scientific Interest (SSSI), non-statutory designated sites, such as Local Wildlife Sites (LWS), and any protected species records within a 2 km radius around the Site[2]. These data were provided in May 2020 and updated in 2021 and 2023.

2.2 The MAGIC.gov website was accessed in April 2020 and revisited on April 2021 and July 2023 to identify any internationally statutory designated sites, such as Special Protected Areas (SPA), within 5 km of the Site.

2.3 In addition, on-line aerial photographs and maps (Google Earth, Bing Maps, Ordnance Survey 1:25,000, were accessed April 2020, and reviewed in April 2021 and May 2023) to identify any ponds within 250 m of the Site.

Field survey

Extended Phase 1 Habitat Survey

2.4 The majority of the extended Phase 1 habitat survey work was carried out by consultant ecologist Richard Birch CEcol MCIEEM, who undertook the extended Phase 1 habitat survey on 6 and 7 May 2020; the survey was carried out dry fine weather, in suitable weather conditions.

2.5 The Site was revisited on 4 May 2021 by Principal Ecologist Guy Miller CEcol MCIEEM and Senior Ecologist Emily McVean MCIEEM to review, confirm and update the previous survey results. A further visit was carried out by Guy Miller on 17 and 18 July 2023 to review, confirm and update the previous survey results.

2.6 During these surveys the Site was walked over and the habitats were described with reference to the Phase 1 habitat survey methodology (JNCC, 2010). Target notes were made of notable features, these are shown in Section 7.

2.7 The habitats were assessed for their suitability to support protected species and checks were made for signs and evidence of protected species throughout the Site.

2.8 Searches were made for evidence of badger *Meles meles* (such as setts, feeding remains, dung pits, hairs and tracks). Watercourses and ponds within the Site were subject to searches for evidence for otter *Lutra lutra* and water vole *Arvicola amphibius*. The Site was assessed for its potential to support reptiles and amphibians. Trees and buildings were assessed for their potential to support roosting bats. The Site was searched for the presence of invasive non-native plants such as Japanese knotweed *Fallopia japonica* and Himalayan balsam *Impatiens glandulifera*.

2.9 Survey area: The area surveyed in 2020 was based on provisional layout and development boundary. This was subsequently revised meaning that some areas that were surveyed in 2020 are now outside the Site boundary. Some of the features that are now outside the Site boundary, but adjacent to the Site, are referred to in the Target Notes (Section 7) where they provide relevant contextual information. The survey area excludes the grid connection cable route; this be provided by underground cabling located within the adopted highway and will not affect vegetated areas.

[2] Excluding the grid connection cable route; this be provided by underground cabling located within the adopted highway and will not affect vegetated areas.

Bird Surveys

2.10 The full methods and results of these surveys are presented in a separate report Alaw Môn Bird Survey Technical Report (BSG Ecology, 2023a).

2.11 In summary, breeding bird surveys were carried out on a monthly basis in April, May and June 2020; three visits were carried out in total. This survey was repeated in April, May and June 2023.

2.12 Wintering bird surveys, involving nine evenly spaced visits, were carried out between mid-October 2020 and mid-March 2021. The aim of wintering bird survey was to determine whether the site is of functional importance to birds using Llyn Alaw SSSI.

Great Crested Newt (GCN) Surveys

2.13 Details of the survey methods and results are presented in a separate report: Alaw Môn Great Crested Newt Technical Report (BSG Ecology, 2023b). The survey approach has involved a combination of desk-based assessment and a variety of field survey techniques:

- A review of aerial photographs (Google Earth), online maps (OS 1:25,000 maps) and the extended Phase 1 habitat survey was undertaken to identify ponds. Ponds within the Site (four) and within a 250m radius around its boundary were included in the survey.
- Wherever access was possible these were subject to an initial Habitat Suitability Index (HSI) assessment for great crested newt.
- All accessible ponds within 250m of the Site, that were found to be holding water, and therefore capable of being sampled, were subsequently subject to eDNA survey for great crested newt.
- Ponds which returned a positive eDNA result were subject to further assessment. A population class assessment survey was carried out for Pond 7.

Consideration of limitations

2.14 Access was not granted for a small number of the off-site ponds; the majority of ponds with the study area have been assessed and surveyed for great crested newt. This is not assessed to be a significant constraint on the assessment of impacts of great crested newt. It is discussed in more detailed in the Great Crested Newt Survey Report (BSG Ecology, 2023).

2.15 This report excludes the grid connection cable route, this be provided by underground cabling located within the adopted highway and will not affect vegetated areas. This is not considered to be a significant limitation.

3. Results and Interpretation

3.1 The text below provides the results from the desk study and field surveys. The results of birds and great crested newt surveys are set out in separate reports.

Designated Sites

3.2 Details of designated sites are provided in Table 1 and Table 2 below. In summary,

- There are no internationally statutory designated sites within 5 km of the Site. Excluding the grid connection cable route, this be provided by underground cabling located within the adopted highway and will not affect vegetated areas.
- There are three nationally designated SSSIs within 2km of the Site. Two of these are designated for their geological interest; one of these (Nantanog SSSI) is within the Site boundary. A further SSSI, Llyn Llywenan, which is just over 2 km from the Site, and has been included in the table below to give additional local context.

- There are three non-statutory designated LWS within 2 km of the Site.

Table 1: Statutory designated nature conservation sites

Site Name	**Habitats/Interest[3]**	**Approximate distance from the Site**
Nantanog SSSI	Nantannog ravine is of special interest for its geology. The exposure features a bedded sequence of shales and sandstones of the Nantannog Formation, with shelly and graptolitic faunas. The Site contains excellent exposures, illustrative of the sedimentation and stratigraphy of Anglesey in the Lower Ordovician.	Within the Site; the developable area is on either side of the SSSI, but outside of the SSSI boundary.
Llyn Alaw SSSI	The largest mesotrophic open water in west Gwynedd. It has considerable ornithological interest especially for overwintering wildfowl; numbers of teal *Anas crecca*, shoveler *Anas clypeata* and whooper swans *Cygnus cygnus* can be around 1% of the British population. Other species supported include mallard *Anas platyrhynchos*, wigeon *Anas penelope*, goldeneye *Bucephala clangula*, pochard *Aythya ferina*, tufted duck *Aythya fuligula*, ruddy duck *Oxyura jamaicensis*, pink-footed geese *Anser brachyrhynchus*, common tern *Sterna hirundo*, black-headed gull *Chroicocephalus ridibundus*, great crested grebe *Podiceps cristatus*, coot *Fulica atra*, curlew *Numenius arquata*, lapwing *Vanellus vanellus*, and golden plover *Pluvialis apricaria*. The uncommon slender spike-rush *Eleocharis acicularis* occurs in the reservoir margins. NB Greenland white-fronted geese *Anser albifrons flavirostris* use the northern part of Llyn Alaw and adjacent farmland in winter months (BTO/Echoes Project, pers comm.). This population has been identified recently and is therefore not referred to on the SSSI citation.	400 m to the north of the Site
Tyddyn Gyrfer SSSI	This Site is of special interest for its Precambrian geology and lies within the largest outcrop of gneisses in southern Britain. The Site provides a small but informative exposure of interleaved paragneisses and amphibolites that are representative of the upper amphibolite facies Central Anglesey Gneisses in the late Neoproterozoic Coedana Complex.	1.7 km to the south of the Site
Llyn Llywenan SSSI	Llyn Llywenan is selected as an example of a moderately base-rich lowland lake in West Gwynedd; it is primarily of biological interest. The flora of the lake includes a range of submerged, floating and emergent macrophyte species. A variety of overwintering wildfowl species frequent Llyn Llywenan, including mallard, teal, wigeon, shoveler, tufted duck and pochard; it also supports an interesting breeding bird community.	2.1 km to the south-west

[3] Source: Countryside Council for Wales, Site of Special Scientific Interest Citations.

Table 2: Non-statutory designated nature conservation sites

Site Name	Habitats/Interest	Distance from the Site
Cors-y-Bol LWS	A large area of valley mire on deep peat with associated areas of marshy grassland, mixed swamp, scattered and dense willow scrub and some semi-improved acid grassland. The whole area has considerable ornithological interest. It has populations of breeding snipe *Gallinago gallinago*, curlew *Numenius arquata*, lapwing *Vanellus vanellus*, grasshopper warbler *Locustella naevia*, sedge warbler *Acrocephalus schoenobaenus*, reed bunting *Emberiza schoeniclus*, whinchat *Saxicola rubetra* and whitethroat *Sylvia communis*. Barn owl *Tyto alba* use the Site for hunting and it provides a wintering area for greylag geese *Anser anser* and canada geese *Branta canadensis*, woodcock *Scolopax rusticola* and harriers.	Adjacent to the west Site boundary.
Tir Pori Traian LWS	Two fields of semi-improved neutral grassland. The fields support crested dog's-tail *Cynosurus cristatus*, bent grasses *Agrostis* sp., sweet vernal-grass *Anthoxanthum odoratum*, Yorkshire fog *Holcus lanatus*, red fescue *Festuca rubra* and heath-grass *Danthonia decumbens*. Herbs present include common knapweed *Centaurea nigra*, birds-foot trefoil *Lotus corniculatus*, yarrow *Achillea millefolium*, field wood-rush *Luzula campestris* and tormentil *Potentilla erecta*.	Adjacent to the north-eastern corner of the Site (at SH401843).
Cors Tre'r Ddol LWS	An area of marshy grassland, reed bed and willow scrub at the confluence of two streams. Most of the grassland is dominated by tufted hair-grass *Deschampsia cespitosa* and meadowsweet *Filipendula ulmaria*. Other species present include greater tussock-sedge *Carex paniculata*, soft rush *Juncus effusus*, Yorkshire fog, yellow flag iris *Iris pseudacorus*, bogbean *Menyanthes trifoliata*, wild angelica *Angelica sylvestris*, sneezewort *Achillea ptarmica*, yellow rattle *Rhinanthus minor* and northern marsh orchid *Dactylorhiza purpurella*. The site is also used by snipe, sedge warbler and reed bunting.	1.04 km to the south of the Site.

Habitats

3.3 The Phase 1 habitat survey maps and Target Notes are presented in Section 6 (Figure 2) and 7.

3.4 The majority of the Site supports grazed pasture; there was one 19ha arable field in the north of the Site in 2020; this supported improved grassland in 2023.

3.5 The fields are generally separated by hawthorn-dominated hedgerows with occasional field boundary trees. Shelterbelts and small patches of woodland and trees are present but infrequent, and the landscape is generally open.

3.6 Ponds are a common feature of the area, both within the Site and in the surrounding area. Cors-y-Bol, a minor stream that discharges to Llyn Alaw to the north, is one of few running watercourses within or close to the Site. Habitats are described in further detail below.

Grassland

3.7 Pasture is the main land use within the Site. Three grassland types are present:

- Improved grassland, is the main grassland type, with a high proportion of perennial rye-grass *Lolium perenne* and clover species.

- Poor semi-improved grassland (c. 63ha coverage), with a relatively low diversity of forbs but supporting a slightly more diverse sward that the improved grassland, including sheep's sorrel *Rumex acetosella*, white clover *Trifolium repens*, perennial rye-grass *Lolium perenne,* and cock's-foot *Dactylis glomerata*. The sward also supports sweet vernal-grass *Anthoxanthum odoratum*, jointed rush *Juncus articulatus*, brown bent *Agrostis vinealis*, creeping buttercup *Ranunculus repens*, cuckooflower *Cardamine pratensis*, marsh thistle *Cirsium palustre* and springy turf moss *Rhytidiadelphus squarrosus*. See Section 7: Target Note 12 for a full description.
- Marshy grassland (c. 14ha coverage), with soft rush *Juncus effusus* being the dominant species, and typically with evidence of grazing.

Dense and scattered scrub

3.8 Approximately 2.6ha of the Site supports either dense or scattered scrub. This is dominated by blackthorn *Prunus spinosa*; osier willow *Salix viminalis* is abundant in wetter areas.

Broad leaved woodland and mixed plantation

3.9 Plantation woodland makes up approximately 3.2ha of the Site. A small (<0.5ha) pocket of broadleaved woodland is present in the east of the Site. The mixed plantation includes sitka spruce *Picea sitchensis,* European larch *Larix decidua,* sycamore *Acer pseudoplatanus.* The broadleaved woodland present is primarily ash *Fraxinus excelsior*, sessile oak *Quercus petraea* and Norway maple *Acer platanoides* with a hawthorn *Crataegus monogyna* understory.

Ponds and standing water

3.10 Photographs of ponds and standing water are set out in Appendix 3. The ponds vary in character: some appear to be natural (i.e. Ponds 2 and 3), some appear to be man-made (i.e. Ponds 5 and 6), some of the ponds are very vegetated with little open water, supporting floating sweet-grass *Glyceria fluitans*, soft rush, bulrush *Typha latifolia;* some are dry (former pond at SH 39391 83752) or on the verge of drying out. Ponds 5 and 6 are large and deeper with more open water. Pond 4 is an ephemeral pond which only forms after periods of rainfall. It was not present during the survey work in 2020, but had formed after rain in early May 2021.

3.11 Aquatic and marginal vegetation within ponds is variable, species present include soft-rush, curled pondweed *Potamogeton crispus*, amphibious bistort *Persicaria amphibia*, water-lily *Nymphaea* sp., least duckweed *Lemna minuta*, water mint *Mentha aquatica*, reed canary-grass *Phalaris arundinacea*, soft rush, great willowherb *Epilobium hirsutum*, gypsywort *Lycopus europaeaus*, and yellow flag *Iris pseudacorus.*

3.12 Two areas of shallow standing water are present within the Site boundary (Ponds 4 and 11); these are areas that pool with shallow water after rainfall, and can vary in size: Pond 4 is often absent but after rain is up to c. 70m^2 in area; Pond 11 appears to vary between 700 and 7000m^2 in area (the size estimates are based on historical imagery on Google Earth (accessed 18 June 2021)).

3.13 Further information on ponds is provided in relation to great crested newt below, and also in the separate Great Crested Newt Report.

Running water and ditches

3.14 The Site contains 7.5km of running water in small streams or wet ditches, and 1.9km of dry ditches. Of the running water and wet ditches, 5.8km of these are considered to be eutrophic. The steams and ditches support a combination of open sections and sections lined with scrub and vegetation (such as the watercourse that runs through Nantanog SSSI). Marginal species on some of the stream and ditch margins include hemlock water-dropwort *Oenanthe crocata*, fool's watercress *Apium nodiflorum,* water mint, watercress *Rorippa nasturtium-aquaticum*, water starwort *Callitriche* agg., lesser water-parsnip *Berula erecta, and* water horsetail *Equisetum fluviatile.* Soft rush is often abundant along the stream margins. Descriptions and photos of the running water and ditches can be found under Section 7: Target Notes 13, 21, and 22.

Earth banks and hedgerows

3.15 There are 7.3km of earth banks intersecting the Site. These “cloddiau” are often associated with fencing are vegetated with species such as heath dog-violet *Viola canina* and foxglove *Digitalis purpurea* (see Section 7, Target Notes 3, 10 and 25 for more full descriptions and photos).

3.16 The Site includes 0.46km of species-rich hedge, 4.95km of species-poor hedge and 6.94km of species-poor defunct hedge. The species-poor and defunct hedges predominantly support hawthorn *Crataegus monogyna*. The species-rich hedges also include ash *Fraxinus excelsior*, sycamore, blackthorn *Prunus spinosa*, elder *Sambucus nigra*, and grey willow *Salix cinerea,* with ivy *Hedera helix* and bramble *Rubus fruticosus* agg. also present. Patches of field-layer vegetation, including bluebell and hemlock water-dropwort, occur at the base of hedgerows throughout the Site. (See Section 7: Target Notes 7, 9, 26 30 35).

Acid rock/scree

3.17 There are several small natural rock outcrops within the west part of the Site and the remains of some small, old quarry workings. Nantannog SSSI [a geological SSSI], a small rocky ravine, which is within the Site but outside development areas, also includes rock exposures. See Target Notes 17 and 39.

Notable Plant Species

3.18 The data search returned records for notable plant species; the majority of these relate to Llyn Alaw SSSI. Two very old records relate directly to the Site; one record for branched bur-reed *Sparganium erectum subsp. erectum* from 1977 within the Cors-y-Bol LWS, and another record for sea pink *Armeria maritima* from 1981 was returned for the north part of the Site.

3.19 Branched bur-reed was verified as present in the central-eastern part and far west of the Site during the Phase 1 habitat survey (see Section 7: TNs 22 and 41). Sea pink was not observed during surveys.

Invasive plant species

3.20 The data search returned records for the following Schedule 9 plant species (i.e. invasive species listed under the Wildlife and Countryside Act 1981 (as amended)), within 2 km of the Site: Canadian waterweed *Elodea canadensis*, Japanese knotweed *Fallopia japonica*, and Himalayan balsam *Impatiens glandulifera*. None of these records relate to the Site. No Schedule 9 plant species were identified on Site during the habitat survey.

Protected Species

3.21 This section provides an assessment of the Site’s potential to support protected species. Further information on the legal protection afforded to protection species is set out in Appendix 1.

Badger

3.22 The data search returned no records for badger within 2 km of the Site. No badger setts were identified during the Phase 1 habitat survey. No field signs (such as tracks, snuffle hole, or latrines) were recorded. Suitable habitat for badgers is present within the Site, such as scrub, hedgerows, small patches of woodland for sett creation, and grassland for foraging. There is no evidence to suggest that this species occurs within the Site.

Bats

Existing Records

3.23 The data search returned 49 records of bats within 2 km of the Site; some of records are for bat roosts (eight known locations in the surrounding 2km area). The records range between 1986 and

2021 and are for the following bat species: soprano pipistrelle *Pipistrellus pygmaeus*, common pipistrelle *Pipistrellus pipistrellus*, brown long-eared bat *Plecotus auritus*, Daubenton's bat *Myotis daubentonii*, noctule bat *Nyctalus noctula*, and an unspecified 'unknown bat' record.

3.24 One record ('unknown bat') from 2005 is from within the Site boundary; in the northern part of the Site near Chwaen-goch farm (the farm is outside the Site boundary); it was not noted as a roost. The other records are from outside the Site boundary.

Bat Roosts - Buildings

3.25 One group of derelict structures is within the Site: two roofless barns with gaps in the stone walls where mortar is missing that may have some suitability for roosting bats. This is described in Section 7: Target Note 24. The walls are likely to have suitability for crevice-dwelling bats only. The building is assessed to have low suitability for roosting bats (with reference to the criteria set out in industry guidance, Collins *et al*., 2016).

3.26 A number of other structures are present close to, but outside of the Site boundary, including the farm buildings at Nantanog, and various other properties adjacent to the Site (these are described in Section 7, Target Notes 11, 15, 18, and 44). These include structures approximately 5m from the Site boundary, such as the derelict buildings at Glan-y-Gors Bach.

3.27 The proposed development will not affect any of these structures, and will retain linear habitat features suitable for use by foraging bats; the need further survey for bats (i.e. beyond preliminary roost assessment) has been scoped out.

Bat Roosts - Trees

3.28 A small number of trees within the Site are considered to have suitability for roosting bats. The small group of ash, oak and beech trees (Target Note 45) near the centre of the site; these support potential roost features such as hollows, splits or small cavities. Since the proposed development will not affect any of these trees, and will retain linear features, the need further survey for bats has been scoped out.

Bats - Foraging/Commuting

3.29 The Site provides habitat suitable for foraging and commuting bats, although the large, open pasture fields, which are the main habitat feature within the Site, are assessed to be of limited suitability for bats. Within the context of the Site, features of greater value for bats include hedgerows, scrub, patches of woodland, ponds and waterbodies.

Birds

3.30 The results of the data search and survey work are set out in the separate Bird Survey Report.

Great Crested Newt

3.31 The data search returned five records of great crested newt from two locations within 2 km of the Site. The closest three records are from 1992 for a location 61 m to the east of the northern part of the Site (at grid reference: SH396847). The other two records, from 2017, are for a location within Diane Wood, 642 m west of the Site (at grid reference: SH 3716 8515).

3.32 A positive eDNA result was obtained from Pond 7 in 2020; population class assessment survey in 2021 and 2023 confirms the presence of a small breeding population in this pond. Two other positive eDNA results were obtained in 2023 (Pond 3 and 8), although neither are assessed to be breeding ponds. The eDNA survey results for all other ponds sampled in 2020, 2021 and 2023 were negative (i.e. great crested newt is not present). Further information is presented the Great Crested Newt Technical Report.

Other Amphibians

3.33 The data search returned records for palmate newt *Lissotriton helveticus*, common toad *Bufo bufo*, and common frog *Rana temporaria* within 2 km of the Site. The records range between 1977 and 2020. None of the records relate to the Site; there is one record for common toad from 1977 for a location 59 m north of the northern part of the Site near Cors-y-Bol LWS.

3.34 Palmate newt and smooth newt *Lissotriton vulgaris* were recorded in Pond 7 during the great crested newt survey in low numbers both 2021 and 2023.

Reptiles

3.35 The data search returned 22 records of reptiles: one record each for adder *Vipera berus* and grass snake *Natrix helvetica*; four records for slow worm *Anguis fragilis*; and 16 records for common lizard *Zootoca vivipara* within 2 km of the Site. The records range between 1977 and 2022. The adder record is historic, dating from 1977 from a location to the north of Site, near Cors-y-Bol LWS. There are no records from the Site. There are numerous records from the south shore of Llyn Alaw.

3.36 Habitats within the Site suitable for reptiles include woodland, scrub, rough field edges and earth banks. The wetland and scrub adjacent to the Site within Cors-y-Bol LWS offers good habitat. No incidental observations of reptile have been made during field surveys.

Otter

3.37 The data search returned four records for otter *Lutra lutra* within 2 km of the Site. None of these records relate to the Site. The closest record, from 2011, is for a location 730 m to the north-west of the Site.

3.38 The watercourses within the Site are mostly narrow ditches and are unlikely to support the abundance of prey species required to support otters; there are considered to be of limited value for otter. The larger areas of standing water adjacent to the Site such as Ponds 1, 5, 6 and 8, may be suitable for otter. These ponds were visited during survey work (great crested newt eDNA sampling); no otter field signs were noted.

Water Vole

3.39 The data search returned 14 records for water vole *Arvicola amphibius* within 2 km of the Site. The records range from 1997 to 2017. Two of these records are either within or close to the Site boundary; these date from 2005 and 2009 and are located at OS Grid References SH380839 (a 100x100m area, which includes the edge of the Site) and SH3884 (which accurate to a 1km grid square only and may not be within the site). The precise locations are not provided.

3.40 Wet ditches that are potentially suitable for water vole are present within the Site. Some of these are subject to heavy grazing and poaching by livestock and offer relatively low food availability and cover. No evidence of presence has been recorded from the watercourses within the Site. Field signs of this species were recorded from Cors y Bol LWS adjacent to the Site (see Target Note 42).

Red Squirrel

3.41 The data search returned three records for red squirrel *Sciurus vulgaris* from an area to the east of the Site near Llanerch-y-medd (one from 2017 from a location 1.92 km east of the Site; and two from a location 1.5km to the east dating from 2021/22). This species requires woodland habitat. There is little suitable woodland habitat within the Site; the majority of the Site is considered to offer unsuitable habitat. It has not been recorded from the Site during the survey work.

Invertebrates

3.42 The data search returned 105 records for 20 invertebrate species. The records date from a very wide period (between 1953 and 2021), some being very old and many are associated with the Llyn Alaw SSSI. None of the records relate to the Site. The nearest records relate to damselfly species recorded from land to the east and west of the Site, in proximity to existing pond and wetland habitat.

3.43 Records were provided for the following butterfly and moth species: cinnabar moth *Tyria jacobaeae*, dingy skipper *Erynnis tages*, lackey *Malacosoma neustria*, shaded broad-bar *Scotopteryx chenopodiata*, small heath *Coenonympha pamphilus*, small pearl-bordered fritillary *Boloria selene*, and wall butterfly *Lasiommata megera*. The closest record, from 1999 for wall butterfly, is from a location 654 m to the west of the Site.

3.44 Records were also provided species of water boatman, shrimp, weevil, whirligig beetle, hydrophilid beetle, and fly (*Arctocorisa carinata*, *Crangonyx pseudogracilis/floridanus*, *Cyanapion gyllenhalii*, *Gyrinus minutus*, *Helochares punctatus*, and *Pilaria scutellate)*. The closest record is from 2006 for an amphipod shrimp *Crangonyx pseudogracilis/floridanus* from a location 599 m to the north-west of the Site.

3.45 The majority of the Site is assessed to be of low value for invertebrates. Within the context of the Site, the more interesting habitats for invertebrates include scrub, hedgerows, woodland, marshy grassland, ponds and watercourses.

Other Species

Hedgehog

3.46 The data search returned 76 records for hedgehog *Erinaceus europaeus* within 2 km of the Site. The records range from 2004 and 2019. The closest record is from 2016 for a location 14 m east of the Site boundary. Potentially suitable habitats (hedgerow, scrub and woodland, and rough field edges) occur within the Site.

Brown Hare

3.47 The data search returned 133 records for brown hare *Lepus europaeus* within 2 km of the Site. The records range from 1997 and 2016. Four records from 2005 are within the Site boundary; the record locations are associated with grassland fields and are distributed across the eastern and southern parts of the Site.

4. Summary Recommendations

A summary of the key findings and recommendations from this report are presented in Table 3 below.

Table 3: Summary of recommendations

Feature	Evaluation	Recommendations
Nantanog SSSI	National importance (geological SSSI)	The Development's design to incorporate adequate buffer around SSSI and consultation with NRW.
Llyn Alaw SSSI	National importance (geological SSSI)	No direct impacts (further information is provided in Bird Survey Report). Retain habitats suitable for wildfowl (i.e. waterbodies) within the Development's design.
Cors y Bol LWS	County Level importance	Protect and incorporate adequate buffer into Development's design.
Tir Pori Traian LWS	County Level importance	Protect and incorporate adequate buffer into Development's design.
Habitats (pasture, marshy grassland, scrub, hedgerows, watercourses, ponds)	The majority of grassland habitat is assessed to be of low ecological value. Localised areas of marshy grassland are of higher value within the context of the Site. Scrub, hedgerows woodland, watercourses and ponds are of higher value within the context of the Site.	Protect higher value features, incorporate buffer from these features within Development's design. Consider opportunities for enhancement.
Badger	No setts identified. Suitable habitats present.	Incorporate precautionary buffer from habitat features (scrub woodland and hedgerows). Given that this species is mobile and creates new setts from time to time a precautionary pre-construction check* is recommended.
Bats	Bat roosts are protected. There are limited opportunities for bats to roost within the Site. The open pasture fields are assessed to be of low suitability for bats. Other habitat features provide suitable foraging habitat.	Protect potential roost features (trees and building) and higher value foraging features (such as hedgerows, woodland, scrub, wetland, watercourses and ponds), incorporate buffer from these features within Development's design.
Birds	The Site is dominated by open grazed-pasture farmland that supports very few ground-nesting birds. There are localised areas of habitat within the Site which are of greater value for birds (hedgerows, woodland, scrub watercourses and ponds) and wetland habitat on the margins of the Site.	Protect higher value features (such as hedgerows, woodland, scrub, wetland, watercourses and ponds, including Pond 11), incorporate buffer from these features within Development's design. Localised removal of habitat during the nesting season has potential to

	In winter, bird interest is primarily associated with Pond 11 (further information is provided in the Bird Survey Report).	give rise to a negative impact on birds. Given the legal protection afforded to nesting birds it is recommended that any vegetation removal is carried out outside the nesting period (which for most species is between March and August).
Great crested newt	This species breeds in Pond 7, in low numbers. Further information on the legal protection afforded to this species is provided in the Great Crested Newt Survey Report.	Incorporate a buffer around Pond 7 in the Development's design. Further mitigation may also be required in this area. This would depend on the likelihood of impacts occurring; this would be influenced by the construction programme and Development's design layout. Given the legal protection afforded to this species, it is possible that a licence may be needed. As, above, this would depend on the likelihood of impacts occurring. Retain other ponds within the Site boundary with a buffer. Enhancement measures (such as pond management, pond creation and management and enhancement of terrestrial habitats) may be possible.
Reptiles	Given that local records have been provided for common reptile species in the local area, it is assumed that reptiles are present within suitable habitat (field edges, wetland, scrub, marshy grassland)	Protect higher value foraging features (such as hedgerows, woodland, scrub, watercourses and ponds), incorporate buffer from these features within Development's design.
Otter	No evidence of use. Watercourses of limited suitability.	Incorporate precautionary buffer around ponds and watercourses and other habitat features. Further precautionary pre-construction checks* of any stream crossing points recommended.
Water vole	No evidence of use.	Incorporate precautionary buffer around ponds and watercourses and other habitat features. Further precautionary pre-construction checks* of any stream crossing points recommended.
Red squirrel	No evidence of use; habitat of limited suitability.	Incorporate precautionary buffer around scrub and woodland and other habitat features.
Invertebrates	The majority of the Site (improved or species-poor semi-improved pasture) is assessed	Protect higher value features (such as hedgerows, woodland, scrub watercourses and ponds),

	to be of low suitability for invertebrates.	incorporate buffer from these features within Site layout design.
Hedgehog	The majority of the Site (improved or species-poor semi-improved pasture) is assessed to be of low suitability for hedgehog.	Protect higher value features (such as hedgerows, woodland, scrub watercourses and ponds), incorporate buffer from these features within Development's design.
Brown hare	This species has been previously recorded from the Site and occurs in the surrounding area. It was not recorded during the survey work.	Protect higher value features (such as hedgerows, woodland, scrub watercourses and ponds), incorporate buffer from these features within Development's design. Possible enhancement opportunities through habitat management.

*Precautionary pre-construction checks are suitable to be controlled by condition prior to the commencement of construction work.

5. References

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6. Figures

(overleaf)

Llyn Alaw SSSI

Nantanog SSSI

Earthwork

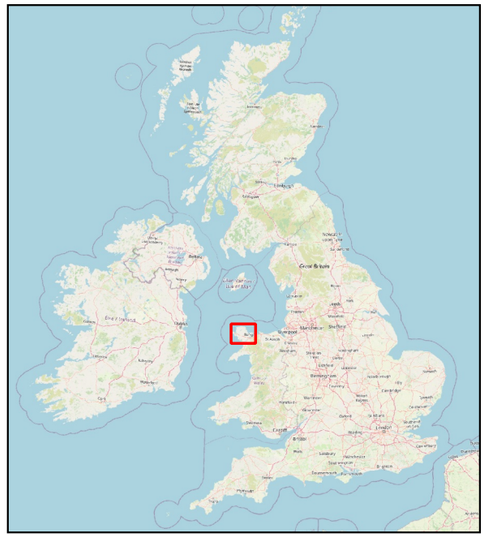
Cors-y-Bol

Tir Pori Traian

0 600 1,200 1,800 m

Legend

- Local Wildlife Site (indicative)
- Sites of Special Scientific Interest
- Site boundary



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PROJECT TITLE

ALAW MON SOLAR FARM

DRAWING TITLE

Figure 1: Site Location and Statutory Designations

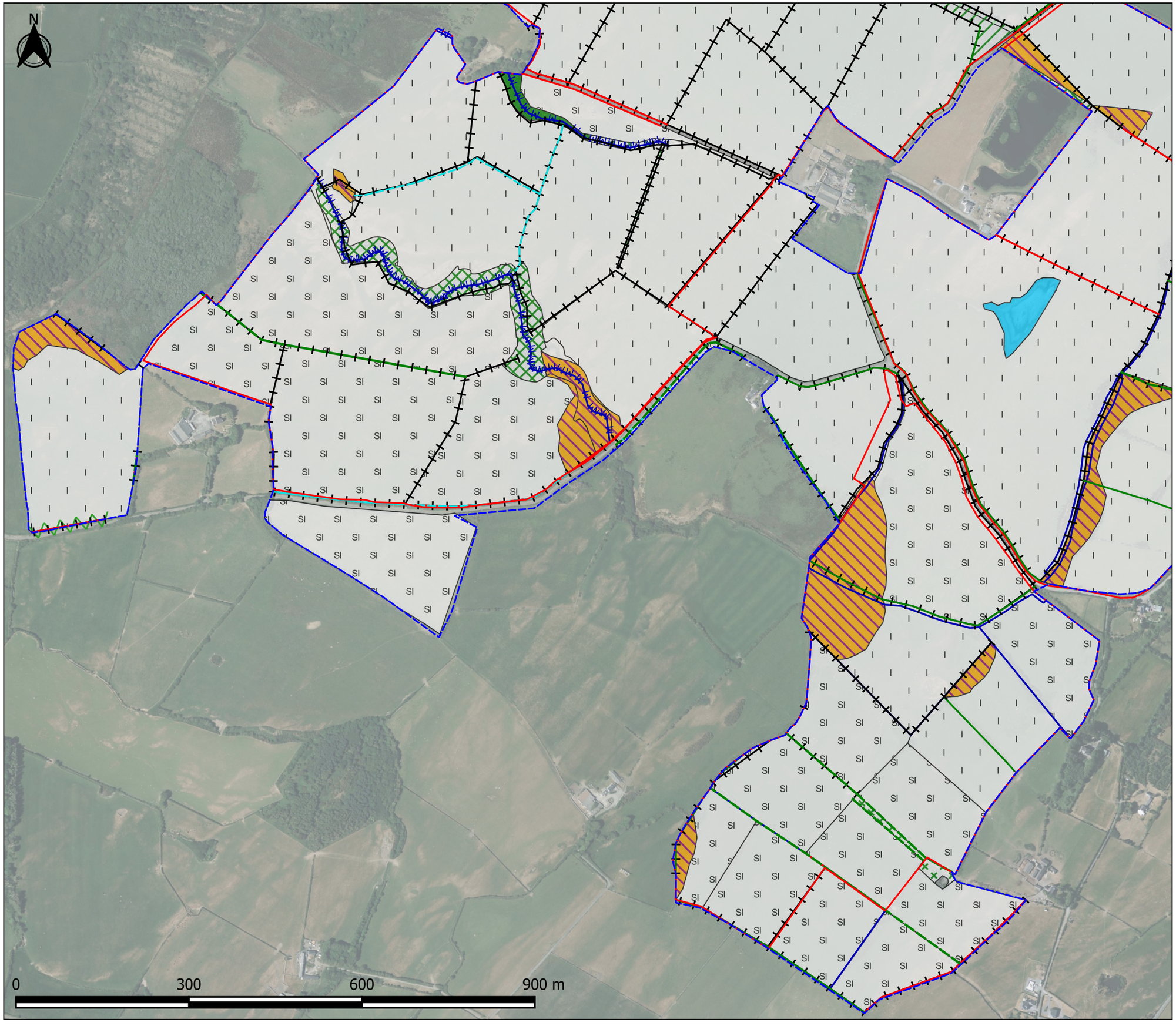
DATE: 17/07/2023 CHECKED: GM SCALE: 1:12,000

DRAWN: SL APPROVED: GM VERSION:1.0

Projection: OSGB 1936/British National Grid - EPSG 27700

Sources: © Natural England

Graphics Ref. No.: 04001



Legend

- Intact hedge - native species-rich
- Intact hedge - species-poor
- Defunct hedge - species-poor
- Fence
- Wall
- Dry ditch
- Running water
- Running water - mesotrophic
- Broadleaved woodland - semi-natural
- Broadleaved woodland - plantation
- Mixed woodland - plantation
- Scrub - dense/continuous
- Scrub - scattered
- Improved grassland
- Marsh/marshy grassland
- Poor semi-improved grassland
- Standing water
- Built up areas inc. hardstanding
- Survey boundary
- Site boundary

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Figure 2a: Extended Phase 1 Habitat Survey Results (West)

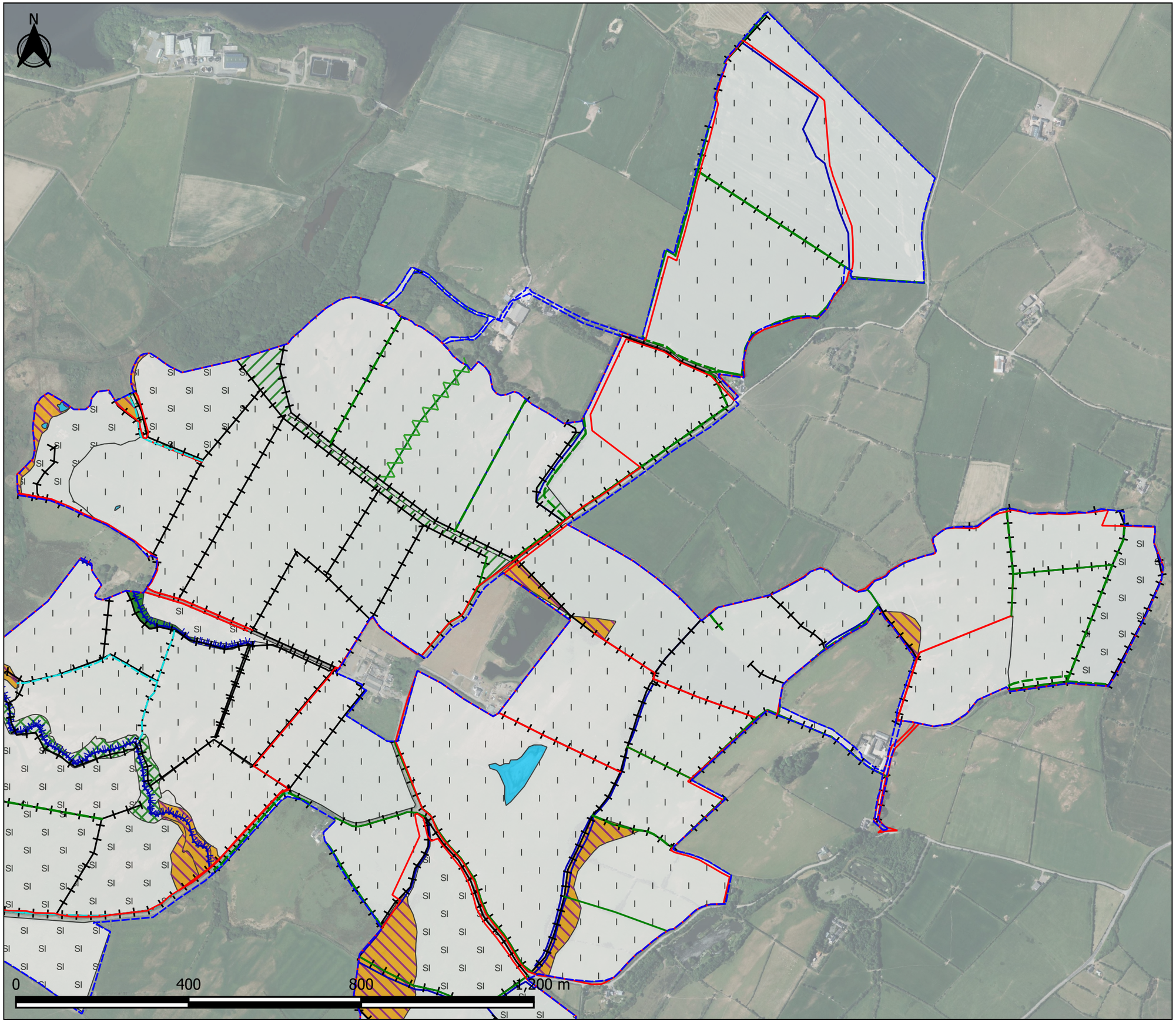
DATE: 10/10/2023 CHECKED: GM SCALE: 1:6,250

DRAWN: SL APPROVED: GM VERSION:1.1

Projection: OSGB 1936/British National Grid - EPSG 27700

Sources: BSG Ecology survey data

Graphics Ref. No.: 04664



Legend

- Intact hedge - native species-rich
- Intact hedge - species-poor
- Defunct hedge - species-poor
- Fence
- Wall
- Dry ditch
- Running water
- Running water - mesotrophic
- Broadleaved woodland - semi-natural
- Broadleaved woodland - plantation
- Mixed woodland - plantation
- Scrub - dense/continuous
- Scrub - scattered
- Improved grassland
- Marsh/marshy grassland
- Poor semi-improved grassland
- Standing water
- Built up areas inc. hardstanding
- Survey boundary
- Site boundary

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DRAWING TITLE

Figure 2b: Extended Phase 1 Habitat Survey Results (East)

DATE: 10/10/2023 CHECKED: GM SCALE: 1:8,350

DRAWN: SL APPROVED: GM VERSION:1.1

Projection: OSGB 1936/British National Grid - EPSG 27700

Sources: BSG Ecology survey data

Graphics Ref. No.: 04665

7. Target notes and Photographs

(overleaf)

TN No.	Notes	Photo
1	Pond 16. A slurry pit; highly eutrophic	
2	Hedge on edge of drain, to 3m. *Ulex europaeus* (A), *Salix cinerea* (A), *Crataegus monogyna* (F), *Prunus spinosa* (O), *Rubus* agg. (A)	
3	NB: Outside revised site boundary, no longer included.	
4	Nantannog SSSI (geological)	
5	<u>NB Outside Site boundary but adjacent to Site</u> Pond 29. Dry pond with *Typha latifolia* (A), *Epilobium hirsutum* (A), *Juncus effusus* (A)	

TN No.	Notes	Photo
6	Pond 11. Shallow scrape in field.	
7	NB: Outside revised site boundary, no longer included.	
8	Line of trees including *Acer pseudoplatanus* (F), *Fraxinus excelsior* (F), *Crataegus monogyna* (F). Site of former pond, now gone (evidence of field drain installed recently)	
9 -17	NB: Outside revised site boundary, no longer included.	
18	<u>NB Outside Site boundary but adjacent to Site</u> Building: Nantannog Farm.	

TN No.	Notes	Photo
19	<u>NB Outside Site boundary but adjacent to Site</u> Pond 5. Submerged macrophytes include *Potamogeton crispus* (F), *Ranunculus aquatilis* (O) *Persicaria amphibia* (C), *Nymphaea* sp. (O), *Lemna minuta* (O). Emergent & Marginal include *Mentha aquatica* (O), *Phalaris arundinacea* (A), *Juncus effusus* (A), *Dryopteris affinis* (O), *Dryopteris. dilatata* (O), *Epilobium hirsutum* (F), *Lycopus europeaus* (O), *Salix aurita* (O), *Salix cinerea* (F), *Typha latifolia* (F), *Iris pseudacorus* (F), *Alnus glutinosa* (F). Birds include greylag goose *Anser anser*, moorhen *Gallinula chloropus*.	
20	<u>NB Outside Site boundary but adjacent to Site</u> Pond 33. *Juncus effusus* (D), *Juncus articulatus* (A). Surrounding improved grassland includes *Potentilla anserina* (F), *Holcus lanatus* (A), *Agrostis stolonifera* (A).	
21	Canalised ditch. *Glyceria fluitans* (A), *Mentha aquatica* (A), *Berula erecta* (A), *Equisetum fluviatile* (O), *Apium nodiflorum* (O).	

TN No.	Notes	Photo
22	Continuation of 21 with richer community including *Sparganium erectum* (F), *Angelica sylvestris* (O) *Rorippa* n*asturtium-aquaticum* (O).	
23	Depression that may occasionally hold water	
24	Two barns, neither has a roof. Some (low) potential for bats in walls.	

TN No.	Notes	Photo
25	Hedge to 1m. *Rubus fruticosus* agg., *Crataegus monogyna*, *Hedera helix*, *Acer pseudoplatanus*, *Rosa canina* (R) and *Ulex europaeus*. Diverse ground flora including *Digitalis purpurea* (A), *Silene dioica* (F), *Filipendula ulmaria* (O), *Berula erecta* (F), *Athyrium filix-femina* (F), *Hyacinthoides non-scripta* (O), *Cardamine pratensis* (O), *Rorippa nasturtium-aquaticum* (O).	
26	*Sambucus nigra* (O), *Crataegus monogyna* (A), *Rubus* agg. (F), *Ulex europaeus* (F), *Prunus spinosa* (F), *Hedera helix* (F), *Acer pseudoplatanus* (F).	
27	Habitat just outside boundary but an example of a feature with potential for reptiles.	

TN No.	Notes	Photo
28	Relict vegetation ditch with eutrophication from surrounding arable. *Rorippa nasturtium-aquaticum* (A), *Veronica beccabunga* (A), *Apium nodiflorum* (A), *Glyceria fluitans* (A), *Ranunculus hederaceus* (O), *Stellaria uliginosa* (F).	
29	Dry pond. Drains into a larger pond off-site.	
30	Hedge supporting whitethroat, song thrush *Turdus philomelos*. Hare *Lepus europaeus* observed in field.	

TN No.	Notes	Photo
31	Wide field margin. Nesting potential for birds; potential for reptiles. Not floristically diverse.	
32	Hedgerow and ditch. Unmanaged to 3m. *Cytisus scoparius* in hedge. Flora in understorey and ditch including *Callitriche* sp. (F), *Juncus effusus* (F), *Glyceria fluitans* (A), *Cardamine pratensis* (O) *Solanum dulcamara* (F), *Galium palustre* (F), *Stellaria uliginosa* (F). Potential water vole *Arvicola amphibius* habitat.	
33	Game covert.	

TN No.	Notes	Photo
34	*Crataegus monogyna* (A), *Picea sitchensis* (A), *Prunus domestica*; (A), *Lonicera periclymenum* (R), *Rubus* agg. (A), *Salix cinerea* (O), *Acer pseudoplatanus* (F). Woodland flora of *Hyacinthoides non-scripta*, *Silene dioica* and *Dryopteris affinis*.	
35	*Ulmus glabra* (R), *Acer pseudoplatanus* (F), *Prunus spinosa*(A), *Ulex europeaus* (A), *Crataegus monogyna* (A), *Rubus* agg. (C), *Salix cinerea* (A), *Salix caprea* (O). Ditch contains *Juncus effusus* (A), *Oenanthe crocata* (A), *Filipendula ulmaria* (C).	
36	Osier (*Salix viminalis* - A) with *Prunus spinosa* away from the water's edge. Breeding bullfinch *Pyrhulla pyrhulla*.	-
37	Game covert. Understorey of *Hyacinthoides non-scripta*	
38	Shelterbelt and game covert. *Picea sitchensis* (A)	

TN No.	Notes	Photo
39	Entrance to Nantannog SSSI. *Apium nodiflorum* (A), *Cirsium palustre* (F), *Filipendula ulmaria* (O), *Chrysoplenium oppositifolium* (O). Marshy grassland: *Cirsium palustre* (O), *Stellaria alsine* (F), *Juncus effusus* (A), *Juncus acutiflorus* (A), *Anthoxanthum odoratum* (A), *Montia fontana* (O), *Conopodium majus* (O), *Agrostis canina* (F), *Cardamine pratensis* (F), *Ranunculus flammula* (F), *Lotus pedunculatus* (F). *Hydrocotyle vulgaris* (F), *Carex nigra* (F), *Galium palustre* (A), *Caltha palustris* (O), *Silene flos-cuculi* (LF).	
40	Acid grassland over thin soil with rock outcrops. *Festuca ovina* (A), *Agrostis capillaris* (A). *Geranium molle* (F), *Cerastium glomeratum* (F), *Cerastium fontanum* (F), *Ficaria verna* (O), *Ranunculus bulbosus* (O).	
41	<u>NB Outside Site boundary but adjacent to Site</u> Boundary Cors-y-Bol. *Oenanthe crocata* (A), *Sparganium erectum* (F), *Solanum dulcamara* (F), *Epilobium hirsutum* (F), *Caltha palustris* (F), *Apium nodiflorum* (F), *Filipendula ulmaria* (O-F).	-

TN No.	Notes	Photo
42	<u>NB Outside Site boundary but adjacent to Site</u> Poor fen on deep peat (30-40cm) / Willow Carr. *Rubus* agg. (A), *Juncus effusus* (A), *Holcus lanatus* (A), *Agrostis stolonifera* (A), *Salix cinerea* (A). Lichen community on *Salix*. Water vole *Arvicola amphibius* confirmed.	
43	<u>NB Outside Site boundary but adjacent to Site</u> Poor fen on deep peat (to 40+cm) / acid grassland / willow carr mosaic. *Juncus effusus* (A), *Filipendula ulmaria* (A), *Hydrocotyle vulgaris* (C), *Potentilla palustris* (C), *Carex rostrata* (F), *Rumex acetosa* (F), *Valeriana officinalis* (F), *Salix repens* (O), *Molinia caerulea* (A), *Angelica sylvestris* (F), *Equisetum palustre* (A), *Lotus pedunculatus* (F).	
44	<u>NB Outside Site boundary but adjacent to Site</u> Building / Quarry: Glan-y-Gors Bach. Barn 1 = slate-roofed stone building in poor condition, in the southeast of the cluster of structures. Building 2 In the northwest of the cluster of structures. No roof, stone building. Low potential for roosting bats. House (see TN45 image) = in the east of the cluster of structures. No roof, Potential for rooting bats in chimneys. Rock exposure from old quarrying present.	

TN No.	Notes	Photo
45	*Fraxinus excelsio*r (F), *Quercus petraea* (O), *Pinus sylvestris* (R), *Fagus sylvatica* (O), *Acer platanoides* (A), *Crataegus monogyna* (F). Potential for bats and birds in hollow trees.	
46	Pond 2 in natural hollow in 2020; mainly dry in May 2021	

TN No.	Notes	Photo
47	Pond 30. *Juncus effusus* (A), *Glyceria fluitans* (A), *Myosotis* sp. (F), *Lemna minuta* (F), *Typha latifolia* (O), *Callitriche* agg. (F), *Agrostis canina* (F). Dry in May 2021	
48	Marshy grassland: *Molinia caerulea* (A), *Juncus effusus* (A), *Poa humilis* (F). Drier areas: *Festuca rubra* (A), *Ulex europaeus* (F), *Rumex acetosella* (A), *Galium saxatile* (F), *Festuca ovina* (F), *Angelica sylvestris* (F), *Filipendula ulmaria* (A), *Galium palustre* (C), *Lotus pedunculatus* (C), *Valeriana officinalis* (F), *Salix cinerea* (C).	-

Table A: Botanical species list

Scientific name	**Common name**
Acer platanoides	Norway maple
Acer pseudoplatanus	Sycamore
Agrostis canina	Velvet bent
Agrostis capillaris	Common bent
Agrostis stolonifera	Creeping bent
Agrostis vinealis	Brown bent
Alnus glutinosa	Alder
Angelica sylvestris	Wild Angelica
Anthoxanthum odoratum	Sweet vernal-grass
Apium nodiflorum	Fool's water-cress
Athyrium filix-femina	Lady-fern
Berula erecta	Lesser water-parsnip

Scientific name	**Common name**
Callitriche agg.	Water starwort sp.
Caltha palustris	Marsh marigold
Cardamine pratensis	Cuckoo flower
Carex nigra	Common sedge
Carex rostrata	Bottle sedge
Cerastium fontanum	Common mouse-ear
Cerastium glomeratum	Sticky mouse-ear
Chrysoplenium oppositifolium	Opposite-leaved golden saxifrage
Cirsium palustre	Marsh thistle
Conopodium majus	Pignut
Crataegus monogyna	Hawthorn
Cytisus scoparius	Broom
Digitalis purpurea	Foxglove
Dryopteris affinis	Scaly male-fern
Epilobium hirsutum	Great willowherb
Equisetum fluviatile	Water horsetail
Equisetum palustre	Marsh horsetail
Fagus sylvatica	Beech
Festuca ovina	Sheep's fescue
Festuca rubra	Red fescue
Ficaria verna	Lesser celandine
Filipendula ulmaria	Meadowsweet
Fraxinus excelsior	Ash
Galium palustre	Marsh bedstraw
Galium saxatile	Heath bedstraw
Geranium molle	Dove's-foot crane's-bill
Glyceria fluitans	Floating sweet-grass
Hedera helix	Ivy
Holcus lanatus	Yorkshire fog
Hyacinthoides non-scripta	Bluebell
Hydrocotyle vulgaris	Marsh pennywort
Iris pseudacorus	Yellow flag
Juncus articulatus	Jointed rush
Juncus effusus	Soft rush
Lemna minuta	Least duckweed
Lonicera periclymenum	Honeysuckle
Lotus pedunculatus	Greater bird's-foot trefoil
Lycopus europeaus	Gypsywort
Mentha aquatica	Watermint
Molinia caerulea	Purple moor-grass
Montia fontana	Blinks
Myosotis sp.	Forget-me-not sp.
Nymphaea sp.	Water-lily sp.
Oenanthe crocata	Hemlock water-dropwort
Persicaria amphibia	Amphibious bistort

Scientific name	**Common name**
Phalaris arundinacea	Reed canary-grass
Picea sitchensis	Sitka spruce
Pinus sylvestris	Scots pine
Poa humilis	Spreading meadow-grass
Polypodium vulgare	Polypody
Potamogeton crispus	Curled pondweed
Potentilla anserina	Silverweed
Potentilla palustris	Marsh cinquefoil
Prunus domestica	Wild plum
Prunus spinosa	Blackthorn
Quercus petraea	Sessile oak
Ranunculus aquatilis	Common water-crowfoot
Ranunculus bulbosus	Bulbous buttercup
Ranunculus flammula	Lesser spearwort
Ranunculus hederaceus	Ivy-leaved crowfoot
Ranunculus repens	Creeping buttercup
Rhytidiadelphus squarrosus	Springy turf-moss
Rorippa nasturtium-aquaticum	Watercress
Rosa canina	Dog-rose
Rubus fruticosus agg.	Bramble
Rumex acetosa	Sorrel
Rumex acetosella	Sheep's sorrel
Salix aurita	Eared willow
Salix caprea	Goat willow
Salix cinerea	Grey willow
Salix repens	Creeping willow
Salix viminalis	Osier
Sambucus nigra	Elder
Silene dioica	Red campion
Silene flos-cuculi	Ragged-robin
Solanum dulcamara	Bittersweet
Sparganium erectum	Branched bur-reed
Stellaria uliginosa	Bog stitchwort
Typha latifolia	Bulrush
Ulex europaeus	Gorse
Ulmus glabra	Wych elm
Valeriana officinalis	Common valerian
Veronica beccabunga	Brooklime
Viola canina	Dog violet

Appendix 1: Summaries of Relevant Policy, Legislation and Other Instruments

This section briefly summarises the legislation, policy and related issues that are relevant to the main text of the report. The following text does not constitute legal or planning advice.

Planning Policy Wales 10

PPW 10 seeks to sustain and create places in which…

- the role which landscapes, the historic environment, habitats and biodiversity, the characteristics of coastal, rural or urban environments play in contributing to Distinctive and Natural places are identified, understood, valued, protected and enhanced;
- further fragmentation of habitats is avoided, wherever possible, and green networks, corridors and connecting habitat within developed areas is protected, and enhanced;
- sites designated for their landscape or nature conservation importance are fully considered and their special characteristics and features protected and enhanced, whilst the network of sites should be recognised as being at the heart of improving the resilience of ecosystems;

Paragraph 6.4.4 states that

"It is important that biodiversity and resilience considerations are taken into account at an early stage in both development plan preparation and when proposing or considering development proposals. [……] All reasonable steps must be taken to maintain and enhance biodiversity and promote the resilience of ecosystems and these should be balanced with the wider economic and social needs of business and local communities. Where adverse effects on the environment cannot be avoided or mitigated, it will be necessary to refuse planning permission."

Paragraph 6.4.5 states that

"Planning authorities must seek to maintain and enhance biodiversity in the exercise of their functions. This means development should not cause any significant loss of habitats or populations of species, locally or nationally and must provide a net benefit for biodiversity. In doing so planning authorities must also take account of and promote the resilience of ecosystems……

TAN 5 Nature Conservation and Planning (Wales only)

Technical Advice Note (TAN) 5 supplements Planning Policy Wales and provides advice about how the land use planning system in Wales 'should contribute to protecting and enhancing biodiversity and geological conservation.'

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.'

In section 2.4 when deciding planning applications that may affect nature conservation, 'local authorities should:

- contribute to the protection and improvement of the environment…seeking to avoid irreversible harmful effects on the natural environment;
- ensure that appropriate weight is attached to designated sites of international, national, and local importance;

- protect wildlife and natural features in the wider environment, with appropriate weight attached to priority habitats and species in Biodiversity Action Plans;
- ensure that all material considerations are considered and decisions are informed by adequate information about the potential effects of a development on nature conservation;
- ensure that the range and population of protected species is sustained;
- adopt a stepwise 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; where there may be significant harmful effects local planning authorities will need to be satisfied that any reasonable alternative sites that would result in less or no harm have been fully considered.'

At section 3.3.2 regarding Local Development Plans policies the guidance states that a policy should be included in respect of the application of the precautionary principle.

Section 4 includes specific and detailed guidance, expanding on the principles set out in 2.4, in respect of the development control process including pre-application discussions, preparing planning applications, requests for further information and ecology in respect of Environmental Impact Assessment (EIA). The broad principles of development control requirements are set out as follows:

- 'Adopting the five-point approach to decision-making – information, avoidance, mitigation, compensation and new benefits;
- ensuring that planning applications are submitted with adequate information, using early negotiation, checklists, requiring ecological surveys and appropriate consultation;
- securing necessary measures to protect, enhance, mitigate, and compensate through planning conditions and obligation;
- carrying out effective panning enforcement; and
- identifying ways to build nature conservation into the design of new development.'

Environment (Wales) Act 2016

The Environment (Wales) Act 2016 passed into law in March 2016. Part 1 of the Act sets out Wales' approach to planning and managing natural resources at a national and local level with a general purpose linked to statutory 'principles of sustainable management of natural resources' defined within the Act.

Section 6 of the Act places a duty on public authorities to 'seek to maintain and enhance biodiversity' so far as it is consistent with the proper exercise of those functions. In so doing, public authorities must also seek to 'promote the resilience of ecosystems'. The duty replaces the section 40 duty in the Natural Environment and Rural Communities Act 2006 in relation to Wales, and applies to those authorities that fell within the previous duty.

Public authorities will be required to report on the actions they are taking to improve biodiversity and promote ecosystem resilience. This is expanded on in sub-section (2):

In complying with subsection (1), a public authority must take account of the resilience of ecosystems, in particular the following aspects—

- diversity between and within ecosystems;
- the connections between and within ecosystems;
- the scale of ecosystems;

- the condition of ecosystems (including their structure and functioning);
- the adaptability of ecosystems.

Section 7 concerns biodiversity lists and the duty to take steps to maintain and enhance biodiversity. It replaces the duty in section 42 of the NERC Act 2006. The Welsh Ministers will publish, review and revise lists of living organisms and types of habitat in Wales, which they consider are of key significance to sustain and improve biodiversity in relation to Wales.

The Welsh Ministers must also take all reasonable steps to maintain and enhance the living organisms and types of habitat included in any list published under this section, and encourage others to take such steps.

European protected species (Animals)

The Conservation of Habitats and Species Regulations 2017 (as amended) consolidates various amendments that have been made to the original (1994) Regulations which 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.

"European protected species" (EPS) of animal are those which are shown on Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended). They are subject to the provisions of Regulation 43 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

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

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

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 Natural England (NE) for development works and by Natural Resources Wales in Wales. In accordance with the requirements of the Regulations (2017, as amended), a licence can only be issued where the following requirements are satisfied:

c. 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'

a. 'There is no satisfactory alternative'

d. 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.

Definition of breeding sites and resting places

Guidance for all European Protected Species of animal, including bats and great crested newt, regarding the definition of breeding and of breeding and resting places is provided by The European Council (EC) which

has prepared specific guidance in respect of the interpretation of various Articles of the EC Habitats Directive.[4] Section II.3.4.b) provides definitions and examples of both breeding and resting places at paragraphs 57 and 59 respectively. This guidance states that 'The provision in Article 12(1)(d) [of the EC Habitats Directive] should therefore be understood as aiming to safeguard the ecological functionality of breeding sites and resting places.' Further the guidance states: 'It thus follows from Article 12(1)(d) that such breeding sites and resting places also need to be protected when they are not being used, but where there is a reasonably high probability that the species concerned will return to these sites and places. If for example a certain cave is used every year by a number of bats for hibernation (because the species has the habit of returning to the same winter roost every year), the functionality of this cave as a hibernating site should be protected in summer as well so that the bats can re-use it in winter. On the other hand, if a certain cave is used only occasionally for breeding or resting purposes, it is very likely that the site does not qualify as a breeding site or resting place.'

European protected species (Plants)

The Conservation of Habitats and Species Regulations 2017 (as amended) consolidates various amendments that have been made to the original (1994) Regulations which 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.

"European protected species" (EPS) of plant are those which are present on Schedule 5 of the Conservation of Habitats and Species Regulations 2017 (as amended). They are subject to the provisions of Regulation 46 of those Regulations.

Regulation 47 makes it an offence to deliberately pick, collect, cut, uproot or destroy a wild plant of an EPS. It also makes it an offence to have in possession or control any live or dead plant or part of plant which has been taken in the wild and which is an EPS (or listed in Annexe II(b) or IV(b) of the Habitats Directive).

Competent authorities

Under Regulation 7 of the Conservation of Habitats and Species Regulations 2017 (as amended) a "competent authority" includes "any Minister of the Crown…, government department, statutory undertaker, public body of any description or person holding a public office.

In accordance with Regulation 9, "a competent authority must exercise their functions which are relevant to nature conservation, including marine conservation, so as to secure compliance with the requirements of the [Habitats and Birds] Directives. This means for instance that when considering development proposals a competent authority should consider whether EPS or European Protected Sites are to be affected by those works and, if so, must show that they have given consideration as to whether derogation requirements can be met.

Birds

All nesting birds are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs. In addition to this, for some rarer species (listed on Schedule 1 of the Act), it is an offence to disturb them whilst they are nest building or at or near a nest with eggs or young, or to disturb the dependent young of such a bird.

The Conservation of Habitats and Species Regulations 2017 (as amended) places duties on competent authorities (including Local Authorities and National Park Authorities) in relation to wild bird habitat. These provisions relate back to Articles 1, 2 and 3 of the EC Directive on the conservation of wild birds (2009/147/EC, 'Birds Directive'[5]) (Regulation 10 (3)) requires that the objective is the 'preservation, maintenance and re-

[4] Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC. (February 2007), EC.
[5] 2009/147/EC Birds Directive (30 November 2009. European Parliament and the Council of the European Union.

establishment of a sufficient diversity and area of habitat for wild birds in the United Kingdom, including by means of the upkeep, management and creation of such habitat, as appropriate, having regard to the requirements of Article 2 of the new Wild Birds Directive…' Regulation 10 (7) states: 'In considering which measures may be appropriate for the purpose of security or contributing to the objective in [Regulation 10 (3)] Paragraph 3, appropriate account must be taken of economic and recreational requirements'.

In relation to the duties placed on competent authorities under the 2017 Regulations, Regulation 10 (8) states: 'So far as lies within their powers, a competent authority in exercising any function [including in relation to town and country planning] in or in relation to the United Kingdom must use all reasonable endeavours to avoid any pollution or deterioration of habitats of wild birds (except habitats beyond the outer limits of the area to which the new Wild Birds Directive applies).'

Reptiles

All native reptile species receive legal protection in Great Britain under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Viviparous lizard, slow-worm, grass snake and adder are protected against killing, injuring and unlicensed trade only. Sand lizard and smooth snake receive additional protection as "European Protected species" under the provisions of the Conservation of Habitats and Species Regulations 2017 (as amended) and are fully protected under the Wildlife and Countryside Act 1981 (as amended).

All six native species of reptile are included as 'species of principal importance' for the purpose of conserving biodiversity under Section 41 (England) of the NERC Act 2006 and Section 7 of the Environment (Wales) Act 2016.

Current Natural England Guidelines for Developers6 states that 'where it is predictable that reptiles are likely to be killed or injured by activities such as site clearance, this could legally constitute intentional killing or injuring.' Further the guidance states: 'Normally prohibited activities may not be illegal if 'the act was the incidental result of a lawful operation and could not reasonably have been avoided'. Natural England 'would expect reasonable avoidance to include measures such as altering development layouts to avoid key areas, as well as capture and exclusion of reptiles.'

The Natural England Guidelines for Developers state that 'planning must incorporate two aims where reptiles are present:

- To protect reptiles from any harm that might arise during development work;
- To ensure that sufficient quality, quantity and connectivity of habitat is provided to accommodate the reptile population, either on-site or at an alternative site, with no net loss of local reptile conservation status.'

Water vole

Water vole is protected under the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to kill, injure or take any water vole, damage, destroy or obstruct access to any place of shelter or protection that the animals are using, or disturb voles while they are using such a place. Water vole is listed as a Species of Principal Importance under the provisions of the NERC Act 2006 in England and under the provisions of the Environment (Wales) Act 2016.

Wild mammals in general

The Wild Mammals (Protection) Act 1996 (as amended) makes provision for the protection of wild mammals from certain cruel acts, making it an offence for any person to intentionally cause suffering to any wild mammal. In the context of development sites, for example, this may apply to rabbits in their burrows.

[6] English Nature, 2004. *Reptiles: guidelines for developers.* English Nature, Peterborough. https://webarchive.nationalarchives.gov.uk/20150303064706/http://publications.naturalengland.org.uk/publication/76006

Invasive non-native species

An invasive non-native species is any non-native animal or plant that has the ability to spread causing damage to the environment.

Under the Wildlife and Countryside Act 1981 (as amended) it is an offence to release, or to allow to escape into the wild, any animal which is not ordinarily resident in and is not a regular visitor to Great Britain in a wild state or is listed under Schedule 9 of the Act.

It is an offence to plant or otherwise cause to grow in the wild invasive non-native plants listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

Hedgerows

Article 10 of the Habitats Directive[7] requires that 'Member States shall endeavour…to encourage the management of features of the landscape which are of major importance for wild fauna and flora. Such features are those which, by virtue of their linear and continuous structure…or their function as stepping stones…are essential for the migration, dispersal and genetic exchange of wild species'. Examples given in the Directive include traditional field boundary systems (such as hedgerows).

The aim of the Hedgerow Regulations 1997[8], according to guidance produced by the Department of the Environment[9], is "to protect important hedgerows in the countryside by controlling their removal through a system of notification. In summary, the guidance states that the system is concerned with the removal of hedgerows, either in whole or in part, and covers any act which results in the destruction of a hedgerow. The procedure in the Regulations is triggered only when land managers or utility operators want to remove a hedgerow. The system is in favour of protecting and retaining 'important' hedgerows.

The Hedgerow Regulations set out criteria that must be used by the local planning authority in determining which hedgerows are 'important'. The criteria relate to the value of hedgerows from an archaeological, historical, wildlife and landscape perspective.

[7] Council Directive 92/43/EEC of 2i May 1992 on the conservation of natural habitats and of wild fauna and flora.
[8] Statutory Instrument 1997 No. 1160 – The Hedgerow Regulations 1997. HMSO: London
[9] The Hedgerow Regulations 1997: a guide to the law and good practice, HMSO: London