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Land at Pentre Bach Farm, Torfaen

Ecological Assessment

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1 Summary

Report purpose	Ecological assessment of a ground mounted photovoltaic solar farm and energy storage facility, together with associated equipment, infrastructure, and ancillary works.
Client and commission date	Elgin Energy Esco (London); September 2019.
Date and methods of survey	An extended Phase 1 habitat survey was completed on 19 September 2019 as part of a Preliminary Ecological Appraisal. A further targeted survey of four areas of species-rich semi-improved neutral grassland in the northern part of the Site was completed on 2 July 2020. Dormouse and bat survey work was completed during summer and autumn 2020 and in spring 2021. Dormouse survey involved the deployment of 100 nest tubes in areas of mature unmanaged hedgerow and woodland edge in accordance with industry standard guidelines. Monthly walked transect bat surveys and the deployment of two static detectors (five nights of data were collected each month from both detectors) were completed between June 2020 and May 2021.
Key findings	The Site and immediately surrounding areas are not subject to statutory designation. Part of the woodland and all streams within the Site are Sites of Importance for Nature Conservation (SINCs), which are non-statutory designated sites. Additionally, Limekiln Wood SINC is immediately adjacent to the Site. The SINCs are of county borough value for biodiversity. The Site largely comprises improved and poor semi-improved grassland of low ecological value. However, four species-rich semi-improved neutral grassland fields are within the Site; of these, three met the criteria for local designation as a SINC based on the number of indicator species present. The neutral grassland habitats are therefore considered to be of county borough importance in terms of their biodiversity value. The network of hedgerows, woodland (some of which is ancient woodland) and streams within and adjacent to the Site are of inherent ecological interest due to their age, character, botanical diversity and due to the linkages between habitats they provide. Parts of them fall within the SINC designations, and they are also 'Priority Habitats' under Section 7 of the Environment (Wales) Act 2016. They are of county borough value for biodiversity. No dormice or evidence of their presence was recorded during the survey work. A minimum of ten species of bat were recorded using the Site from static detector survey work. Observations indicated that bat activity was heavily biased towards field boundaries. It was inferred from the data that local roosting was likely (due to the number of records of bats close to emergence times). The bat community recorded using the Site is considered to be of county borough importance due to its diversity. A badger sett was recorded to the west of the Site boundary.
Potential impacts	Without mitigation there is potential for construction phase impacts including: • Loss of extent / degradation of habitat within SINCs as a result of compaction of root protection zones, pollution, sediment mobilisation and changes in lighting. • Loss and fragmentation of hedgerow and woodland outside of the SINCs resulting in local impacts on habitat connectivity. • Loss, compaction and rutting of the species-rich semi-improved neutral grassland, resulting in changes in species composition / loss of condition.

	• Loss of bat roosts (directly and through changes in lighting) and a reduction in the condition of foraging habitat. • Disturbance leading to displacement of otter from the stream corridor and/or impacts on foraging habitat quality due to sedimentation / pollution. • Incidental destruction of the active nests of breeding ground-nesting birds and killing / injury of reptiles. • Damage, destruction, disturbance or the obstruction of access to active badger setts. Without mitigation there is potential for operational phase impacts including: • Loss of extent or condition of woodland and hedgerow vegetation due to changes in management to reduce shading • A long-term reduction in the extent and condition of the species-rich semi-improved neutral grassland due to shading from the panels and grazing by sheep. • Reduction in habitat quality resulting from changes in management and grazing regimes impacting on various species / species groups including bats, breeding birds, reptiles and invertebrate communities.
Mitigation and Enhancement	The design of the solar farm has incorporated stand offs of at least 5 m from hedgerows, trees and secondary woodland, and 15 m from ancient woodland. This substantially mitigates impacts on these features and the protected species that are known to use / are likely to use them. Other commitments are: • The production of a Construction Environmental Management Plan (CEMP) in which measures to avoid accidental physical damage, pollution, lighting and other impacts to SINCs, hedgerow and woodland habitats will be detailed. • The partial retention of areas of species-rich semi-improved neutral grassland, and compensatory creation of new areas of this habitat type outside of the solar array (but within the site boundary). • Maintaining and improving the botanical diversity of field boundary habitats through sowing of a wildflower seed mix and managing grazing within them. • The creation of ponds in several suitable locations. • Construction of hibernacula for reptiles within field boundary habitats / close to ponds. • Construction method statements to minimise the potential for impacts on breeding birds and reptiles (these will form part of the CEMP) • A Habitat Management Plan (HMP), the detail of which will be agreed with the local planning authority, but which will include overall biodiversity objectives, management prescriptions, species planting composition information, and the locations and design of ponds, nest boxes and refugia. It is recommended that if the LPA intend consenting the application, conditions are applied requiring a CEMP, HMP and pre-construction badger survey. Suggested wording of these conditions is contained in **Section 7** of this report.

2 Introduction

2.1 BSG Ecology was initially commissioned in September 2019 by Elgin Energy Es Co Limited to undertake a Preliminary Ecological Appraisal for land at Pentre Bach, Torfaen (the 'Site'). Subsequently, in June 2020, BSG was commissioned to undertake further survey for protected species.

2.2 The Site is the proposed location of a new solar farm of approximately 45 ha.

Site description

2.3 The Site is situated to the south of Cwmbran at Ordnance Survey Grid Reference ST 28223 92480 (see **Figure 1**). Current land use includes pasture used for grazing, small areas of broadleaved woodland, unmanaged hedgerows (some associated with streams), and mature standard trees.

2.4 In the wider landscape, the Site is surrounded by farmland with associated farm buildings, a network of hedgerows, streams and small woodland blocks.

Project description

2.5 The project will involve the installation of a ground mounted photovoltaic solar farm and energy storage facility, together with associated equipment, infrastructure, and ancillary works (see Drawing 29522 9007 Indicative Layout Plan_ Rev D-A1).

2.6 The proposed solar array will lie entirely within current field boundaries, and access between fields will be via existing farm tracks. Removal of hedgerows and mature trees is not anticipated as part of the proposed development.

2.7 If the solar farm is consented, fields within it will be subject to sheep grazing during the operational phase of development. At the end of the operational life of the solar farm the land will be restored to pasture.

Purpose of this Report

2.8 The purpose of this report is to provide the ecological evidence necessary to inform a planning decision with regard to the proposed development.

3 Methods

Desk study

3.1 A data request was made to the South East Wales Biodiversity Records Centre (SEWBReC) to obtain information on non-statutory designated sites and records of protected, invasive or otherwise notable species within 2 km of the Site. A central Ordnance Survey Grid Reference (ST 28299 92520) was provided to SEWBReC; the 2 km search area was centred on this point. Data were received on 5 November 2019.

3.2 The desk study also involved a review of publicly available information including the UK Government's MAGIC[1] website and 'Where's the Path'[2]. Data from both of these sources was initially accessed in June 2019 (when initially scoping work), and most recently on 4 February 2022 in the preparation of this ecological report.

3.3 The MAGIC database was used to establish the presence of statutory designated sites of nature conservation interest in relation to the proposed development. Where's the Path was used to review Ordnance Survey data and Google Earth Pro[3] to obtain recent and historical aerial photography of the local area, to provide ecological context for the results of the Site assessment.

Field survey

Extended Phase 1 Habitat Survey

3.4 A Phase 1 habitat survey was completed by Gareth Lang (Principal Ecologist) on 19 September 2019. The survey followed methods recommended by the Joint Nature Conservation Committee (JNCC) handbook for extended Phase 1 habitat survey (2010).

3.5 The survey was 'extended' to include an assessment of the habitats on Site for their suitability to support protected species and include a broad assessment of trees for their potential to support roosting bats. The survey was completed in accordance with industry standard guidance (Collins, 2016).

3.6 Further survey of four species-rich grassland fields in the northern part of the Site was completed on 2 July 2020 by Caroline O'Rourke (Senior Ecologist and experienced botanical surveyor). This was a targeted survey of fields that had been cut prior to the initial visit, in order to confirm the quality of the habitat types present.

Dormouse Survey

3.7 Dormouse survey was principally undertaken as at the time of commission (June 2020) it was unclear whether all hedgerows and trees within the Site boundary would be retained. It was subsequently confirmed there would be no tree or hedgerow removal.

3.8 Dormouse survey involved the deployment of 100 nest tubes at regular intervals along mature unmanaged hedgerows and woodland edge around the Site in accordance with survey guidance set out in English Nature's Dormouse Conservation Handbook (English Nature, 2006). The guidance recommends that to determine the presence/absence of dormouse within suitable habitat, a minimum of 50 nest tubes need to be put out in suitable habitats for several months, and these should be periodically checked for indications of use by dormouse. The locations of dormouse tubes at Pentre Bach are shown on **Figure 2**.

3.9 Indications of use by dormice include observations of animals using nest tubes during survey work or finding a nest characteristic of the species. Dormouse typically make neat nests comprising tightly-woven honeysuckle bark (or similar), along with green leaves, normally hazel (although other species are used). This differs from the nest of other small mammals which typically lack a distinct structure.

[1] Available at www.magic.defra.gov.uk/magicmap.aspx
[2] Available at https://wtp2.appspot.com/wheresthepath.htm
[3] Google Earth Pro 7.3.4.8248 (64-bit)

3.10 In order to collect data in line with guidance at Pentre Bach, the tubes were deployed in June 2020, and subsequently checked in each of September and November 2020 and May 2021 to establish likely presence / absence (months are attributed a weighted score in guidance in accordance with the likelihood of encountering dormouse). This level of survey allowed a score of '20 points' to be achieved, the minimum number needed to conclude likely absence if evidence of the species is not recorded.

3.11 The survey work was conducted by Gareth Lang (NRW dormouse licence number: S090281-1) and Caroline O'Rourke (NRW dormouse licence number: S089291-1).

Bat Activity Survey

3.12 Bat survey was principally undertaken as at the time of commission (June 2020) it was unclear whether all hedgerows and trees within the Site boundary would be retained. It was subsequently confirmed there would be no tree or hedgerow removal.

3.13 Bat survey involved monthly walked transects and static detector deployments. This approach was based on industry standard Bat Conservation Trust guidance (Collins [Ed.], 2016). The route of the transect and positions of the static detectors are shown on **Figure 2**.

3.14 A walked transect survey was carried out during each month from June to October 2020 inclusive, and in April and May 2021. All surveys commenced at sunset and were completed in suitable weather conditions (heavy rain, strong winds and temperatures below 10°C were avoided as recommended in industry standard guidelines (Collins [Ed.], 2016)). The timing of the surveys therefore covered the bat emergence/ re-entry period and the period of most intense foraging activity when prey is most abundant (Altringham, 2003).

3.15 Surveyors used two bat detectors on each survey to supplement visual observations: a Batbox Duet detector for listening to bat calls and an EM3 or Anabat SD2 bat detector for recording calls for subsequent identification. Identification of recorded bat calls was carried out using AnalookW software (by Titley Scientific). Surveyors noted any bat activity heard or seen on an annotated plan. Field notes included a record of the time of each bat encounter, allowing results to be cross-referenced with the recorded data.

3.16 A table detailing the dates, times and weather conditions during each survey can be found in **Appendix 1**.

3.17 Static detectors (Song Meter (SM2) bat detectors with external microphones) were deployed at four locations within the site in order to characterise the bat community present. These locations selected for sampling are shown on **Figure 2**. Sampling was completed between June and October 2020 and in April and May 2021. Detector locations 1 and 2 were used in June 2020, and locations 3 and 4 in July; the locations were alternated until the end of the sampling period. Five nights of data were collected per detector per month.

3.18 The SM2 detectors were configured to record above the level of ambient noise, such as from wind or rain, using an adaptive trigger set to 6 decibels (dB). They were set to define a bat pass as a call note of >2 milliseconds (ms) separated from another by more than one second. An external microphone was connected via a cable to the logger and attached to a pole or tree approximately 2.5 – 3 m above ground level.

3.19 The static detectors were set to record for a period of (at least) five nights, from half an hour before sunset to half an hour after sunrise each night (the period during which bats are usually active and away from their roosts). The duration of recording varied per night throughout the survey period to account for day / night length.

3.20 Recorded bat calls (from both the walked transect survey and static detector surveys) were run through Wildlife Acoustics Kaleidoscope Pro auto-identification software, with each file then checked

manually by an experienced ecologist using AnalookW software (produced by Titley Scientific). The number of passes was counted, and relative activity calculated[4].

Limitations to methods

3.21 There were no significant limitations to the survey or desk study.

Personnel

3.22 Personnel principally involved in the planning and implementation of field survey at the Site, and in the production of this report were as follows:

- Caroline O'Rourke (ACIEEM) undertook the botanical survey of the fields in the northern part of the Site, as well as some of the dormouse survey work. Caroline was a Senior Ecologist at BSG Ecology until January 2021, and now works as a Research Associate at the Floodplain Meadows Partnership. She is an experienced botanist and vegetation surveyor who has worked as a professional ecologist since 2009. She holds a Botanical Society of the British Isles (BSBI) Level 4 Certificate in Field Identification and has been formally trained in and has considerable applied experience of National Vegetation Classification. She has expertise in grassland habitat survey and has undertaken research contracts aimed at identifying strategic opportunities for grassland creation and restoration for Natural Resources Wales (NRW). Caroline is also an experienced protected species surveyor and holds survey licences for great crested newt and hazel dormouse.
- Gareth Lang (ACIEEM), Principal Ecologist, completed the initial Phase 1 survey of the Site and was responsible for the planning and co-ordination of the protected species survey work. Gareth holds survey licences for bats, dormouse and great-crested newt in England and Wales and has managed and completed multiple baseline surveys for these species' groups. He has a broad range of experience with organising and conducting bat survey, primarily to inform large scale renewable developments. Gareth has designed habitat management strategies for dormouse and implemented them in the field (both for conservation projects and as mitigation for development). He has also managed a long-term monitoring site for dormouse in Usk on behalf of Gwent Wildlife Trust. Gareth has authored numerous protected species mitigation licences for a range of species and developments across the renewables, residential, infrastructure and heritage sectors.
- Charlotte Alsop (QCIEEM), Consultant Ecologist, assisted in co-ordinating the bat survey, completed the bat data analysis to inform this report, and the initial Preliminary Ecological Appraisal which significantly informed this assessment. Charlotte has worked as a professional ecologist since 2016, and has considerable experience undertaking protected species survey, and in the analysis of bat data using a range of software.
- Owain Gabb (MCIEEM, CEnv), Director of Ecology, acted as technical director for the work and was responsible for drafting the assessment contained in this report. Owain has worked as a professional ecologist since 1999 and with onshore renewables projects since 2002. He typically co-ordinates and directs support to planning applications where birds, protected species and habitats require detailed consideration, and which are often subject to Environmental Impact Assessment and / or Habitats Regulations Assessment. He has worked throughout the UK and Ireland and has a well-developed understanding of legal and policy drivers.

[4] Relative activity (referred to as 'activity' in the main text) of different species of bats is calculated by the number of passes (P) recorded within a unit of time – hour (h).

4 Results and Interpretation

4.1 In this section the results of fieldwork and desk study are brought together. Interpretation of the results and an assessment of the potential impacts of the proposed development are included in Section 5.

Designated Sites

4.2 The desk study identified thirty-two[5] designated sites for nature conservation within 2 km of the Site. A summary of the key results is provided below, and full details are provided in **Appendix 2**.

4.3 There are two statutory designated sites within the 2 km perimeter around the Site. Henllys Bog Site of Special Scientific Interest, a site of national importance, is 1.5 km to the west. It is a small fen with a ground flora rich in plant species and is the only site in the county for marsh helleborine *Epipactis palustris*. A second statutory site Llwyn Celyn Local Nature Reserve (LNR) is 0.4 km to the north of the Site and is the largest example of flower rich meadows in the county borough.

4.4 In Torfaen County Borough blanket non-statutory designations have been applied to all ancient woodlands, quarries, watercourses and commons; these types of habitat all qualify as Sites of Importance for Nature Conservation (SINCs). Watercourses and areas of ancient semi-natural woodland are present within the Site and along its boundary. No further information is provided regarding the notification of ancient woodland. Watercourses are notified for their associated fauna, including otter *Lutra lutra*, bat species, brown trout *Salmo trutta*, salmon *Salmo salar* and bullhead *Cottus gobio*.

4.5 Limekiln Wood SINC is situated immediately to the northeast of the Site and is notified for its ancient woodland habitat. To the east of Limekiln Wood is Pant Glas SINC (approximately 40 m from the Site), which is notified for its neutral and acid grassland habitats (National Vegetation Classification: MG5 and U4b respectively).

4.6 Approximately 50 m west of the Site is Green Court Meadows SINC, which contains good quality unimproved neutral grassland, as well as natural springs, species-rich hedgerows, and patches of marshy grassland.

4.7 Of the remaining twenty-eight designated sites, twenty-six are notified for one of a combination of the following: neutral grassland habitats, ancient woodland habitats, freshwater habitats and their associated fauna, marshy grassland. One site is designated for a particular species; Tynewydd Roadside Verge SINC is the only place where corky fruited water dropwort *Oenanthe pimpinelloides* has been recorded in Gwent.

Habitats

4.8 The habitats present on Site are described in **Table 1** and illustrated in **Figure 1**. Photographs are included in **Section 8** of this report and target notes are included in **Appendix 3**.

[5] This does not include the blanket designations for ancient woodlands and watercourses (see paragraph 4.3).

Table 1: Summary of habitats present on and adjacent to Site

Habitat Type	Habitat Description
Semi-improved Neutral Grassland	Four fields in the northern part of the Site comprise species-rich semi-improved neutral grasslands: the western field is a poorer example of this habitat type than the other three. Species present include abundantly occurring common bent *Agrostis capillaris* and occasion sweet vernal grass *Anthoxanthum odoratum* and rarely occurring Yorkshire fog *Holcus lanatus* and timothy grass *Phleum pratense.* Herb diversity is moderate, and includes species such as yellow rattle *Rhiananthus minor,* common knapweed *Centaurea nigra,* lesser stitchwort *Stellaria graminea,* common mouse-ear *Cerastium fontanum,* bird's-foot trefoil *Lotus corniculatus,* ribwort plantain *Plantago lanceolata,* meadow buttercup *Ranunculus acris*, common sorrel *Rumex acetosa,* common dandelion, red clover *Trifolium pratense* and common spotted orchid *Dactylorhiza fuchsii.*
Improved grassland	Perennial rye-grass *Lolium perenne* dominated pasture with short sward and limited herb diversity is present across much of the Site.
Poor semi-improved grassland	Three fields with low diversity grassland supporting a short sward dominated by perennial ryegrass, sweet vernal grass, common bent, Yorkshire fog, cock's foot *Dactylus glomerata* and timothy grass. Herb diversity is low and limited to a small number of common species including creeping buttercup *Ranunculus repens*, common mouse-ear chickweed, dandelion *Taraxacum officionale* agg, red clover, hop trefoil *Trifolium campestre*, broad-leaved plantain *Plantago major* and meadow buttercup.
Hedgerows	Hedgerows are present across the Site. The hedgerows (of varying heights and widths) are unmanaged, dense and species-rich. Species include hazel *Corylus avellana*, holly *Ilex aquifolium*, dogwood *Cornus sanguinea*, spindle *Euonymus europaea*, hawthorn *Crataegus monogyna*, ivy *Hedera helix*, pedunculate oak *Quercus robur*, ash *Fraxinus excelsior* and elder *Sambucus nigra*. The hedgerows have connectivity to woodland blocks in the wider area, including Limekiln Wood SINC to the northeast of the Site.
Broadleaved woodland	Broadleaved woodland borders the Site to the west and the northeast. These areas of woodland extend into the Site in linear, finger-like fragments, and are connect to the internal network of hedgerows. A small (isolated) woodland copse is also present in the south of the Site. Species include ash, oak *Quercus robur*, alder, hazel, wych elm *Ulmus glabra*, cherry *Prunus avium*, crab apple *Malus sylvestris*, willow *Salix sp.*, beech *Fagus sylvatica*, sycamore *Acer pseudoplatanus*, holly and hawthorn. The broadleaved woodland has connectivity to the wider area, including Limekiln Wood SINC to the northeast of the Site.
Bracken	A large area of dense bracken is present along part of the western Site boundary and smaller patches are present in the southeast of the Site.
Scattered trees	Scattered trees are present across the Site, including standalone trees and rows of trees as boundary features. Most of the scattered trees are pedunculate oak.
Bramble scrub	A small area of bramble scrub is present in the centre of the Site, adjacent to an area of woodland and an access point between two fields.

Protected species

4.9 No species records were returned by SEWBReC from within the Site boundary.

4.10 SEWBReC returned a total of seven hundred and ninety-five records for fifty-seven different species. The results are summarised in **Table 2**; following the completion of the Phase 1 survey, consideration was given to the potential for the Site to support protected species (in the third column of the table). This initial appraisal informed the requirement for further work.

Table 2: Summary of protected species and habitat suitability

Species	Data search results	Initial habitat suitability appraisal
Amphibians	No records for great crested newt *Triturus cristatus* were returned by SEWBReC.	No ponds are present within the Site boundary or within 250 m of the Site boundary. The two nearest ponds to the Site (located within improved fields approximately 0.3 km east of the Site) were considered unsuitable for great crested newt at the time of the initial Phase 1 survey. The first was a new pond with little marginal vegetation, and the second a carp pond with mallard *Anas platyrhynchos* and breeding geese present. The Site is unlikely to support great crested newt. Other amphibians may use the Site, but the lack of suitable local ponds for breeding is likely to be a limiting factor in terms of local populations.
Birds	Four hundred and nineteen records for birds were returned by SEWBReC, including for the following Schedule 1 species: barn owl *Tyto alba*, brambling *Fringilla montifringilla*, fieldfare *Turdus pilaris*, kingfisher *Alcedo atthis*, Mediterranean gull *Ichthyaetus melanocephalus*, red kite *Milvus milvus* and redwing, *Turdus iliacus*.	The woodland, hedgerows and scrub present on Site provide suitable habitat for common nesting and foraging birds. It is possible that small numbers of ground-nesting birds are present in the species-rich semi-improved neutral grasslands, in areas of encroaching bramble, and in the bracken-dominated field in the western part of the Site. Otherwise, the short sward length is likely to preclude ground-nesting within the Site.
Bats	One hundred and ninety-one records for bats were returned by SEWBReC, including records for the following species: Brandt's bat *Myotis brandtii*, brown long-eared bat *Plecotus auritus*, common pipistrelle *Pipistrellus pipistrellus*, Daubenton's bat *Myotis daubentonii*, lesser horseshoe bat *Rhinolophus hipposideros*, Natterer's bat *Myotis nattereri*, soprano pipistrelle *Pipistrellus pipistrellus* and whiskered bat *Myotis mystacinus*. Of these records, forty-two are for bat roosts. The nearest bat roost records are located approximately 0.2 km west of the Site in the buildings at Cwm Farm. These records are for a common pipistrelle, a brown long-eared bat and a bat of an unknown species recorded in 2018.	Overall, the Phase 1 survey concluded the Site was likely to be of high suitability for commuting and foraging bats. The hedges and woodland present on Site are of high-quality and are well-connected through the wider landscape to known roost locations. The streams present within the Site also provide suitable foraging habitat for bats. Many trees across the Site also provide suitable roosting opportunities for bats.

	A further five records for roosting bats were returned from 0.7 km west of the Site, at Castell y Bwch Farm. These records are for common pipistrelle, brown long-eared bat and an unidentified pipistrelle bat, recorded in 2004 and 2005. Five records were returned from approximately 0.3 km south of the Site at Craig y Ceiliog Farm. These records are dated September 2009, and are for one brown long-eared bat, one soprano pipistrelle, one Natterer's bat and two unidentified bats. All other bat roost records are over 0.9 km from the Site.	
Badger	SEWBReC returned five records for badger within the search area. One record is located in the field immediately adjacent to the southeast. Two of the records are located approximately 0.3 km southeast of the Site beyond some farm buildings. The remaining two records are located approximately 1.5 km to the east.	Signs of badger were recorded during the extended Phase 1 habitat survey, including three runs and one badger sett (one entrance found). The woodland and hedgerows present on Site provide suitable habitat for badger.
Hazel dormouse	One record of hazel dormouse was returned by SEWBReC. The record is for a hibernating dormouse in a garden on Llantarnam Road, approximately 1.8 km northeast of the Site.	The woodland and hedgerows present are of good quality and well-connected to similar habitats in the surrounding area. These habitats provide suitable habitat for dormouse.
Otter and water vole	Thirty-two records for otter *Lutra lutra* were returned by SEWBReC. The majority of these were from locations to the east and southeast of the Site including along the Monmouthshire and Brecon Canal. The nearest record for otter is located approximately 0.9 km southeast of the Site, along the brook which runs adjacent to the western boundary of the Site. SEWBReC returned one record for water vole within the search area. This record is located along the Monmouthshire to Brecon Canal, approximately 1.4 km northeast of the Site.	The watercourses present within the Site boundary are narrow, shallow, and unlikely to provide suitable habitat for otter or water vole. The brook which runs adjacent to the western boundary of the Site is wider, and otter have been recorded further downstream along this watercourse. This watercourse is not suitable for permanent use by otters but is suitable for commuting otters and the surrounding woodland is suitable for temporary resting places such as couches.
Reptiles	Four records for grass snake *Natrix natrix* were returned by SEWBReC. All records are over 1 km from the Site boundary.	The areas of bracken present on Site may provide suitable habitat for basking reptiles, and any hedge bases with longer vegetation adjacent also have some potential for reptiles.

Dormouse Survey Results

4.11 No hazel dormice or signs of their presence were recorded during the survey work.

4.12 Wood mouse *Apodemus sylvaticus* use of the tubes was regularly noted. Evidence included animals, wood mouse nests and cached acorns.

4.13 Hazel dormouse is not considered further in this ecological assessment.

Bat Survey Results

4.14 Static detectors were deployed for a total of 667 hours over 70 nights during the survey period in 2020/21. A minimum of ten species of bat were recorded using the Site from static detector survey work. The number of bat passes (P) and bat activity (passes per hour expressed as P/h) for each species during automated surveys is shown in Table 3. The most frequently recorded species were *Myotis* sp. (11.1 P/h) and common pipistrelle (9.3 P/h). Soprano pipistrelle was recorded at a rate of 1.7 P/h and all other species were recorded at a rate of 0.1 P/h or less. This pattern was also reflected in the transect survey results, during which *Myotis* sp., common pipistrelle and soprano pipistrelle were the most frequently recorded species.

Table 3: Number of bat passes (P) and bat activity (P/h) of bat species during automated surveys

Species	**Number of bat passes (P)**	**Bat activity (P/h)**
Nathusius' pipistrelle	2	< 0.01
Common pipistrelle	6,230	9.3
Soprano pipistrelle	1,132	1.7
Myotis sp.	7,417	11.1
Myotis / long-eared bat sp.	2	< 0.01
Long-eared bat sp.	85	0.1
Noctule	47	0.1
Noctule / Leisler's bat	3	< 0.01
Leisler's bat	14	< 0.1
Serotine	5	< 0.01
Greater horseshoe bat	1	< 0.01
Lesser horseshoe bat	69	0.1
Unidentified bat sp.	1	< 0.01
Total	**15,008**	**22.5**

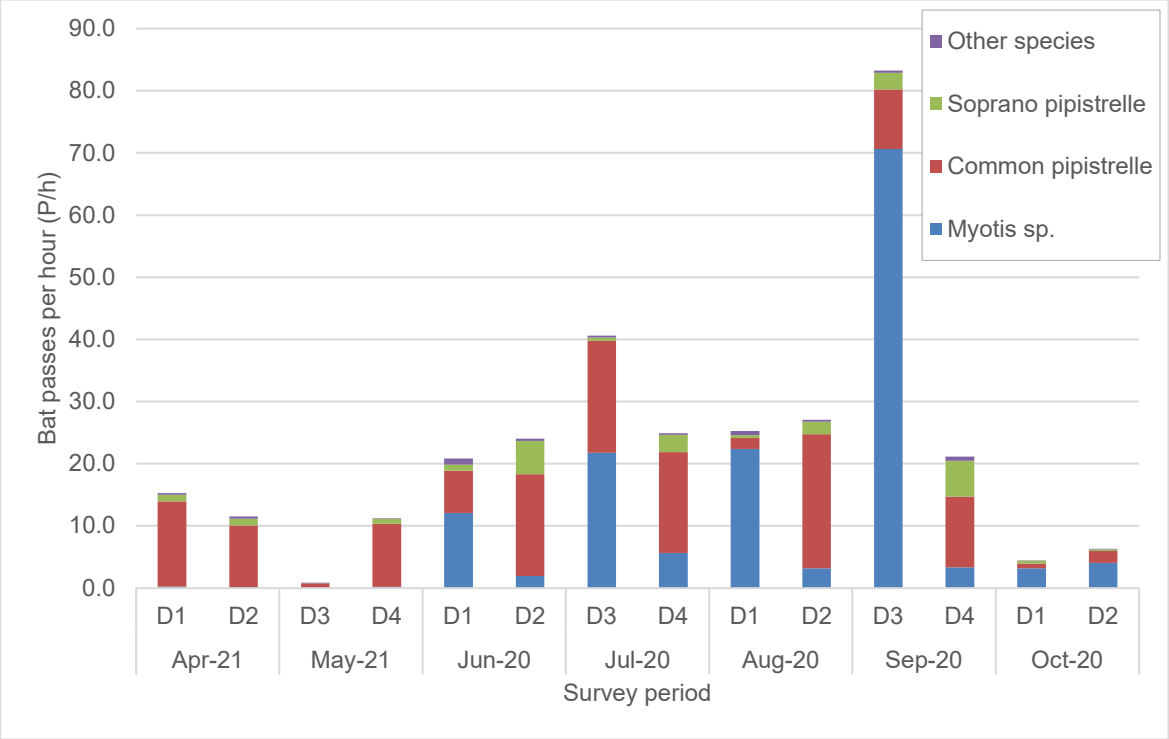
4.15 Bat activity recorded at each detector location across the survey period are contained in **Table 4**, overleaf. The highest activity levels were recorded at D3 (46.1 P/h), which was located along a hedgerow in the northern part of the Site. The majority of passes recorded at D3 were *Myotis* sp. (35.2 P/h) but *Myotis* sp. activity at D3 varied substantially between survey periods (<0.1 P/h in May 2021, 21.8 P/h in July 2020 and 70.6 P/h in September 2020). *Myotis* sp. were recorded commuting along this hedgerow (near to D3) on several occasions during the transect surveys.

4.16 The highest activity levels recorded during automated survey were in September 2020 (52.2 P/h). This increase in activity is largely the result of increased *Myotis* sp. activity at D3, as described above. The activity recorded at each detector location across the survey period is displayed in **Graph 1**, overleaf. The highest activity recorded during the transect surveys was in April 2021 (60.0 P/h), followed by September 2020 (39.4 P/h) and August 2020 (31.9 P/h). The activity levels recorded during transect surveys in other months was lower (ranging from 6.9 P/h in June 2020 to 22.5 P/h in October 2020).

Table 4: Number of bat passes (P) and bat activity (P/h) at each detector location

Detector location	Number of bat passes (P)	Bat activity (P/h)
D1	3,007	15.2
D2	3,155	15.9
D3	6,242	46.1
D4	2,604	19.2

Graph 1: The proportion of bat activity (P/h) recorded for each species per month during automated surveys.



4.17 Throughout the survey period, six noctule passes were recorded on static detectors between 0 – 20 minutes after sunset. These passes were recorded at D4 in May and September, and at D2 in August. Noctule bats are classified as an 'earlier emerging species' (Collins, 2016) with a mean emergence time of 7 minutes after sunset (Andrews & Pearson, 2017). The 'early' passes recorded at the Site suggests small roosts may occur locally, but the presence of larger or regularly used roosts (such as a maternity roost) is considered very unlikely, based on the activity recorded.

4.18 Nine hundred and twenty-six common pipistrelle passes were recorded on static detectors between 0 – 40 minutes after sunset. These passes were spread over the survey period (recorded on almost every night[6]) with a slight peak in August (264 P) and were recorded at all detector locations with the highest number recorded at D2 (384 P). Common pipistrelle bats are classified as an 'earlier emerging species' (Collins, 2016) with a mean emergence time of 24.8 minutes (Andrews & Pearson, 2017). These recurrent 'early' passes suggest common pipistrelle bats regularly roost nearby during the active season and use the hedgerows and woodland edges as commuting routes away from the roost. Common pipistrelle activity drops off sharply after 60 minutes after sunset, however, indicating that the Site does not necessarily provide an important foraging resource for the species.

[6] 'Early' passes for common pipistrelle, soprano pipistrelle and *Myotis* sp. were recorded on twenty-nine, nineteen and twenty-two of the thirty-five survey nights, respectively.

4.19 Ninety-four soprano pipistrelle passes were recorded on static detectors between 0 – 40 minutes after sunset. These passes were spread over the survey period (recorded on just over half of the nights[5]) but peaked in September (40 P)and were recorded at all detector locations with the majority (57 P) being recorded at D4. Soprano pipistrelle bats are classified as an 'earlier emerging species' (Collins, 2016), with a mean emergence time of 33.5 minutes after sunset (Andrews & Pearson, 2017). These occasional 'early' passes may indicate that soprano pipistrelle bats roost locally on an opportunistic basis throughout the active season, but the presence of a larger or more frequently used roost (such as a maternity roost) is considered unlikely, based on the activity recorded.

4.20 Three hundred and seventeen *Myotis* sp. passes were recorded on static detectors between 0 – 60 minutes after sunset. These passes were spread over the survey period (recorded on more than half of the survey nights) but were most frequent in August 2020 (103 P) and September 2020 (151 P). The majority of the *Myotis* sp. passes recorded at this time of night were at D1 (137 P) and D3 (152 P). All *Myotis* sp. are classified as 'later emerging species' (Collins, 2016); the emergence times of *Myotis* sp. that have been recorded locally (see **Table 2**) range from 31 minutes after sunset (for Natterer's bat) to 54 minutes after sunset (for Daubenton's bat) (Andrews & Pearson, 2017). These 'early' passes may indicate that *Myotis* sp. roost locally (e.g., in the woodland adjacent to the northeast of the Site) throughout the active season, particularly during the late summer and early autumn. *Myotis* sp. activity drops off slightly in the middle of the night but remains at > 10 P/h until shortly before sunrise, indicating that *Myotis* sp. likely use the hedgerows and woodland edge for foraging throughout the night (as well as for commuting away from the roost).

4.21 The above interpretation of bat activity (i.e., use of linear features and woodland as commuting routes and foraging resources) is supported by the activity recorded during the transect surveys. Only one pass, a commuting noctule, was recorded in open areas of the Site. All other bat passes recorded during transect surveys were associated with tracks, hedgerows, or woodland habitats.

5 Potential Impacts

Designated Sites

5.1 No construction or operational phase impacts on statutory designated sites are anticipated as a result of the proposed development.

5.2 Part of the woodland and all streams within the Site are SINCs (non-statutory designated sites) under Torfaen County Borough Council's blanket designation for ancient woodlands and watercourses. Additionally, Limekiln Wood SINC is immediately adjacent to the Site. In the absence of mitigation, the development could result in the following impacts on the SINCs:

- Direct construction phase impacts including habitat loss and degradation through compaction, pollution and sediment mobilisation, and indirect impacts e.g., temporary disturbance resulting from changes in lighting.
- Operational phase impacts such as a loss of extent or condition if, for example, there was a perceived need to manage boundary vegetation within them to reduce shading.

5.3 The SINCs are of county borough value for biodiversity; it follows that construction and operational phase impacts on them could therefore be significant at the same geographical level in the absence of appropriate mitigation.

Habitats

5.4 The network of hedgerows, woodland (some of which is ancient woodland) and streams within and adjacent to the Site are of inherent ecological interest due to their age, character, and botanical diversity. They also have potential to support a range of protected species (including birds, mammals, reptiles, and invertebrates) and to provide ecological corridors for their dispersal through the local landscape.

5.5 Hedgerows and lowland mixed deciduous woodland are 'Priority Habitats' under Section 7 of the Environment (Wales) Act 2016. Some of the woodland and the on-Site stream, which are linked by these features, are also designated as SINCs. It follows that the network of hedgerows, woodland and the stream corridor are considered to be of county borough value for biodiversity, either because they fall within the local designated areas or form links between them.

5.6 The (moderately) species-rich semi-improved neutral grassland habitats do not meet 'Priority Habitat' criteria with regard to Section 7 of the Environment (Wales) Act 2016. Three of the four meadows (**Figure 1**; Target Notes 17, 19 a & b) do meet the criteria for local designation as a SINC (Gwent Wildlife Trust, 2004), based on the number of indicator species present. The neutral grassland habitats are therefore considered to be of county borough importance in terms of their biodiversity value.

5.7 Bramble scrub, areas of bracken, improved and species-poor semi-improved grassland habitats are of importance at the Site level only.

5.8 In the absence of mitigation, the development could result in the following impacts on habitats within and adjacent to the Site during construction:

- Direct loss and fragmentation of hedgerow and woodland edge through widening of access points or heavy pruning to reduce shading.
- Damage to hedgerow and woodland as a result of compaction of root protection zones by heavy plant or material laydown.
- Pollution events leading to local loss of condition of any ecologically valuable habitat affected.
- Sedimentation through run off to local watercourses, leading to a reduction in habitat quality.
- Compaction and rutting of the species-rich semi-improved neutral grassland, resulting in changes in species composition and loss of condition.

5.9 In the absence of mitigation, the development could result in the following impacts on habitats within and adjacent to the Site during operation:

- Loss of extent or condition of woodland and hedgerow vegetation if there was a need to change their management to reduce shading
- Long term reduction in the extent and condition of the species-rich semi-improved neutral grassland due to shading from the panels and grazing by sheep.

5.10 The network of hedgerows and woodland and the stream corridor are considered to be of county borough value for biodiversity, as parts of them fall within SINCs, they meet priority habitat criteria, and form a network of features that allow dispersal of species through the local landscape. The species-rich semi-improved neutral grassland fields also meet SINC criteria.

5.11 It follows that these habitats are considered to be of county borough value for biodiversity; in the absence of mitigation, construction and operational phase effects on them could therefore be significant at the same geographical level.

5.12 The loss or reduction in bramble scrub, areas of bracken, improved and species-poor semi-improved grassland that the development will result in will be of no more than Site level significance.

Protected Species

5.13 In the absence of mitigation, the construction phase of development could result in the following impacts on protected and priority species:

- Loss of bat roosts (though direct removal and changes in lighting levels), disruption to regularly used flight lines and physical damage to foraging areas (leading to potential changes in prey availability). Data suggest the bat community recorded using the Site is likely to be of county borough importance, due to its diversity, and that one or more species is likely to roost within or adjacent to the Site boundary. It follows that construction phase effects on the bat community could be significant at the same county borough level.
- Potential disturbance, leading to displacement of otter using the on-Site stream corridor and adjacent woodland, and a reduction in habitat quality if impacts on the stream (such as pollution or sedimentation) affect the local prey resource. The effects of this are unlikely to be more than locally significant, as the stream only has potential to be used by otter on a transient basis. However, disturbance of a European protected species constitutes an offence, and measures will need to be taken to avoid it.
- The incidental destruction of the active nests of breeding ground-nesting birds, and the killing / injury of reptiles during construction works. The ecological effects of these actions would be of no more than Site level significance, but both would constitute offences under the Wildlife and Countryside Act 1981 (as amended).
- Damage, destruction, or the obstruction of access to badger setts, and disturbance to badgers using setts. During the Phase 1 survey the only active badger sett located was sufficiently outside of the solar farm boundary to be unlikely to be impacted by construction works; however, the species is inherently mobile, and there is a possibility of new sett creation within the Site since the original survey work took place. Effects on badgers would be likely to constitute an offence under the Protection of Badgers Act 1992.

5.14 During operation, changes in management / grazing regimes have the potential to result in a reduction in habitat quality, leading to changes in invertebrate communities and reduced foraging value for a range of species, including bats, breeding birds and reptiles. This is a potentially significant effect at the county borough level.

6 Mitigation and Enhancement

Designated Sites

6.1 No mitigation for statutory designated sites is required.

6.2 The design of the solar farm has sought to avoid any direct impacts on SINCs in accordance with policy recommendations for ancient woodland and project-specific arboricultural advice. Stand offs of at least 5 m from hedgerows, trees and secondary woodland, and 15 m from ancient woodland have been built into development design.

6.3 Measures to avoid impacts on SINCs during construction will need to be detailed in a Construction Environmental Management Plan (CEMP). These are likely to include a range of measures to control accidental physical damage, lighting, pollution, soil compaction and sediment mobilisation, and may require the presence of an Ecological Clerk of Works to assist in effective implementation. Further information is set out in **Section 7** of this report.

6.4 On the assumption that the CEMP is effectively implemented, it is likely that impacts on SINCs can be fully mitigated, such that impacts on them are neutral.

Habitats

Hedgerows, Trees and Woodland

6.5 The design of the solar farm has sought to avoid any direct impacts on hedgerows, trees and woodland in accordance with policy recommendations for ancient woodland and project-specific arboricultural advice. Stand offs of at least 5 m from hedgerows, trees and secondary woodland, and 15 m from ancient woodland have been built into development design.

6.6 Measures to avoid impacts on hedgerows, trees, woodland, and the stream corridor during construction will need to be detailed in a CEMP. These are likely to include a range of measures to control accidental damage, lighting, pollution, soil compaction and sediment mobilisation, and may require the presence of an Ecological Clerk of Works to assist in effective implementation. Further information is set out in **Section 7** of this report.

6.7 On the assumption that the CEMP is effectively implemented, it is likely that impacts on hedgerows, trees and woodland can be fully mitigated.

6.8 It is proposed to manage the northern and eastern boundaries of the southern field (Field 4 on the Masterplan), and the eastern boundary of the eastern field (Field 6) to increase visual screening from residential receptors. It is recommended that any planting considers how to enhance species diversity in the hedgerow around Field 4 (which is species poor[7]), and that both additional hedgerow and woodland planting sources native species / material of local provenance. This should form part of a wider strategy to maintain and enhance the biodiversity value of the hedgerows during the operational life of the solar farm. This has the potential to have a significant beneficial effect at the Site level.

Grassland

6.9 The development design has sought to retain some areas of species-rich semi-improved neutral grassland and proposes the creation of replacement habitat in some other areas under the control of the landowner (though over-sowing with yellow rattle and / or the spreading of green hay). There will be a net loss of hay meadow as a result of development; the extent of this loss had not been quantified at the time of this report.

[7] Most on site hedgerows are species-rich.

6.10 Areas of meadow within the array are likely to lose botanical diversity over time due to sheep grazing and are not included in the operational total. The effective net loss of extent of species-rich semi-improved neutral grassland is considered to be significant at the county borough level.

6.11 Within 5 m of hedgerows, where grassland quality is currently poor (predominantly due to shading and in places due to inconsistent management with the central parts of the field concerned), a wildflower seed mix will be sown. Ahead of this, patches will need to be scarified. Further information is in **Section 7** of this document.

6.12 Where the retained margin around the fields is 15 m (in proximity to ancient woodland and SINCs), part of the area will remain as species-rich semi-improved neutral grassland. Both the 5 m and 15 m margins will need to be fenced (and fences maintained) to ensure that stock incursion is controlled.

6.13 The creation of a more flower-rich sward in areas around the boundaries of the fields will result in a locally significant effect in terms of field boundary quality, which is likely to be reflected in more abundant and varied invertebrate fauna

Ponds

6.14 The creation of several ponds is proposed in suitable locations within the Site (see Masterplan).

6.15 The pond resource within the wider area is limited, with the low water levels in one pond and the stocking of another within the landholding with fish likely to limit their value to amphibians.

6.16 Pond creation is likely to result in a significant beneficial effect at the Site level.

Protected Species

6.17 In general, by avoiding impacts on hedgerows, woodland and streams, the requirement for further measures to avoid impacts on protected species during construction of the solar farm should be largely obviated. However, the following measures should be implemented to ensure legislative compliance and inform the scope of the CEMP (further details are provided in **Section 7** of this report).

Bats

6.18 No direct loss of bat roosts, or severance of commuting routes, will occur as a result of the proposed development.

6.19 The design of the solar farm has sought to avoid any direct impacts on hedgerows, trees and woodland in accordance with policy recommendations for ancient woodland and project-specific arboricultural advice. Grassland adjacent to field boundaries in the northern and western parts of the Site will be retained and managed to improve biodiversity value, and ponds, which are likely to provide focal points for foraging activity, will be created.

6.20 Construction phase mitigation will be needed to ensure that changes in light levels at potential bat roosts in hedgerow trees and adjacent woodland, and along field boundary commuting routes are appropriately controlled. Control measures should be outlined in a CEMP.

6.21 If mitigation proposed is implemented, it is likely that effects on bats will be neutral during construction and slightly beneficial (potentially significant at the Site level) during operation.

Otter

6.22 Measures will need to be put in place to mitigate potential disturbance of otter during the construction phase to ensure legislative compliance.

6.23 It is unlikely that otter uses the stream within the Site with regularity or for sustained periods. If proportionate controls, such as measures to avoid and / or reduce noise and visual disturbance of

commuting otters can be identified, any residual effect on otter is likely to be minimal. Mitigation measures for otter should be outlined in a CEMP.

Breeding Birds

6.24 No work with the potential to affect breeding birds (such as the removal of areas of bramble scrub and stands of bracken) should be completed in the period March to August, inclusive.

6.25 If this is not possible, a walkover survey will be completed by a suitably experienced ecologist to identify any active nests and inform appropriate mitigation.

6.26 A method statement should be produced detailing measures to avoid impacts on nesting birds (as outlined above) and included in a CEMP.

6.27 Kestrel *Falco tinnunculus* / barn owl boxes should be erected during the operational phase of the development. Both species are likely to use the Site post construction (if present locally), as the establishment of field margins is likely to provide them with an enhanced foraging resource.

6.28 If mitigation proposed is implemented, it is likely that effects on breeding birds will be neutral during construction and slightly beneficial (potentially significant at the Site level) during operation.

Reptiles

6.29 Measures will need to be implemented to prevent the killing and injury of common reptiles during construction.

6.30 Proposed pond creation, biodiversity-led management of grassland within field margins and the creation of hibernacula in suitable locations close to the ponds / within field margins are likely to result in a beneficial (potentially significant at the Site level) effect on reptiles during operation.

Badger

6.31 Due to the absence of setts on or near the Site, no impacts on badger are anticipated.

6.32 Notwithstanding this, a pre-works check will need to be carried out to identify the presence of any badger setts or evidence of any changes of use of the Site by badgers since the original Phase 1 survey was completed.

6.33 Appropriate further mitigation measures to protect badgers, and avoid contravention of the law, will be put in place if required and identified in the CEMP.

6.34 Sufficient gaps should be left under perimeter fences to allow access to badger (it is noted that animals will also be able to dig under these fences in normal circumstances) as well as other terrestrial mammals.

7 Recommendations

7.1 The accuracy of the conclusions of the assessment presented in this report will depend on whether construction phase controls and operational phase habitat management are implemented effectively.

7.2 If the planning authority is minded to approve the proposed solar development, it is therefore recommended that a number of ecological conditions are applied to the consent. These are set out below.

Pre-commencement Badger Survey

7.3 A pre-construction check for badger activity should be completed no more than three months in advance of the proposed commencement of construction.

7.4 This will identify any changes in badger activity on the Site and inform the need for further mitigation or licencing.

Construction Environmental Management Plan (CEMP)

7.5 A CEMP will be produced. This will set out robust measures to protect the SINCs, the network of hedgerows and trees within the Site, and retained areas of species-rich semi-improved neutral grassland within and adjacent to the Site during construction. In particular, measures are needed to ensure the following does not occur:

- physical damage of these habitats (including the root protection zones of trees),
- pollution (of all habitats including streams),
- sediment mobilisation (to streams), and
- compaction or rutting of species-rich semi-improved neutral grassland habitats, particularly those in the (retained) green wedge and 15 m perimeter buffer areas from ancient woodland.

7.6 The CEMP will also include working method statements aimed at achieving legislative compliance with regard to breeding birds, roosting bats, common reptiles and amphibians, and badger. Consideration will need to be given to bat roosts, likely bat commuting routes and foraging areas if works cannot be completed within daylight hours, and to otter and their resting places when working in proximity to the on-Site stream. The latter is likely to need to be informed by a pre-construction check for otter.

7.7 With regard to both habitats and species, the CEMP should set out:

- how adherence to protocols / method statements will be monitored, documented, and reported.
- emergency response and reporting protocols if accidents (spillages or potential offences such as the killing or injury of protected species) occur.
- measures to ensure construction phase lighting (if required) is appropriately controlled and directed away from potential bat roosting habitat (in particular), such that there is no significant change in baseline light levels.
- whether / when an ecological clerk of works needs to be present to ensure effective delivery of controls set out in the CEMP.

Habitat Management Plan

7.8 Section 6 of the Environment (Wales) Act 2016 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*'.

7.9 A habitat management plan will therefore be produced that will be implemented over the operational life of the solar farm. This will build on the Masterplan, which indicates where habitat retention and enhancement is proposed, and will include:

- An overall aim and a series of objectives for each habitat type. Progress against objectives should be measured over time through periodic monitoring. The regularity of monitoring and associated reporting should be agreed with the local planning authority.
- Further information on proposed species composition, monitoring and replacement of failed plants within new areas of hedgerow and woodland established to screen the Site from residential properties in the local area.
- Information on how the hedgerows and woodland around the Site will be managed to retain their biodiversity value during the operational life of the solar farm.
- Management prescriptions for the retained green wedge and the newly created areas of species-rich semi-improved neutral grassland. These are likely to include the use of green hay taken from the Site to help establish the new areas of grassland, annual cutting using appropriate machinery, and aftermath grazing to ensure the sward remains similar in character over time. Stock will need to be excluded from the species-rich semi-improved neutral grassland during the period March to end July via fences, which will need to be maintained for the operational life of the solar farm; the HMP should also clearly identify how this will be achieved.
- Management of 5 m and 15 m perimeter grassland strips to improve species (floristic) diversity over time (the field margins close to the hedgerows have reduced diversity due to shading and variation in management from the interior of the fields), and the creation of habitat that will support small mammals and a wide variety of invertebrates. This is likely to be initially achieved through cutting the vegetation down, scarifying it to open up patches of soil, and seeding. The physical means of managing the sward in these areas should be clearly identified in the HMP (i.e., whether by machinery or grazing for part of the year) or both.
- Further details regarding the creation and long-term management of three ponds within suitable areas on the margins of the fields. The latter are likely to include measures to ensure water quality is maintained, to prevent shading and drying out, and identify and eradicate non-native invasive species over the operational life of the solar Site.
- Habitat creation for reptiles, including the provision of refugia in field margins close to the newly created ponds.
- The erection, maintenance, and periodic replacement (as necessary) of two no. barn owl / kestrel nest boxes in suitable locations close to the 15 m perimeter strips of grassland on the edges of fields in the western and northern parts of the Site.

8 References

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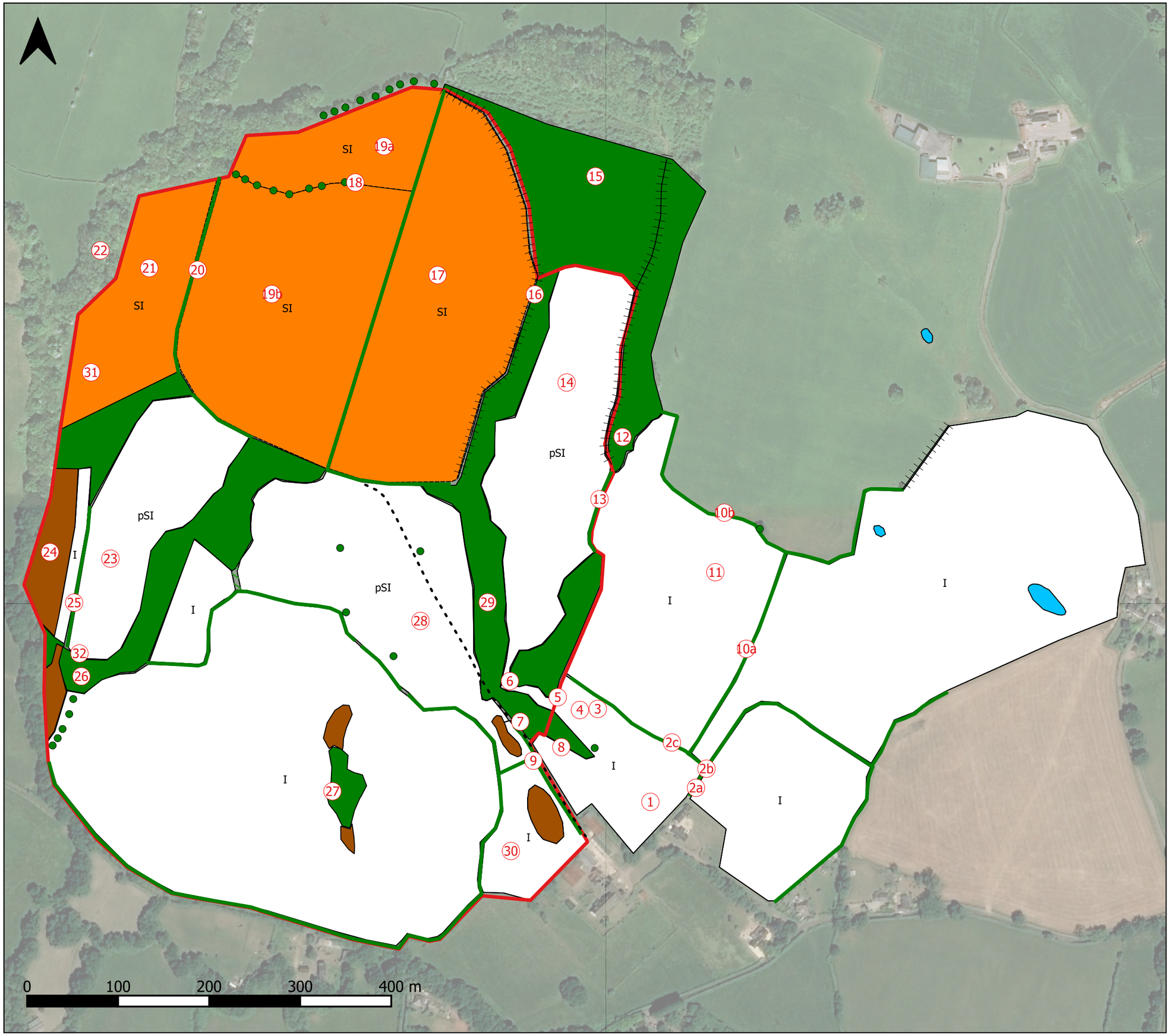
9 Figures

(overleaf)



Legend

- Site Boundary
- Broadleaved tree
- Target note
- Intact hedge - species-poor
- Fence
- Gravel track
- Broadleaved woodland - semi-natural [7]
- SI Neutral grassland - semi-improved [4]
- I Improved grassland [8]
- pSI Poor semi-improved grassland [3]
- Bracken - continuous [6]
- Standing water [4]

BSG ecology

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JOB REF: P19-510

PROJECT TITLE

Pentre Bach Solar Farm

DRAWING TITLE

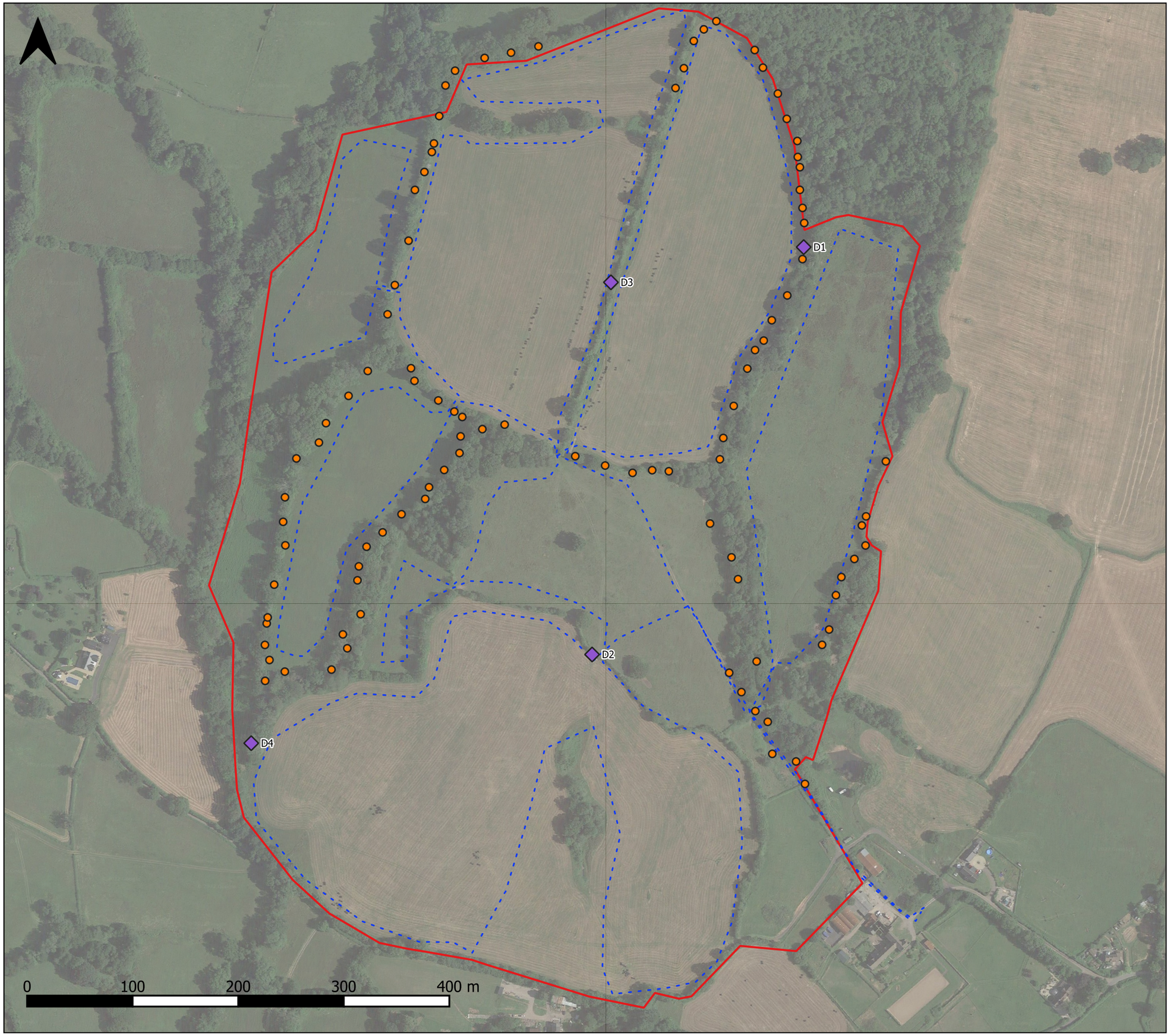
Figure 1: Extended Phase 1 Habitat Map

DATE: 03.11.2020 CHECKED: OG SCALE: 1:4,000

DRAWN: KR APPROVED: OG VERSION: 1.0

Sources: BSG Ecology survey data

Document path



Legend

- Site boundary
- Dormouse tube
- Bat detector
- Bat transect route

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PROJECT TITLE

Pentre Bach Solar Farm

DRAWING TITLE

Figure 2: Dormouse tube locations, bat transect route and bat detector locations

DATE: 21.01.2022 CHECKED: OG SCALE: 1:3,450

DRAWN: JC APPROVED: OG VERSION: 1.0

Sources: BSG Ecology survey data

Document path

10 Photographs

(overleaf)

Photograph 1: TN7. Woodland. Enclosed canopy, sparse ground flora.

Photograph 2: TN7. Small stream emerging from rock pile.

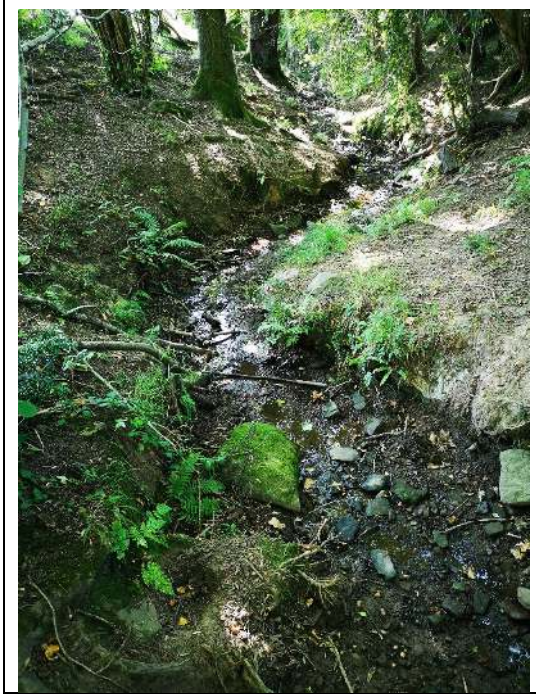
Photograph 3: TN8. Badger run.

Photograph 4: TN12. Mature oak with damaged limb (bat roosting potential).

Photograph 5: TN14. Cattle grazed improved / species-poor semi-improved grassland.

Photograph 6: TN15. Ash tree with woodpecker hole on edge of woodland (bat roosting potential).

Photograph 7: TN16. Minor stream throughout woodland.



Photograph 8: TN17. Semi-improved neutral grassland, after cutting. Central hedge with mature standard trees incl. oak and ash.

Photograph 9: TN21. Semi-improved neutral grassland (not grazed) with longer sward.	**Photograph 10:** TN22. Entrance to badger sett.
	
Photograph 11: TN24. Bracken colonisation.	**Photograph 12:** Bramble scrub between improved and semi-improved in south of Site (no target note).
	

Photograph 13. Hay meadow community typical of northern fields. Common spotted orchid in foreground. Yellow rattle and sweet vernal grass prominent.

11 Appendices

Appendix 1: Dates, Times, and Weather Conditions during Bat Surveys

Appendix 2: Designated sites within 2 km of the Site

Appendix 3: Target notes

Appendix 4: Summaries of Relevant Policy, Legislation and Other Instruments

Appendix 1: Bat Survey Dates, Times, and Weather Conditions

Transect survey dates, times, and weather conditions

Date	Surveyors*	Time		Precipitation		Temperature (°C)		Wind Beaufort Scale (0-8)		Cloud cover (0-8)	
		Start	End	Start	End	Start	End	Start	End	Start	End
23/06/2020	CA + BG	21:34	00:11	Nil	Nil	22	14	0	0	1	0
14/07/2020	CA + BG	21:24	23:54	Nil	Nil	14	14	0	0	8	8
18/08/2020	CA + BG	20:28	22:53	Nil	Nil	20	18	1	1	5	8
09/09/2020	CA +BG	19:38	21:49	Nil	Nil	18	14	1	1	0	0
14/10/2020	CA + BG	18:20	21:32	Nil	Nil	12	10	2	2	4	4
22/10/2021	CA + KR	20:21	22:24	Nil	Nil	11	10	1	1	0	0
25/05/2021	CA + DB	21:04	23:18	Nil	Nil	10	9	1	1	1	0

*CA = Charlotte Alsop, BG = Becky Gibbs, KR = Kirsty Rogers, DB = Dominic Brown (zero-hours).

Static detector deployment dates (data from these nights used)

Deployment period	Dates	No. nights recorded	D1	D2	D3	D4
June 2020	16 – 20/06/2020	5	✓	✓		
July 2020	13 – 17/07/2020	5			✓	✓
August 2020	18 – 22/08/2020	5	✓	✓		
September 2020	09 – 13/09/2020	5			✓	✓
October 2020	08 – 12/10/2020	5	✓	✓		
April 2021	22 – 26/04/2021	5			✓	✓
May 2021	17 – 21/05/2021	5	✓	✓		

Appendix 2: Designated sites within 2 km of the Site

Site name and designation[8]	Distance and direction from the Site (at its nearest point)	Reasons for notification
Limekiln Wood (SINC)	0 m northeast (adjacent to Site)	This site is designated for its ancient woodland habitat.
Pant Glas (SINC)	0.04 km east	This site is notified for its neutral and acid grassland habitats (MG5 and U4b NVC).
Green Court Meadows (SINC)	0.05 km west	The site contains good quality unimproved neutral grassland. There are also natural springs, species-rich hedgerows, and patches of marshy grassland.
Ty'n-y-Pwll Fields (SINC)	0.1 km south	Semi-improved neutral grassland and bracken slopes with UKBAP species Deptford Pink *Dianthus armeria* recorded.
Trawsmawr Meadows (SINC)	0.2 km southeast	This site is a good quality example of species-rich grassland (MG5 NVC), and has species-rich hedgerows and an associated tributary.
Pant Glas Marsh	0.3 km east	This site is notified for its marshy grassland habitats (MG23 NVC).
Hollybush Heights (SINC)	0.4 km north	This site is notified for its neutral hay meadows, beech woodland and species-rich hedgerows (MG5a and MG5b NVC).
Llwyn Celyn (LNR)	0.4 km north	This site represents the largest example of flower rich meadows in Torfaen.
Bettws West (SINC)	0.4 km south	Notified for its mosaic of unimproved neutral grassland, bracken slopes and scrub habitats.
Hollybush Meadow (SINC)	0.7 km north	Damp uncut grassland with relatively species-rich flora, part of an amenity area (MG5 NVC). This site is an example of the council managing an amenity area for wildlife.
Ty Coch Tip (SINC)	0.7 km northeast	This site is notified for its diverse semi-improved grassland, marshy grassland, ancient woodland and wet woodland.
Monmouthshire and Brecon Canal (main arm) (SINC)	0.8 km east	This site is a freshwater canal, notified for its associated habitats and species.
Tamplin Lock Marsh (SINC)	0.8 km east	Notified for its species-rich marshy grassland habitat.
Henllys Open Space (SINC and LNR)	0.8 km northwest	This site includes a mosaic of habitats including marshy grassland, ancient semi-natural woodland, stream and ditches, scrub and hedgerows. There are also records for the local BAP species short winged conehead *Conocephalus dorsalis*.
Springfield Meadow (SINC)	0.9 km northwest	This site is notified for its unimproved neutral grassland (MG5 NVC).

[8] SSSI = Site of Special Scientific Interest; SINC = Site of Interest for Nature Conservation; LNR = Local Nature; WTR = Wildlife Trust Reserve

Tynewydd Roadside Verge (SINC)	1.0 km southwest	This site is a roadside verge is the only place where corky fruited water dropwort *Oenanthe pimpinelloides* has been recorded in Gwent.
Dowlais Brook (and surrounding buffer habitat) (SINC)	1.2 km north	This brook (and its surrounding buffer habitat) is notified for its associated fauna, which includes white-clawed crayfish *Austropotamobius pallipes*, otter *Lutra lutra* and water vole *Arvicola amphibus*.
Coed Meyrick Moel (SINC and WTR)	1.2 km northwest	This ancient woodland site has remained unmodified and contains some woodland species listed in the SINC criteria (recorded 1997).
Garth Fawr East (SINC)	1.2 km south	This site is notified for its ancient semi-natural woodland habitat.
Ty-Ffynon (SINC)	1.2 km southeast	Neutral grassland adjacent to Monmouthshire-Brecon Canal, with area of ruderal vegetation.
Park Farm Wood (SINC)	1.2 km southwest	Notified for its ancient woodland habitat.
Coed-y-Twyrch Pasture (SINC)	1.2 km west	Three narrow fields containing damp neutral grassland (MG5 NVC). All community constant species present.
Greenmeadow Wood, Hennlys (SINC)	1.2 km west	This ancient woodland has not been modified to any great extent and retains some woodland species listed in the SINC criteria (recorded 1977).
Henllys Link Meadow (SINC)	1.3 km northwest	This site, adjacent to Nant y Milwr Tributary, contains poor semi-improved grassland. Habitat quality is described as 'hay meadow in decline'.
Malpas Brook / Bettws Brook (SINC)	1.3 km southeast	The site is a freshwater stream that is used as a migratory route by otters. It travels through various other SINC sites therefore creating a wildlife corridor.
Sneyd Park Wood (SINC)	1.4 km southeast	Predominantly ancient semi-natural woodland with some more recent areas of woodland.
Llantarnam Ponds (SINC)	1.5 km east	This site is notified for its ponds, wet woodland, ancient woodland, and neutral grassland (MG5 NVC) and associated fauna (white-clawed crayfish, otter, kingfisher *Alcedo atthis*, bluebell *Hyacinthoides non-scripta*, ramsons *Allium ursinum*, goosander *Mergus merganser* and cormorant *Phalazrocorax carbo*).
Henllys Bog (SSSI and WTR)	1.5 km west	Small fen with a ground flora rich in plant species. It is the only site in the County for marsh helleborine *Epipactis palustris*.
Bank above Nant y Pandy (SINC)	1.5 km west	Notified for its neutral species rich grassland (MG5c NVC) and ancient woodland habitat.
Pandy Mawr Pasture 2 (SINC)	1.5 km west	Notified for its neutral species-rich grassland and ancient woodland habitats (MG5 NVC)
Brooklands Farm (SINC)	1.6 km east	This site comprises semi-improved neutral grassland with stream and scrub. There is good connectivity towards Newport, and high potential for protected species.
Henllys Meadow - Sycamore Court (SINC)	1.6 km northwest	This site is notified for its neutral species-rich grassland (hay meadow) (MG5 NVC).

Appendix 3: Target notes

Target note	Description
1	Improved grassland. Perennial rye-grass, white clover, red clover, occ. dock, broad-leaved willowherb, silverweed, hop trefoil, common thistle. Oak tree with hollowed stem and cavities leading up to branches 12 m high 1m DBH.
2	A hedge a. Hazel, bramble, hawthorn, ivy, blackthorn c. 3 m high b. Bramble, hawthorn, blackthorn, common nettle, hazel, 2m high c. Back to 3 m, above sp. + holly. Small area of bracken at base.
3	Less heavily managed than grassland at TN1, but with sweet vernal grass, cock's-foot, timothy grass, Yorkshire fog, common nettle encroachment.
4	Recent excavation holding standing water. Broken pipe. Surrounding vegetation suggests long term wet condition – alder saplings, mare's tail, soft rush, broad-leaved willowherb, silverweed, ribwort plantain, common thistle.
5	Alder trees on wood edge c. 12 m high 50cm DBH. Stream through narrow culvert c. 4 inches.
6	Wood. Alder dominant, ash present. Ground flora includes nettle, mint, creeping buttercup, pedunculate oak.
7	Wood. Enclosed canopy, sparse ground flora. Bramble dominant but mainly bare ground. Hazel, holly, hawthorn, pedunculate oak, wych elm, cherry. Small stream emerging from rock pile occasional features in trees e.g., wych elm.
8	Badger run into woodland.
9	Hedge c. 4 m high incl. hazel.
10	Hedge. a. c. 1.8 m high. Hazel, rosebay willowherb, bracken, hawthorn. b. c. 1 m high. Blackthorn dominant with bracken.
11	Perennial ryegrass dominant, ribwort plantain, dandelion, creeping buttercup, daisy, red clover, common knapweed, Yorkshire fog, cock's-foot. Bracken near edges.
12	Broadleaved woodland with mature oak, ash, hawthorn, crab apple. Ash with evidence of die back. Two oaks with damaged limbs on woodland edge.
13	Wide hedge c. 4 m high. Holly, dogwood, spindle, ash, hawthorn.
14	Cattle grazed improved / species-poor semi-improved grassland. Perennial rye grass dominant, with sweet vernal grass, soft rush, common bent, creeping buttercup, cock's foot, common thistle, mouse-ear, dandelion, red clover, hop trefoil, broad-leaved plantain, timothy grass.
15	Broadleaved wood. Mostly mature ash and oak. Some mature cherry plantation. Two ash trees on edge of woodland with knotholes and woodpecker holes, mature oaks in centre of woodland with potential roosting features.
16	Minor stream throughout wood. Very little flowing water at time of survey (flow c. 10cm wide). Wood with mature alder, hazel, bramble, hawthorn, oak, ash, cherry.
17	Semi-improved neutral grassland with several indicator species of neutral grassland of SINC quality including yellow rattle, red clover, creeping bent, lesser stitchwort, common knapweed, bird's-foot trefoil, tufted vetch *Vicia cracca*, cuckoo flower *Cardamine pratensis*, common-spotted orchid, flatweed *Hypochaeris radicata*, meadow vetchling *Lathyrus pratensis*, field wood-rush *Luzula campestris*, tall fescue *Schedonorus arundinacea* and red clover.

	Central hedge with mature standard trees incl. oak, ash. One ash tree with woodpecker holes. Hedge 1-2 m high with ash, bracken, hawthorn, holly, ivy, elder. Bracken and hawthorn shrub, then mature oaks (some with branch splits).
18	Tree line, incl. oaks, one with knothole. Bramble on dead stump at east end, then with bramble scrub between.
19	a & b: Semi-improved neutral grassland / hay meadow with several indicator species of neutral grassland of SINC quality including common knapweed, flatweed, meadow vetchling, bird's foot trefoil, yellow rattle, lesser stitchwort, red clover, tufted vetch, and tormentil.
20	Hedge with mature standard trees incl. oak and ash.
21	Semi-improved neutral grassland with common bent, cock's-foot, sweet vernal grass, meadow buttercup, some alder saplings, some indicator species of neutral grassland of SINC quality including common knapweed, red clover, yellow rattle, lesser stitchwort, bird's foot-trefoil. Not grazed, with longer sward than rest of the Site.
22	Broadleaved wood with alder, hazel, willow, oak, sycamore, and ash. Brook in small valley. Badger set (1 entrance found).
23	Species poor semi-improved grassland, similar to TN20.
24	Bracken colonization. Improved around eastern margin.
25	Hedge = line of mature trees and shrubs including oak, ash, hawthorn.
26	Mature beech + cherry + ditch with some flowing water. Mainly dry.
27	Woodland copse with hawthorn and bramble extending north. Mature trees incl. oak and ash. Some with PRFs. Deep depression with stream valley in. Only water present where poached, nettles dominate depression, with bramble scrub beyond copse to south.
28	Poor semi-improved range of grass species. Common bent, Yorkshire fog, sweet vernal grass, cock-s-foot, timothy grass. Nettle patch in north of field.
29	Broadleaved wood over stream valley. Very little running water. Oak, ivy, hazel.
30	Improved grassland with patchy scrub on a bank and nettle.
31	Badger run into woodland (east to west).
32	Badger run into woodland (north to south).

Appendix 4: 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 11

11.1 PPW 11 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.

11.2 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."

11.3 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)

11.4 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.'

11.5 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.'

11.6 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 taken into account 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.'

11.7 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.

11.8 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

11.9 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.

11.10 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.

11.11 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):

11.12 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.

11.13 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.

11.14 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)

11.15 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.

11.16 "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

11.17 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.

11.18 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:

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

b. 'There is no satisfactory alternative'

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

Definition of breeding sites and resting places

11.19 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.[9] 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.'

Birds

11.20 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.

11.21 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'[10]) (Regulation 10 (3)) requires that the objective is the 'preservation, maintenance and re-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'.

11.22 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).'

Badger

11.23 Badger is protected under the Protection of Badgers Act 1992. It is not permitted to wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so; or to 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 to it. A badger sett is defined in the legislation as "a structure or place, which displays signs indicating current use by a badger".

11.24 ODPM Circular 06/2005[11] provides further guidance on statutory obligations towards badger within the planning system. Of particular note is paragraph 124, which states that "The likelihood of disturbing a badger sett, or adversely affecting badgers' foraging territory, or links between them, or significantly increasing the likelihood of road or rail casualties amongst badger populations, are capable of being material considerations in planning decisions."

[9] Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC. (February 2007), EC.
[10] 2009/147/EC Birds Directive (30 November 2009. European Parliament and the Council of the European Union.
[11] *ODPM Circular 06/2005. Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Impacts within the Planning System* (2005). HMSO Norwich.

11.25 Natural England provides Standing Advice[12], which is capable of being a material consideration in planning decisions. Natural England recommends mitigation to avoid impacts on badger setts, which includes maintaining or creating new foraging areas and maintaining or creating access (commuting routes) between setts and foraging/watering areas.

Reptiles

11.26 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).

11.27 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.

11.28 Current Natural England Guidelines for Developers[13] 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.'

11.29 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.'

Wild mammals in general

11.30 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.

Hedgerows

11.31 Article 10 of the Habitats Directive[14] 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).

11.32 The aim of the Hedgerow Regulations 1997[15], according to guidance produced by the Department of the Environment[16], 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

[12] http://www.naturalengland.org.uk/ourwork/planningdevelopment/spatialplanning/standingadvice/specieslinks.aspx

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

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

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.

11.33 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.