MAES MAWR SOLAR PARK

Preliminary Ecological Appraisal

Quality Management

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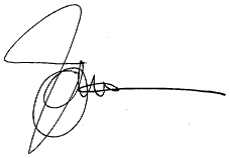
Tim Oliver MCIEEM  24 June 2022

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EXECUTIVE SUMMARY

- RPS was commissioned by Elgin Energy Esco Ltd to undertake a Preliminary Ecological Appraisal (PEA) of land located at Maes Mawr Farm to the east of Church Village in Rhondda Cynon Taff, South Wales. Elgin Energy proposes the installation of a solar park at the site.
- The site is approximately 41 ha in size and can broadly be subdivided into a larger western section and smaller eastern section.
- Much of the western part of the site comprises semi-improved grassland with areas of soft rush dominated marshy grassland. A large field with a continuous cover of soft rush forms a marsh in the lowest lying part of the site. Part of this field overlies a layer of peat between 0.5 and 1m in depth, although the remainder comprising disturbed non-peat substrates that used for the deposition of soils during the construction of the adjoining bypass. Shallow surface peat is also present in parts of two other fields.
- The eastern section is on higher ground and comprises short-grazed pasture fields that has been subject to some level of agricultural improvement in the past.
- Across the site the fields are bounded by long established overgrown hedgerows with mature hedgerow trees. Many of the field boundaries have associated hedgebanks and field ditches. A small watercourse flows within the site with three small watercourses on the site boundaries.
- Extensive adjoins broadleaved, partially ancient, woodland adjoins the site to the east and north which form part of the Willowford Site of Importance for Nature Conservation. The site also has hydrological links to two further designated sites; Tonteg Marsh SINC downstream of the site. Due to the proximity of these designated sites, in the absence of appropriate protection measures. there is potential for the development to result in indirect adverse effects during construction.
- Two small blocks of woodland are located within the site, adjacent to the boundary.
- The solar park development is expected to retain the hedgerows (including hedgerow trees), streams, ponds and ditches to maintain higher value biodiversity features over the lifetime of the development and following decommissioning. This would avoid the potential for impacts on dormouse, water vole, otter, hedgehog and bats (foraging).
- Accessible on-site and off-site ponds should be assessed for breeding great crested newt populations, although there are no known nearby populations in the local area. The longer grassland and hedgerow bases are potential reptile habitat and precautionary species protection measures should be employed during construction.
- Some of the pasture fields have the potential to be used by ground nesting birds and a breeding bird survey should be undertaken to assess the species assemblage using the site. A wintering bird survey should also be undertaken to assess use of the fields and margins as foraging habitat.
- The ponds and adjoining marshy grassland should be subject to surveys to confirm the presence/absence of a water vole population and inform requirements for species protection, if necessary.
- Dormouse has been recently recorded in scrub habitats on a disused railway line in the local area. Avoiding the widening access points or removing parts of a hedgerow and creating habitat buffers would maintain the value of the site for dormouse (if present) and avoid the potential for any adverse effects as a result of development.
- The solar park should be designed to include enhancements for biodiversity over the lifetime of the project with potential to maintain the biodiversity value of the mature field boundaries, marsh and rush pasture, grassland field margins and ponds. Changes in management should be designed to maintain the value of the grassland beneath the solar arrays, around the field margins. Areas of deeper peat should be safeguarded form any disturbance and actively managed to maintain water levels and increase botanical diversity. Additional areas of marshy grassland should be brought forward for habitat enhancement to increase the extent of sharp-flowered rush pasture.

- Habitats of value for different faunal species should be incorporated into the site layout. Depending on the findings of surveys for wintering birds, breeding birds, water vole and GCN; mitigation, species protection and enhancement where species occur within the site.
- The installation of bird boxes and bat boxes on trees along hedgerows and on the woodland edge would supplement existing cavity features in trees and benefit local populations.

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1 INTRODUCTION

1.1 Purpose and Scope of This Report

1.1.1 RPS was commissioned by Elgin Energy EsCo Ltd to undertake a Preliminary Ecological Appraisal (PEA) of land located at Maes Mawr Farm, located to the east of Church Village in Rhondda Cynon Taff, South Wales, hereafter referred to as 'the Site'. Elgin Energy proposes the installation of a solar park at the site.

1.1.2 The aim of the PEA is to provide an initial assessment of the site's ecological value, and the potential impacts on the site as a result of the proposed development. The assessment is based on the following elements undertaken as part of the PEA:

- a desk-based search for designated sites and records of protected species and other species that could present a constraint;
- Phase 1 habitat survey of the habitats present on site;
- an assessment of the site for potential to support protected species or other species that could present a constraint, and make appropriate recommendations for further survey work if necessary;

1.1.3 The findings of the PEA are presented in this report and the accompanying Habitats Map based on the Phase 1 Habitat Survey. This report is referred to as a Preliminary Ecological Appraisal Report (PEAR) in accordance with CIEEM (2017).

1.1.4 This assessment is considered 'preliminary' until any required protected species, habitat or invasive species surveys are completed, and the results incorporated into a final Ecological Appraisal or Ecological Impact Assessment (EcIA) which supports the planning application. Where such surveys are considered necessary this is identified in the PEAR.

1.1.5 The PEAR also provides outline options for avoidance / mitigation / compensation measures as appropriate; and makes recommendations for appropriate biodiversity enhancements in line with national and local planning policy.

1.1.6 This report pertains to these results only. Recommendations included within this report are the professional opinion of an experienced ecologist and therefore the view of RPS. This report and the supporting surveys and desk-based assessment have been carried out and prepared in accordance with the British Standard for Biodiversity Code of Practice for Planning and Development (BS42020:2013).

1.2 Study Area and Zone of Influence

Site Description

1.2.1 The site is located on farmland between Church Village and Treforest Industrial Estate. The site is centred on National Grid coordinates ST102858.

1.2.2 The site is approximately 40ha and largely comprises semi-improved and marshy grassland bounded by hedgerows and field ditches. An unclassified road runs north-south through the middle of site broadly creating eastern and western sections. Areas of broadleaved woodland adjoin the site to the north and east.

1.2.3 The Church Village bypass (A473) adjoins the site to the north-west with broadleaved woodland and residential areas on the opposite side of this road. Pastural fields bounded by hedgerows extend beyond the site boundary to the south. An operational solar park lies to the south-east of the site.

1.2.4 The River Taff lies over 300m to the east of the site with broadleaved woodland and a mainline railway line located between this watercourse and site boundary. The wider landscape is a mix of pasture and arable farmland, and broad-leaved woodland with the extensive Treforest Industrial Estate located to the east of the River Taff.

1.3 Legislation and Policy

1.3.1 Relevant legislation, policy guidance and both Local and National Biodiversity Action Plans (BAPs) are referred to throughout this report where appropriate. Their context and application is explained in the relevant sections of this report.

1.3.2 The relevant policy and legislation include:

- Environment (Wales) Act 2016
- The Conservation of Habitats and Species Regulations 2017;
- The Wildlife and Countryside Act 1981 (as amended);
- The Protection of Badgers Act 1992;
- The Countryside and Rights of Way Act 2000;
- The Hedgerow Regulations 1997;
- The Natural Environment and Rural Communities Act 2006;
- Planning Policy Wales
- Technical Advice Note 5 (TAN5)
- Rhondda Cynon Taff Biodiversity Action Plan

1.3.3 A summary of legislation relevant to protected or other species identified as potential constraints in this report is provided in Appendix A.

2 METHODS

2.1 Desk Study

2.1.1 Ecological records within a 2 km radius of the site were requested from South East Wales Biodiversity Records Centre (SEWBReC). The data request was limited to records for protected species or other species of conservation interest recorded within the last ten years and sites of nature conservation interest within 2 km of the site.

2.1.2 The desk study also included a data trawl for information on statutory sites of nature conservation interest, such as Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Area of Conservation (SACs) and National Nature Reserves (NNRs); and non-statutory sites, such as Sites of Importance for Nature Conservation (SINCs) and Local Wildlife Sites (LWSs).

2.1.3 Locations of statutory designated sites were accessed via the government 'MAGIC' website (https://www.magic.defra.gov.uk). More detailed information including site descriptions and features of interest were obtained from the Joint Nature Conservation Committee website (http://jncc.defra.gov.uk).

2.1.4 A 1:25,000 OS map was used to identify nearby features such as ponds or green corridors that could provide habitat for protected species, or connectivity to other areas of suitable habitat, which would influence the assessment.

2.1.5 Ordinance survey mapping was accessed via the government 'MAGIC' website (https://www.magic.defra.gov.uk) which was used to determine the number and locations of ponds within 500m of the site boundary.

2.2 Ecological Appraisal

2.2.1 The site survey element of the ecological appraisal consisted of two components: a Phase 1 Habitat Survey and a scoping survey for protected species and other species of conservation concern which could present a constraint to development.

2.2.2 The surveys were undertaken on 22nd December 2020 by Georgia Kelly. The Phase 1 Habitat Surveys followed the standard methodology (JNCC, 2016), and as described in the Guidelines for Preliminary Ecological Assessment (CIEEM, 2018). In summary, they comprised a walkover of the survey area and recording the habitat types and boundary features present.

2.2.3 A protected species scoping survey was carried out in 2020 and 2021 conjunction with the Phase 1 Habitat survey. The on-site habitats were assessed for their suitability to support protected species or other species of conservation importance that could pose a planning constraint. The suitability of adjacent off-site habitats, and the Site's connectivity with suitable habitats in the surrounding area was taken into account when assessing the Site's potential to support protected species.

2.2.4 Areas of habitat and other features of interest considered suitable for protected species or those of conservation interest, such as refuges and ponds were recorded. A preliminary search was made of suitable habitat for evidence of use by protected species although this search was not exhaustive.

2.2.5 A follow up habitat survey was undertaken on 1st June 2022 by Tim Oliver. The habitat descriptions and botanical information has been updated. The protected species sections of the report have not been updated. The findings of subsequent Phase 2 survey reports for wintering birds, breeding birds, water vole, and great crested newt are reported separately.

2.2.6 The updated PEA forms an appendix to the biodiversity chapter of the Environmental Statement.

2.3 Limitations

Desk Study

2.3.1 The desk study data is third party controlled data, purchased for the purposes of this report only. RPS cannot vouch for its accuracy and cannot be held liable for any error(s) in these data.

Habitat Survey

2.3.2 It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no investigation can ensure the complete characterisation and prediction of the natural environment.

2.3.3 The protected/notable species assessment provides a preliminary view of the likelihood of these species occurring on the site, based on habitat suitability, known distribution of the species (based on desk study data) and any direct evidence on the site. It should not be taken as providing a full and definitive survey of any protected/notable species group.

Accurate Lifespan of Ecological Data

2.3.4 The majority of ecological data remain valid for only short periods due to the inherently dynamic nature of habitats and wildlife. The survey results contained in this report are considered accurate for up to three years, assuming no significant considerable changes to the site conditions. The exact age of acceptable data will depend on the development specifics and the local planning authority.

3 RESULTS

3.1 Designated Sites

3.1.1 There is one international designated site for nature conservation value within 5 km of the site, the Cardiff Beech Woods SAC. This is a composite site of several discrete areas of woodland, the closest of which is located approximately 2.83km south of the site at the closest point.

3.1.2 The Severn Estuary SPA, SAC and Ramsar site is located just under 10km to the south of the site with no other international designations within this radius.

3.1.3 There are 19 non-statutory sites located within the 2 km search radius of the site. A summary of these sites is provided in Table 3.1.

3.1.4 The Willowford SINC is a near continuous series of small copses and woodlands including some areas of ancient woodland. The habitat is primarily dominated by oak, with more localised ash, alder and birch, with hazel, willow and hawthorn. Ancient woodland ground flora occur in parts of the SINC with bluebell, wood anemone, dog violet, bugle, primrose, red campion, wood speedwell, male fern, broad buckler fern and hart's-tongue fern. The Willowford SINC represents a large block of semi-natural woodland within a local network of woodland and is good quality woodland for birds and bats.

3.1.5 The SINC also provides connectivity between Tonteg Marsh SINC and Llantwit Fardre Marsh SINC (to the north) with Coed Gedrys SINC (to the south).

Table 3.1: Designated sites within 2 km of the study area

Site name	Type	Interest Features	Distance from site (at closest point)
Statutory Sites			
Cardiff Beech Woods	SAC	Areas of broad-leaved deciduous woodland. Annex I habitat *Asperulo-Fagetum beech forests*, for which it is one of the largest concentrations of the habitat in Wales. Annex I habitat *Tilio-Acerion forests of slopes, screes and ravines* is also as a qualifying feature but not the primary reason for the site. The woods show mosaics and transitions to acidic beech woodland and oak *Quercus* and ash *Fraxinus excelsior* woodland. Ground flora species include ramsons *Allium ursinum*, sanicle *Sanicula europaea*, bird's-nest orchid *Neottia nidus-avis* and yellow bird's-nest *Monotropa hypopitys*.	2.83
Non-statutory Sites			
The Willowford AW8.161	SINC	a large block of near continuous semi-natural woodland including areas of ancient woodland. The network of woods is important connection linking the Tonteg Marsh/Llantwit Fardre Marsh SINC to the north) with Coed Gedrys SINC (to the south)	Adjoining
Tonteg Marsh	SINC	AW8 138 Large area of wet valley bottom habitat with a complex mosaic of wet and drier grasslands, wet scrub and species-rich woodland.	153m W feed by D3
Taff and Rhondda Rivers	SINC	AW8.142 –river The River Taff and its bank side habitats are extremely diverse and varied; with the	187m E

		watercourse and adjoining habitats: woodland, floodplain grassland; neutral and marshy grassland	
Coed y Fardre		AW8 141 – Large semi-natural woodland on the upper valley side of the River Taff with associated bracken slopes and semi-improved neutral grassland	626m N
Coed y Gedrys and Garth-fawr	SINC	AW8.156 A large mosaic of ancient woodland and species-rich marshy grassland and damp neutral grassland	757m S
Taff Trail Cycletrack	SINC	AW8.162 – mosaic of habitats, including wet alder and willow carr, dry oak woodland, areas of swamp, species-rich banks and violet rich bracken slopes.	940m E
Llantwit Fardre Marsh	SINC	Extensive area of marshy grassland, drier species - rich neutral grassland, wet woodland and watercourse. Peat soils support with cotton-grass bog and cross-leaved heath. (Llantwit Fardre Marsh West supports an important mosaic of species rich neutral grassland, species-rich diverse woodland)	494m SW and 968m W
Fforestnewydd	SINC	AW8 163 A block of ffridd on the valleyside comprising a network of small woodlands associated with numerous small stream valleys and a large area of unimproved and semi-improved acid grassland/ bracken	1.027m NE
Efail Isaf South	SINC	AW8 146 A broadly linear mosaic of woodland and marshy grassland associated with disused railway line and Cwm Nant Felin	1.016m S and 1.767 SW
Heol-y-Cawl	SINC	AW 8 139 – small but important area of species rich marshy grassland and dry neutral grassland	1.519 N
Coed Caedyrys / Tir Thomas Jones Tip	SINC	AW8 160 – species rich woodland with ancient woodland ground flora	1.59 E
Brynhill Chapel Grassland	SINC	AW8 140 Three species-rich neutral pastures associated with Brynhill Chapel.	1.804 NW
Duffryn Dowlais	SINC	AW8 136 A large block of mature woodland with a well developed structure, and strong elements of ancient woodland ground flora	1.826 W
Ty-Rhiw Woodlands and Penrhos Cutting	SINC	AW8 158 An extensive area of semi-natural woodland (including areas of ancient woodland with diverse semi-natural ground flora), adjoining the Taff Trail and the railway sidings at Penrhos cuttings.	1.84m SE
Cwm Colliery Grasslands	SINC	AW8 131 – A large area of horse grazed, species rich marshy grassland and areas of species-rich, wet woodland	2.00 NW
The Garth	LWS		1.25
Coedgae Basset	LWS		1.32
Mynydd Meio, South of Abertridwr	LWS		1.80
Coed Rhiw'r Ceiliog	LWS		1.89

Abbreviations used in Table 3.1: SPA: Special Protection Area; SSSI: Site of Special Scientific Interest; NNR: National Nature Reserve LWS: Local Wildlife Site; NS: Not supplied; ha: hectare.

3.2 Species Records

3.2.1 A summary of the records held by the local records centre of protected species and other species of conservation interest recorded within 2 km of the site in the last 10 years records is provided in Table 3.2.

3.2.2 Only data with a 6-figure grid reference resolution or higher are provided, since locations given at a lower resolution do not allow accurate calculation of distance to the site boundary.

Table 3.2: Species records from the last 10 years within 2 km of the site

Common name	Scientific name	Nearest distance from site (km)	Year of most recent record	Conservation Status
Bats				
Common pipistrelle	*Pipistrellus pipistrellus*	0.92	2019	EPS, WCA5, HabsDir 4, HabRegs2, EA s7, LBAP
Soprano pipistrelle	*Pipistrellus pygmaeus*	0.95	2019	EPS, WCA5, HabsDir 4, HabRegs2, EA s7, LBAP
Pipistrelle species	*Pipistrellus sp.*	0.99	2019	EPS, WCA5, HabsDir 4, HabRegs2, EA s7, LBAP
Myotis species bat	*Myotis sp.*	1.51	2013	EPS, WCA5, HabsDir 4, HabRegs2, EA s7, LBAP
Unknown bat species	*Chiroptera sp.*	1.01	2018	EPS, WCA5, HabsDir 4, HabRegs2, EA s7, LBAP
Other Mammals				
Eurasian badger	*Meles meles*	1.41	2016	PBA, LBAP
European otter	*Lutra lutra*	1.05	2018	EPS, WCA5, EA s7, HabsDir 4, HabRegs2 UKBAP, LBAP
West European hedgehog	*Erinaceus europaeus*	1.02	2018	EA s7, UKBAP, LBAP
Reptiles and Amphibians				
Slow-worm	*Anguis fragilis*	1.27	2015	WCA5(part), EA s7, UKBAP, LBAP
Grass snake	*Natrix helvetica*	1.19	2012	WCA5(part), EA s7, UKBAP, LBAP
Common toad	*Bufo bufo*	0.87	2013	EA s7, UKBAP

Abbreviations used in Table 3.2: EPS: European Protected Species; WCA5: Wildlife & Countryside Act Schedule 5; EA s7: Environment (Wales) Act 2016, Section 7; UKBAP: UK Biodiversity Action Plan priority species; LBAP: Local Biodiversity Action Plan priority species; HabDir2, 4, 5: Habitats Directive Annex 2, 4, 5; PBA: Protection of Badgers Act 1992; HabRegs2: The Conservation (Natural Habitats, &) Regulations 2017 (Schedule 2).

3.2.3 The following bird species which may use habitats within or adjoining the site and which are listed by the British Trust for Ornithology on the Birds of Conservation Concern Red List have been recorded within 2km of the site:

Grasshopper warbler *Locustella naevia* (EA s7, UKBAP), mistle thrush *Turdus viscivorus*, tree pipit *Anthus trivialis* (EA s7, UKBAP), wood warbler *Phylloscopus sibilatrix* (EA s7, UKBAP), yellowhammer *Emberiza citrinella* (EA s7, UKBAP), spotted flycatcher *Muscicapa striata* (EA s7, UKBAP, LBAP), starling *Sturnus vulgaris* (EA s7), grey wagtail *Motacilla cinerea* and house sparrow *Passer domesticus* (EA s7, UKBAP)

3.2.4 The following bird species which may use the on-site habitats, and which are listed by the British Trust for Ornithology on the Birds of Conservation Concern Amber List have been recorded within 2km of the site:

Mallard *Anas platyrhynchos*, reed bunting *Emberiza schoeniclus* (WCA1, EA s7, UKBAP, LBAP), kestrel *Falco tinnunculus* (EA s7) and willow warbler *Phylloscopus trochilus* (UKBAP)

3.3 Phase 1 Habitat Survey

3.3.1 The site is divided by a central unclassified road with a smaller eastern section of more heavily grazed fields approximately 6.7ha in extent and a larger western section approximately 32ha in extent comprising wetter ground with substantial areas of soft rush within the grazed pasture fields.

3.3.2 The survey results are presented in the form a Phase 1 Habitat Plan (Ref ECO01609-001). Features within the site are referenced on the habitat plan; fields (F1, F2, etc), ponds (P1, P2, etc), watercourses (W1, W2, etc), ditches (D1, D2, etc) and hedgerows (H1, H2, etc) and are cross-referenced in the habitat descriptions. Photographs of habitats and features are provided in Appendix B.

Semi-improved Grassland

3.3.3 Fields F14, F16 and F17 on the eastern side of the site are located on relatively dry ground rising up from the road running north-south through the middle of the site.

3.3.4 The grassland species composition of Field 16 and the majority of F16 was characterised by crested dog's-tail *Cynosurus cristatus*, and meadow grasses *Poa* spp. with Yorkshire fog *Holcus lanatus*, sweet vernal grass *Anthoxanthenum odoratum* and red fescue locally frequent and perennial ryegrass *Lolium perenne* occasional.

3.3.5 Herb species abundance and diversity across the field is generally poor characteristic of agricultural improvement. White clover is abundant with creeping buttercup and creeping thistle both frequent. Other species present in very low abundance include yarrow, common nettle, oval sedge, common mouse-ear and dandelion.

3.3.6 The majority of F17 has a similar herb composition but with marsh thistle and yarrow also frequent. Sweet vernal grass is more abundant alongside crested dog's-tail in the closely sheep grazed pasture field.

3.3.7 The grassland in the northern third of F17 has a significant cover of bryophytes with red fescue, common bent, field woodrush *Luzula campestre* yarrow *Achillea millefolium*, bird's-foot trefoil *Lotus corniculatus*, germander speedwell *Veronica chaemydrys*, and pignut *Conopodium majus.*

3.3.8 Additional species on the eastern boundary, adjoining The Willowford SINC included a few acid grassland indicators (sheep's sorrel *Rumex acetosella*, heath speedwell *Veronica officinalis*, and heath bedstraw *Galium saxatile*), along with meadow vetchling *Lathyrus pratense*, meadow buttercup *Ranunculus acris*, common sorrel *Rumex acetosa,* and lesser celandine *Ranunculus ficaria* were present at low frequency. White clover *Trifolium repens* indicative of more improved grassland remains abundant or locally frequent.

3.3.9 The eastern field margin of F16 and the hedgebank on the northern boundary of F14 supported some of the species composition found in F17.

3.3.10 Bracken is an abundant ground cover in the adjoining woodland with one stand within F17.

3.3.11 There is no boundary fence and there is a transition from agriculturally improved pasture into grazed woodland ground flora with a strip of species-poor semi-improved acid grassland on the field boundary.

Semi-improved Neutral Grassland / Regenerating Grassland / Marshy Grassland

3.3.12 The western section of the site the ground is lower lying and wetter. Species diversity in the fields is variable but with no areas of high species diversity due to past agricultural improvement.

3.3.13 Habitat structure and composition is also influence by the creation of cover crops for pheasants in 2018 which were then abandoned and are now reverting back to grassland / tall ruderal vegetation.

3.3.14 On the western side of the site, this management/land use covered the majority of F7, approximately 50% of F9 and F11 and strips around the margins of F12 and F13. Prior to the sowing of the pheasant cover, aerial photography shows all these fields as bright green in colour indicating significant agricultural improvement in the past. On the eastern side of the site the whole of F15 was resown as a cover crop.

3.3.15 The wettest pasture fields (F6-F9) areas of soft rush dominated vegetation are frequent creating a patchy rush pasture. Soft rush is at least frequent and usually abundant within the pastures. The short grassy sward is characterised by a high frequency of Yorkshire fog, meadow grass *Poa* sp., sweet vernal grass and creeping bent *Agrostis stolonifera* with few herb species often limited to creeping buttercup *Ranunculus repens*. Areas of the wetter grasslands with higher diversity supported cuckooflower *Cardamine pratense* and oval sedge *Carex leporina* which were both locally frequent in several of the fields, along with marsh thistle *Cirsium palustre*, meadow buttercup *Ranunculus acris*, common sorrel *Rumex acetosa*, willowherb species, and lesser spearwort *Ranunculus flammula*.

3.3.16 More extensive areas of soft rush dominated marshy grassland are present in field F9. Cuckooflower and lesser spearwort are more prevalent along with marsh thistle *Cirsium palustr*e and bog stitchwort *Stellaria alsine* occasional on the wettest ground.

3.3.17 The fields in the southern part of the western section (F10, F11, F12 and F13) are drier but there are a few patches of soft rush. Sweet vernal grass *Anthoxanthenum odoratum*, red fescue *Festuca rubra*, meadow foxtail *Alopecurus pratensis*, and crested dog's-tail are all frequent components of the grassland in these fields. Perennial rye grass, broadleaved dock and dandelion, creeping buttercup all occur occasionally.

3.3.18 The herb composition includes yarrow, meadow buttercup, common sorrel, common mouse-ear *Cerastium fontanum,* and ribwort plantain, but occur at a low diversity per square metre.

3.3.19 Very localised populations of sharp-flowered rush *Juncus acutiflorus*, compact rush, smooth brome *Bromus racemosus,* common sedge *Carex nigra*, glaucous sedge and cuckooflower all occur on the western side of Field F13.

3.3.20 Bluebell *Hyacinthoides non-scripta* and bracken *Pteridium aquilinum* are both locally frequent/abundant in drier grassland adjoining field boundary hedgerows.

3.3.21 The areas of regenerating grassland (former pheasant cover crop) typically comprises 70-80% cover of grass and ruderals with bare ground. The most frequent colonising species are creeping bent, Yorkshire fog and soft rush along with a range of ruderals include broadleaved dock, creeping buttercup, white clover *Trifolium repens*, cleavers *Galium aparine,* and scentless mayweed *Tripleurospermum inodoratum*. Occasional plants of crop species are also present having continued to self-seed.

Marsh

3.3.22 Field F3 was a large expanse of soft rush dominated marsh over 4ha in extent on low-lying ground located towards the north-eastern boundary of the site. The soft rush is typically prevalent forming a virtual monoculture with extensive areas where dead rush leaves smothering the ground.

3.3.23 Patches of short grass sward occur amongst the dense rush tussocks and are more prevalent on the drier margins. Yorkshire fog and creeping bent are the primary grass species. Herb species are infrequent and the diversity is low. Willowherb species and curled dock *Rumex crispus* are the most frequently occurring species with occasional compact rush *Juncus conglomeratus,* cuckooflower, creeping buttercup, common marsh bedstraw *Galium palustre,* great willowherb

Epilobium hirsutum, hard rush *Juncus inflexu*s, toad rush *Juncus bufonius,* and oval sedge. Tall fescue *Schedonorus arundinacea* is locally frequent. Parts of the habitat are heavily waterlogged in winter with areas of shallow pooling, most notably on the eastern side of the field adjacent to pond created in the relatively recent past

3.3.24 Aerial photography illustrates that prior to 2008, Field F3 was an improved grassland subject to disturbance/ soil placement in 2009 as part of the construction of the Church Village Bypass and was restored back to agricultural grassland by 2013.

3.3.25 The assessment of soils, completed on 1st June 2022 confirmed that approximately in a quarter of the field (central northern section) there is a peat layer with an approximate depth of 0.8 – 1.0m although there is no obvious variation in the botanical composition of this area and there are no sphagnum mosses. The ground will be dry for about half of the year but becoming waterlogged throughout the winter months.

Rush Pasture

3.3.26 Field F1 supports rush pasture comprises sharp-flowered rush which is abundant across half of the small field. The associate species were wild angelica *Angelica sylvestris*, cuckooflower, glaucous sedge, common marsh bedstraw, meadow buttercup, ragged robin *Silene flos-cuculii*, common nettle, lesser spearwort, marsh thistle, great willow herb, square-stemmed willowherb, short-fruited willowherb, common hemp nettle *Galeobdolen tetrahit*. Willow saplings are colonising the habitat and bramble is encroaching from the wooded field boundary. Purple moor-grass *Molinia caerulea* and devil's-bit scabious occur at low frequency.

3.3.27 Red fescue, Yorkshire fog, tormentil Potentilla erecta, heath grass *Danthonia decumbens* and green ribbed sedge *Carex binervis* occur on adjoining drier ground

3.3.28 Field F2, adjoining F1 is primarily a species-poor soft rush dominated pasture but sharp-flowered rush is locally frequent on the eastern margin with creeping bent, Yorkshire fog, silverweed *Potentilla anserina*, common bedstraw, creeping cinquefoil *Potentilla reptans*, cuckooflower, field woodrush and red fescue.

3.3.29 A few areas of purple moor-grass occur on field margins. The extents of the habitats is small and the species diversity is low. The largest area, in the south-western part of F5 is less than 0.1ha. Smaller patches are present in the south-eastern corner of F3 in dry ditch channel, in the south-eastern corner of F7 and in the north-western and south-western boundaries of F9.

3.3.30 Himalayan balsam *Impatians glandulifera* has colonised this habitat in F5 and F9 and is locally abundant in places.

Hedgerows

3.3.31 The majority of the hedgerow field boundaries in the western section of the site are mature and scrubby with a typical height of 4m and width of 3m. Several of the field boundaries are lines of trees and shrubs, notably along watercourses and ditches with shallow open water. Some hedgerows have signs of historic past management include laying and coppicing and locally there is a high proportion of hazel *Corylus avellana*. The bases of many of these old hedgerows are more open and are no longer stockproof.

3.3.32 In contrast the hedgerows on either side of the central north-south road are regularly managed and have a typical height of 1.5m and width of 1-2m.

3.3.33 The hedgerows typically contain between 3 and 4 woody species with the most frequent being hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa* and field maple *Acer campestre*. Less frequently occurring species were holly *Ilex europeaus*, hazel *Corylus avellana*, silver birch *Betula pendula*, elm *Ulmus* sp., sycamore *Acer pseudoplatanus*, willow *Salix* sp. and ash *Fraxinus excelsior*.

3.3.34 Many of the hedgerows contained larger standard trees of at last 40cm diameter at breast height, typically oak *Quercus robur*, ash and beech *Fagus sylvatica*.

3.3.35 The hedge-base flora beneath the canopies was typically species-poor and heavily shaded being characterised by common nettle *Urtica dioica*, broad-leaved dock *Rumex obtusifolius* and cleavers. Bracken *Pteridium esculentum* is dominant along the base of hedgerows H10 and H23 and bluebell is abundant along several hedgerows in the south-western part of the site in spring.

3.3.36 Hedgerows broaden in a few locations. In the north-western corner of F12 mature oaks and hazel coppice and oak create a narrow wooded habitat with abundant bluebell, plus bramble, lesser celandine *Ranunculus ficaria* remote sedge and *Carex remota* with saplings of holly, hawthorn and rowan.

3.3.37 Hedgebanks and undulating ground adjoining the hedgerows support very localised areas of dry acid grassland and marshy grassland with purple moor-grass or sharp flowered rush with associate herb species.

3.3.38 Summary descriptions of each of the hedgerows is provided in Appendix C.

Watercourses

3.3.39 One ditch / stream runs north south through the centre of the western section comprising W1, W2, D4, D11, D16, D17, and D18. Further watercourses are located on the southern boundary of the western section (W3) and adjoining the southern boundary of the eastern section (W4).

W1 and W2

3.3.40 The W1 is a wooded watercourse adjoining Field F1 on the north-western site boundary. The narrow channel has steep to vertical 3m high banks with trees and shrubs on both banks. The channel is 1m wide and fast flowing with a stony channel bed. The water was fast flowing with a maximum depth of 20cm in December. Bryophytes, ferns, and ivy *Helix hedera* are growing on the banks with patches of bare ground.

3.3.41 A cavity in the bank alcove measuring 2m wide, 1m in height and 0.75m deep has formed on the western bankside 1m beneath the roots of a large beech tree (TN1). A pipeline crosses the stream above the water level from the bankside of field F1 to the west (TN2).

3.3.42 W2 is the upstream section of the same watercourse as W1. It has steep 1.5m high banks. The channel is up to 1m wide along the site boundary, widening to 2m in the off-site woodland to the north. The stream is slow flowing with and supports patches of floating sweet-grass *Glyceria fluitans*, brooklime *Veronica beccabunga* and rush species on the margins..

3.3.43 A mosaic of grasses, bryophytes, tall ruderals, rushes, bracken and bramble *Rubus fruticosus* agg. are growing on the banks A hedgerow comprising mature trees runs alongside on the western bank with a short 3m long section of stone wall beneath a large beech tree (TN3).

W3

3.3.44 The watercourse W3, beyond the south-western site boundary, is lined by mature streamside trees and is continuous with the small block of woodland in the south-western part of the site. The channel is typically 1m wide with a stony bed with shallow sloping banks (approximately 25cm in height). There was a moderately fast flowing with a maximum depth of 20cm at the time of the December survey. The watercourse channel widens to 3m and has a more silty substrate where it flows along the edge of the woodland and the banks are near vertical reaching 1m in height. The stream channel is shaded and lacks aquatic vegetation with the banks supporting grasses, ferns, scrub and bryophytes.

W4

3.3.45 The watercourse W4 is a narrow channel adjoining field F14, outside the site boundary. The channel is up to 1m wide and supports abundant floating sweet-grass with occasional patches of soft rush. The stream is moderately fast flowing with shallow water depth at the time of the December survey. The banks are moderately steep banks of up to 0.5m in height with grassland that is continuous with the pasture and subject to sheep grazing.

D3

3.3.46 A wide engineered drain lies in the north-western part of the site has a shallow (diffuse) water flow to the north-west. This drain has a 3m channel and is bounded by 1-2m high banks.

3.3.47 In places, mature shrub willows fill the base, but several wetland species occur in more open areas; remote sedge, floating sweet-grass, marsh marigold *Caltha palustris*, and water horsetail *Equisetum fluiviatile*.

3.3.48 Mature oak and birch trees form a continuous canopy on the northern bank and with a dense bramble thicket with occasional trees on the southern side. Wavy hair-grass *Deschampsia flexuosa*, and hard fern *Blechnum spicant* were rare on the banks of this drain. growing with creeping soft-grass *Holcus mollis*, ivy, and common bent.

Field Ditches

3.3.49 There are a total of 19 field ditches within the site, the majority of which are located beneath or immediately adjacent to hedgerows and are shallow and heavily shaded. The banks are typically 0.3 to 1m in height and shallow to moderately steep.

3.3.50 The water channels are typically less than 1m wide with water depths of less than 0.3m.

3.3.51 Bramble, bracken, common nettle, rough meadow grass and coarse grasses typically characterise the bankside flora but in localised less shaded sections support tall herb vegetation comprising hemlock water dropwort *Oenanthe crocata*, hemp agrimony *Agrimonia eupatorium*, soft rush, remote sedge, marsh thistle and lady fern *Athyrium filix-femina*.

3.3.52 A few aquatic species present in localised sections of less shaded ditches and banks. Floating sweet-grass *Glyceria fluitans* occurs occasionally with fool's watercress *Apium nodiflorum*, common marsh bedstraw, lesser spearwort, water starwort species and brooklime also noted.

3.3.53 Open unshaded section of Field ditch D6 support purple moor-grass and sharp flowered rush with a few associate wetland species. Adjacent banks support acid grassland indicator species including sheep's fescue, sheep's sorrel, tormentil and heath bedstraw.

3.3.54 Field ditch D5 is a short recently created channel connected to Pond P1. The ditch has 0.5m – 1m high vertical banks bounded by bramble. A few plants of round-leaved crowfoot *Ranunculus omiophyllus* and lesser spearwort have been recorded in the channel.

3.3.55 Field ditches D14 is a shallow wide ditch with a diffuse surface water flow. The vegetation is abundant soft rush with colonising shrubs and a range of wetland herb species. Field ditch D15 is vertical sided excavated channel with sparse vegetation in the base.

3.3.56 The banks of a short section of mainly dry ditch alongside H15 supported a range of wet grassland species (lesser spearwort, marsh bedstraw, square-stemmed St John's wort *Hypericum tetrapterum*, greater bird's-foot trefoil *Lotus pedunculatus,* common figwort *Scrophularia nodosa,* jointed rush *Juncus articulatus,* and false fox sedge *Carex obtrubae*) alongside woodland plants (bluebell, yellow pimpernel *Lysimachia nemorum,* and ivy). Brooklime and water starwort were both growing on seasonally wet base of this ditch.

Waterbodies

3.3.57 Pond P1 comprises a widened broadly circular channel approximately 5m wide with a low-lying central island supporting soft rush dominated marshy grassland. Several of the banks are steep with bare earth. Submergent vegetation is absent with soft rush, and a small stand of reedmace *Typha* sp. on the banks. Pond 1 is very turbid and used by commercially farmed mallards.

3.3.58 It was created between 2016 and 2018 with the widening of an existing ditch channel and through the excavation of a new channel to create a circular waterbody enclosing part of the field to form the island.

3.3.59 Pond P3 present towards the centre of field F9, measuring 15m in length and 12m in width, with an island at the centre measuring 6m in length and 2m in width. Patches of floating sweet-grass, brooklime, water starwort *Calitriche* sp., bulbous rush *Juncus bulbosus*, round-leaved water-crowfoot *Ranunculus omiophyllus* and water purslane *Lythrum portula* are present.

3.3.60 Patchy rush dominated vegetation is present on the banks around the edge of the pond and are continuous with the surrounding marshy grassland. Forget me not, cuckooflower, lesser spearwort and bog stitchwort are frequent. Other wetland species include marsh pennywort *Hydrocotyle vulgaris*, marsh speedwell *Veronica scutellata*, water pepper *Persicaria hydropiper,* gipsywort *Lycopus europaeus*, sharp flowered rush, and a single plant of common cotton grass *Eriophorum angustifolia.*

3.3.61 Aerial photography shows that Pond P3 was only excavated in 2016/2017. Prior to this it was a marshy area within managed agriculturally improved grassland, but based on its circular shape, it is very likely to have historically been pond which then become silted up over time.

3.3.62 A steep-sided depression an open wooded copse (P2) held water in Dec 2020 has been completely dry in 2021 and early 2022. Aquatic vegetation is absent and there is a mature oak tree growing on the side indicating that it does not usually hold water.

Mature Trees

3.3.63 A large number of mature trees are present within the site but almost all are within hedgerows and wooded field boundaries.

3.3.64 Individual mature oak and ash trees are also present between fields F16 and F17 (TN6). Both trees have broken limbs and callous holes are present on the oak tree.

3.3.65 A line of mature trees forms the northern side of the wide man-made Ditch 3.

Broad-leaved Woodland

3.3.66 A 0.75ha block of broad-leaved woodland lies on the south-western boundary adjoining field F13 (TN7). The woodland comprises oak, and ash trees with hazel, holly and hawthorn also present. The ground cover was grassy with bluebells with bare ground and bryophytes below the scrubby areas.

3.3.67 Creeping soft grass is abundant with bluebell, rough meadow grass, and Yorkshire fog were the most frequent species. Bracken is locally dominant on the eastern woodland edge.

3.3.68 Western boundary is a hedgerow with hedgebank. Ivy is abundant with several ground flora species associated with older woodland habitat including greater stitchwort, wood sorrel, remote sedge, bluebell and pignut.

3.3.69 A small copse comprising less than 10 semi-mature/mature oak trees adjoins the western boundary. The copse has 30% canopy cover and the ground flora is dominated by creeping soft grass with no shrub layer. Dense stands of Himalayan balsam are present on the boundaries adjoining the woodland.

Scrub

3.3.70 A very small (0.07ha) area of dense scrub lies on the western boundary of field F5. Species composition includes hawthorn, with young silver birch and ash trees with rushes and grasses are growing amongst the scrub. Several small, dense patches of bramble are present in field F4. Scattered hawthorn trees are present in field F5.

Buildings and Hardstanding

Small Farm Building

3.3.71 A small single-storey concrete outbuilding is located on the eastern boundary within F16 (TN8). The building is of brick and concrete construction with wooden soffits and a flat felt roof. Two small window openings on the eastern and western elevations and gaps where the door has been damaged on the northern elevation provide potential access points for birds and bats into the building. The internal walls and ceiling are plastered.

3.3.72 Cavities on the external structure are limited to small gaps where the wooden soffits are damaged and where sections of the felt roofing have lifted up.

Industrial Area

3.3.73 The cable route extends 1.8km north from the proposed solar arrays to Tonteg road. The route follows the paved single track road which extends through the site northwards, before turning east along the road and beneath the railway bridge. The route then follows Gwaelod-Y-Garth road, Taffs Mead Road and Severn Road through Treforest Industrial Estate, before adjoining Tonteg Road and the National Grid site.

Bare Ground

3.3.74 An area of ground at the north of field F5 has been cleared and levelled. The western edge of the area comprises a steep 2m high bank supporting grasses and tall ruderal species (TN9). Crushed stone has been laid across the levelled area. A pile of refuse (approximately 5m in diameter) was present immediately outside the site to the north.

Offsite Habitats

Broad-leaved Woodland

3.3.75 Broad-leaved woodland that is grazed by sheep adjoins the site to the north and east.

3.3.76 To the north of the western section of the site, the woodland canopy and shrub layer comprises beech, silver birch, oak, ash and hazel with patches of holly, hawthorn and bramble. Grasses, mosses and ferns and few small patches of bracken form the ground flora. Alder is a locally frequent canopy species on lower lying ground and the non-native invasive species Himalayan balsam is locally abundant.

3.3.77 The areas of broadleaved woodland adjoining the eastern section are grazed by sheep and have an open structure with a tree canopy and grass and/or bracken dominated ground flora (TN10).

3.3.78 Canopy species include pedunculate oak, sycamore, beech, silver birch, and ash. Mature hazel, holly and hawthorn are occasional. Because the boundary between the pasture and woodland is unfenced the ground flora is subject to grazing and consequently there are very few young shrubs and trees.

3.3.79 A few springs are located at the top of the wooded slope which feed narrow rivulets with shallow stony channels running down slope to the east.

Ponds

3.3.80 Pond P1 is a large recently created man-made pond on the eastern side of field F5. The pond is 100m in length and up to 42m wide with a large central island measuring 70m in length and 35m, accessed by a wooden bridge.

3.3.81 The pond lacks submerged aquatic vegetation and has turbid water which was estimated to be over 0.5m in depth. Mallards were present on the pond during the walkover survey. The banksides and island are dominated by rushes. Small patches of bramble, common reed *Phragmites australis*, bulrush *Typha* sp. and scattered willow saplings are additionally present on the island.

3.3.82 The island has vertical bare earth banksides up to 0.3m in height, with small to medium sized mammal burrows halfway up the bank on the eastern side (TN4).

3.3.83 Pond P4 is a spring located within the broad-leaved woodland to the east of the site. The open water was a 5m diameter in December and has turbid water with an estimated depth of less than 0.5m. The pond has moderately steep grassy banksides and supports patches of floating sweet-grass.

3.3.84 Pond P5 is located at the entrance to the farm buildings at the north of the site. The pond is near dry, with the open water being 1m in diameter and less than 0.2m in depth. The pond has shallow banks supporting bramble, tall ruderal, mosses and grasses.

3.4 Protected Species Scoping

Invertebrates

3.4.1 The low botanical diversity of the grasslands that make up the majority of the site will limit their potential value for invertebrates.

3.4.2 The mature trees, hedgerows, ponds, ditches and off-site woodland will be the principal habitats of value for invertebrates within the site and immediate surroundings. The species assemblage at the site will benefit from the presence of aquatic and wooded habitats.

3.4.3 There are a number of records of marsh fritillary butterfly *Euphydryas aurinia* in the local area, mostly over 10 years old. Extensive areas of marshy grassland are located to the west and there is a past record for this species (older than 10 years). The marshy grassland within the site is species-poor and dominated by dense soft rush tussocks and is considered to have very low potential value for this local biodiversity action plan priority species.

Great Crested Newts (GCN)

3.4.4 There are no past records of GCN within 2km of the site and populations are not widespread in the wider area.

3.4.5 In terms the potential value of the pond habitats, Ponds P1 and P3 are over 1m deep and support aquatic vegetation. However, both ponds are used by waterfowl and may support fish reducing the likelihood of GCN being present.

3.4.6 Pond P4 is a seasonal spring with an estimated maximum depth of 0.5m with floating sweet-grass covering the surface as it considered to have low suitability for GCN.

3.4.7 Ponds P2 has been completely dry during all the site visits after December 2020. P5 lacked aquatic vegetation and are considered to have negligible suitability as breeding habitat for GCN.

3.4.8 During the winter walkover survey, the field ditches typically had water depths of less than 20 cm with several dry sections. Aquatic vegetation is virtually absent and the channels will be dry in summer, making them suitable habitat for breeding GCN.

3.4.9 In addition, the Ordinance Survey maps shows four further ponds within 250m of the site. One of the ponds is located within woodland 10m from the road proposed for the cable route. Two are located between 100-150m north of the site within residential properties and a fourth is located within woodland 140m east of the site.

3.4.10 If a GCN breeding population is present in an on-site pond or one of the nearby off-site ponds then dense vegetation in the bases of hedgerows and alongside ditches would provide cover with the potential to be used by GCN as foraging habitat and dispersal routes. The marshy grassland and would also be potential foraging areas.

Reptiles

3.4.11 The taller vegetation alongside hedgerows, ditches, watercourses and marshy grassland provide areas of cover and potential foraging habitat with records of both grass snake and slow worm from the local area in the past. The ponds are likely to support at least one common amphibian species which would provide an additional source of prey for grass snake, a species that can be far ranging in summer.

3.4.12 In contrast the closely grazed pasture fields, particularly to the east of the site (F14, F16 and F17) have very low value as reptile habitat lacking cover and invertebrate prey species.

Breeding Birds

3.4.13 The hedgerows and mature trees would be expected to have value for a range of breeding species associated with farmland habitats. The grasslands could also be used by ground nesting farmland species including skylark and potentially have value as feeding and roosting areas for wintering birds. The patchy semi-improved/marshy grassland has the potential to be used by nesting waders such as lapwing.

3.4.14 Ponds P1 and P3 could provide foraging habitat and areas of shelter for waterfowl. The woodlands (primarily off-site) will add to the diversity of the breeding bird assemblage and the size of populations in the immediate vicinity of the site.

Wintering Birds

3.4.15 During the February walkover survey the majority of bird activity was associated with the hedgerow field boundaries with the mature hedgerow shrubs and trees providing a resource for a range of commonly occurring passerine species associated with urban and rural habitats with tit species, robin *Erithacus rubecola* and dunnock *Prunella modularis* occurring most frequently.

3.4.16 A small amount of bird activity as associated with birds foraging in fields within the development. Most notably a flock of 70 linnet *Linaria cannabina* were recorded in the eastern half of the site, associated with Field F15, along with flock of four chaffinches *Fringilla coelebs* and a single skylark *Alauda arvensis*. The seed remaining in the deadheads of a crop growing within the grassland provided an overwinter food source for these species. At the end of survey walkover a flock of 50 linnet were seen flying south west from the direction of F15 towards Field F11 and were considered to be part of the same group of birds.

3.4.17 A group of four chaffinch were also recorded in Field F9 feeding in the field and sheltering in the adjoining hedgerow. A group of 22 mallard *Anas platyrhynchos* were also in the same field adjacent to Pond 3. Along with frequent sightings of wood pigeon *Columba palumbus*, a flock of 20 stock dove *Columba oenas* overflew the Field F9 where they will be feeding on fields in and around the site.

3.4.18 A pair of stonechat were recorded on soft rush grassland southern margin of Field F3 the extensive marshy grassland with a single female recorded in Field F9. A male reed bunting was observed on bramble in the south-eastern corner of Field F3. A flock of 14 starling *Sturnus*

vulgaris briefly roosted on shrubs adjacent to Pond 3 having flown into the site from the west and pied wagtails *Motacilla alba,* up to four, were feeding om Field F17.

3.4.19 Based on the habitat many of the fields would have the potential to be used at least occasionally by wintering fieldfare *Turdus pilaris* and redwing *Turdus iliacus.* Mistle thrush *Turdus viscivorus* were starting to hold territories at the site with at least four singing males within and adjacent to the site and a pair of birds were observed feeding on Field F16 which is bounded on two sides by woodland. A single song thrush *Turdus philomelos* was recorded in the scrubby hedgerows close to Pond 1.

3.4.20 No bird activity were observed in the very extensive species-poor marshy grassland (Field F3) away from the hedgerow boundaries. The field has the potential to be used by snipe with the dense soft rush providing dense cover and the waterlogged ground would be expected to support suitable invertebrate prey.

3.4.21 Other species recorded in the site included jay *Garrulus glandarius*, green woodpecker *Picus viridis* and magpie *Pica pica.* Additional bird species heard calling from woodland adjoining the site included sparrowhawk *Accipter nisus* and nuthatch *Sitta europaea*.

Bats

3.4.22 Mature and semi-mature trees are present within the hedgerows and adjoining habitats. These trees are of a sufficient age and size to contain potential roost features which may support bats. In particular the mature oak and ash trees between fields F16 and F17 were noted as having callous holes and broken limbs which could be associated with cavities.

3.4.23 The small farm building within field F16 has low potential value for bats. While the openings provide access to bats, the interior lacks crevices or structures in which bats could roost. The farm buildings outside the site to the north of the site were not assessed.

3.4.24 The site has the potential to attract foraging bat species with the marshy grassland, watercourses, ditches, hedgerows, mature trees and small woodland block having highest potential value. These features are likely to be used as flightlines connecting with blocks of woodland adjoining the site boundary and the wider countryside.

Dormouse

3.4.25 There are many intact hedgerows within the site most of which are wide and densely scrubby with good connectivity to areas of off-site woodland. Most of the on-site hedgerows provide sufficient cover and structure for dormice with a range of woody species which would provide food sources.

3.4.26 The treelines and defunct hedgerows within the site have poor connectivity and provide less extensive areas of habitat and are considered sub-optimal for dormouse.

3.4.27 Although the extensive areas of broad-leaved woodland adjoining the site lacks a dense understorey, but there is good connectivity higher in the canopy and there is potential for dormouse to use the habitat and connecting hedgerows.

Badgers

3.4.28 An outlier badger sett with single entrance is located 8m at the base of hedgerow H2 (TN11) in the northern part of the site. Leaf litter is present in the sett entrance and sprawling bramble has grown over the surrounding area, indicating the sett has not currently active. A single mammal push-through was noted beneath a fence (TN12) with no latrines, dung pits or signs of foraging activity found during the walkover survey.

Otter

3.4.29 Otters are known to be resident in the local area with records from the closest record from the River Taff,1km from the site. The River Taff lies 340m from the site at the closest point with a railway line creating a degree of separation. The small watercourses within the site flow through culverts before entering the river.

3.4.30 No signs of otter were found, although the site walkover could not include a comprehensive search. The shallow water depth reduces the likelihood of regular use by otter but they have the potential to be used as corridors by otters moving through the landscape.

3.4.31 Areas of potential cover that could be used by otters during the daytime are largely limited to the sides of stream W1 on the north-western boundary of the site. The patches of dense scrub are located along W2 and W3 are considered to be too small to have value as cover for otter during the daytime and a public footpath runs parallel to W2.

Water Vole

3.4.32 The watercourses and field ditches had very shallow water and had very low potential value for water vole.

3.4.33 In Pond P1, a few medium sized mammal holes were visible in the bank on the eastern side of the island. Based on the size and position of the burrow entrances on the bank indicate that they could relate to water vole activity.

3.4.34 Extensive feeding signs of small mammals were present, with many piles of rush stems in parts of Field F3 including in locations a significant distance from the pond. Many of the stems were small were likely to relate to field/bank vole activity, but piles of 20cm long rush with 45^{o} angle chewed ends were indicative of water vole.

3.4.35 The marsh area (Field 3) is an extensive area of potential terrestrial habitat for water vole but the ground will be waterlogged throughout the winter and any hibernation opportunities would be limited to banks around the drier field margins.

Other Species

3.4.36 Hedgehog have been recorded within the local area. Hedgerows and hedge base flora provide suitable habitat and dispersal routes for hedgehogs.

3.4.37 The grazed pasture and marshy grassland are sub-optimal habitat for brown hare and there are no past records of this species in the local area.

4 EVALUATION AND POTENTIAL IMPACTS

4.1 Designated Sites

4.1.1 The nearest designated site is Cardiff Beech Woods SAC located approximately 2.83km south of the site at the closest point with no potential impact pathways associated with the solar park.

4.1.2 The nearest non-designated site is The Willowford SINC which adjoins the site boundary to the north and east of the survey area. Tonteg Marsh SINC is located on the opposite side of the Church Village bypass with hydrological connectivity between Ditch D3 and this designated site.

4.1.3 The development has the potential to directly and indirectly affect the features within the designated sites located close to the site boundary, primarily during construction. Following good environmental practice and implementing control measure to avoid pollution of running water would avoid potential adverse impacts on the adjoining and adjacent designations during the installation of panels and construction of infrastructure,

4.2 Habitats

Semi-Improved Grasslands

4.2.1 The short grazed pasture, semi-improved neutral grassland, marshy grassland/ rush pasture and regenerating grassland are not species-rich and comprise species that common in similar habitats in the surrounding landscape.

4.2.2 The regenerating grasslands also support a generally limited diversity of common grass and wildflower species. The fields have been subject to agriculturally modification and nutrient enrichment in past and this will affect their species composition and diversity.

Marshy Grassland / Marsh / Rush Pasture

4.2.3 The localised areas of sharp-flowered rush pasture and small patches of purple-moor grass quality as the habitat of principal importance (HPI) ‘purple moor grass and rush pastures’ under Section 7 of the Environment (Wales) Act 2016

4.2.4 The much more extensive soft rush dominated marsh and patches of marshy grassland with the semi-improved grassland lacked the dominant and associate plant species representative of this priority habitat type and are not classified as a habitat of principal importance.

Hedgerows, Field Ditches and Mature Trees

4.2.5 The hedgerows provide valuable wildlife corridors and foraging and sheltering opportunities for a range of species. Each of the individual hedgerows is a HPI and the network is an importance ecological resource within the site.

4.2.6 A large number of hedgerow trees are present within the field boundaries and there are sections of old coppiced hazel and other with evidence of having been laid in the past. Many of the hedgerows are associated with hedge banks (over 0.5m high) and/or dry ditches which confer additional biodiversity value.

4.2.7 The field ditches, number of connections to other hedgerows, presence of hedgerow trees, and lack of gaps increases the value of the hedgerows.

4.2.8 Any hedgerows with over 5 woody species and several associated features including ditches would qualify as important under the Hedgerow Regulations 1997.

4.2.9 The mature and semi-mature trees within boundary hedgerows have intrinsic value and removal of any mature or semi-mature trees would result in the loss of habitat which it would not be possible to re-establish over the lifetime of the solar park development.

4.2.10 The retention of hedgerows and field ditches would maintain the network of field boundaries and minimise habitat loss.

Ponds

4.2.11 Pond P1 provides suitable habitat for a range of species and has value within the context of the local area. Pond P2 is smaller in size and considered to have value in the context of the site. Ponds supporting priority species would classify as a HPI. The loss of any ponds would been to be fully mitigated in the development proposal with the creation of replacement habitat.

Woodland

4.2.12 The small block of on-site woodland comprises young and semi-mature trees and lacks a dense scrub understorey associated with more established woodland present in the wider landscape. Although small in extent the broadleaved woodland could classify as a HPI.

4.2.13 The more extensive off-site woodland will definitely qualify as a HPI. Adjoining the northern and eastern boundaries there is the potential for indirect effects which could be negated through the use of appropriate stand offs and buffer zones.

Watercourses

4.2.14 The watercourses within and adjoining the site will be headwaters in the vicinity of their source and as such will classify as HPI. They are a key ecological resource. Direct impacts would be unlikely, being primarily located on the site boundaries. During enabling works, construction and operation some activities would have the potential to directly and indirectly affect these features – such as through surface water run-off from working areas to the movement of soil.

4.3 Species

Invertebrates

4.3.1 The main features of value for invertebrates (mature trees, hedgerows, ponds, watercourses ditches and off-site woodland) will all be retained and protected from adverse impacts. The potential for impacts on invertebrates will relate to the change in context of marshy grassland once solar panels have been installed.

4.3.2 The value of the site for invertebrates will be maintained within the developed site with localised impacts restricted to species associated with marshy grassland and wet pasture.

Great Crested Newts

4.3.3 Two ponds held sufficient open water to have suitability as breeding ponds for great crested newts. There is a low likelihood of GCN occurring within the site based on the nearest known GCN populations.

4.3.4 The majority of individuals in any GCN population typically remain within 50m of a breeding pond throughout the year with smaller numbers using habitats in the wider area (Langton, Beckett and Foster, 2001). Any populations using ponds located further from the site would be unlikely to use the pasture fields within the survey area.

4.3.5 The installation of solar arrays would result in temporary disturbance of semi-improved grassland and marshy grassland. The construction of an access road could affect localised areas of grassland habitats and require the construction of hedgerow crossing points.

4.3.6 Where GCN populations occur, habitat mitigation would be required in the landscape scheme site and species protection measures would need to be implemented in advance and alongside construction. Once constructed the value of the solar park as terrestrial habitat would remain unchanged.

Reptiles

4.3.7 The soft rush tussocks in the marshy grassland, hedgerow bases and the banks of ditches and ponds have the potential to support reptiles.

4.3.8 If populations of slow-worm or grass snake occur within the site, species protection measures would be required during the construction of the solar park and the magnitude of the impact would specifically relate to the extent of loss of reptile habitat. With sensitive site design there would be no significant impacts on reptile populations.

Breeding Birds

4.3.9 Much of the site and its adjoining habitat provide suitable habitats that could be used breeding birds, particularly the hedgerows and woodland outside the site. Less common species potentially breeding on-site include tree pipit *Anthus trivialis* and willow warbler *Phylloscopus trochilus*.

4.3.10 The fields with less intensive levels of grazing are likely to be attract ground nesting birds such as meadow pipit *Anthus pratensis* and skylark *Alauda arvensis*.

4.3.11 Lapwing *Vanellus vanellus* are also ground nesting with a few known breeding areas in the surrounding area. Nesting lapwing have not been recorded at the site suggesting that they have not bred at the site in the past.

4.3.12 The installation of the solar panels will alter the agricultural fields which are found throughout the local area and use of the site by ground nesting pairs would be expected to be typical of the use of fields in the local area.

4.3.13 The installation of solar panels outside the breeding bird season would avoid direct impacts on nest sites and ground nesting birds. The change in visual context following the installation of the solar arrays could reduce the suitability of the fields as habitat for ground nesting birds, with possible displacement for areas in which solar arrays are installed.

Wintering Birds

4.3.14 The hedgerows and trees will provide sources of food for a variety of birds during the winter months. Redwing *Turdus iliacus* and fieldfare *Turdus pilaris* are likely to be present on site overwinter along with more common resident species. Areas of dense soft rush have the potential to be regularly utilised by snipe *Gallingo gallingo*.

4.3.15 The fields and scrubby margins could be also be of value to farmland bird species that have suffered long term population declines with both linnet and skylark recorded during an initial scoping survey in late winter.

4.3.16 The planting of pheasant cover crops in 2018 will have briefly increased winter food availability but this will have significantly declined since they were abandoned. The installation of solar panels will change the context of the site and the amount of food available in the site overwinter should be considered in the site design and layout.

Bats

4.3.17 Bats have the potential to be impacted by the direct loss of mature trees, loss or fragmentation of the hedgerow network, the loss of habitats associated with an abundance of invertebrate prey and artificial lighting. In the absence of artificial lighting during construction or operation and no potential for any indirect impacts on flight lines or foraging.

4.3.18 There would be negligible potential for bats to be impacted by the proposed development if the retention of hedgerows, ditches, trees and ponds is built into the site design. Where this is not possible further survey would be required to classify the status of use and define measures to avoid impacts.

Dormouse

4.3.19 The woodland located outside the site boundary has the potential to support a dormouse population. Overgrown and continuous hedgerows connected to the woodland would also be expected to be used by this species if present in the adjoining woodland.

4.3.20 Changes to the context of the offsite the woodland or the loss of hedgerows could affect dormouse activity is present and a presence/absence survey would need to be completed in order to assess if this species would be affected by the development.

4.3.21 Retention of the network of field boundary hedgerows and avoidance of impacts on off-site woodland, the value of the site for dormouse would remain unaffected and if present should continue to utilise the same field boundary habitats within the solar park.

Badgers

4.3.22 Currently no active badger setts could be affected by the solar park and no potential impacts have been identified. All potential foraging habitat for badgers within the site would be retained within any solar park development. The typical design for perimeter fence includes gaps at ground level for badgers to move beneath. The whole development and surrounding landscape would remain potential foraging habitat and the solar park would have a negligible effect on this species.

4.3.23 The inactive badger sett is located close to the site boundary. If it were to become active prior to the start of the development, the installation of the solar arrays could result in short term disturbance. The potential for damage or disturbance to the sett would also need to be assessed if any new access tracks are to be created within 30m of an active sett.

Otter

4.3.24 Only one watercourse flows through the site (W2) located in north-western part of the site close to pond P1. No signs of activity were found and there are no predicted potential impacts on otters from the solar park development based on the low value of the watercourse for foraging and absence of adjoining dense cover. Based on the retention of the ponds and watercourses with stand offs there would be no anticipated impacts on this species.

Water vole

4.3.25 Further survey work is required to determine the presence/absence of water vole in ponds or the adjoining marshy grassland.

4.3.26 If colonies are present, sensitive site design would be required to avoid the potential for impacts on the population. The field ditches and watercourse habitats have negligible value for water voles based on the very low habitat suitability. They are shallow-sided and the ditches are seasonally dry.

4.3.27 The anticipated impact from any new ditch crossings is negligible but if these features form part of the detailed design follow up survey would be required in order to fully assess presence/absence and any impacts.

Hedgehog

4.3.28 The use of the site by hedgehog and would not be adversely affected by the installation of the solar arrays or operation of the solar energy park. Cover would be provided in the bases of

retained hedgerows and reasonable visibility would remain below the solar panels enabling individuals to scan for the approach of predators to be detected.

5 CONCLUSIONS

5.1.1 The main habitats within the proposed solar park site largely comprises semi-improved grassland, marshy grassland with regenerating grassland where pheasant cops have been sown in the past.

5.1.2 Habitats of principal importance (HPI) listed under Section 7 of the Environment (Wales) Act 2016 comprise localised areas purple moor-grass / sharp flowered rush pasture (F1 and the localised areas on field margins F5, F7, and F9)

5.1.3 Other Section 7 habitats include the hedgerows, watercourses (primarily located outside the site boundary), and broadleaved woodland.

5.1.4 A network of overgrown hedgerows, hedge banks and field ditches divide the relatively small fields in the western part of the site. In contrast defunct flailed hedgerows bound very short grazed pasture in the eastern part of the site.

5.1.5 Mature and semi-mature trees are present in a number of the hedgerows, contributing to the value of the network and directly contributing to the overall biodiversity value of the site.

5.1.6 There are two ponds within open water located within the survey area; one a broadly circular with a large central island where part of the original field has been enclosed. The second was also excavated within an area of marsh within the last 10 years but historically is likely to have been a pond that silted up over

5.1.7 The site adjoins broadleaved woodland to the north of the western part of the site and to the east of the eastern part of the site. Both areas of woodland are within The Willowford SINC. A 0.6ha block of broadleaved woodland lies in the south-western corner of the site and a few sections of hedgerow widen out to form small linear wooded habitats.

5.1.8 The proposed cable route is aligned to a single-track road to the north of the site where its adjoins broadleaved woodland. The cable route follows the road north-eastwards under a railway bridge and through an industrial estate where it connects to the national grid.

5.1.9 The proposals would result in the loss of lower value, species-poor habitat, primarily semi-improved grassland, soft rush dominated marshy grassland and arable fields. The development of the site is expected to have a low impact on habitats within the site.

5.1.10 Based on the retention of key habitats (woodland, hedgerows, field ditches, ponds and streams) and the provision of minimum stand-offs there would be no impacts on the following species which have the potential to utilise habitats within the site or in wider landscape:

- Bats (roosts, flight lines and foraging)
- Dormouse
- Water vole
- Otter
- Badger
- Hedgehog

5.1.11 Breeding bird surveys should be undertaken to determine the nature conservation value of the wintering and breeding bird assemblages and assess the use and value of the site by ground nesting birds, in particular. Significant impacts on populations of ground nesting birds habitat would need to be mitigated. The value of the site for species nesting in scrub, hedgerows, woodland should be maintained.

5.1.12 Additional wintering bird survey visits should be undertaken to classify the use of the site by different species of birds and to explicitly assess use by farmland passerines.

5.1.13 An eDNA survey should be carried out to assess the presence / absence of breeding populations of GCN in the on-site ponds P1 and P3, and any accessible high value off-site ponds within 250m of the site. If GCN are found to be present the protection of the breeding population will need to be built into the design of the site and methods of construction.

5.1.14 Any mature trees that cannot be retained would need to be subject to further survey to assess use by roosting bats. Trees with roosts should be protected within the design. The solar energy park should be designed to include enhancements for biodiversity over the lifetime of the project.

5.1.15 Precautionary measures will be undertaken to protect reptiles from injury during the installation of the solar arrays.

5.1.16 A water vole survey should be carried out for ponds P1 and P3 and the adjoining marshy grassland to confirm the presence/absence of this species. if present the survey would confirm the level of activity and the extent to which habitats supporting water vole fall within the footprint of the development. Mitigation and species protection measures would be required where this is the case.

5.1.17 An inactive badger sett is located 8m from the site. A pre-commencement badger survey should be undertaken prior to construction to confirm the status of badgers within the site. The inclusion of mammal gaps beneath the perimeter fence would ensure permeability for mammals including badger and otter to be able to move through the landscape.

5.1.18 In relation to enhancement for biodiversity, wetland/marshy grassland biodiversity enhancement areas should be incorporated into the layout of the solar park.

5.1.19 The range of grassland habitats that will be below the solar arrays should be subject to management regimes that will maintain the species diversity and avoid a degradation in habitat condition over time.

5.1.20 Buffer zones alongside field margin habitats should be subject to enhancement for biodiversity and would be a mix of wildflower grassland and tussocky grassland.

5.1.21 Purple moor-grass vegetation of the field margins would be retained and management should seek to increase the extent of the habitat. Ditches and more bankside vegetation should also be protected from disturbance.

5.1.22 Field margins where there are small numbers of plants that are indicators of acid soils should be subject to targeted enhancement as semi-improved acid grassland.

5.1.23 Wildflower grassland should be subject to a meadow style management with periodic cutting (1-3 times a year) outside of the main flowering season (May – August) to provide greater cover and habitat for a range of species. Localised areas of species-poor vegetation should be subject to wildflower seeding appropriate for the underlying substrate.

5.1.24 Areas of tussocky grassland on the grassland field margins would be subject to rotational cutting (once every three years). This habitat would promote grassland structural diversity and maintain areas of dense cover as a feature of the network of hedgerows.

5.1.25 Selected field margins should be used as winter bird seed crops (annually sown with specific mix) to provide a food source for flocks of farmland birds during the winter months.

5.1.26 Defunct hedgerows could be replanted with appropriate woody species native to the local area and the ecological value of the on-site ponds could be enhanced.

5.1.27 In addition, bird boxes and bat boxes could be installed on trees along hedgerows and on the woodland edge would supplement existing cavity features in trees and which would benefit the local populations of some species.

5.1.28 Habitats should be subject to long term management over the lifetime of the development, maintaining different types of grassland providing areas of dense cover or botanical species

diversity. Hedgerows should be managed to maximise their flowering and fruiting and maintain a dense structure as cover.

5.1.29 Overall, the proposed solar park should result in very limited habitat loss with the maintenance of grassland below the solar arrays and around the field margins. Protection of key ecological features within the site and targeted enhancement supporting by biodiversity management over the 25 year period would deliver a long term biodiversity net gain.

REFERENCES

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

Langton, T.E.S, Beckett, C.L and Foster. J.P (2001) *Great Crested Newt Conservation Handbook.* Froglife, Halesworth.

DRAWINGS

Drawing 1 Phase 1 Habitat Plan

Notes
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Legend

- Proposed cable route
- Acid grassland - semi-improved
- Bare ground
- Broadleaved woodland - semi-natural
- Himalayan balsam
- Marsh/marshy grassland - soft rush dominated
- Marsh/marshy grassland - purple moor grass
- Other
- Scrub - dense/continuous
- Standing water
- Tall ruderal
- Broadleaved scattered trees
- Hedge with trees - native species-rich
- Hedge with trees - species-poor
- Intact native species-rich hedge
- Intact species-poor hedge
- Defunct species-poor hedge
- Running water
- Wet ditch
- Mammal push-through
- Scattered scrub
- Target note

Rev	Description	By	CB	Date
A	--	LW	GK	JAN 21

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Project: Maes Mawr

Title: Phase 1 Habitats Map

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APPENDICES

Appendix A

Relevant Legislation

Great Crested Newts

Great Created Newts *Triturus cristatus* are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (and as amended), which affords the species protection under Section 9. The species is also listed on Schedule 2 of the Conservation of Habitats and Species Regulations 2017. In combination, this makes it an offence to:

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

Great Crested Newts are also listed on the UKBAP as a Priority Species and are listed as a species of principal importance for biodiversity in England & Wales under Section 41 of the Natural Environment & Rural Communities Act (2006).

Reptiles

All common UK reptile species (Adder *Vipera berus*, Grass Snake *Natrix natrix*, Common Lizard *Zootoca vivipara* and Slow Worm *Anguis fragilis*) are protected through part of Section 9(1 and 5) of the Wildlife & Countryside Act 1981 (as amended). This prohibits:

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

Birds

All birds, their nests and eggs are afforded protection under the Wildlife and Countryside Act 1981, as updated by the Countryside and Rights of Way Act 2000. It is an offence to:

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

Schedule 1 birds cannot be intentionally or recklessly disturbed when nesting and there are increased penalties for doing so. Licences can be issued to visit the nests of such birds for conservation, scientific or photographic purposes but not to allow disturbance during a development even in circumstances where that development is fully authorised by consents such as a valid planning permission.

Bats

All British bat species are fully protected under Schedule 5 of the Wildlife and Countryside Act 1981, as updated by the Countryside and Rights of Way Act 2000. All British bats are also included on Schedule 2 of The Conservation of Habitats and Species Regulations 2017 as European Protected Species. It is an offence to:

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

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

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

The following bat species are listed as being of principal importance for the conservation of biodiversity in England, (commonly referred to as UKBAP Priority species): Barbastelle, Bechstein's, Noctule, Soprano Pipistrelle, Brown Long-eared, Greater Horseshoe, and Lesser Horseshoe.

Badger

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

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

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

Dormouse

Hazel Dormouse *Muscardinus avellanarius* is fully protected under Schedule 2 of the Conservation of Habitats and Species Regulations 2017. The Regulations prohibit:

- Intentionally, recklessly or deliberately kill, injure or take a Dormouse;
- The deliberate disturbance of this species in such a way as to be significantly likely to affect:
  - Their ability of to survive, hibernate, migrate, breed, or rear or nurture their young; or;
  - The local distribution or abundance of Dormice.
- Damage or destruction of a breeding site or resting place (nest);
- The possession or transport of Dormice or any other part of.

Dormice are also protected under the Wildlife and Countryside Act 1981 (as amended) through their inclusion in Schedule 5. Under the Act, they are protected from:

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

Offences can be deliberate, intentional or reckless and penalties for any of the above include fines of up to £5k and imprisonment of up to 6 months, per animal affected.

Dormice are also listed on Species of Principal Importance under S7 of the Environment (Wales) Act 2016. National objectives & targets include the maintenance of the geographical range and viability of existing dormice populations to ensure that it remains in favourable conservation status.

Water Vole and Otter

Water vole and Otter and their habitats are fully protected under the Wildlife and Countryside Act 1981 (as amended). Under this legislation it is an offence to:

- Capture, kill or injure a Water Vole or Otter;
- Damage, destroy or obstruct access to a breeding site or resting place (i.e. burrow);
- Disturb a Water Vole or Otter whilst in a place of shelter;
- Possess or control a Water Vole or Otter (live or dead), any part of a Water Vole or Otter or anything derived from a Water Vole or Otter;
- Sell, barter or exchange a Water Vole or Otter (live or dead), any part of a Water Vole or Otter or anything derived from a Water Vole or Otter; and / or
- Advertise or offer for sale, barter or exchange a Water Vole or Otter (live or dead), any part of a water vole or Otter or anything derived from a Water Vole or Otter.

Offences can result from intentional or reckless actions. Penalties include fines of up to £5000 and / or imprisonment for up to six months, per offence. Under certain circumstances a licence can be granted by Natural England to permit activities that would otherwise constitute an offence.

Otters have additional protection, being listed as a European Protected Species (EPS) under Conservation of Habitats and Species Regulations 2017. This makes it an offence to deliberately or recklessly:

- Capture, injure or kill an Otter;
- Harass an Otter or group of Otters;
- Disturb an Otter in a holt or any other structure or place it uses for shelter or protection;
- Disturb an Otter while it is rearing or otherwise caring for its young;
- Obstruct access to a holt or other structure or place Otters use for shelter or protection or to otherwise deny the animal use of that place;
- Disturb an Otter in a manner that is, or in circumstances which are, likely to significantly affect the local distribution or abundance of the species;
- Disturb an Otter in a manner that is, or in circumstances which are, likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young.

It is also an offence to:

- Damage or destroy a breeding site or resting place of such an animal (note that this does not need to be deliberate or reckless to constitute an offence);
- Keep, transport, sell or exchange or offer for sale or exchange any wild Otter or any part or derivative of one (if obtained after 10 June 1994).

Both species are listed as Species of Principal Importance under S7 of the Environment (Wales) Act 2016.

Appendix B

Site Photographs

Plate 1: Semi-improved neutral grassland (Field F6)

Plate 2: Semi-improved acid grassland on north-east boundary

Plate 3: Semi-improved neutral grassland (Field F10)

Plate 4: Semi-improved neutral grassland with soft rush (Field F4)

Plate 5: Soft rush dominated Marsh in December (Field F3)

Plate 6: Soft rush dominated Marsh in June (Field F3)

Plate 7: Species-rich managed hedgerow

Plate 8: Mature hedgerow with large trees

Plate 9: Stream W1

Plate 10: Stream W2

Plate 11: Stream W3

Plate 12: Stream W4

Plate 13: Shallow field ditch

Plate 14: Field ditch D16

Plate 15: Pond P1 (facing south)

Plate 16: Pond P1 (facing north)

Plate 17: Sharp-flowered rush marshy grassland (Field F1)

Plate 18: Pond P3

Plate 19: Mature hedgerow with bluebell/bracken ground flora

Plate 20: Shallow wetland ditch (D14) downslope of Pond P3

Plate 21: Broadleaved woodland in south-western part of site

Plate 22: Off-site broadleaved woodland (alder), beyond northern boundary

Plate 23: The Willowford SINC on eastern boundary

Plate 24: Bare ground and stone in field F5

Plate 25: The Willowford SINC open woodland with bracken

Plate 26: Off-site spring in The Willowford SINC adjacent to site boundary

Plate 27: Sharp-flowered rush marshy grassland (Field F1)

Plate 28: Spring-fed rivulets within The Willowford SINC

Plate 29: Off-site watercourse within woodland to north of site

Plate 30: Single lane road with managed hedgerows dividing the site

Plate 31: Hedgerows adjoining cable route

Plate 32: Railway bridge along cable route

Appendix C

Hedgerow Summary

Characteristics of onsite hedgerows

Hedgerow reference	Species-rich (over 5 species per 30m) / Species-poor	Intact / Defunct	Larger trees within hedgerow	Hedgerow structure
H1	Species-poor	Intact	-	Mature (tall and scrubby) hedgerow
H2	Species-poor	Intact	✓	Mature (tall and scrubby) hedgerow
H3	Species-rich	Intact	✓	Mature (tall and scrubby) hedgerow
H4	Species-poor	Intact	-	Bramble and gorse at the top of roadside embankment
H5	Species-poor	Intact	-	Mature (tall and scrubby) hedgerow
H6	Species-poor	Intact	-	Mature (tall and scrubby) hedgerow
H7	Species-poor	Intact	✓	Mature (tall and scrubby) hedgerow
H8	Species-poor	Intact	✓	Mature (tall and scrubby) hedgerow
H9	Species-poor	Intact	✓	Mature (tall and scrubby) hedgerow
H10	Species-poor	Intact	✓	Managed, dense structed hedgerow along roadside
H11	Species-poor	Intact	✓	Mature (tall and scrubby) hedgerow
H12	Species-poor	Intact	-	Managed, dense structed hedgerow along roadside
H13	Species-poor	Intact	✓	Mature (tall and scrubby) hedgerow
H14	Species-poor	Intact	✓	Mature (tall and scrubby) hedgerow
H15	Species-rich	Intact	-	Managed, dense structed hedgerow along roadside
H16	Species-poor	Intact	✓	Mature (tall and scrubby) hedgerow
H17	Species-poor	Defunct	-	Mature (tall and scrubby) hedgerow
H18	Species-poor	Intact	-	Managed, dense structed hedgerow along roadside
H19	Species-poor	Defunct	-	Mature (tall and scrubby) hedgerow
H20	Species-poor	Intact	✓	Mature (tall and scrubby) hedgerow
H21	Species-poor	Intact	✓	Mature (tall and scrubby) hedgerow
H22	Species-poor	Intact	✓	Mature (tall and scrubby) hedgerow
H23	Species-rich	Intact	-	Managed, dense structed hedgerow along roadside
H24	Species-rich	Intact	✓	Mature (tall and scrubby) hedgerow
H25	Species-poor	Intact	-	Managed, dense structed hedgerow e hedgerow along roadside
H26	Species-poor	Defunct	-	Managed hedgerow with gaps
H27	Species-poor	Defunct	-	Trees and mature shrubs Leggy hedgerow with gaps
H28	Species-poor	Intact	-	Managed, dense structed hedgerow along roadside
H29	Species-poor	Defunct	-	Scattered mature hedgerow shrubs with large gaps
H30	Species-poor	Defunct	-	Managed hedgerow with gaps
H31	Species-poor	Defunct	-	Managed hedgerow with large gaps
H32	Species-poor	Intact	-	Managed, dense structed hedgerow along roadside

Hedgerow reference	Species-rich (over 5 species per 30m) / Species-poor	Intact / Defunct	Larger trees within hedgerow	Hedgerow structure
H33	Species-poor	Intact	-	Managed, dense structed hedgerow along roadside
H34	Species-poor	Intact	-	Scrubby hedgerow with larger trees
H35	Species-poor	Intact	-	Managed, dense structed hedgerow along roadside
H36	Species-poor	Intact	-	Managed garden hedgerow
H37	Species-poor	Intact	-	Mature (tall and scrubby) hedgerow adjoining woodland to west
H38	Species-poor	Intact	-	Dense, managed garden hedgerow with tall section of conifer
H39	Species-rich	Intact	-	Managed, dense structed hedgerow along roadside, adjoining woodland to south
H40	Species-rich	Intact	-	Managed, dense structed hedgerow along roadside, adjoining woodland to south
H41	Species-rich	Intact	-	Managed, dense structed hedgerow along roadside, adjoining woodland to north
H42	Species-rich	Intact	-	Managed, dense structed hedgerow along roadside
H43	Species-poor	Intact	-	Managed, dense structed hedgerow along roadside
H44	Species-poor	Intact	-	Managed, dense structed hedgerow along roadside
H45	Species-poor	Intact	-	Managed, dense structed hedgerow along roadside