



Land to the West of Delph Road

On behalf of Lightsource Renewable Energy Ltd.

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Ecological Appraisal

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Contents

1	Summary	1
2	Introduction.....	2
2.1	Background	2
2.2	Site Description	2
2.3	Key Legislation, Policy and Guidance	2
3	Methodology	4
3.1	Desk Study	4
3.2	Field Survey.....	4
4	Results.....	6
3.1.	Designated Sites	6
5	Discussion.....	14
5.2	Designated Sites for nature conservation.....	15
5.3	Habitats	15
5.4	Birds	16
5.5	Bats	18
5.6	Badger	18
5.7	Otter & water vole	19
5.8	Amphibians and Reptiles.....	19
5.9	Invertebrates.....	19
5.10	Other Species.....	20
5.11	Summary – Ecology Priority Matrix.....	21
6	REFERENCES	22

Figure 1 : Phase 1 Habitat Survey Map

Appendix 1: Photographic Plates

Appendix 2: Bird records returned by Cofnod

Appendix 3: Reasonable Avoidance measures Amphibians and Reptiles

1 SUMMARY

- 1.1.1 This report presents the results of an Ecological Appraisal of a planning application site at Land to the West of Delph Road, Penrycae, Wrexham, LL14 1TU (the application site).
- 1.1.2 The Appraisal was commissioned in relation to the proposed installation of ground mounted photovoltaic panels on the site, sufficient to generate approximately 5 Megawatts of solar electricity that will feed in to the national grid, and associated infrastructure.
- 1.1.3 The aims of the appraisal were to assess the nature conservation value of the application site and immediate surrounds, including the potential presence of any rare, protected or notable species, and to identify any features including designated sites for nature conservation, habitats or species to occur, and which may constitute material constraints to the proposed development.
- 1.1.4 The Ecological Appraisal comprised two elements: a desktop study and an Extended Phase 1 Habitat Survey (carried out on the 20th November 2014).
- 1.1.5 The application site comprises three large improved grassland fields used as sheep and cattle pasture. A mix of intact and defunct and largely species poor hedgerows with associated ditches bound the fields and part of the application site. A strip of young plantation mixed woodland bounds the application site to the north and east. Two other smaller areas of young mixed plantation woodland were present along the site boundary to the west.
- 1.1.6 The application site does not form part of any statutory and non-statutory designated sites. There are a number of statutory and non-statutory designated sites in the wider area however no direct or indirect impacts are anticipated on these sites.
- 1.1.7 The potential for impacts on birds, terrestrial mammals, amphibians, reptiles and invertebrates are considered. Overall impacts are considered to be negligible and with appropriate mitigation and sensitive design measures, it is considered that impacts on protected and notable species can be avoided.
- 1.1.8 Protection measures are recommended in order to avoid impacts on the hedgerows and mature trees during the construction phase of the development. Measures are also recommended to prevent pollution through increased runoff and sedimentation to water courses during construction and operational phases.
- 1.1.9 The current land use of arable within the construction area is of low ecological value. The inclusion of habitat enhancement measures such as the development and management of structured grassland, planting of new native hedgerows and installation of bird and bat boxes will serve to provide a net biodiversity gain at a local level.

2 INTRODUCTION

2.1 BACKGROUND

- 2.1.1 Avian Ecology Ltd. was commissioned by Lightsource Renewable Energy Ltd. to undertake an Ecological Appraisal of a proposed development application site at Land to the West of Delph Road, Penrycae, Wrexham LL14 1TU.
- 2.1.2 The Appraisal was commissioned in relation to the installation of ground mounted photovoltaic panels on the site, sufficient to generate 5 Megawatts of solar generated electricity that will feed in to the national grid. The centre of the proposed development lies at grid reference SJ 2807 4423.
- 2.1.3 The objectives of the Appraisal are to:
- Provide baseline information on the current habitats and ecological features both within the application site and in the immediate surrounding area;
 - Identify the presence or potential presence of any protected species or habitats and provide an appraisal of any potential effects the proposed development may have on these;
 - Identify the proximity of any sites designated for nature conservation and identify the pathway for any potential effects the proposed development may have on these; and
 - Provide recommendations for further survey work and/or mitigation measures, which may be required and outline opportunities for habitat enhancement.
- 2.1.4 The Appraisal comprised a field survey, in combination with a desk based review of existing data and available online resources.

2.2 SITE DESCRIPTION

- 2.2.1 The application site, approximately 10.7ha in area, is located to the west of Delph Road, Penrycae, Wrexham. The surrounding area comprises extensive farmland, with pockets of woodland, and the settlements of Acrefair, Penrycae and Ruabon.

2.3 KEY LEGISLATION, POLICY AND GUIDANCE

- 2.3.1 Reference where appropriate has been made to the following key pieces of legislation, policy and guidance listed in Table 2.1.

Table 2.1: Key Legislation, Policy and Guidance.

European
• Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (hereafter referred to as the ‘Habitats Directive’); and • Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds (codified version of Directive 79/409/EEC as amended) (hereafter referred to as the ‘Birds Directive’).
National
• The Conservation of Habitats and Species Regulations 2010, as amended (hereafter referred to as the ‘Habitats Regulations’); • The Wildlife and Countryside Act 1981 (as amended); • Countryside and Rights of Way Act 2000; • Protection of Badgers Act 1992; • The Hedgerows Regulations 1997; • Natural Environment and Rural Communities Act (2006); • The National Planning Policy Framework (NPPF); Environment Strategy for Wales (WAG, 2006) • Technical Advice Note 5 (TAN 5) (2009) • The United Kingdom Biodiversity Action Plan (UK BAP); • ‘<i>Birds of Conservation Concern 3</i>’ (Eaton et al., 2009); • Natural England Technical Information Note TIN101 Solar Parks: maximising environmental benefits (Natural England, 2011); • Solar Power: RSPB Briefing, March 2011 (RSPB, 2011); • RE National Solar Centre (2014). Biodiversity Guidance for Solar Developments. Eds G. E. Parker and L. Greene; and • ‘RSPB Enhancement Package for Solar Farms on Former Arable Land’ (RSPB, 2013).
Local
• Wrexham Biodiversity Action Plan

3 METHODOLOGY

3.1 DESK STUDY

- 3.1.1 A desktop study was undertaken to identify the presence of any known existing features, habitats or species of ecological importance within the study area.
- 3.1.2 The study included a review of relevant policy and guidance and sought to identify the presence of any designated sites for nature conservation, through a review of the Multi Agency Geographic Information for the Countryside (MAGIC) and Natural Resources Wales websites¹.
- 3.1.3 An information request was also submitted to the North Wales Environmental Information Service (Cofnod) to obtain any biological species records pertinent to the proposed development.
- 3.1.4 The following minimum data search parameters were used (Cofnod data searches centred on the approximate centre point of the application site):
- All statutory designated sites within a 5km radius;
 - Non-statutorily designated sites within a 2km radius;
 - Records for all pertinent species within a 2km radius.
- 3.1.5 Reference was also made to Ordnance Survey maps of the wider area and online aerial images (www.google.co.uk/maps) in order to determine any further features of nature conservation interest in the wider area.

3.2 FIELD SURVEY

- 3.2.1 The field survey comprised an Extended Phase 1 Habitat Survey, which was undertaken on 20th November 2014 by Mr Mark Nelson MSc, a suitably qualified ecologist.
- 3.2.2 The extent of the survey area is shown in **Figure 1**.
- 3.2.3 The survey was undertaken in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) Technical Guidance Series *Guidelines for Preliminary Ecological Appraisal* (CIEEM, 2012), following the UK industry standard Joint Nature Conservation Committee (JNCC) Phase 1 Habitat Methodology (JNCC, 2010).
- 3.2.4 During survey all habitats within the survey area were mapped according to industry standards and described using a series of ‘target notes’ (TNs). TNs and habitat types are illustrated on **Figure 1** and detailed in **Tables 4.3-4.7**.
- 3.2.5 The survey was also extended to include the additional recording of specific features indicating the presence, or likely presence, of protected species, invasive species and other species of conservation significance.

¹ www.magic.gov.uk and www.naturalresourceswales.gov.uk, and <http://cyfoethnaturiolcymru.gov.uk/out-and-about/nrw-web-maps/protected-sites-and-landscapes>.

Limitations of Survey

- 3.2.6 An Extended Phase 1 Habitat Survey does not aim to produce a full botanical or faunal species list or provide a full protected species survey but, enables competent ecologists to ascertain an understanding of the ecology of the site in order to:
- Broadly identify the nature conservation value of a site and preliminary assess the significance of any potential impacts on habitat/species recorded; and/or
 - Confirm the need and extent of any additional specific ecological surveys that are required to identify the true nature conservation of a site.
- 3.2.7 Seasonality is also a key issue in ecological surveys as the timing of survey may dictate whether certain species groups are under-recorded or missed altogether. It is impossible to survey for all organisms in one survey visit due to the staggered nature of the life histories of different species.
- 3.2.8 The survey visit was undertaken in November, outside the optimal survey season in which to survey the broad habitats and characteristic flora expected to be present on the site (April to September). It is possible some species biodiversity was missed however in relation to the improved nature of the habitats on site this was considered unlikely to be significant in relation to the objectives of this appraisal.

4 RESULTS

3.1. DESIGNATED SITES

4.1.1 Four statutory designated sites were identified within a 5km radius of the application site. These are detailed in Table 4.1 below.

Table 4.1: Statutory designated sites within 5km of the application site (SSSI: Site of Special Scientific Interest, SAC: Special Area of Conservation, AONB: Area of Outstanding Natural Beauty).

Site Name & Status	Grid Ref. & Distance	Description of qualifying features
Afon Dyfrdwy (River Dee) SSSI River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (Wales) SAC	SJ 2695 4207 (Approx. 2.4km SSW from boundary)	The section of the River Dee between Llangollen and Bangor-on-Dee is noted for the unusual hybrid water-crowfoot <i>Ranunculus x bacchii</i>, otter <i>Lutra lutra</i>, water vole <i>Arvicola terrestris</i>, atlantic salmon <i>Salmo salar</i>, bullhead <i>Cottus gobio</i>, sea lamprey <i>Petromyzon marinus</i>, brook lamprey <i>Lampetra planeri</i>, river lamprey <i>Lampetra fluviatilis</i>, grayling <i>Thymallus thymallus</i> and eel <i>Anguilla Anguilla</i>. It is also noted for freshwater pearl mussel <i>Margaritifera margaritifera</i> and the water beetle <i>Bidessus minutissimus</i>. SAC – Habitats and species that are a primary reason for designation (Annex I): • Water courses of plain to montane levels • Atlantic salmon • Floating water plantain <i>Luronium natans</i> Secondary (Annex II) features: • Sea lamprey • Brook lamprey • River lamprey • Bullhead • Otter
Ruabon / Llantysilio Mountains and Minera SSSI Berwyn a Mynyddoedd De Clwyd / Berwyn and South Clwyd Mountains SAC	SJ 2568 4485 (Approx. 2.4km W from boundary)	Designated for its dry heath and blanket bog habitats making up heather moorland, limestone and neutral grasslands, rare and uncommon plants and a variety of upland birds including black grouse <i>Tetrao tetrix</i>. Minera caves are designated for bat interest. SAC – Habitats and species that are a primary reason for designation (Annex I): • European dry heaths • Blanket bogs Secondary (Annex I) features present as a qualifying feature but not a primary reason for designation: • Semi-natural dry grasslands and scrubland facies on calcareous substrates • Transition mires and quaking bogs • Calcareous and calcshist screes of montane to alpine levels • Calcareous rocky slopes with chasmophytic vegetation

Stryt Las A'r Hafod SSSI Johnstown Newt Sites SAC	SJ 2977 4558 (Approx. 2.1km NE from boundary.)	Designated for its large population of great crested newt <i>Triturus cristatus</i> as well as significant populations of four other commoner amphibians. SAC – Habitats and species that are a primary reason for designation (Annex I): • Not applicable Secondary (Annex II) features: • Great crested newt • A population of great crested newt • An assemblage of the five widespread amphibian species namely common frog, common toad, palmate newt, common newt and great crested newt
Nant-Y-Belan and Prynella Woods SSSI	SJ 2996 4127 (Approx. 3.6km SE from boundary)	Largest and one of the best examples of a semi-natural woodland type largely restricted to Wales and Southwest England. Notable for its botanic interest including the uncommon wild daffodil <i>Narcissus pseudonarcissus</i> .

Non-Statutory Designated Sites

- 4.1.2 Cofnod provided information for non-statutory sites within a 2km radius around the approximate centre of the application site. These are presented in Table 4.2.

Table 4.2: Non-statutory designated sites within 2km of the application site. (WS: Wildlife Site).

Site Name & Status	Grid Ref & Distance (km)	Description
Plas Bennion WS	SJ 285 439 (Approx. 210m SE from boundary.)	Dense / continuous scrub with marshy and semi-improved grasslands.
Gardden Wood / Rocky Wood WS	SJ 294 445 (Approx. 1.1km E from boundary)	Semi-natural broadleaved woodland.
Acrefair Railway Cutting WS	SJ 285 439 (Approx 1.1km S from boundary)	Semi-improved neutral grassland
Yew Tree Dingle WS	SJ 277 460 (Approx 1.3km N from boundary)	Semi-natural broadleaved woodland on steep river banks
Gardden Fort Wood WS	SJ 297 448 (Approx 1.5km E from boundary)	Semi-improved neutral grassland and semi-natural broadleaved woodland

Habitats

- 4.1.3 A Phase 1 Habitat Map is presented in **Figure 1**. Photographic plates are provided in **Annex 1**. A summary of habitats and species considered pertinent to the project are presented below. Information on the legal implications of the presence of such habitats and/or species

is discussed in Section 5 where appropriate, along with an assessment of possible impacts on these features.

- 4.1.4 The site occupies three large improved grassland fields used as pasture for sheep and cattle. The land lies within a wider agricultural landscape and is relatively isolated from higher value habitats such as watercourses, mature woodland or non-farmland.
- 4.1.5 The application site and much of the surrounding land is restored habitat from former mining use. The majority of the habitat features are of relatively recent origin and developing.
- 4.1.6 Field boundaries are largely formed by species-poor hedgerows, mostly intact. Wide gates are placed at the ends of the hedges closest to the road. Table 4.3 details hedges recorded during the survey.

Table 4.3 Hedgerow descriptions

Hedge Number	Comment
H1	Species poor hedge, defunct. Approx 1m high, 0.5m wide. Trimmed square, no ditch or bank. Very defunct/gappy. Species present include gorse <i>Ulex europaeus</i> . Runs alongside track. Links with hedge H2 to south.
H2	Species poor hedge, intact. Approx 3m high, 1m wide. Trimmed, on slight bank, ditch alongside to west outside site boundary (D1). Species present predominantly hawthorn <i>Crataegus monogyna</i> with occasional gorse, oak <i>Quercus robur</i> , wild cherry <i>Prunus avium</i> , bramble <i>Rubus fruticosus</i> , nettle <i>Urtica dioica</i> . Links with hedge H1 to west, woodland W3 to east.
H3	Species poor hedge, intact. Approx 1m high, 1m wide. Trimmed, no bank, ditch to east, merges into scrub strip along east side. Species present include hawthorn (90%), gorse, wild cherry. Links with woodland W1 to north and woodland W3 to south.
H4	Species poor hedge, intact. Approx 1.8m high, 1m wide. Trimmed, a little sparse. On slight bank, ditch alongside to north (D2). Species present include hawthorn, gorse, ash <i>Fraxinus excelsior</i> , blackthorn <i>Prunus spinosa</i> , bramble, common knapweed <i>Centaurea nigra</i> . Links with woodland W1 to northeast and hedge H3 to southwest.
H5	Species poor hedge, defunct. Approx 2m high, 1.5m wide. Trimmed, no bank, ditch alongside to west (D4). Species present include hawthorn. Links with woodland W3 to north and hedge H6 to south.
H6	Species rich hedge, intact. Approx 5m high, 1.5m wide. Untrimmed, no bank, dry ditch alongside to north. Species present include ash, hawthorn, willow <i>Salix</i> ssp, gorse, oak, wild cherry, bramble. Links with hedge H5 to west.

4.1.7 Woodlands bordering the application site comprised small areas of young plantation mixed woodland. One (W1) formed an extensive narrow belt acting as a screen along the edge of the road, continuing to the north and south of the application site.

4.1.8 Details of woodlands are shown in Table 4.4.

Table 4.4 Woodland descriptions

Wood Number	Comment
W1	Narrow strip of recent plantation mixed woodland, approx.. 10 years old. Species include Norway spruce <i>Picea abies</i> , ash <i>Fraxinus excelsior</i> , hawthorn <i>Crataegus monogyna</i> , oak <i>Quercus robur</i> , alder <i>Alnus glutinosa</i> , aspen <i>Populus tremula</i> , willow <i>Salix</i> ssp. Trees 2.5m to 5m tall on average, aspen approx 8m tall. Ground flora of gorse <i>Ulex europaeus</i> , dog-rose <i>Rosa canina</i> , broad-leaved dock <i>Rumex obtusifolius</i> , jointed rush <i>Juncus articulatus</i> . Variable tree ages along woodland length, and some open patches. Mistle thrush <i>Turdus viscivorus</i> seen. No bat roost potential. No dormouse potential.
W2	Plantation mixed woodland, approx 15 years old. Species include Norway spruce, birch <i>Betula pendula</i> , willow, oak, grey alder <i>Alnus incana</i> . Trees approx 8m to 10m tall. Ground flora bracken <i>Pteridium aquilinum</i> , bramble <i>Rubus fruticosus</i> . No bat roost potential. No dormouse potential.
W3	Plantation mixed woodland, approx 15 years old. Species include birch, Norway spruce, ash, white willow <i>Salix alba</i> , grey willow <i>Salix cinerea</i> . Trees approx 8m to 20m tall. Ground flora includes bramble and marsh thistle <i>Cirsium palestra</i> . No bat roost potential. No dormouse potential.
W4	Narrow strip of scrub with grey willow <i>Salix cinerea</i> , goat willow <i>Salix caprea</i> , ash <i>Fraxinus excelsior</i> , wild cherry, poplar <i>Populus</i> ssp up to 5m tall.
W5	Narrow strip of scrub containing goat and grey willow. Less than 5m high

4.1.9 Four ditches containing water were present; all were associated with hedge lines. A further dry ditch was associated with hedge H6. All linked and ultimately flowed out at the southern boundary of the application site.

4.1.10 A large pool / field depression approximately 200m south of the application site boundary. This pool was shallow and had no apparent inflow so was considered likely to be seasonally filled by rainfall. This is an un-vegetated ephemeral feature, apart from a fence line which crossed the pool containing remnants of a gorse hedge. The surrounding land comprised grazed improved grassland.

4.1.11 Details of ditches are presented in Table 4.5.

Table 4.5 Ditch descriptions

Ditch Number	Comment
D1	Drainage ditch. Approx 2m wide and 0.5m deep. Bottom with stones in parts. Mainly flowing west to east, but some pools. Water quality moderate, no obvious signs of algae. Aquatic vegetation extensive patches of large bitter-cress <i>Cardamine amara</i> . No evidence seen for otter <i>Lutra lutra</i> or water vole <i>Arvicola amphibius</i> . Pools may offer some potential for amphibians including great crested newt <i>Triturus cristatus</i> .

	Joins with D4 within wood to south.
D2	Drainage ditch. Approx 1.5m wide, 0.5m deep. Still water, dry in places. Water quality moderate, no obvious signs of algae. Aquatic vegetation grasses and creeping buttercup <i>Ranunculus repens</i> where ditch dries seasonally, large bitter-cress present where it remains wetter. No evidence seen for otter or water vole. Some potential for amphibians, including great crested newt in wetter sections. Joins with D3 to south.
D3	Drainage ditch. Approx 0.3m wide, 0.2m deep. Still and shallow, dries out to north. Bed of rocks and stones. Water quality moderate, no obvious signs of algae. Aquatic vegetation grasses and mosses. No evidence seen of otter or water vole and habitat generally poor suitability. Unlikely to become deep enough to support great crested newts. Offers good potential to support freshwater invertebrates preferring shallow water and stone substrate. Joins with D4 to south in woodland
D4	Drainage ditch. Approx 2m wide, 1m deep. Largely still but flowing a little to south and opens to wider pooling sections in places. Water quality moderate, no obvious signs of algae. Aquatic vegetation large patches of large bitter-cress in shallow areas, two stands of common reedmace <i>Typha latifolia</i> in the deeper water. No evidence seen for otter or water vole. Some potential to support amphibians including great crested newt in the deeper pools. Runs southward and links with other drains in area.

4.1.12 Table 4.6 summarises the main habitat types recorded within the site boundary.

Table 4.6: Main habitat types identified within the application site.

JNCC Habitat Code	Habitat Name	Approximate area (total study area ha)	% cover of study area
B4	Improved grassland	26ha	100%
J2.1.2	Species poor hedge – intact	524m	negligible
J2.2.2	Species poor hedge - defunct	470m	negligible
J2.1.1	Species rich hedge - intact	130m	negligible
A2.2	Scattered scrub	0.1ha	negligible

4.1.13 Table 4.7 details target notes from the field survey, and should be viewed in conjunction with Figure 1.

Table 4.7: Target notes summary.

Target Note Number	Comment
TN1	Improved grassland, grazed pasture. Heavily grazed. Slopes down towards west. Restored colliery, earth compacted. Photo 1
TN2	Gravel filled drainage channel running along west edge of woodland W1, recently cut.

TN3	Improved grassland, grazed pasture. Heavily grazed. Slopes down towards southwest. Photo 2. Restored colliery, earth compacted.
TN4	Improved grassland, grazed pasture. Heavily grazed. Slopes down towards south and east. Restored colliery, earth compacted. Grey partridge <i>Perdix perdix</i> present.
TN5	Track, approx 4m wide. Tall hedge to west (H7), broken hedge to east (H1). Track grass trimmed short.
TN6	Strip between field approx 4m to 5m wide. Contains hedge H3 along west side, ditch D3 through centre, scattered scrub carr woodland and a patch of recently felled woodland. Scrub comprises grey willow <i>Salix cinerea</i> , goat willow <i>Salix caprea</i> , ash <i>Fraxinus excelsior</i> , wild cherry, poplar <i>Populus</i> ssp up to 5m tall. Ground surface is very stony with a ground flora of mosses, gorse <i>Ulex europaeus</i> and a little bramble <i>Rubus fruticosus</i> .
TN7	Scattered scrub along drainage ditch. Willow car comprising goat willow and grey willow up to 5m tall, ground flora of mosses.

Protected & Notable Species

The application site and adjacent land is potentially suitable for a range of protected species and the wider area offers some possible foraging habitat for bats and birds, as described below. A data information request was submitted to Cofnod to obtain any records held for species of known conservation status within 2km of the application site.

Birds

- 4.1.14 Cofnod provided records of a number of bird species, including species protected under Schedule 1 of the Wildlife and Countryside Act (WCA) 1981, species listed on the UK Biodiversity Action Plan (UKBAP), listed as a priority species under Section 42 of the Natural Environment and Rural Communities (NERC) Act 2006 and / or red or amber listed species in 'Birds of Conservation Concern' (BoCC) (Eaton et al, 2009). Appendix 2 Table A2.1 summarises protected and notable bird species recorded within 2km of the application site along with their conservation status.
- 4.1.15 In general the application site habitats would not be considered important for maintaining populations of key species, some of which would be more likely to favour woodland and riverine habitats.
- 4.1.16 The improved grassland together with boundary hedgerows and young woodland are likely to support a suite of breeding birds typical of farmland habitats in the region. Buzzard *Buteo buteo*, grey partridge *Perdix perdix*, robin *Erithacus rubecula* and mistle thrush *Turdus viscivorus* were observed within the application site during the field survey.
- 4.1.17 The off-site pool/field depression and surrounding grassland to the south was observed to have a number of birds present at the time of survey, comprising gulls *Laidae*, lapwing *Vanellus vanellus*, mallard *Anas platyrhynchos*, Canada goose *Branta Canadensis* and grey heron *Ardea cinerea*.
- 4.1.18 The wider area is known to support barn owls. The farm buildings adjacent to the southern edge of the site are relatively modern and unsuitable for barn owl nesting sites. No trees or other structures suitable for nesting barn owls were located within the application site.
- 4.1.19 The field outside the southern boundary of the application site is also likely to support a range of breeding birds, and winter migrants due to the pool present within it. There are no waterbodies of this type within the application site.

Bats

- 4.1.20 Cofnod provided nine records of bat species within 2km of the site, for common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, noctule bat *Nyctalus noctula* and myotis bat species *Myotis* ssp. The closest record was for a myotis species 890m south of the site. One bat roost was recorded 1.7km east of the site.
- 4.1.21 None of the hedgerows, woodlands or trees within or adjoining the application site was considered suitable to offer bat roost potential.
- 4.1.22 The grazing land use of the application site, its open aspect, and its relative isolation from areas of mature woodland and other suitable bat habitat offers few opportunities for foraging bats. However, the boundary hedgerows, scrub and developing plantation woodland within and/or adjacent to the application site provide foraging and commuting

opportunities for bat species as well as habitat connectivity with the wider environment where better quality bat habitat is present.

Badger

- 4.1.23 Cofnod provided eleven records relating to badger *Meles meles* within 2km of the site, with the most recent record dating from 2006. The closest record was 1.4km east of the site.
- 4.1.24 No setts or other signs indicating badger *Meles meles* activity were identified within or immediately adjacent to the application site. Hedge bases and field margins provide potential habitat for this species, and it is possible that badgers are present in the area given their mobility and widespread distribution in North Wales.

Otter and Water Vole

- 4.1.25 Cofnod provided three records relating to otter *Lutra lutra* within 2km of the application site, with the most recent record dating from 2011. The closest record was 1.1km to the northeast of the application site. No records were provided for water vole *Arvicola amphibius*.
- 4.1.26 Several wet ditches were recorded on or adjacent to the application site. No evidence was seen for the presence of otter *Lutra lutra* or water vole during the field survey and the majority of the ditches had insufficient water depth or bankside habitat unsuited to provide suitable shelter, holts or resting places for these species, although they may be used as movement routes around the wider area. Ditch D4 had deeper pools which were potentially suitable for otter on a transient basis or water voles. This watercourse ultimately connects with the River Dee to the south and hence provides a possible dispersal corridor.

Hazel Dormouse

- 4.1.27 No records were provided for hazel dormouse within 2km of the application site.
- 4.1.28 No evidence of the possible presence of hazel dormouse *Muscardinus avellanarius* was recorded during the habitat survey, and this species is only present in scattered populations in Cheshire and North Wales. Boundary hedges were generally species-poor and dominated by species not favoured by feeding dormice. These hedgerows are also isolated from large areas of mature broadleaved woodland. Consequently, the application site is considered to have very low potential to support hazel dormouse, if present in the wider area.
- 4.1.29 As the proposed development will not require the removal of any hedgerow or woodland habitat, which will be retained and protected as part of the proposed development, this species is not considered further in this report.

Amphibians

- 4.1.30 The only records for amphibians, including single record for great crested newt *Triturus cristatus* and for smooth newt *Lissotriton vulgaris*, were all over 20 years old. No recent record of any amphibian species was provided. However North Wales and the Wrexham area is considered to be a stronghold for great crested newts, and their potential presence in the vicinity of suitable nearby water bodies cannot therefore be discounted.
- 4.1.31 Overall, the dominance of improved grasslands, lack of permanent waterbodies and setting within a relatively open wider agricultural landscape means that the application site offers low suitability for amphibians in general. The nearest waterbody lies outside the application site several hundred metres to the south and separated by an improved grassland field and

farm buildings/hardstanding. There is potential connectivity along the ditch network however, including D1 and D4 which run along the western boundary of the application site.

Reptiles

- 4.1.32 Three records of grass snake *Natrix natrix*, the most recent from 2011, and one of slow-worm *Anguis fragilis* from 2007 were provided by Cofnod, the closest being 1.3km from the site.
- 4.1.33 The improved grassland fields offer low suitability terrestrial habitat for great crested newts however field margins, hedgerow bases and scrub habitat provide potentially more suitable habitat for common reptile species such as grass snake or common lizard.

Brown hare and other notable species

- 4.1.34 Cofnod provided thirteen records relating to brown hare *Lepus europaeus* within 2km of the application site, with the most recent record dating from 2011. The closest record was 759m to the south. Hares are widely distributed and mobile species and are therefore considered likely to be occasionally present in or around the application site.
- 4.1.35 Three records of polecat *Mustela putorius* (dating from 2008) were provided by Cofnod, however the application site does not provide suitable habitat for this species and it is not considered further in this report.
- 4.1.36 Records of dingy skipper *Erynnis tages*, wall butterfly *Lasioommata megera* and white-letter hairstreak *Satyrrium w-album* were provided by Cofnod for the wider area. However the application site consists almost entirely of improved grassland and species-poor hedgerows and was considered to offer limited potential to support rare or protected invertebrates, or a diverse invertebrate assemblage, due to a lack of habitat structure and diversity.

5 DISCUSSION

- 5.1.1 In the absence of specific guidance for Wales, Natural England Guidance TIN101 (Natural England, 2011) is referred to within this Appraisal. TIN101 states '*like any type of development, solar parks have the potential to affect the landscape, natural habitats, soils and geological and archaeological features*'.
- 5.1.2 However, it also notes that a well located and designed park can avoid negative environmental impacts and deliver a net gain for biodiversity as well contributing positively towards low carbon energy production.
- 5.1.3 In view of the above, this section seeks to identify potential effects on protected and notable species. The proximity of statutory and non-statutory designated sites and potential effects on their qualifying interests is discussed. To this extent, recommendations are made for further survey work and mitigation, if required. Measures are proposed for the protection of on-site habitats throughout the construction phase of development.
- 5.1.4 This section also introduces opportunities for post-development habitat enhancement on the application site for the benefit of local biodiversity. This section is based on the Application Site Layout.

5.2 DESIGNATED SITES FOR NATURE CONSERVATION

- 5.2.1 Natural England guidance TIN101 (Natural England, 2011) highlights the potential for adverse impacts where a solar park is proposed on or adjacent to a designated site or near sites of high wildlife value. Any solar park close to a designated site or site of high wildlife value will need to demonstrate that the development would not compromise the objectives of the designation.
- 5.2.2 The application site does not form part of any statutory or non-statutory designated site for nature conservation. One SSSI is located within 5km of the application site boundary, three SAC within 10km and five non-statutory designated sites located within 2km.
- 5.2.3 By virtue of their separation distances and qualifying interests, no pathway for effect can be identified for the statutory or non-statutory designated sites. None of the sites listed in Tables 4.1 and 4.2 are considered to be ecologically or hydrologically linked to the application site, which supports a low diversity of species typical of intensively managed grassland. It is not considered likely to support rare or notable plant species or species-rich communities.
- 5.2.4 River Dee and Bala Lake SAC / SSSI is situated approximately 2.4km away from the boundary of the site, and no direct or indirect impacts are therefore anticipated as a result of the proposed development due to the nature of the proposed development (short time scale and relatively low disturbance levels during construction).
- 5.2.5 To prevent any possibility of any indirect downstream effects on species or habitats during construction, relevant Pollution Prevention Guidance (PPG) will be implemented and adhered to throughout construction works. With pollution prevention measures in place and construction activity and solar panels set back away from drainage ditches, no downstream effects are anticipated and hence no discernible effects on the qualifying wetland features of designated sites.

5.3 HABITATS

- 5.3.1 The site predominantly comprises intensively managed grassland in an agricultural landscape with little species diversity and which is generally of low value to wildlife. Some managed pasture will be lost as part of the proposed development but over 90% of the land beneath the solar panels will be retained as grassland and managed by grazing in the long term.
- 5.3.2 The field margins, defunct and intact species-poor and species rich hedgerows, ditches, scrub and young boundary woodland offer more valuable habitat at a local level. The solar panel infrastructure and layout has been designed to retain and protect these more valuable features, and the habitat loss associated with the proposed development footprint will be entirely limited to improved grassland habitat of low ecological value.
- 5.3.3 The proposed access to the site will be via the existing farm access, requiring no additional habitat loss.
- 5.3.4 All trees and the hedgerows will be retained and protected during the construction works. The perimeter fence will be installed first and this will then act as a barrier preventing construction activities encroaching upon boundary features. Protection measures will be employed to avoid adverse impacts in accordance with BS 5837:2012 *Trees in relation to design, demolition and construction*.

- 5.3.5 Consideration will be given to any potential for pollution run-off to occur during the construction and operational phases. Standard pollution prevention measures will be employed, following Natural Resources Wales Pollution Prevention Guidelines.
- 5.3.6 During the operational phase of the proposed development, dirt and dust can accumulate on the glass surface of the panels, reducing its power output. Periodic cleaning of PV modules will subsequently be required to ensure maximum power output. Cleaning PV modules will typically be undertaken during early morning or late afternoon hours when solar radiation is low and the modules are cooler, especially in regions with hotter temperatures. The glass surface of the PV modules will be cleaned with a soft brush using soft, clean water with a recommended pressure less than 690kPa, which is typical of most municipal water systems.
- 5.3.7 Solar PV modules are designed to withstand high snow loads. When removing snow a brush will be used to gently remove snow. No chemicals and minimal amounts of water will be used, resulting in no potential for polluted run-off to occur. No mitigation is therefore required in relation to the operational phase of the proposed development.
- 5.3.8 As part of the proposed development a series of enhancement measures will be implemented, including new native hedgerow planting within existing gappy sections of hedgerow using native species appropriate to the locality, and the management of pasture by controlled grazing under and around the solar panels to encourage a more species and structurally diverse grassland to develop.
- 5.3.9 Additional species rich wildflower seeding will take place at the boundaries of the application site and to re-vegetate ground disturbed during construction in order to increase floristic diversity and benefit invertebrates, small mammals and birds. Such enhancement measures are outlined within a Biodiversity Management Plan and will serve to provide net gains for wildlife at a local level.

5.4 BIRDS

- 5.4.1 With the exception of displacement from the development footprint the potential effects of photovoltaic (PV) solar parks on birds are not well documented, with research and monitoring into the potential for collisions and wing singeing having largely centred upon large Concentrated Solar Power (CSP) Farms. CSP developments typically comprise large concentrated solar arrays, which use mirrors (heliostats) to reflect sunlight onto a central receive tower and standby focal points. Developments are typically located in desert environments, and are not currently proposed within the UK.
- 5.4.2 PV panels which are used within the UK and proposed as part of this application are designed to absorb as much light as possible and are not considered to pose a collision risk to birds given their reduced glare. There is no firm or reliable evidence that suggests large numbers of bird strikes can be associated with PV panels, or confirms that waterfowl might be attracted to the panels (BirdLife Europe, 2011; RSPB, 2011). Similarly the effect of light reflected from mirrored panels, capable of resulting in wing singeing, will not occur at PV solar parks as concentrating reflected light is not part of the design.

- 5.4.3 Inevitably PV panels may still pose some risk of collision mortality to birds, particularly heavy wing-loading species such as swans and geese, given that birds may collide with any fixed object, or man-made structure such as fences, towers or buildings which are already present within and adjacent to the application site. The PV panels proposed as part of the application will be pre-fitted with a white border and white dividing strips as standard, which are considered to increase their visibility to birds and lessen their attraction to aquatic invertebrates (Hovarth *et al.*, 2010; RSPB, 2011). Potential collision impacts to birds are therefore not considered further within this Appraisal.
- 5.4.4 The site is not located within land containing important or sensitive bird populations and the land beneath the footprint of the development currently comprises intensively managed grassland fields, typically considered to be of limited value for most birds. However the field margins, hedgerows and immature woodland and scrub within and surrounding the site are likely to support a suite of farmland species, including potentially some species of conservation concern, such as linnet, yellowhammer, mistle thrush and tree sparrow, which were reported within records obtained by Cofnod and within the Extended Phase 1 Habitat Survey.
- 5.4.5 There is potential for breeding birds to be displaced by the construction phase of the development, either directly or indirectly, via disturbance impacts. Works are generally anticipated to be of short duration and relatively low impact and the intensively managed grassland beneath the footprint of the development is of limited value for most ground nesting birds. Construction works could potentially directly impact small numbers of ground breeding birds if conducted during the breeding season. Some localised disturbance could also occur on nesting birds within surrounding field boundary vegetation or on any birds nesting around the field margins, again depending on the timing of works.
- 5.4.6 Boundary habitat comprising field margins, hedgerows and trees will remain as part of the proposed development and there will be no loss of or impacts on these potential nesting habitats.
- 5.4.7 It is acknowledged that species specialising in open habitats may be displaced from the footprint of the development however, this is considered to be a negligible effect in the context of the breeding and wintering bird assemblage predicted to be present and the availability of comparable, and preferable habitats available within the adjacent and wider area.
- 5.4.8 All birds receive some level of protection during the breeding season. In order to avoid impacts on nesting birds and to ensure compliance with the provisions of the Birds Directive and the Wildlife and Countryside Act 1981 (as amended), it is recommended that any initial ground works and any associated vegetation removal take place outside of the bird breeding season (March to August inclusive) thereby avoiding any potential impacts on breeding birds. If vegetation works are necessary during the breeding season, a nest-search of all suitable habitats would be undertaken by a suitably experienced ecologist prior to works commencing. Only once the appointed ornithologist is satisfied that site clearance works will not result in an offence under the legislation, may works proceed.
- 5.4.9 Habitat enhancement including management of grassland to encourage more species and structurally diverse habitat, additional hedgerow planting (providing increased seed and invertebrate food resources) and the planned installation of bird nest boxes (including tree sparrow boxes) within vegetation along the margins of the application site will provide additional habitat and encourage breeding birds. Providing the implementation of mitigation and enhancement measures to be detailed within the BMP, it is predicted that the proposed development will serve to result in a net gain for birds at a local level.

5.5 BATS

- 5.5.1 Two possible mechanisms have been identified (Natural England, 2011) whereby operational solar parks may impact on bats;
- Loss of commuting and foraging habitat; and,
 - Injury through interaction with solar panel, either through occasional collision as a result of bats attempting to drink from the panels, or collision into panels when they are vertically aligned and bats attempt to fly through them (Siemers and Grief, 2010).
- 5.5.2 Natural England (2011) Guidance TIN101 states that there is some evidence from a laboratory-based study that bats can collide with solar panels, however further field-based research is required in order to comprehensively assess the likelihood of these effects.
- 5.5.3 The intensively managed grassland, which extends across the majority of the application site, provides limited opportunities for foraging bats, due to its open nature and relative lack of invertebrate prey. The boundary hedgerows, ditches, scrub and young plantation woodland provide potentially more suitable foraging and commuting opportunities for bat species.
- 5.5.4 There are no mature trees or buildings with bat roost potential within the application site and no roosts will be directly affected by the proposed development.
- 5.5.5 Temporary disturbance during the construction period is not considered to be significantly higher than that from existing agricultural activities. Consequently, no impacts are anticipated on roosting bats if present in mature trees or buildings bordering the application site.
- 5.5.6 As no hedgerow/woodland or tree losses will occur as a result of the proposed development, with access to the field being gained using existing tracks and gaps in hedgerows, no effects will occur on potential bat foraging and commuting routes or habitat connectivity.
- 5.5.7 The operational site will not be lit and bats will not therefore be likely to experience indirect effects from night-time lighting.
- 5.5.8 Hedgerow planting and gapping-up to be undertaken as part of the development is expected to improve foraging and commuting opportunities around the application site over time. Additional enhancement, described in full in the BMP will be achieved through the installation of bat roost boxes located on suitable features to the boundaries of the application site.

5.6 BADGER

- 5.6.1 No setts were identified within or within the immediate vicinity of the application site. Badgers are known to forage widely across agricultural habitats, and it is possible that badger visit the application site on an occasional basis.
- 5.6.2 Due to the lack of evidence of badger presence, short-duration of works and limited excavation works required, effects on badgers are considered negligible. A pre-construction badger survey will be undertaken to identify any new badger activity or the presence of setts within at least 25m of proposed construction areas. If setts are identified within 25m and works are considered to be of a scale and duration that could cause disturbance, a scheme of mitigation will be discussed in consultation with Natural Resources Wales.

- 5.6.3 In line with standard good construction practice ground excavations during the construction phase should be covered overnight or fitted with a means of escape for mammals or other species that could become trapped. All construction materials should be stored in secured compounds or raised off the ground.
- 5.6.4 To maintain the potential for badger access and foraging across the application site, suitable gaps will be provided beneath the perimeter fence in places to allow the free passage of mammals beneath it. Habitat enhancement through management to encourage more structurally and species diverse grassland and gapping up of hedgerows will improve the foraging value of the application site for badgers.

5.7 OTTER & WATER VOLE

- 5.7.1 Habitats within the application site were sub-optimal for otter or water vole. Construction activity will not affect on-site ditches, and therefore no impacts are anticipated on these watercourses or downstream habitats, or on otters or water voles if present in the area. Measures to prevent indirect pollution of water courses as outlined above will serve to avoid any indirect impacts on these species, where present within the wider area.

5.8 AMPHIBIANS AND REPTILES

- 5.8.1 Habitats to the margins of the application site may potentially be used by small numbers of common reptile species however the site is relatively isolated within an agricultural landscape and reptiles are not considered likely to be present in anything other than small numbers, if at all. The construction area, comprising largely of open intensively managed arable land provides low suitability habitat for reptiles and amphibian species.
- 5.8.2 Given the poor quality habitat for these species within the application site, notably the lack of permanent waterbodies, and the low number of local records, the proposed development is considered likely to have negligible effects on local amphibian or reptile populations. All works will also stand clear of all ditches and hedgerow bases across the site, further reducing the potential for any adverse effects on amphibian or reptile species if present. Construction of the solar park requires very low levels of land take (typically less than 4% footprint on the ground) and limited excavation for a temporary period of time, and therefore the likelihood of potential impacts on amphibian species is considered to be low.
- 5.8.3 As a precautionary measure, Reasonable Avoidance Measures (RAMs) will be implemented through the construction period (included as Appendix 3) to ensure the protection of any amphibian and reptiles species potentially present. Habitat enhancement through management of grassland to encourage more structurally and species diverse grassland and gapping up of hedgerows will improve the foraging and refuge value of the application site for amphibians and reptiles if present in the area.

5.9 INVERTEBRATES

- 5.9.1 Natural England Guidance TIN101 notes that some invertebrates may be affected by solar parks developed close to areas of high wildlife value. The application site does not however, lie within or near to any high value invertebrate sites and is considered to provide low value habitat for invertebrates. The boundary hedgerows and associated trees provide higher value habitats for a range of invertebrate species, and this value will be unaffected by the proposed development.

5.9.2 Habitat enhancement measures (hedgerow planting and management to create more diverse grassland) are expected to provide new opportunities within the application site for invertebrates at a local level.

5.10 OTHER SPECIES

5.10.1 No other species are considered pertinent in relation to the proposed development.

5.11 SUMMARY – ECOLOGY PRIORITY MATRIX

Ecological receptor	Recommended Further Survey Effort	Recommended Mitigation / Enhancement Measures
Designated Sites for Nature Conservation	n/a	Pollution prevention measures to avoid any potential for downstream effects
General Habitat	n/a	Protection of trees, ditches and hedgerows during construction Pollution prevention measures General habitat enhancement measures.
Birds	Nest searches if vegetation works are proposed during breeding/nesting season (March to August inclusive).	Vegetation clearance to avoid breeding season (March to August inclusive). Hedgerow gapping up Installation of bird boxes
Bats	n/a	Retention and protection of trees and hedgerows. Installation of bat boxes
Badgers	Pre-construction badger survey.	Precautionary measures to include covering open excavations and safe storage of materials overnight. Raise sections of perimeter fence to maintain access to habitats within operational site
Otter	n/a	Stand clear of ditch habitats Pollution prevention measures
Water Vole	n/a	Stand clear of ditch habitats Pollution prevention measures
Reptiles	n/a	Watching brief should be employed by site operatives during construction phase.

6 REFERENCES

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FIGURE 1

Habitat Survey Plan



APPENDIX 1

PHOTGRAPHIC PLATES



Photo 1

TN1 View of application site improved grassland



Photo 2

TN2 and W1 young woodland border application site



Photo 3

TN4 Improved grassland field



Photo 4

TN6 and immature woodland/scrub strip W4



Photo 5

H4 Species poor hedgerow



Photo 6

H6 species rich hedgerow

APPENDIX 2

Bird species Records returned by Cofnod

Table A2.1: Records of protected and notable bird species provided from Cofod (Annex 1: Listed on Annex 1 of the Birds Directive; BoCC: Amber/Red Birds of Conservation Concern; S41: Listed on Section 41 of the NERC Act, Species of Principal Importance; UK BAP: UK Action Plan Priority Species; S1: Schedule 1 of the Wildlife and Countryside Act).

Species	No. of Records	Conservation Status
Cormorant <i>Phalacrocorax carbo</i>	2	BoCC - Amber
Little Egret <i>Egretta garzetta</i>	1	Annex 1, BoCC - Amber
Mute Swan <i>Cygnus olor</i>	14	BoCC - Amber
Greylag Goose <i>Anser anser</i>	8	Annex 1, S42, UKBAP, BoCC - Red
Mallard <i>Anas platyrhynchos</i>	51	BoCC - Amber
Teal <i>Anas crecca</i>	18	BoCC - Amber
Tufted Duck <i>Aythya fuligula</i>	34	BoCC - Amber
Pochard <i>Aythya ferina</i>	5	BoCC - Amber
Goldeneye <i>Bucephala clangula</i>	1	S1, BoCC - Amber
Red Kite <i>Milvus milvus</i>	4	Annex 1, S1, BoCC - Amber
Hen Harrier <i>Circus cyaneus</i>	2	Annex 1, S1, S42, BoCC - Red
Goshawk <i>Accipiter gentilis</i>	1	S1
Kestrel <i>Falco tinnunculus</i>	39	S42, BoCC - Amber
Hobby <i>Falco subbuteo</i>	24	S1

Species	No. of Records	Conservation Status
Merlin <i>Falco columbarius</i>	3	Annex 1, S1, BoCC - Amber
Osprey <i>Pandion haliaetus</i>	3	Annex 1, S1, BoCC - Amber
Black Grouse <i>Tetrao tetrix</i>	1	S42, BoCC - Red
Grey Partridge <i>Perdix perdix</i>	4	S42, UKBAP, BoCC - Red
Little Ringed Plover <i>Charadrius dubius</i>	2	S1, BoCC - Amber
Lapwing <i>Vanellus vanellus</i>	37	S42, UKBAP, BoCC - Red
Curlew <i>Numenius arquata</i>	12	S42, UKBAP, BoCC - Red
Snipe <i>Gallinago gallinago</i>	2	BoCC - Amber
Woodcock <i>Scolopax rusticola</i>	11	BoCC - Amber
Black-headed Gull <i>Chroicocephalus ridibundus</i>	33	S42, BoCC - Amber
Herring Gull <i>Larus argentatus</i>	10	S42, UKBAP, BoCC - Amber
Lesser Black-backed Gull <i>Larus fuscus</i>	9	BoCC - Amber
Common Gull <i>Larus canus</i>	7	BoCC - Amber
Stock Dove <i>Columba oenas</i>	11	BoCC - Amber
Turtle Dove <i>Streptopelia turtur</i>	3	S42, UKBAP, BoCC - Red
Cuckoo	6	S42, UKBAP, BoCC - Red

Species	No. of Records	Conservation Status
<i>Cuculus canorus</i>		
Barn Owl <i>Tyto alba</i>	54	S1, BoCC - Amber
Swift <i>Apus apus</i>	18	BoCC - Amber
Kingfisher <i>Alcedo atthis</i>	5	Annex 1, S1, BoCC - Amber
Green Woodpecker <i>Picus viridis</i>	4	BoCC - Amber
Lesser Spotted Woodpecker <i>Dendrocopos minor</i>	7	S42, UKBAP, BoCC - Red
Skylark <i>Alauda arvensis</i>	7	S42, BoCC - Red
Sand Martin <i>Riparia riparia</i>	1	BoCC - Amber
Swallow <i>Hirundo rustica</i>	34	BoCC - Amber
House Martin <i>Delichon urbicum</i>	12	BoCC - Amber
Meadow Pipit <i>Anthus pratensis</i>	5	BoCC - Amber
Yellow Wagtail <i>Motacilla flava</i>	4	S42, UKBAP, BoCC - Red
Grey Wagtail <i>Motacilla cinerea</i>	12	BoCC - Amber
Dunnock <i>Prunella modularis</i>	52	S42, UKBAP, BoCC - Amber
Redstart <i>Phoenicurus phoenicurus</i>	7	BoCC - Amber
Wheatear <i>Oenanthe oenanthe</i>	4	BoCC - Amber

Species	No. of Records	Conservation Status
Song Thrush <i>Turdus philomelos</i>	30	S42, UKBAP, BoCC - Red
Redwing <i>Turdus iliacus</i>	39	S1, BoCC - Red
Mistle Thrush <i>Turdus viscivorus</i>	22	BoCC - Amber
Fieldfare <i>Turdus pilaris</i>	35	S1, BoCC - Red
Whitethroat <i>Sylvia communis</i>	1	BoCC - Amber
Willow Warbler <i>Phylloscopus trochilus</i>	15	BoCC - Amber
Wood Warbler <i>Phylloscopus sibilatrix</i>	1	S42, UKBAP, BoCC - Red
Goldcrest <i>Regulus regulus</i>	17	BoCC - Amber
Spotted Flycatcher <i>Muscicapa striata</i>	11	S42, UKBAP, BoCC - Red
Pied Flycatcher <i>Ficedula hypoleuca</i>	3	S42, BoCC - Amber
Marsh Tit <i>Poecile palustris</i>	3	S42, UKBAP, BoCC - Red
Starling <i>Sturnus vulgaris</i>	31	S42, UKBAP, BoCC - Red
House Sparrow <i>Passer domesticus</i>	57	S42, UKBAP, BoCC - Red
Tree Sparrow <i>Passer montanus</i>	3	S42, UKBAP, BoCC - Red
Brambling <i>Fringilla montifringilla</i>	18	S1
Linnet	5	S42, BoCC - Red

Species	No. of Records	Conservation Status
<i>Linaria cannabina</i>		
Lesser Redpoll <i>Acanthis cabaret</i>	5	S42, UKBAP, BoCC - Red
Bullfinch <i>Pyrrhula pyrrhula</i>	42	S42, UKBAP, BoCC - Amber
Hawfinch <i>Coccothraustes coccothraustes</i>	2	S42, UKBAP, BoCC - Amber
Common Crossbill <i>Loxia curvirostra</i>	8	S1
Reed Bunting <i>Emberiza schoeniclus</i>	3	S42, UKBAP, BoCC - Amber
Yellowhammer <i>Emberiza citrinella</i>	1	S42, UKBAP, BoCC - Red

Appendix 3

Reasonable Avoidance Measures Amphibians and Reptiles

Legislation

Great crested newts (GCN) are European Protected Species (EPS) and they and their habitat are fully protected under national (Wildlife & Countryside Act 1981 (as amended)) and European law (The Habitats and Species Regulations 2010 (as amended)). The combined legislation makes it illegal to:

- intentionally or deliberately capture, kill or injure a great crested newt;
- intentionally or recklessly damage, destroy or obstruct access to any place used for shelter and protection including resting and breeding places, whether occupied or not;
- deliberately, intentionally or recklessly disturb a great crested newt when in a place of shelter;
- possess a great crested newt, or any part of it, unless acquired lawfully;
- sell, barter, exchange or transport or offer for sale great crested newts or parts of them.

Anyone carrying out activities which may affect EPS must consider the presence of EPS, their breeding sites and resting places. Best practice guidance is available from Natural Resources Wales and Natural England, which advises on assessing for the presence of EPS, and the possible impact of operations (including strategies for avoiding committing offences). If an offence cannot be avoided, then a derogation licence should be sought from Natural Resources Wales.

Common reptile species namely the common lizard, slow-worm, grass snake and adder are protected against killing, injuring and sale.

Method Statement Objectives

The objectives of this method statement are therefore to:-

- Avoid committing an offence under the above legislation; and,
- Ensure that the favourable conservation status of the species concerned is maintained.

Any development related activities on the application site, such as vegetation clearance or excavations in areas of suitable amphibian habitat may potentially affect this species. As a result, safeguards must be implemented to protect this species and the Method Statement below details measures to be implemented to ensure these objectives are achieved. If these measures are followed then both objectives will be achieved without the need for a derogation license from Natural Resources Wales.

Method Statement

This method statement should be followed for the installation of the solar panels and associated minor works within the site, which may affect the surrounding terrestrial habitat. Minor or short term destructive or disturbance works (e.g. cable laying or ground mountings) will also follow this Method Statement to ensure legal compliance and to ensure the favourable conservation status of the species is not compromised.

The following measures will be adopted throughout the construction period of the proposed development:

- Site operatives will be informed by 'tool box' talk at the start of the construction period on ecological responsibilities and what to look out for during development works.
- There will be no impacts on boundary hedgerows or adjacent semi-improved grassland (other than hedgerow planting) and no potential places of shelter (e.g. rubble / log piles) will be disturbed during the construction phase.
- Any vegetation works including the removal of taller grassland (above 15cm) and scrub will be undertaken using hand tools (e.g. hand held strimmer). This will encourage animals to vacate the area. Cut material should be removed immediately from the working area.
- Site operatives will keep a watching brief throughout the construction phase; especially during initial ground clearance operations.
- The proposed timing of the works should coincide with the majority of amphibians still being within ponds (March to July/August) or when amphibians and reptiles are in hibernation (November to February inclusive). This will reduce the likely presence of individual animals within this unfavourable terrestrial habitat.
- Between March and October inclusive (when amphibians and reptiles are active) - Should any trenches and excavations be required, an escape route for animals that enter the trench must be provided, especially if left open overnight. Ramps should be no greater than of 45 degrees in angle. Ideally, any holes should be securely covered.
- Between March and October inclusive (when amphibians and reptiles are active) - All excavations left open overnight or longer should be checked for animals prior to the continuation of works or infilling.
- Between March and October inclusive (when amphibians are active) - Any excavated material should be placed on boards or sheeting to reduced damage to the grass sward (if present). If left overnight this material should be searched prior to being used as infill.
- If a GCN is found, work must stop immediately and contact should be made with a licensed, qualified ecologist, who will liaise with Natural England.