Report Title	**Proposed Installation of Solar Photovoltaic Panels on Land off Hafod Road, Johnstown, Wrexham – Ecological Mitigation and Enhancement Statement**
Date issued	**20th August 2025**
Author	**Tom Knight**
Report Version	**C520/ EMES/ 2.0**
Client	**National Trust**
Contract Ref.	**C520**

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Quality Assurance

Survey/ Assessment Work Schedule		
Survey/Assessment Type	**Surveyors/ Author**	**Date**
Mitigation/ Enhancement Statement	Tom Knight	April-June 2025

Review Schedule				
Issue	**Date**	**Author**	**Reviewed by**	**Approved by**
1.0	25/06/25	Tom Knight	Max Ellson	Max Ellson
2.0	20/08/25	Tom Knight	Max Ellson	Max Ellson
Minor amendments following internal review. Changes to proposed development site boundary, drainage, etc.				

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Figure 1 – Extended Phase 1 Habitat Survey

1 INTRODUCTION

1.1 Project Background

1.1.1 Marches Ecology was commissioned by the National Trust to prepare an Ecological Mitigation and Enhancement Statement (EMES) for the proposed installation of solar photovoltaic (PV) panels and associated infrastructure on land off Hafod Road, Johnstown, Wrexham (Approximate OS Grid Ref. SJ 3130 4588). The proposed mitigation measures are principally required due to the presence of, or potential presence of, legally protected or other priority species and/ or valued habitat either on the site or close to it. The principal aim of this EMES is to prescribe and guide implementation of the mitigation measures. Enhancement measures required to achieve Net Benefit for Biodiversity (NBB) are also provided.

1.1.2 The current application concerns a small solar farm proposed to be constructed on the central southern part of the site. A vehicle access track would be created between the existing track adjacent to the northern site boundary and the PV panel compound. The mitigation/ compensation measures proposed in this EMES address the perceived impacts of the proposal. *Figure 1* is a copy of the Extended Phase 1 Habitat Survey plan from Marches Ecology (2025) and provided here for ease of reference. The Target Note numbers used in the text of this EMES are shown on this plan. The boundary of the survey site for the purpose of this EMES is shown on *Figure 1*. The survey site is henceforth referred to as 'the site'.

1.1.3 It should be noted that the survey site includes both the proposed development site and additional land, outside the planning application boundary, but within the applicant's control. The proposed development site boundary is shown on a Dulas Ltd plan: *Figure 2* – Proposed Layout, Revision A, date unknown. The proposed development site (shown with a solid red line on the Dulas Ltd plan) essentially excludes that part of the arable field to the east and south of the solar array that is to be retained for agricultural use (shown with a solid blue line on the Dulas Ltd plan).

1.1.4 This EMES is informed by a background data search, an Extended Phase 1 Habitat Survey (and Walkover Survey update), Hedgerow Survey and *Schedule 9* Plant Survey conducted at the site. The findings of this survey and assessment work are provided in a Preliminary Ecological Appraisal (PEA) (Marches Ecology 2025). This EMES should be read and used in conjunction with the information provided in the aforementioned report.

1.1.5 The PEA identified the following valued ecological resources (either present or potentially present) for which avoidance/ mitigation/ compensation measures are considered necessary:

- Habitat: large trees and hedgerows.
- Badgers: use of site/ surrounding area.
- Bats: the habitat is of low value for commuting/ foraging. Trees within the boundary features/ adjacent woodland could be used for roosting.
- Great Crested Newts: potential use of terrestrial habitat.
- Reptiles: potential use of habitat within the site.
- Birds: some of the habitat is of limited value largely for nesting birds some of which are of conservation interest.

The PEA also notes that parts of the site could be used by Hedgehog (*Erinaceus europaeus*). Dingy Skipper (*Erynnis tages*) was recorded at the site.

Marches Ecology (2025) provides a brief summary of relevant legislation.

1.2 Biodiversity Enhancement

Introduction

1.2.1 Technical Advice Note 5 (Nature Conservation and Planning) (Welsh Assembly Government, 2009) and LPG 32 (Wrexham County Borough Council 2011) seek developments to achieve net biodiversity gain. The requirement to secure and maintain net benefit for biodiversity (NBB) (through enhancements) was reinforced in a letter issued by the Chief Planner (Welsh Government) to all planning departments in October 2019. NBB has been defined as '*The concept that development should leave biodiversity and ecosystems in a better state than before, through securing long term, measurable and demonstrable benefit, primarily on site*' (Pitt 2021).

1.2.2 This was reiterated in a letter from the Minister for Climate Change to the Heads of Planning dated October 2023. An Annex[1] attached to this letter provided text to update Planning Policy Wales (PPW) (Welsh Government 2024). Subsequently, Chapter 6 of PPW has been updated which provides '*further clarity .... on securing net benefit for biodiversity through the application of the step-wise approach, including the acknowledgement of off-site compensation measures as a last resort, and, the need to consider enhancement and long-term management at each step.*'

1.2.3 WCBC (2011) lists '*examples of how enhancements could be achieved on development sites*'. The options provided include planting native trees and shrubs of local provenance; connecting existing habitats with species-rich hedgerows; creation of ponds and scrapes; bird-boxes; and creating amphibian hibernacula. CIEEM (2022) states that '*a key requirement is that the measures put forward are suitable in the local context of the site*'. It is proposed to plant locally native shrubs and trees in new areas of scrub/ hedgerows, to cultivate an area to maintain 'arable field margin' habitat on the site, create a new wetland, and other valued habitat, and to retain existing grassland, boundary features and trees.

Assessment of Required Level of NBB Provision

1.2.4 The installation of a small solar farm and associated infrastructure within an existing arable field can be categorised as a low impact proposal. All of the existing trees and hedgerows within the site are to be retained. The only habitat to be lost would be part of the arable field which is mostly of low ecological value. The margin from which the Locally Scarce plant Smooth Brome has been recorded is considered to be of local value. The Locally Scarce plant Black-grass was recorded from the northeast part of the arable field and this area may also be of local value. Hedgerows and trees around the site boundaries are of local value. The site does border some areas of habitat considered to be of greater ecological value but significant indirect impacts are not anticipated.

1.2.5 The site is located approximately 340 m to the east of the closest part of Johnstown Newt Sites SAC/ Stryt Las a'r Hafod SSSI (Bonc Yr Hafod Country Park). The PEA considers potential impacts on the Great Crested Newt population/s supported by this designated site. It is concluded that there is a low risk of potential direct impacts on individual Great Crested Newts only. There would be no significant impact at the population level.

[1] *Annex to Heads of Planning Letter Dated 11 October 2023: Addressing the Nature Emergency through the Planning System: Updated National Planning Policy for Chapter 6 of Planning Policy Wales*.

1.2.6 The loss of this habitat would not result in a significant impact on any valued ecological resource at this location. NBB provision '*should be proportional to the extent and impact of development*' (CIEEM 2022). The proposed enhancements will increase the general biodiversity value of the site and provide an important resource for plants, invertebrates, birds, amphibians and potentially mammals and reptiles.

1.3 Author

1.3.1 This document was produced by Tom Knight of Marches Ecology. Tom Knight is an ecologist with over twenty-five years of consultancy experience. His relevant academic qualifications and professional memberships are as follows:

- Chartered Environmentalist (Society for the Environment).
- Full Member of the Chartered Institute of Ecology and Environmental Management (CIEEM).
- PgDip Conservation Management.
- BSc (Hons) Environmental Studies.
- C&G Biological Surveying.

2 USING THIS DOCUMENT

2.1 Structure of the EMES

2.1.1 *Sections 3* to *10* of this EMES present all of the proposed mitigation, compensation and enhancement measures. *Section 3* details 'general' measures while the subsequent Sections (*4* to *10*) apply to specific ecological resources (habitats/ species/ species groups). Each Section is generally divided under three main sub-headings as follows:

- Summary of Resource Status. This sub-section provides a brief summary of the status and value of the identified ecological resource within the site or adjacent area where applicable and where known. The PEA report mentioned in *Section 1.1* should be referred to for detailed information.
- Mitigation. This sub-section details all required mitigation measures during the relevant stage of the project as far as is reasonably possible.
- Compensation/ Enhancement. This sub-section, where included, details all proposed compensation/ enhancement measures.

2.1.2 All retained/ created ecological features will be subject to ongoing inspection as detailed in *Section 11*.

2.1.3 Ongoing management of retained/ created ecological features is generally not covered in any level of detail within this EMES. A separate Landscape Maintenance and Management Plan (Viento Environmental Ltd 2025) has been produced which details landscape maintenance operations/ ongoing management.

2.2 Implementation

2.2.1 This EMES will be referred to throughout the pre-construction/ construction phases by all those responsible for works on the site that may impact the ecological resource and will be implemented in conjunction with the Construction Environmental Management Plan – CEMP (Dulas 2025a). It is envisaged that a consultant ecologist will be retained to co-ordinate and supervise as necessary the implementation of certain ecological mitigation/ enhancement measures. The National Trust will also provide on-site ecological expertise/ support.

2.2.2 All site personnel will be made aware of the importance and sensitivity of identified ecological resources and the proposed ecological mitigation measures through this EMES and a tool-box talk and will subsequently be responsible for their own actions completed under a watching brief or overseen by the consultant ecologist/ National Trust staff. A consultant ecologist will be appointed to ensure appropriate delivery of all requirements detailed in this EMES. The consultant ecologist will only attend site where required to do so by measures prescribed in this EMES.

2.2.3 The consultant ecologist (in conjunction with the main construction contractor and the National Trust) will also be required to ensure the following:

- All appropriate wildlife legislation obligations are met;
- All necessary (wildlife) licensing requirements are met if applicable;
- Any requirements with regards wildlife related planning conditions are met;
- All (ecological) monitoring requirements are completed; and
- All temporary fencing/ signage requirements are established as detailed within this EMES.

2.3 Landscape Maintenance and Management Plan

2.3.1 The Landscape Maintenance and Management Plan (Viento Environmental Ltd 2025) is to be used in conjunction with the EMES. This document details landscape maintenance operations during the establishment period (Years 1-5) and subsequent aftercare period (Years 6-20). The Landscape Maintenance and Management Plan includes a plan: *Figure LS01 Landscaping Scheme*, dated 17/08/25. *Figure LS01* presents all of the existing vegetation to be retained, proposed habitats to be created, as well as other ecological enhancements including the proposed bird-boxes and amphibian hibernacula.

3 GENERAL

3.1 Introduction

3.1.1 This Section of the EMES details best practice or 'generic' mitigation measures that are applicable for all operations during the pre-construction and construction phases. These generic measures will be achieved through the successful implementation of the detailed measures outlined in the following Sections.

3.1.2 Tasks that could impact the ecological resource include, but are not necessarily limited to:

- Site clearance works and soil stripping (vegetation, soil removal and handling);
- Site establishment (temporary contractors compound(s) and associated infrastructure, storage areas (including soil mounds), soil movement/ excavation, temporary lighting);
- Groundworks (site investigations, excavations, installation/ realignment/ connection of underground services and watercourses);
- Construction (dust, noise, vibration, traffic movements);
- Incidents (pollution (air, water and ground), erosion/ sediment run off (*e.g.* to watercourses); and
- Removal of temporary features post-construction.

3.2 Generic Mitigation Measures

3.2.1 Generic measures to mitigate potential impacts on ecological resources are as follows:

- where possible, the physical works would be designed to avoid or minimise impacts on features of ecological importance;
- where there is potential for impact on protected species, mitigation measures will be designed to ensure compliance with the law and licensing procedures;
- where possible, measures will be taken to minimise adverse impacts on other species;
- where possible, potential impacts will be avoided through seasonal timing of work, *e.g.* avoiding vegetation clearance during the bird nesting season;
- through implementation of best practice in relation to construction sites, disturbance to wildlife will be minimised as much as possible. Routine construction site practices will be implemented to control dust, spillages, releases to watercourses, vibration and noise;
- a consultant ecologist will be retained prior to, for the duration of the construction phase, and the post-construction phase, to ensure the necessary delivery of all ecological mitigation measures outlined in the EMES in conjunction with the National Trust;
- compliance and site awareness will be ensured through the provision (by the retained consultant ecologist) of a toolbox talk to all site personnel as required as well as direct monitoring where necessary. Further to the initial toolbox talk its contents will be included within all subsequent site inductions. The consultant ecologist/ National Trust staff will supervise works as detailed in the following Sections/ Reasonable Avoidance Measures (RAMs) Method Statement and would be available to attend site should unforeseen ecological issues arise;
- compliance with the mitigation measures required by any protected species licence (should it become necessary to obtain one) will be ensured through monitoring and auditing by the retained consultant ecologist; and

- pre-construction surveys should be undertaken to provide up-to-date data to inform mitigation measures if required.

3.2.2 General best practice measures will be implemented during the construction works to avoid/ minimise any indirect impacts (*e.g*., dust, diffuse pollution, etc) on adjacent habitat (see Dulas 2025a). The general advice contained in the Guidance for Pollution Prevention (GPP) leaflets produced by SEPA, EA and the Environment and Heritage Service (Northern Ireland) should be adhered to, particularly the following:

- GPP1: Understanding Your Environmental Responsibilities - Good Environmental Practices.
- GPP5: Works and Maintenance in or Near Water.
- GPP6: Working on Construction and Demolition Sites.

4 HABITAT AND FLORA

4.1 Resource Status

4.1.1 The site is an arable field bounded in places by hedgerows/ lines of shrubs. Some of these boundaries contain a small number of large trees. Towards the northeast corner of the site there is a small patch of scrub and trees along a short stretch of watercourse. Stands of tall ruderals are present in places on the field edges. The habitat within the site is considered to largely be of site value, with some features such as large trees and hedgerows, of local value[2].

4.1.2 Two notable plants were recorded from the survey site: *Bromus racemosus/ commutatus* (Smooth Brome) and *Alopecurus myosuroides* (Black-grass). These plants are Locally Scarce but of Least Concern (Vascular Plant Red Data List for Wales).

4.1.3 Two species of plant listed on *Schedule 9* (*Wildlife and Countryside Act 1981* (as amended) were recorded from the survey site: *Lamiastrum galeobdolon* subsp. *argentatum* (Variegated Yellow Archangel) and *Heracleum mantegazzianum* (Giant Hogweed). Some of the Variegated Yellow Archangel is close to the proposed development footprint. *Cotoneaster* cf. *bullatus* (Hollyberry Cotoneaster) was also recorded close to, but outside, the survey site.

4.2 Mitigation Measures

Temporary Protective Fencing

4.2.1 Prior to the start of construction or preparatory operations temporary protective fencing will be installed adjacent to the northwest site boundary (adjacent to the feature at *Target Note 2*), along the edge of the grassland to be retained at *Target Note 18* and along the hedge at *Target Note 6*, including the trees at *Target Notes 6a* and *6b*. The fence along the northwest boundary is required to protect the trees at *Target Note 2* and the feature along this field boundary that could be used by amphibians as a hibernacula/ refugia – the rubbish/ tipped materials at *Target Note 2*. It will also prevent construction access to areas that support Variegated Yellow Archangel, a non-native invasive plant. The fence by *Target Note 6* is required to protect the hedge and trees from inadvertent damage, and that at *Target Note 18* to protect the retained grassland, as it is located close to the temporary construction compound.

4.2.2 As installation of part of the temporary protective fence is required under the Great Crested Newt RAMs, the alignment and installation will be reviewed/ agreed with the retained consultant ecologist. The temporary protective fencing will be of a type that would halt the uncontrolled movement of any materials/ soils (*e.g*. heras). The temporary protective fencing will be appropriately maintained throughout the construction period. It will be retained in-situ, and in an effective state of repair, for the duration of all the works. No work of any kind will be allowed within this (buffer) area. A large, clearly visible sign will be attached to the top of this fence approximately every 10 - 20 m along its length facing into the site. These signs will measure at least 30 cm by 30 cm (as a minimum). The signs will

[2] CIEEM (2018) recommends the use of geographical context as a frame of reference for identifying the importance (value) of ecological features. The frame of reference has the following categories: International/ European - National - Regional - Metropolitan/County/Vice-county/ other local-authority wide area - Local. Within this report Local is defined as relating to district or parish; less than local refers to features of value at a Site level.

take the format of normal construction site prohibition notices. The sign will state 'Ecology Area – Do Not Enter' or similar.

4.2.3 There will be no construction activities/ access by personnel/ lighting of fires/ use of machinery/ vehicles or storage of equipment/ materials/ tools/ chemicals on the opposite side of the fence to the construction site. Furthermore, no tools, machinery/ vehicles and equipment will be left within this area. Other materials and spoil, *etc* will not be stored outside the fenced area. The purpose of this fence and importance of not entering the fenced area will be reinforced through the toolbox talk. Should any work be deemed necessary inside the fenced buffer area then the retained consultant ecologist will be contacted for advice and may need to supervise such work if necessary.

Biosecurity

4.2.4 Due to the potential presence of amphibians on the site, the proximity of the Johnstown Newt Sites SAC/ Stryt Las a'r Hafod SSSI and the actual presence of a small number of *Schedule 9* non-native invasive plants within the site, a Biosecurity Risk Assessment and Method Statement will be produced. This document will consider potential risks to the local amphibian population as well as the potential for spread of invasive non-native species and propose measures to minimise any perceived risks.

4.3 Compensation/ Enhancement Measures

Habitat Retention

Retained Grassland

4.3.1 The species-rich grassland along with all the other existing vegetation to be retained, and proposed habitats to be created, is presented on *Figure LS01* (Viento Environmental Ltd 2025).

4.3.2 The northern edge/ northeast corner of the area to be used for habitat creation is a small part of the ex-arable field that does not appear to have been cultivated for crops in recent years (*Target Note 18*). It supports a slightly more established vegetation community that could be termed 'grassland'. It includes various grasses and wildflowers.

4.3.3 It is proposed to retain this existing community and manage the grassland. It will be necessary to mark its western extent either with fencing or posts or similar (for the operation phase) to ensure that it is not included in the regular cultivation of the arable field margin habitat as described below.

4.3.4 This grassland will be cut once or twice a year (likely to be in July and/ or August). When the grassland is cut the cutting blade will be set no lower than 10 cm at any time. All mowing will be completed in hot, dry conditions and not following overnight rain. Ideally all arisings will be removed.

Retained Field Margin

4.3.5 A bare uncultivated strip could be provided between the proposed access track and the northwest site boundary: the location from which *Bromus racemosus/ commutatus* (Smooth Brome) was recorded. This would provide opportunities for this plant.

4.3.6 Given the proximity of the proposed access track to this site boundary it is possible that this strip may be disturbed during the construction phase. This is unlikely to be problematic for this type of habitat. It is suggested that this strip is not subject to cultivation for the first 1-2

years (dependent on what vegetation develops/ plant species come through). Thereafter it can be managed as per the rest of the 'arable field margin' habitat detailed below.

Retained Scrub/ Trees/ Hedgerows

4.3.7 The area of scrub/ trees and ditch at *Target Notes 14/ 15/ 16* will be retained. No particular management is proposed at this stage.

4.3.8 All existing hedgerows/ trees will be retained.

Habitat Creation

4.3.9 It is proposed to provide a range of new habitat types as well as increase habitat connectivity across the site. While scientific studies of solar farms are currently limited it has been shown that solar farms managed for biodiversity with mixed habitat can be of benefit for biodiversity (*e.g*. Solar Energy UK 2024; Copping *et al*. 2025). Further information on habitat creation is provided by Naturesave Insurance & Wychwood Biodiversity (2022).

Arable Field Margin

4.3.10 'Arable field margin' is a *Section 7* priority habitat. It is proposed to provide much of the western side of the area to be used for habitat creation as 'arable field margin'. This will effectively be achieved through continuing tillage but with no annual crops or ongoing applications of fertiliser or pesticides/ herbicides. This area has developed a vegetation community comprising typical ruderal species since the cessation of agricultural management. It is hoped that this will be of benefit for feeding farmland birds, and various invertebrates as well as arable plants (including Black-grass).

4.3.11 Depending on the level of compaction and even-ness of the surface it may be necessary in the first instance to run a chain harrow, power harrow or sub-soiler across this area. It will subsequently be cultivated to a depth of approximately 15 cm every two-three years between February and April for spring germination.

4.3.12 If monitoring indicates that autumn germination would be better at this site then cultivation can be undertaken between September and November.

4.3.13 It is hoped that soil nutrient levels will decline over time primarily through leaching. If this is not the case and pernicious weeds/ agricultural grasses become established over time then some form of nutrient stripping may need to be considered.

4.3.14 Active management of pernicious weeds/ agricultural grasses may also become necessary. Further guidance is provided in Plantlife (2009) and (2012).

Dry Scrub

4.3.15 The use of two scrub mixes is proposed: around the edge of the new wetland there will be 'wet' scrub while to the south and east of this, linking with the existing woodland (*Target Note 12*) and the scrub at *Target Note 15*, there will be 'dry' scrub. All shrubs/ trees to be planted between October and March (but ideally October/ November). The use of bare root whips is preferable.

4.3.16 Scrub is an often undervalued resource and may be of particular value for a range of species groups including nesting birds and invertebrates. Appropriate species for the dry scrub mix are *Crataegus monogyna* (Hawthorn), *Prunus spinosa* (Blackthorn), *Corylus avellana* (Hazel), *Malus sylvestris* (Crab Apple), *Rosa canina* agg. (Dog-rose), *Rosa arvensis* (Field-rose), *Ilex aquifolium* (Holly), and perhaps some *Sambucus nigra* (Elder), *etc*. An

appropriate mix might be: 35%: 20%: 10%: 10%: 10%: 5%: 5%: 5%. The fruiting shrubs would provide a food source for Badgers and other wildlife.

4.3.17 Patches of *Ulex europaeus* (Gorse) and *Cytisus scoparius* (Broom) will also be created and may benefit priority bird species such as Linnet (*Carduelis cannabina*) and Whitethroat (*Sylvia communis*) as well as pollinators. Both of these birds are two of the more frequently recorded priority species found at solar farms (Solar Energy UK 2024). Other priority bird species that may benefit from the proposed habitat creation could include Dunnock (*Prunella modularis*), Skylark (*Alauda arvensis*), Meadow Pipit (*Anthus pratensis*), Song Thrush (*Turdus philomelos*) and Greenfinch (*Carduelis chloris*).

4.3.18 All planting stock should be of ideally locally native provenance but as a minimum certified British native origin (Local Seed Zone 304/ 302[3]). This would also be appropriate for biosecurity reasons.

4.3.19 Given that these shrubs will be planted into an ex-arable field it may be worth delaying the planting for at least one or two years to allow some leaching of nutrients/ other chemical residues.

4.3.20 The management of scrub prescribed in Kent Wildlife Trust (date unknown) is likely to be appropriate at this site though this can be confirmed once the habitat has become established. However, broadly, it should be managed on rotation to achieve a range of ages as well as open patches. Kent Wildlife Trust (date unknown) suggests coppicing 3/15th of the resource every third year. Coppicing should be undertaken in November to January.

Wet Scrub/ Woodland

4.3.21 'Wet woodland' is a *Section 7* priority habitat and a suitable mix will be used in wetter parts of the site near the proposed wetland. This mix will include low-growing *Salix cinerea* (Grey Willow), *Salix caprea* (Goat Willow), *Salix viminalis* (Osier) and *Viburnum opulus* (Guelder-rose). An appropriate mix might be: 50%: 20%: 20%: 10%. This may benefit the Reed Bunting (*Emberiza schoeniclus*), another priority species.

Woodland

4.3.22 A small extension to the woodland at *Target Note 12* is proposed at the northwest corner (of the woodland). It is a relatively small area and as such the planting mix should primarily be *Quercus robur* (Pedunculate Oak)/ *Quercus petraea* (Sessile Oak) and Hazel. 'Lowland mixed deciduous woodland' is a *Section 7* priority habitat.

4.3.23 A few scattered Oak trees will also be planted throughout the habitat creation area and proposed new hedges. It is hoped that they will benefit species such as the Purple Hairstreak (*Favonius quercus*).

Hedgerows

4.3.24 'Hedgerows' is a *Section 7* priority habitat. It is proposed to plant new stretches of hedge along the eastern side of the new vehicle access track (from where it enters the site on the northern boundary, linking with the woodland at *Target Note 12*) and also double the width of the existing hedge adjacent to Hafod Road (*Target Note 6*). This will provide habitat connectivity across the site including for amphibians as well as habitat for nesting birds, invertebrates, *etc*. The hedge by the access track will also provide screening between this

[3] Hubert, J. & Cundall, E. (2006). *Choosing Provenance in Broadleaved Trees*. Forestry Commission, Edinburgh.

feature and the habitat creation area to the east. The widening of the hedge by Hafod Road will strengthen this potential dispersal corridor.

4.3.25 The new hedgerows should be planted as staggered, double rows with five or six plants per metre. The species composition will reflect hedges within the site and include Hawthorn, Blackthorn, Hazel, *Acer campestre* (Field-maple), Holly, Dog-rose and *Ulmus glabra* (Wych Elm). It could also include climbing plants such as *Lonicera periclymenum* (Honeysuckle). This planting will utilise native species of certified British origin and local provenance (Local Seed Zone 302/ 304). An appropriate mix might be: 45%: 20%: 10%: 10%: 5%: 5%: 5%. At the present time *Fraxinus excelsior* (Ash) should not be used.

4.3.26 As mentioned above a small number of Oak will be planted within the hedges. These will be clearly marked and allowed to grow on to form trees.

4.3.27 The individual hedgerow plants should be notch planted during October to November using a T- or L-shaped notch following initial removal of the 'turf'. Each shrub should be protected with a tree-shelter attached to a stake. Frosty periods will be avoided as this may harm the shrubs.

4.3.28 The young plants within the new hedgerows should be cut back in the first year to approximately one-third of their height to promote bushy growth. Once the hedge has been planted it should be kept weed-free through the application of a thick layer (10 cm deep) of mulch or if necessary appropriate application of an organic herbicide (although use of herbicide will be kept to a minimum or avoided if possible). This maintenance operation should be undertaken once a year for the first three years during the growing season. Any losses should be replaced in the first five years after planting during October/ November.

4.3.29 A well established hedge will require trimming from about the sixth year. The hedge shape should be 1.8-2 m high and at least 1.8-2 m wide. Once established the hedgerows by Hafod Road and the vehicle access track are likely to require annual management. If possible, the top could be left uncut every other year. The east side of the hedge by the access track could be left uncut every other year. Otherwise cutting should be undertaken after January but before March.

4.3.30 Once established the hedges should be laid every 10-30 years between mid-November and early March. The best time to lay the hedge would be when stem growth reaches between 5-10 cm diameters at the base.

Wetland

4.3.31 'Ponds' is a *Section 7* priority habitat. There is a low-lying depression in the northeast part of the arable field. This feature often holds some surface water particularly during the winter period. This feature would lend itself to the creation of a new wetland and that is what is proposed here. Rather than being too prescriptive with the design it is proposed that it is developed organically on site and as directed by an ecologist. The wetland (shape, size and exact location) shown on *Figure LS01* (Viento Environmental Ltd 2025) is therefore indicative at this stage.

4.3.32 Little Ringed Plovers (*Charadrius dubius*) have been recorded from the large waterbody within the Commemorative Woodland (to the north of the current application site) in 2024 and 2025. Two adult birds with two young chicks were recorded by the National Trust on 10th July 2025. This species remains a rare breeding bird in North Wales with no more than 20 pairs (Brenchley *et al*. 2013). It is hoped that the proposed new wetland will at least provide further feeding areas for this species. The creation of potential nesting habitat for

this species is covered in *Section 9*. It will also be of value for a range of other wildlife including other priority birds such as Lapwing (*Vanellus vanellus*), foraging bats and amphibians such as the Great Crested Newt.

4.3.33 The approximate perimeter of the new wetland would be marked out prior to any excavation. The width and length dimensions are unknown at present and will depend on site conditions at the time and how much material is excavated. In the deepest parts the waterbody would be excavated to an approximate depth of 1 m to 1.5 m. However, it is hoped that it will be possible to create larger areas of shallow water/ exposed damp mud. Excavated soil will be used to build up a bank on the eastern side. Any further excess material would be spread on the adjacent area. As such the wetland creation will need to be undertaken prior to any scrub planting or cultivation of the arable habitat.

4.3.34 An overflow pipe or ditch will need to be installed. This will be connected to the stretch of open ditch located to the northeast.

4.3.35 All depths and dimensions are approximate as it is not known at this stage how much water the feature will hold and for what parts of the year. Monitoring of the development of this habitat will be important as remedial measures may be required should it not hold sufficient levels of water.

4.3.36 No planting of the wetland is proposed. Natural colonisation is favoured.

4.3.37 A minimum 5 m buffer will be marked and maintained around the new wetland for the operation phase. This should avoid any inadvertent damage during cultivation of the arable field margin habitat.

4.3.38 The wetland will be subject to long-term rotational clearance of silt/ vegetation. Clearance of marginal vegetation may be required every 2-4 years once the wetland is established. Removal of silt may be required approximately every 15 years. Appropriate management prescriptions will be reviewed after the first few years of site inspections and included in the proposed Biodiversity Management Plan.

4.3.39 It should be noted that some management prescriptions (*e.g*. rotational pond clearance) may require a separate application for a ‘conservation’ licence should Great Crested Newts colonise the new habitat. This may also be applicable to management of some of the other habitat.

Management Plan

4.3.40 It is currently proposed to produce a Biodiversity Management Plan (BMP) as recommended by the guidance in BRE (2014) once the created habitats have become established possibly following the first or second year inspection.

5 BADGER

5.1 Resource Status

5.1.1 No setts were recorded from the site (Marches Ecology 2025). An active sett with a single entrance hole was recorded immediately adjacent to, and outside, the southern site boundary. Opportunities for sett excavation are largely limited to the boundaries.

5.1.2 Evidence of Badger activity was recorded from many parts of the site. It is possible that Badgers could forage throughout the site. Well used paths were recorded from the northeast corner of the site and exiting the southern and northwest boundaries.

5.2 Mitigation Measures

Pre-construction Survey

5.2.1 If site clearance/ construction work is not implemented within 12 months of the Walkover Survey (in April 2025) a pre-construction survey will be completed by a suitably qualified ecologist to check that no new setts have been excavated within the site or close to it. This survey would include all of the site and land within approximately 30 m of the boundary where access permission is provided. Should a new sett be located, the implications can be considered at that time.

Best Practice

5.2.2 Should the work include the excavation of deep holes or trenches, such features will be filled in overnight or otherwise made safe by securely covering them or the provision of suitable ramps. The ramps can either be provided with a suitable piece of timber (*e.g*. scaffold planks are ideal) or the edge of the hole/ trench can be re-profiled in at least one location. The re-profiling will give a slope of around 45° or less. The plank will be placed in the excavation so that it is stable and provides a clear option for egress. This should allow any Badger that might become trapped in the excavation to escape.

5.2.3 All liquids or other potentially harmful substances must be stored appropriately and securely. They will not be left uncovered and lids will be fastened.

Watching Brief

5.2.4 As Badgers are known to be present in the area all site workers should maintain a watching brief for potential setts. The requirement and detail of this watching brief will be incorporated into the toolbox talk/ all site inductions. Excavator buckets, other plant, pipes, *etc* will all be checked by construction personnel at the start of each day for any trapped animals. All trenches/ deep holes, should any be excavated, will be inspected each morning by construction personnel to check whether any Badgers have become trapped overnight. Should a Badger become trapped in a trench it may attempt to dig itself into the side of the trench and form a temporary sett. Should a trapped Badger be encountered at any time the retained consultant ecologist will be contacted immediately for advice.

5.2.5 Should a sett/ large animal hole (or suspected sett) be found during construction the following measures will be enacted:

- All work within 30 m of the sett will immediately cease.
- The retained consultant ecologist will be contacted for advice. The consultant ecologist will need to attend site to confirm the status of the sett/ animal hole.
- The consultant ecologist will identify any further mitigation measures/ licensing that might be required including the installation of temporary protective fencing around the sett.
- Work will not re-commence in this area until the consultant ecologist has confirmed that it is safe to do so.

Fencing

5.2.6 Any fencing that may be required during the construction phase will consider Badger movements so that they are not unnecessarily obstructed. A 20-30 cm high gap beneath such fencing would be required to allow Badgers to pass beneath it.

6 BATS

6.1 Resource Status

6.1.1 There are a small number of trees within the site, mostly within boundaries, that contain features of potential value for roosting bats, in particular the Ash at *Target Note 6a* (Marches Ecology 2025). There are also trees just outside the site that could be of value for roosting bats such as within the woodland at *Target Notes 11/ 12* and the boundary feature at *Target Note 2*. These features will not be directly impacted by the proposed development. The habitat within the site generally provides a potential foraging/ commuting resource of low value. Features of moderate potential value are located around the edges.

6.2 Mitigation Measures

Best Practice - Lighting

6.2.1 The CEMP (Dulas 2025a) provides details of temporary lighting that may be utilised during the construction phase if this becomes necessary. These portable lights would be used throughout the site towards the beginning and end of the working days. They should be located away from hedgerows and adjacent trees, and whenever possible should not be used. All luminaires should follow the specifications detailed in BCT & ILP (2023).

6.3 Enhancement

6.3.1 The proposed new habitats are likely to be of high potential value to foraging bats including the provision of potential foraging/ commuting routes across the site.

7 GREAT CRESTED NEWTS

7.1 Resource Status

7.1.1 There is no aquatic habitat within the survey site of potential value to Great Crested Newts.

7.1.2 Given that the survey site is located approximately 340 m to the east of the Johnstown Newt Sites SAC at its closest point, that this site contains a number of waterbodies and supports a very large/ exceptional population, Great Crested Newts could potentially be found anywhere within the surrounding area.

7.1.3 There are three new waterbodies along with an existing waterbody located within the Hafod y Bwch Commemorative Woodland to the north of the survey site. Presence/ absence survey (eDNA) of the existing waterbody in 2023 confirmed the likely absence of Great Crested Newts.

7.1.4 The terrestrial habitat within much of the site (arable field) is considered to be of negligible/ low potential value for Great Crested Newts. The hedges/ field margins around the site are of potential value for this species and are connected to habitat of greater potential value outside the site.

7.1.5 The risk to individual Great Crested Newts due to the proposed development is considered to be low. Given that the proposed development would be confined to the interior of an arable field it is considered unlikely that Great Crested Newts might access the site during the construction phase.

7.2 Mitigation Measures

Non-licensed Reasonable Avoidance Measures

7.2.1 Based on the assessment undertaken in the PEA and the extent of the currently proposed development it is considered appropriate at this site to adopt a non-licensed Reasonable Avoidance Measures (RAMs) approach. Should this be the case then mitigation would be implemented in accordance with a RAMs Method Statement. The Method Statement will detail methods of working that will minimise any perceived risk to Great Crested Newts. The implementation of the RAMs will be organised and overseen by a suitably qualified ecologist. The proposed RAMs would include a Toolbox Talk to be presented by a suitably qualified ecologist that would outline the responsibility of individual contractors (with regards Great Crested Newts and other valued ecological resources). This information would subsequently be included in all site inductions going forwards.

7.2.2 It is likely that the ecologist would only need to be present on site for some elements of the work dependent on the level of perceived risk. In particular the ecologist would need to be present prior to, and during, (vegetation) clearance works for site set-up/ the temporary construction compound, site access track, habitat creation works, any excavation of trenches or similar particularly where left open overnight, and possibly clearance works for the solar array dependent on the state of the vegetation at that time. This would all be detailed in the RAMs Method Statement.

7.2.3 The RAMs are likely to include a visual/ hand-search of the proposed development site to be undertaken by the ecologist prior to commencement of the works. Dependent on the state of the vegetation at this time this may need to be preceded by phased vegetation reduction. Further visual/ hand-/ destructive searches of particular features will be conducted at the

ecologist's discretion. The contractors would then be required to maintain a 'watching brief' for the duration of the works. The ecologist will be retained 'off-site' and be available for advice/ site attendance if required.

7.2.4 Implementation of the Great Crested Newt/ reptile RAMs should only be undertaken when the preceding and following night-time temperature does not fall below 5°C and the day-time temperature is warm.

7.2.5 The inherent risk (to the proposed works) with using a non-licensed approach would be that should a Great Crested Newt be found at any time during the works then they would need to immediately cease and are unlikely to be able to re-commence until a Natural Resources Wales 'disturbance' licence had been obtained.

7.2.6 Due to the potential sensitivity of the location (near an SAC designated for Great Crested Newts) the ecologist will undertake compliance/ monitoring visits throughout the construction phase (other than when on site for other reasons). It is proposed to undertake fortnightly visits during the first month, followed by monthly visits thereafter. A simple log will be maintained by the ecologist recording details of these visits, along with information on implementation of the RAMs, and any issues of non-compliance should they arise along with confirmed remedial measures.

7.2.7 All future maintenance/ management operations that have the potential to disturb or otherwise harm Great Crested Newts, or disturb/ damage their habitat, must be undertaken in accordance with Reasonable Avoidance Measures. All contractors should also be aware that Great Crested Newts may colonise the site in the future, particularly once the pond has been created. Should this be the case then it is likely that an NRW licence will be required for certain management/ maintenance operations. Advice should be sought from a suitably qualified ecologist.

Biosecurity

7.2.8 As detailed in *Section 4* a Biosecurity Risk Assessment and Method Statement will be produced. This document will propose measures for minimising the risk of introducing/ spreading amphibian diseases in accordance with the ARG UK Advice Note 4[4]. Any measures required by the method statement will be implemented throughout the construction phase.

7.3 Enhancement

7.3.1 The proposed new habitats will be retained and managed for the benefit of Great Crested Newts as well as other valued ecological resources. The layout of the new habitats has been designed to provide corridors of habitat across the site, maintaining connectivity. The new wetland also provides potential aquatic habitat that could be used in the future by breeding Great Crested Newts and/ or other amphibians.

Hibernacula

7.3.2 As Great Crested Newts are known to spend a considerable proportion of their terrestrial phase either underground or just above ground under refuge sites, it is of great benefit to provide artificial sites, known as hibernacula, which they can utilise. The hibernacula will be created using material from the site wherever possible (*e.g*. logs, rubble, etc). A mixture of

[4] *Amphibian & Reptile Groups of the United Kingdom Advice Note 4 – Amphibian Disease Precautions: A guide for UK Fieldworkers*. Version 2, revised March 2017.

hardcore, brick rubble, logs, sleepers etc, and loose topsoil will be piled into a mound which will then be covered with a topsoil cap and, ideally, a turf covering. The lower margins of the mound should be exposed to facilitate access. The design can follow that provided in Langton, *et al*. (2001).

7.3.3 Two hibernacula will be provided near the new wetland. They will measure at least 2 m length x 1 m width x 1m height. The creation of these features will be supervised by the ecologist.

Monitoring of the New Waterbodies at Hafod y Bwch

7.3.4 As the National Trust own both the application site and Hafod y Bwch Commemorative Woodland there is an opportunity to offer monitoring of the new waterbodies at the latter as an 'enhancement'. The inclusion of the new wetland to be created in the application site in this monitoring programme may be considered in the future.

7.3.5 It is proposed that three torch survey visits during the period mid-April to mid-May will be undertaken at each of the three waterbodies. Torch surveys are undertaken using a 1.5 million candlelight power clu-lite torch. It involves shining the torch into the pond at night when newts are most active and therefore more visible. The monitoring visits will be undertaken by suitably qualified ecologists, at least one of whom should retain a current Natural Resources Wales (NRW) 'survey' licence. The results of the monitoring will be included in the annual report as detailed in *Section 11* as well as being submitted to the Wales GCN Monitoring Programme.

7.3.6 Initially it is proposed to undertake monitoring in years 1, 3 and 5 (with year 1 assumed to be 2026 at this stage).

8 REPTILES

8.1 Resource Status

8.1.1 The site provides habitat of negligible/ low potential value for reptiles. Grass Snakes have been recorded from the area and could potentially travel along hedgerows/ field margins.

8.2 Mitigation Measures

Reasonable Avoidance Measures

8.2.1 The risk of the proposed works to individual Grass Snakes is considered to be negligible/ low. Basic Reasonable Avoidance Measures (RAMs) will be implemented by a suitably qualified ecologist. This would be undertaken at the same time as the RAMs for Great Crested Newts and be detailed in the Method Statement.

8.2.2 Implementation of the Great Crested Newt/ reptile RAMs should only be undertaken when the preceding and following night-time temperature does not fall below 5°C and the day-time temperature is warm.

Watching Brief

8.2.3 Further to the implementation of the RAMs, all site workers will maintain a watching brief, particularly when the ecologist is not present on site. Should any reptiles be found at this time it may be necessary to temporarily halt work whilst appropriate reptile mitigation/ avoidance measures are designed and implemented.

8.2.4 Should a Grass Snake (or other reptile) be found during the work contractors will halt all activity immediately, and wait until the ecologist has removed the Grass Snake to the receptor site if this is deemed necessary. The receptor site would be within Hafod y Bwch Commemorative Woodland. Alternatively, an escape route should be provided to the work site boundary and the Grass Snake should be allowed to find its own way out.

9 BIRDS

9.1 Resource Status

9.1.1 The site is likely to be of some value, particularly for species that nest in patches of scrub/ hedgerows and scattered shrubs/ trees. Such nesting birds include some species of conservation interest (*e.g*. Dunnock and Long-tailed Tit). Some birds may have nested within the arable crops. The arable field may also be used outside the nesting period.

9.2 Mitigation Measures

Pre-construction Check

9.2.1 The destruction of any bird nests that are in use is illegal. The simplest option to avoid issues arising from the presence of nesting birds is to schedule work that affects nesting habitat (*e.g*. the removal of dense vegetation) outside the nesting period (March to August inclusive). Such work, if undertaken, should seek to ensure that, as far as is possible, all areas within the footprint of the proposed development remain unattractive to breeding birds for the duration of the work. Most of the footprint of the proposed development is currently unsuitable for nesting birds but this could change ahead of the commencement of the construction phase.

9.2.2 Should any occupied nests be found during the construction phase, a buffer zone (determined on the basis of the species concerned and the location of the nest in the context of the surrounding vegetation, but no less than 5 m) would be retained until it can be ascertained that the chicks have left the nest. The buffer zone will be appropriately fenced and signed. In the event that such a nest is found all work would immediately cease in the area and the consultant ecologist would be contacted to provide advice. Work will only re-commence when the consultant ecologist has confirmed any avoidance measures to be implemented.

9.2.3 If it is not possible to remove dense vegetation outside the nesting season all such areas should be checked by a suitably qualified ecologist prior to commencement of works. If any active nests are found at this time a buffer zone as detailed above would be provided.

9.3 Compensation/ Enhancement Measures

Habitat Retention

9.3.1 All existing hedges, scrub and trees are to be retained.

Habitat Creation

9.3.2 The proposed habitat creation is likely to be of value for a range of different bird species including several priority species. Some of the species that may exploit these new habitats are unlikely to use the existing habitat within the site (*e.g*. Reed Bunting, Meadow Pipit, *etc*).

Little Ringed Plover

9.3.3 The Little Ringed Plover is included on *Schedule 1* of the *Wildlife and Countryside Act 1981* (as amended) and as such receives greater protection under this legislation. Whilst it is not identified as a bird of conservation concern either across Wales or the UK as a whole, it is nevertheless a rare nesting bird in North Wales. Given that this species has been recorded from nearby, appears to have nested in the Hafod y Bwch Commemorative Woodland site in

2025, and use local waterbodies for feeding, it is deemed potentially beneficial to provide further suitable nesting and feeding habitat for this species.

9.3.4 As part of the works for the proposed development a temporary construction compound will be established close to the northern boundary/ northwest corner of the site (with an approximate footprint of 600 m^2). The hardcore/ aggregate from this compound, assuming it remains clean, will be re-purposed and spread around the northern and western margin of the new wetland to provide potential nesting habitat for the Little Ringed Plover. This aggregate should be calcareous, either Type 1 MOT limestone (40 mm to dust) or Type 1 MOT recycled crushed concrete will be used. This is often referred to as sub-base and will provide a range of stone sizes up to 40 mm. The creation of this potential nesting habitat will be supervised by the retained ecologist.

9.3.5 The aggregate should be spread at a depth of not less than 50 mm, and ideally 100 mm, to inhibit plants growing through. The area spread with hardcore will be clearly marked with posts so as to avoid inadvertent future 'cultivation'. It is likely with time that the substrate may require some perturbation to reduce the amount of vegetative cover, though some 'live vegetation' is important (*e.g.* Fojt *et al* 2000). This will need to be monitored and remedial action prescribed when required.

9.3.6 Vozabulova *et al*. (2019) found (in a study in the Czech Republic) that Little Ringed Plovers are increasingly nesting in arable crops and that '*Known breeding habitat requirements, such as proximity to a water source, edge avoidance and favour for stones were met in arable land*'. It was noted that they prefer sandy or stony patches, and that nest scrapes were created near to conspicuous objects such as big stones. The suggested 40 mm to dust aggregate should cater for these requirements. The proposed 'arable field margin' habitat may also extend habitat availability for this species. 'Farmland' appears to be increasingly used in the UK, while industrial and similar types of sites also remain important (Conway *et al*. 2019).

9.3.7 Ideally public access to this area should be discouraged as far as is possible.

Nest-boxes

9.3.8 Six nest-boxes suitable for Starling (*Sturnus vulgaris*) [5] [6] [7] will be installed on the trees at *Target Notes 6a, 6b* and *14*. The Starling is a priority species included on *Section 7* of the *Environment (Wales) Act 2016* and the Red List of Birds of Conservation Concern in Wales.

9.3.9 The nest-boxes would be sited out of reach (though accessible for maintenance), 3m or more off the ground. All of the nest-boxes would be located somewhere between (facing) north through east to southeast; avoiding prevailing winds and direct sunlight where possible. Ideally, they will be located in small groups as Starlings are gregarious birds. These nest-boxes will be installed either by, or under the direction of, a suitably qualified ecologist to ensure correct installation.

9.3.10 Bird nest-boxes require annual maintenance as they can become heavily infested with parasites. The nest-boxes will be maintained annually and cleaned if necessary. All maintenance should be carried out when the last bird has left the nest-box; at least October. As such all nest-boxes should be cleaned in late-autumn (late October/ November). At least

[5] https://www.swiftnestboxes.co.uk/index.php/hikashop-menu-for-products-listing/product/44-starling-nest-box

[6] https://www.nhbs.com/3s-schwegler-starling-nest-box

[7] https://www.nhbs.com/vivara-pro-woodstone-starling-nest-box

2 to 3 weeks should be allowed after fledging before undertaking any cleaning. The *Wildlife and Countryside Act 1981*, as amended states that cleaning should only be carried out between 1st August and 31st January and that any eggs present should be destroyed immediately. All nest material should be completely removed and disposed of safely along with any other debris. To ensure that parasite build-up is controlled the inside of the nest-box should be cleansed with boiling water. For safety, this should be undertaken with the nest-box located on the ground. Care should be taken when opening nest-boxes as it is possible that they could be inhabited by bees, wasps or even bats.

10 OTHER SPECIES

10.1 Resource Status

10.1.1 Hedgehogs have been recorded from the area.

10.1.2 Two individual Dingy Skippers (*Erynnis tages*) were recorded on 13th May 2025 visiting nectar sources along the narrow western margin of the arable field by Hafod Road. It is suspected that these individuals may have originated from nearby population/s at Hafod Quarry/ Aberderfyn/ Bonc Yr Hafod Country Park.

10.2 Mitigation Measures

General

10.2.1 It is not currently anticipated that any features that might be used by Hedgehogs would be impacted. Site workers should maintain a watching brief and should a Hedgehog be found at any time all work should stop and the ecologist be contacted for further advice.

10.3 Compensation/ Enhancement Measures

Dingy Skipper

10.3.1 The Dingy Skipper is a *Section 7* priority species.

10.3.2 Common Bird's-foot-trefoil (*Lotus corniculatus*) is generally the main larval food-plant for this species. This plant has not currently been recorded from the survey site. It is proposed to sow the seed of this plant across areas of the retained grassland in the northeast corner of the site, the stony habitat to be created for Little Ringed Plovers and other areas such as along/ adjacent to the new vehicle access track. It is hoped that this will encourage this priority species to colonise the site and use it for breeding (as well as feeding). The Common Blue (*Polyommatus icarus*) was also recorded from the site and would benefit from this proposal.

10.3.3 Advice from the supplier[8][9] will be sought as to the amount of seed to be used.

[8] https://www.naturescape.co.uk/product/birdsfoot-trefoil/

[9] https://meadowmania.co.uk/products/birds-foot-trefoil-seed-lotus-corniculatus-1g?variant=49092092100914&country=GB&currency=GBP&utm_medium=product_sync&utm_source=google&utm_content=sag_organic&utm_campaign=sag_organic&gad_source=1&gad_campaignid=21971088127&gbraid=0AAAAAD0Ld14whmUZPSxC_qRg3NKRVDmTe&gclid=CjwKCAjw6NrBBhB6EiwAvnT_rIG3FVuo3U06N11zGC9wXTcX83elcS9QVZgobIiPICedYv46wF0uthoCZGAQAvD_BwE

11 MONITORING

11.1.1 The importance of securing long-term management/ maintenance and monitoring is central to the NBB approach (*e.g.,* CIEEM 2022). Typically, new habitats should be assessed through a walkover survey whereby a competent ecologist walks the entire site and checks that the habitat is healthy and establishing as intended. Best practice sites should include annual monitoring for the first five years, moving to every two years until year 10 and every five years thereafter (Solar Energy UK, date unknown).

11.1.2 The following monitoring is proposed:

- Two annual site inspections.
- Monitoring/ maintenance of bird nest-boxes.

11.1.3 Two site inspections (of the retained/ created habitats) will be undertaken in April/ May and June-August annually in suitable weather conditions. Ideally the first inspection would be timed to coincide with the flight-period of Dingy Skipper and be undertaken in suitable weather conditions for this species. It should also be undertaken at a time when Little Ringed Plovers might be present.

11.1.4 The purpose of these inspections would be to review the success of management undertaken and subjectively assess the condition of the valued ecological resources. Any requirements for changes to the management regime or remedial measures would be identified. This would include monitoring of the development of the potential nesting habitat for Little Ringed Plovers and consideration of any future management that might be required.

11.1.5 In time, once the habitat has established and a Biodiversity Management Plan is in place, a more standardised approach to monitoring could be adopted. This approach can be adapted from that detailed in Solar Energy UK (2022).

11.1.6 The bird nest-boxes will be subject to maintenance annually in November/ December. The use of these nest-boxes by Starlings (or any other species) will be recorded during the nesting season (March to August inclusive). Starlings typically raise one or two broods a year. Records of nesting birds and other records from the inspections will be submitted to Cofnod[10] (the Local Environmental Records Centre for North Wales).

11.1.7 A brief annual report covering the results of these surveys/ site inspections and management undertaken in that year will be prepared and submitted for review by the WCBC ecologist in December of each year. This report will form the main component of the review process. The main purpose of this review will be to ensure that the retained/ created habitat is being managed in accordance with the Biodiversity Management Plan and that the proposed habitat creation has been successful. Compilation of the report may require records to be maintained throughout the year. The Biodiversity Management Plan will be reviewed every five years or as deemed appropriate.

11.1.8 As stated in *Section 7* the results of the Great Crested Newt monitoring will be included in this report.

[10] https://www.cofnod.org.uk/Home

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North

Individual broad-leaved tree
Locations are indicative only.

Dense/ continuous scrub

Scattered scrub

Hedgerow

Tall ruderal

Tall ruderal/ Bramble mosaic

Unimproved neutral grassland/ tall ruderal/ Bramble mosaic

Running water

A Arable

Building

Hard-standing/ bare ground

Wall

Fence

Badger/ animal path/ breach

Badger sett

Target Note

Survey Site boundary
Refer to inset.

Inset: Survey Site boundary



This figure contains CONFIDENTIAL information relating to Badgers.

It should not be released to 3rd parties.

C520 Proposed Installation of Solar Photovoltaic Panels on Land off Hafod Road, Johnstown, Wrexham - Preliminary Ecological Appraisal

Figure 1 - Extended Phase 1 Habitat Survey; SHEET 1 of 2

Date: 08/04/2025

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10 m 0 50 m
1: 1,000

Base mapping provided by the client.

North

2a
3
5
4
7
6a
6
6b
6c
8
9
10c
10
10a
11
12
12a
10b
10d
10e
10f
A

10 m 0 50 m
1: 1,000

Base mapping provided by the client.

Individual broad-leaved tree
Locations are indicative only.
Dense/ continuous scrub
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***Figure 1* - Extended Phase 1 Habitat Survey; SHEET 2 of 2**

Date: 08/04/2025

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