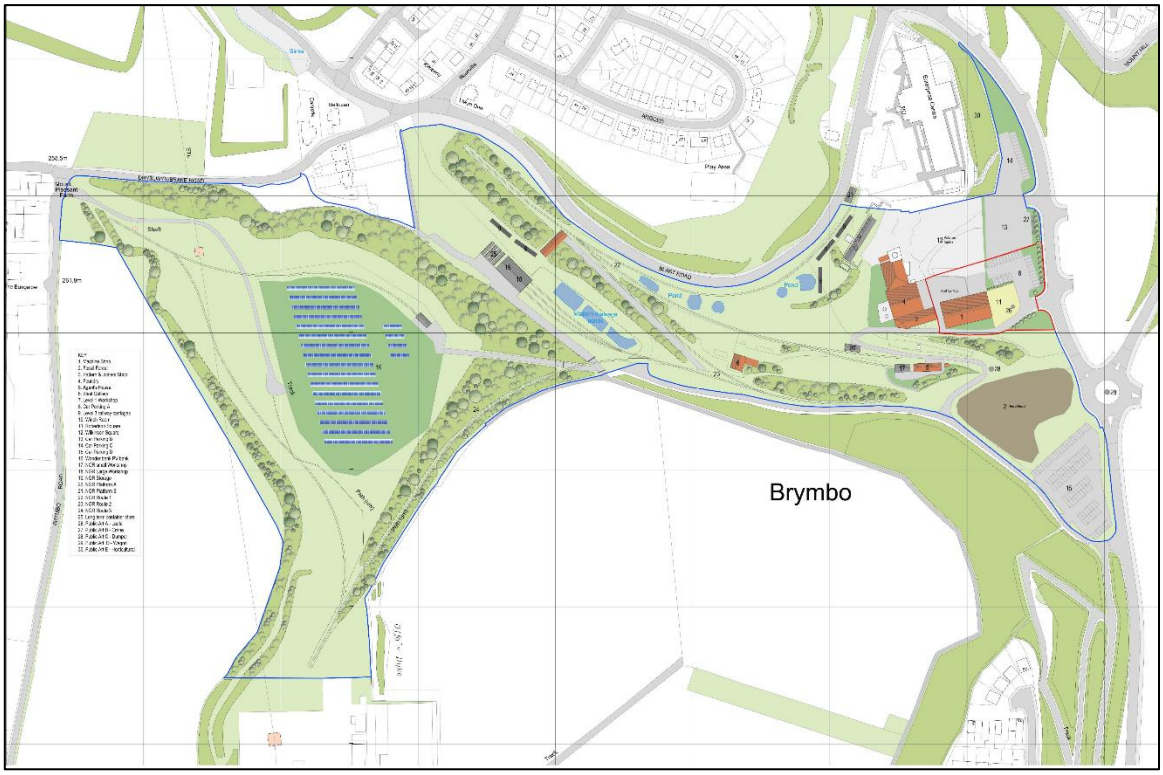
Brymbo Community Solar Park

Preliminary Ecological Appraisal



October 2024

V1.1

Executive Summary

Laura Cottrell MSc MCIEEM was employed to undertake a Preliminary Ecological Appraisal (PEA) to assess early stage potential for ecological impacts on land within the Brymbo Heritage site, identified for the construction of a community solar park with associated infrastructure.

The development is located on approximately 1.5 ha of land known as 'Wonderbank' which is an area of clay capped mining spoil. An Extended Phase 1 Survey and desk study were completed to help inform the nature conservation status of the site.

The main area for development is on an area of bare ground with birch scrub around the periphery. A desk study to identify any statutory sites of the development was undertaken. There is one Sites of Special Scientific Interest (SSSI) within 2km of the site.

The survey revealed no signs of badger or other mammals, however the desk study returned records [redacted], therefore measures will be put in place to ensure no effect will occur on these species. Potential impacts upon bat species are limited to disturbance from illumination and therefore mitigation will be required to reduce the effects of external lighting on site. An Ecological Clerk of Works will be employed throughout the duration of vegetation clearance and habitat creation to ensure no harm or disturbance to birds, reptiles, amphibians and mammals occurs.

Ecological enhancement on site will be achieved with the following measures:

- A native rich flower seed will be sown and managed.
- Hibernacula for reptile and great crested newt will be created within the wider site.

Considering the habitats and plant species in their own right, there is unlikely to be a significant ecological loss. The opportunity to make the site more biodiverse, will provide longer term support for invertebrates, reptiles, amphibians, birds and small mammals.

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Introduction

Dulas Ltd was commissioned to undertake a preliminary ecological appraisal (PEA) on land at Brymbo, Wrexham, Clwyd. The site is centred on SJ 29061 53487 which is approximately 4km northwest of Wrexham city.

This report contains results from the ecology survey and the impact that this development is likely to have on biodiversity, with recommendations for mitigation measures to reduce these impacts.

Proposed Works

The proposed development would comprise solar panels mounted upon tables in a series of arrays along with improved access track, improved security fencing and CCTV, battery storage container, grid connection kiosk and the grid connection to the heritage site.

Policy and Legislation

National Planning Policy

Planning Policy Wales and Technical Advice Note 5 confirms that on some occasions due to environmental issues, planning permission may be refused. Local authorities should therefore consider whether these environmental issues can be adequately addressed by modifying development proposals or by appropriate planning conditions or obligations.

With regard to the development, there may be presence of notable, priority or protected habitats and species present. These may be considered as environmental issues that may cause the failure to achieve planning approval due to their nature conservation status. In this case, species and habitats are a material consideration in determining the planning application. Information relating to protected sites and species must be submitted with planning applications for determination of the whole application. Where existing planning permission is in place, information relating to protected sites and species must be submitted as required as per requirements of planning conditions or obligations.

Conservation of Habitats and Species (Amendment) Regulations 2017 (Habitats Directive)

The main aim of the 'Habitats Directive' is to promote the maintenance of biodiversity by requiring member states to introduce protection for these habitats and species of European importance. The mechanism for protection is through designation of Special Areas of Conservation (SACs), both for habitats and for certain species listed within Annex II. In addition, the Habitats Directive provides specific protection of certain species.

The Environment (Wales) Act 2016

This act makes provision in respect of biodiversity, pesticides harmful to wildlife, protection of birds and invasive non-native species in Wales. Section 6 of this act introduces the biodiversity and resilience of ecosystems duty for which all public authorities in exercise of their functions must Section 7 of this act includes a duty on public bodies to have regard to the purpose of conserving biodiversity in the exercise of their functions. The list of habitats included in Section 7 defines those that are of principal importance in Wales and should be considered when public bodies exercise their duty.

Wildlife and Countryside Act 1981 (as amended)

The Wildlife and Countryside Act 1981 (as amended) (The WCA 1981) is the principal legislation by which most species are protected in Wales. In relation to birds, the WCA 1981 makes it an offence to intentionally kill, injure or take any wild bird; take, damage or destroy the nest of any wild bird while that nest is in use or being built. Schedule 1 of the WCA Act 1981 includes bird species for which addition the additional offence of disturbing these species at their nests or their dependent young.

Wrexham Unitary Development Plan

The Wrexham Unitary Development Plan (1996 - 2011) details policies which relate to biodiversity by which all planning applications must comply. In this case, Policy PS11 Biodiversity is relevant, which details how encouragement will be given to development proposals which improve the biodiversity value of sites. Policy EC4 Hedgerow, trees and Woodland states that '*Development proposals should provide for the conservation and management of hedgerows, trees, orchards, woodland, wildlife and other natural landscape and water features, and include new planting in order to enhance the character of the landscape and townscape. Development which results in the loss or significant damage to valuable trees, important hedgerows or ancient woodland sites will not be permitted'.*

Policy EC6: Biodiversity Conservation states: '*Development either within or close to sites of biodiversity interest will only be permitted where it can be clearly demonstrated that the need for the development outweighs the need to safeguard the intrinsic nature conservation value of the site. Where such development is permitted, damage should be kept to a minimum, and compensatory measures should be provided. Measures to improve the biodiversity value of sites and enhance their natural conservation interest and landscape quality including the establishment of local nature reserves, will be supported*'.

Objectives of the survey

The development will include the removal of existing habitats to facilitate the construction of solar PV array. It is therefore necessary to consider the potential effects on sensitive ecological receptors, i.e. those included in the various legislative documents as well as features such as Local Wildlife Sites and statutory protected sites.

A formal Preliminary Ecological Appraisal (CIEEM, 2017) of the site was completed to confirm the presence of ecological receptors on site and immediate surrounds by:

- Reviewing aerial photography for surrounding habitats and ecological connectivity;
- Completing a desk study to identify statutory and non-statutory designated sites, within 2km of the development.
- Completing an Extended Phase 1 Habitat Survey (JNCC, 2010) by conducting a site walkover to map habitats and ecological constraints.
- Identifying potential positive and negative effects on ecological receptors as a result of development.
- Preparing mitigation and enhancement measures to assist in improving the design, construction and operation of the development.

Quality Assurance

This report is based upon evidence and data prepared, as far as practically possible, in accordance with best practice guidance. It has been prepared and provided in accordance with the Chartered

Institute of Ecology and Environmental Management (CIEEM) Code of Professional Conduct. The report has been prepared based on guidance from BS42020:2013 Biodiversity: Code of practice for planning and development (BSI, 2013). In preparing this report the opinions are expressed as true and professional bona fida opinions.

Methodology

Desk Study

A search for statutory designated sites was completed by reviewing The Multi-Agency Geographic Information for the Countryside (MAGIC) website alongside publicly available datasets provided by using Natural Resource Wales (NRW) for Sites of Special Scientific Interest (SSSI), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, National Nature Reserves (NNR) and Local Nature Reserves (LNR). Each designation within 2km of the proposed site was mapped in a GIS to determine distance from the development and information from citations and web sources used to define the reason(s) for designation and/or features of nature conservation interest.

A data search for protected and notable species was requested from Cofnod Environmental Record centre. Only records from within the last ten years were considered.

Field Survey

An Extended Phase 1 Habitat Survey (JNCC, 2010) was completed on the 01st of October 2024 by Laura Cottrell MSc MCIEEM, who has over 17 years' experience in ecological survey and consultancy. Phase 1 Habitat Survey is a technique for classifying and mapping habitats. The term 'Extended' refers in this project to assessing habitat features that may support protected or priority species such as birds, bats, reptiles etc. Dominant plant species observed within each habitat type were recorded in accordance with plant species nomenclature in Stace (2010). Target Notes (TN) were used to identify potential for protected or priority species or habitats, and to provide more detailed site descriptions.

Limitations

The development site was visited over the period of a single day but within the optimal surveying season. It is considered given the results that the field survey provides an accurate representation of the habitats present and their potential to support priority and protected species.

Weather conditions during the survey were changeable with some overcast and bright sunny spells. It is therefore not considered that the weather conditions hindered the survey.

Results

Desk Study Results

Statutory Designated Sites

There is one SSSI located within 2km of the site boundary Figure 1. The Coedwig Ffosil Brymbo SSSI is located approximately 371m at its nearest point to the east of the site boundary. It comprises approximately 14 m of Upper Carboniferous Duckmantian Coal Measures that contain an internationally important plant fossil assemblage.

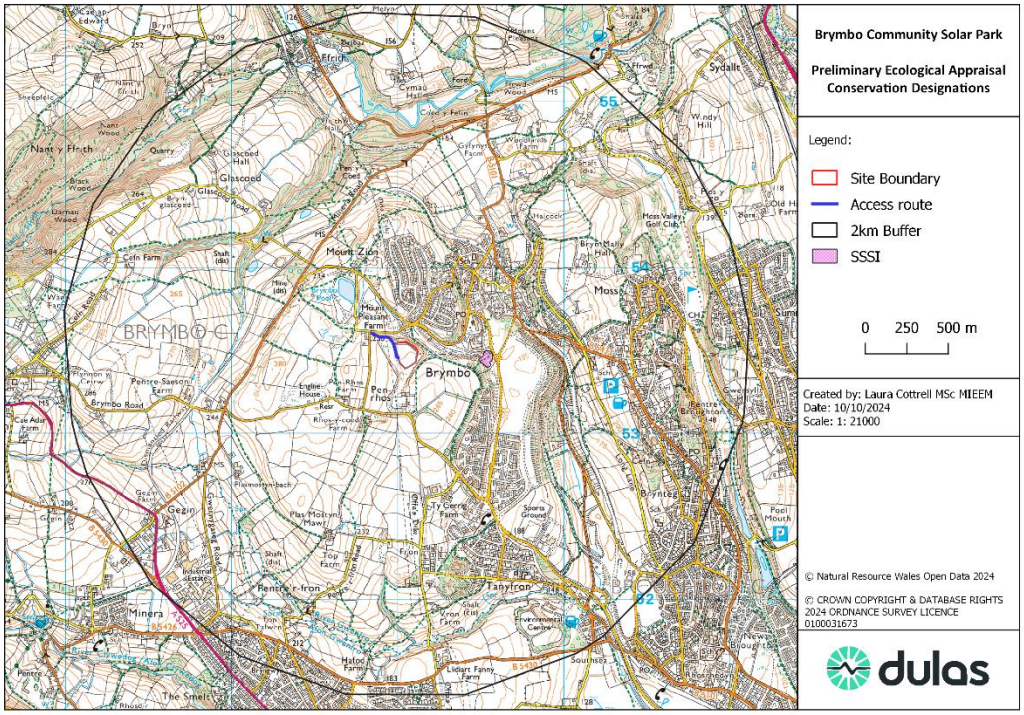


Figure 1: Conservation designations within 2km of the site boundary.

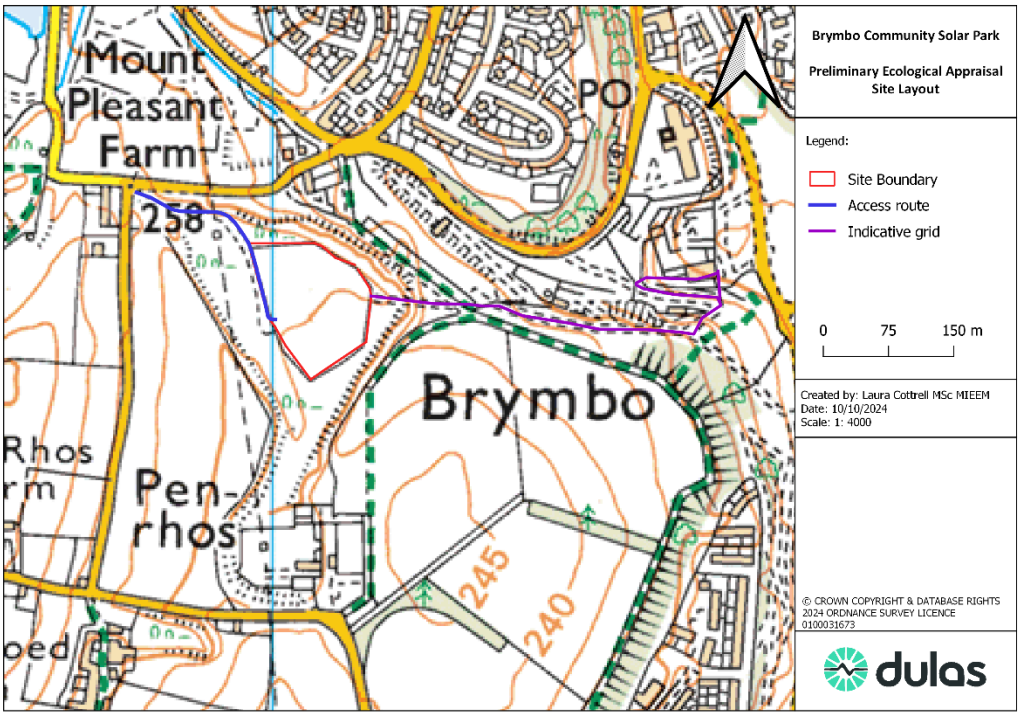


Figure 2: Site Layout

Local Wildlife Sites

Eleven Local Wildlife Sites are present within the 2km search area. The nearest being Zion Mountain which is located 216m to the north. This site is mainly semi-improved grassland with patches of common gorse. There is a large fishing pool has been reduced in size. Bracken is dominant in the north-west field with willow, ash and hazel scrub. The semi-improved pastures have abundant common bent, rye grass, crested dog's-tail, ribwort plantian, white clover and sweet vernal grass.

There is a marshy patch to the south-west which is dominated by floating sweet grass; creeping bent and soft rush are frequent and marsh pennywort occurs. This is a good site for birds particulary linnets and swallows.

B-Lines Cymru

B-Lines[1] are a solution to the problem of the loss of flowers and pollinators. The B-Lines are a series of 'insect pathways' running through the UK countryside and towns, creating a series of wildflower-rich habitat stepping stones. They link existing wildlife areas together, creating a network, like a railway, that will weave across the UK landscape. This will provide large areas of brand new habitat benefiting bees and butterflies– but also a host of other wildlife.

Protected Species

The Cofnod search returned a total of 1324 records within 2km of the centre of the survey site. These records comprised of the following taxonomic groups:

Taxa	**Total number of records**	**Number of species**	**Number of Category 1 species**
Amphibians	200	5	5
Birds	751	58	24
Insect	16	8	4
Mammals	69	9	9
Plants	184	85	2
INNS	104	32	0
Total	**1324**	**197**	**44**

Category 1 species are classified as EPS and/or UK legal protection such as Section 7 species under the Environment Wales Act (2016).

Invasive Non-native Species (INNS)

The desk study returned 104 records of INNS within 2km of the site boundary.

Field Survey results

Habitats

The area covered by the extended Phase 1 habitat survey, contains four dominant habitats, plantation scrub, semi-improved neutral grassland, improved grassland and bare ground.

Scrub

Around the periphery of the site (outside of the red line boundary) is scrub woodland, dominated by birch *Betula pendula* with occasional willow species *Salix sp.*, with little vegetation growing underneath. What vegetation was visible, comprised poor acid grassland consisting of Yorkshire fog *Holcus lanatus*, sweet vernal-grass and creeping bent, with a few herbs such as marsh bedstraw and creeping buttercup. The birch has obviously grown up since the site was cleared (for activities associated with mining) in the relatively recent past.

[1] B-Lines - Buglife



Figure 3: Scrub woodland around the periphery of the site.

Semi-improved neutral grassland and improved grassland

The area for the grid connection comprises semi-improved neutral grassland along a pathway towards the heritage centre. The length of grass pathway is approximately 113m in length until it reaches a track. Species diversity is low, the grassland is situated on a gently sloping hill that falls east to west, just outside of the site boundary to the east. The grassland has a coarse sward with no single species consistently dominant. Tussock forming grasses are constant throughout such as Yorkshire-fog *Holcus lanatus* and Cock's-foot *Dactylis glomerata*. In between the tussocks there is perennial rye-grass *Lolium perene*, creeping bent *Agrostis stolonifera* and sweet vernal-grass *Anthoxanthum odoratum*. Dicotyledons found within the sward were yarrow *Achillea millefolium*, Bird's-foot trefoil *Lotus corniculatus*, Cuckooflower *Cardamine pratensis*, creeping buttercup *Ranunculus repens*, common dandelion *Taraxacum officinale*, ribwort plantain *Plantago lanceolate*, common mouse-ear *Cerastium fontanum*, common sorrel *Rumex acetosa*, curly dock *Rumex crispus*, white clover *Trifolium repens* and creeping thistle *Cirsium arvense*.



Figure 4: Area of grassland to the north of the site

The pathway itself is dominated by species more indicative of improved grassland with rye grass and white clover being dominant species.

Bare ground

The entire area within the red line boundary has been stripped of all vegetation. It is understood that the vegetation clearance was done under a watching brief by a qualified ecologist during September 2024. The access track has also been cleared of vegetation.



Figure 5: Area where vegetation clearance has occurred and where the Solar PV array would be located.



Figure 6: Access track

Invasive Non-Native Species (INNS)

Along the access track where the overhead line poles have been placed, there are stands of Japanese knotweed *Fallopia japonica*. No other INNS was noted on the site.



Figure 7: Stand of Japanese knotweed along access track.

Protected and Priority Species

Amphibians

The data search returned a number of records within 2km of the site for amphibians, the nearest being 105m to the east. An amphibian exclusion fence is erected around the site, to prohibit the movement of amphibians into the heritage site.

Bats

The data search returned a number of records for bats, the nearest being 332m to the east. Whilst the site may be used for foraging, no standard trees were noted on or around the site, apart from the woodland to the north and north east. No trees will be impacted by the development.

Birds

The area surrounding the redline boundary that contains predominantly birch scrub, although it provides some habitat for birds (e.g. bullfinch, common species of warbler), is of little conservation value. This area will not be impacted by the development.

Mammals

[redacted]

Reptiles

No hibernacula was present on the site. The area along the grid route has potential to support common species of reptile such as slow worm and common lizard, due to the varied structure of vegetation with open areas to bask adjacent to the periphery of woodland.

Discussion including Recommendations

The following recommendations have been developed based on the development footprint. The implementation of these recommendations will ensure compliance with the Planning Policy Wales version 12 (Welsh Government, 2024), TAN 5 Nature Conservation and Planning (2009), Section 6

and 7 of the Environment Wales Act, 2016, the Conservation of Habitats and Species Regulations 2017 and the Wrexham Unitary Development Plan (1996-2011).

The recommendations aim to avoid or minimise adverse impacts on the environment and protected species, mitigate and compensate for losses where damage is unavoidable and promote opportunities to enhance biodiversity. There is a requirement that developments must provide net benefit for biodiversity.

Stepwise Approach to Maintaining Biodiversity

As part of the Future Wales: The National Plan 2040 and Planning Policy Wales (PPW) Edition 12 - 7th Feb 2024 planning authorities must follow a stepwise approach to maintain and enhance biodiversity and resilient ecological networks by ensuring that any adverse environmental effects are firstly avoided, then minimized, mitigated, and as a last resort compensated for; enhancement must be secured wherever possible. The first priority for planning authorities is to avoid damage to biodiversity and ecosystem functioning. Where there may be harmful environmental effects, planning authorities will need to be satisfied that any reasonable alternative sites that would result in less harm, no harm or gain have been fully considered. This policy is mirrored within the Local Development Plan: Wrexham Unitary Development Plan (1996-2011).

The process has been followed on site:

Avoidance – Avoidance of semi-natural woodland has been considered for the laying of the grid connection so as to ensure no impact on broadleaf trees and flora associated with semi-natural woodland.

Minimisation – Impacts will be minimised through adopting precautionary measures provided below.

Mitigation/Restoration – A set of restoration measures are provided below.

Biodiversity and Ecosystem Enhancement Scheme/Green Infrastructural Plan

Local Authorities have a duty (known as the Biodiversity and resilience of ecosystems duty) under the Environment (Wales) Act 2016 to seek to maintain and enhance biodiversity in the exercise of their functions. Section 6.4.12 of Planning Policy Wales states that '*Where biodiversity enhancement proportionate to the scale and nature of the development is not proposed as part of an application, significant weight will be given to its absence, and unless other significant material considerations indicate otherwise, it will be necessary to refuse permission'.*

Where possible the existing on-site habitat will be retained to ensure that species are not adversely affected by the development.

Provision of an Ecological Clerk of Works

A suitably qualified Ecological Clerk of Works (ECoW) will be employed to ensure compliance with any conditions to planning consent and to oversee the habitat clearance and habitat creation.

Precautionary Measures

Timing of Vegetation Clearance for Birds

To avoid adverse impacts to nesting birds, the clearance of any shrub along the track to facilitate the grid connection will be undertaken from September to February outside of the bird breeding season (beginning of March to end of September). Alternatively, any works undertaken from March to September will be subject to a check for nesting birds by the ECoW immediately prior to removal of such habitats. If any active nests are found these will be protected, along with an appropriate buffer zone of 5-10m, until the young have fledged.

Timing of Vegetation Clearance and Species Deterrence for Reptiles, Amphibians and Other Mammals

Measures should be taken to minimise the potential for causing the death and injury of individual reptiles, amphibians, hedgehogs and other small mammals during any vegetation clearance, via the implementation of 'species deterrence' measures in the run-up to the commencement of works on-site, and 'destructive searches' of grassland and shrub, where required.

Vegetation should be strimmed or brush cut to a height of approximately 200mm during this period, to make the area less suitable for hedgehogs and reptiles. The ECoW will be on site to supervise the vegetation removal. Arisings will be used for the creation of hibernacula for reptiles. The area strimmed will be left for at least 24 hours and then cut down to near ground level and left for a further 24 hours prior to works commencing. This should make the areas unattractive to wildlife prior to development, and thus encourage them to leave the area. Mechanical clearance methods (e.g. gang-mowing, flail-cutting etc.) will not be used.

Good Construction Practices for Mammals

Any open trenches, steep sided holes and excavations associated with the development will either be closed and covered at night, or a means of escape provided (e.g., plank or reinforced plywood board over 60cm wide at no greater angle than 30º or gently graded site wall of the same angle or equivalent) to prevent any badgers, hedgehogs or other animals falling in and becoming trapped. Any exposed trenches must be checked for trapped wildlife each morning before starting construction activities.

Given the nature of the site and its surrounds the wider habitat retains sufficient foraging resource for mammals. Therefore, measures to enhance habitat specifically for badgers, hedgehogs and polecats are not recommended. However, as mammals are known to be wide spread and the aforementioned may use the site for commuting, wildlife friendly security fencing should be used with gaps to allow for the movement of mammals across the site.

External Lighting

If any lighting is to be installed as security lighting, only a limited amount of lighting must be affixed and only for security purposes. Light fixtures will be directed downwards with additional canopy protection, and must be on a passive infrared (PIR) sensor, to allow lighting to come on only when required. Light fixtures must never directly illuminate any hedgerow, scrub, waterway or trees.

The security lighting scheme must follow advice detailed in the Technical Guidance note 08/18 and generally comprise:

- luminaires are to be LED only, due to their sharp cut-off, lower intensity, good colour rendition and dimming capability;
- luminaires should have a warm white spectrum (ideally <2700 Kelvins), reducing the blue light component and increasing the red-light component;

- luminaires should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats and nocturnal wildlife;
- heights of fixtures should be carefully considered to minimise light spill;
- only luminaires with an upward light ratio of 0% and with good optical control should be used;
- luminaires must always be mounted on the horizontal, i.e. no upward tilt;
- any external security lighting should be set on motion-sensors and short (1min) timers;
- reduce light spill and direct it only to where it is needed. Lighting fixtures must be directed away from any natural features and must not encroach outside the site boundaries, particularly the surrounding trees, hedgerow and other vegetation in the landscape.

Species

Bats

No trees will be affected by the development. Potential impacts are limited to disturbance from illumination and therefore the mitigation above will reduce the effects of external lighting on site.

Great Crested Newt

A great crested newt (GCN) *Triturus cristatus* permanent fence exists around the wider site, restricting access of GCN into the development area. In areas, the vegetation has been allowed to grow around the fence (as shown in Figure 8) The areas of vegetation on either side of the fence should be managed to make sure the fence is still effective in stopping the migration of GCN into the site, as GCN can climb vegetation. This should be done by strimming 50cm either side of the fence under a watching brief by a qualified and licensed ecologist. The area should be checked for GCN prior to strimming by a hand search, and vegetation should be strimmed during the winter months when GCN are not active.



Figure 8: An area where vegetation has been allowed to grow around the GCN fencing

A hibernaculae for GCN should be created close to the existing pond in the woodland to the east. This will be made from logs, stones, inert rubble, soil and turf. Construction will follow instructions and suggestions laid out in the section entitled 'Special Newt Conservation Measures' (Langton, Beckett & Foster, 2001).

It is also recommended to plant native UK wildflower seeds, ideally locally-sourced, across the top of the hibernaculae[2]. Once germinated, this will attract a range of invertebrate fauna to the site, and will aid in creating a cohesive and sturdy structure. Re-sowing of wildflower seeds is recommended each year, as some species reproduce on an annual cycle.

Reptiles

There are no records of reptiles within the area, however it should be noted that reptile species such as slowworm *Anguis fragilis*, grass snake *Natrix natrix* and common lizard *Zootoca vivipara* are widespread and under recorded. No refugia was identified on site, it is possible however, that the site is used by common reptiles, at least on occasion. To the north and south of the site adjacent to the site boundary and the scrub forest (edge habitat) two hibernaculum for reptiles can be constructed. Tree roots, rubble and deep leave litter can be great refuges and over-wintering sites (hibernacula) for reptiles, providing habitat, cover, locations to bask, and food.

- In a sunny spot, dig a hole about 50cm deep and 1.5 metres across.
- Fill with logs, branches, bricks and rocks, leaving plenty of gaps in between.
- Insert entrance tubes (drainpipes) at ground level into the hole.
- Cover the pile with soil (to about 50cm high).
- Plant flower seeds and long grasses over the mound.

Designated sites

Given the distance between the designated sites and the site boundary, no impacts are foreseen.

B-Line Cymru

The grassland compensation below will benefit invertebrates and aid in the vision of Buglife by helping conserve our native pollinators and a range of other wildlife and contributing towards Biodiversity targets.

Habitats and Land Take

Grassland compensation

There is the opportunity to sow a more species diverse grassland by re-seeded with a mix of species suited to a range of substrates, this is due to the substrates from the former coal mining and that the area is clay capped. Therefore a mix of Brownfield Site Wildflower Mix (Open Mosaic Habitat on Previously Developed Land) would be suitable. This mix provides a flower rich habitat, with 80% flora compared to a usual 20% in a meadow mix, for brownfield sites. BFS 14 - Brownfield Site Wildflower Mix (Open Mosaic Habitat on Previously Developed Land) - 80% Flora - Phoenix Amenity Supplies. The seed mix is suitable for a wide range of free draining substrates often of post-industrial origin. This diverse assemblage of wildflowers provides both ephemeral species to colonise bare ground and tall biennial species for sward structural diversity with perennial species and two grasses to establish permanent meadow habitat. Brownfield sites provide important habitats for priority invertebrates and reptiles.

This can be achieved by sowing onto the surface of a prepared fine seedbed in August-September. The mixed grass and wildflower mix should be used at a rate of 3g/m^2.

[2] https://www.wtwales.org/actions/how-build-hibernaculumamphibians-and-reptiles

For the first few years the newly sown grassland will need some management to allow the wildflowers to grow, flower and set seed. The following management is recommended:

Control weeds –tall weeds such as docks and thistles should be cut/topped several times a year for the first two years

The first year's growth – In the first year prevent seedlings from getting smothered by vigorous grass growth. When the new grassland grows to a height of 10-15cm, it should be grazed to a height of approximately 5cm. This may need to happen several times over the year.

The next few years – the sward should be allowed to 'fill-out', i.e. create a good coverage of wildflowers and grasses. The grassland should be grazed once a year after it has flowered and the seed has dropped (late July – August).

Japanese knotweed

It was evident that the Japanese knotweed along the access track has been treated with herbicide. It is recommended that the existing control programme for the Japanese knotweed should be continued until this species has been eradicated from the area. This can take up to three years of herbicide application to achieve.

Conclusion

Planning permission is sought for a community solar park and all associated works. The habitat impacted by the proposal is primarily bare ground, the loss of this habitat is of very little ecological consequence.

Suitable mitigation measures can be incorporated into the proposed application to mitigate/ compensate any potential impacts to ecological features and to demonstrate 'no biodiversity net loss' in accordance with Planning Policy Wales and local planning policy. Enhancement and creation of habitats have been put forward as a Net Benefit for Biodiversity. As such, no significant impact can be expected which would prevent determination of a planning application or development of this site.

References

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JNCC (2010) Handbook for Phase 1 Habitat Survey. Peterborough

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