

Preliminary Ecological Appraisal (PEA) Report

Project: Land at Bryn Isa, Vicarage Lane, Gresford, LL12 8US

Client: Mr and Mrs Paletta

Date: April 2022

Reference: 080422.PEA



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REPORT DETAILS

Reference no.	080422.PEA
Version	001
Status	FINAL

QUALITY ASSURANCE

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Date of review	11th April 2022

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EXECUTIVE SUMMARY

The contents of this report detail the findings of a Preliminary Ecological Appraisal (PEA) undertaken during April 2022 at Bryn Isa, Gresford, LL12 8US (hereafter referred to as 'the site'). The site is centred on approximate Ordnance Survey Grid Reference (OSGR) SJ 35260 54274. The findings of this report have been used to inform the proposed installation of 60 (sixty) solar panels (arranged in 2 lines of 30 panels each) in the location shown coloured red on the submitted Site Plan and Location Plan

The site is very small and set over 0.042 ac is composed of species poor hedgerow, improved grassland, arable land. (**Plan 1**).

The site offers moderately-good potential commuting and foraging habitat for common bat species on the northern hedgerow boundary only, it is well-connected with the wider landscape in that an east and westerly direction. No further survey(s) with regard to bats is required. A sensitive lighting scheme is recommended, along with bat box provision as an enhancement.

The trees and hedgerow on the site provide overall 'high' bird nesting potential, although no active bird nests were identified during the nesting bird inspection (**Plan 1**;). A small number of passerine bird species were observed flying over and around the site during the PEA. A sensitive tree/ hedgerow/ scrub works scheme must be adhered to where necessary and bird box provision is recommended as an enhancement.

No potential significant standing waterbodies were identified during the desktop study, within a 250m zone of influence without barriers. The suitability of the terrestrial habitat throughout the site is poor for GCN. No amphibians were found on the site during a hand search and a lack of potential refugia was noted on the site. No GCN records were returned within 1km of the site. No further survey with regard to GCN is necessary.

The site provides poor reptile habitat with little refuge or basking potential present. No reptiles or amphibians were found on the site during a hand search and there was a lack of potential refugia on the site. No records for reptile species were returned within 1km of the site. No further survey with regard to reptiles is considered necessary.

No evidence of other protected/ notable species was noted during the survey and no adverse impacts upon species or habitats of ecological importance are envisaged, provided the provisions detailed within this report are adhered to.

1. INTRODUCTION

1.1 COMMISSION AND PROPOSALS

- Pearce Environment Ltd were commissioned to undertake a Preliminary Ecological Appraisal (PEA) at Bryn Isa, Gresford, LL12 8US (hereafter referred to as 'the site'). The site is centred on approximate Ordnance Survey Grid Reference (OSGR) SJ 35260 54274.
- The findings of this report have been used to inform the proposed installation of 60 (sixty) solar panels (arranged in 2 lines of 30 panels each) (**Appendix 1**).

1.2 AIMS

- This report sets out the findings of a desk-based study, site-based study undertaken by Pearce Environment Ltd in April of 2022
- The aims of this report are to:
 - i. Determine the habitat types within and immediately adjacent to the boundary of the site in relation to the application footprint;
 - ii. Identify habitats and species constraints pertinent to the proposals, in accordance with statutory legislation and guidance given in the NPPF¹;
 - iii. Determine the need for any additional species surveys, where necessary;
 - iv. Detail any mitigation and compensation schemes, Reasonable Avoidance Measures (RAM's) and/ or licensing requirements, where necessary; and
 - v. Identify opportunities for the proposals to provide enhancements and add to the biodiversity resource within the site.

1.3 BACKGROUND

- No previous ecological reports relating to the site itself are known to the surveyor.

¹ Department for communities and Local Government (2019). National Planning Policy Framework.

2. METHODOLOGY

- This section summarises the methodologies used during the ecological studies undertaken to inform the proposed development, in line with the aims set out in **Section 1** of this report.

2.1 DESK STUDY

- The desk study is an important part of the ecological assessment as it provides contextual information, such as the sites' proximity to designated areas and known records of protected/ notable species (**Table 2.1**).
- This information is used to supplement the findings of a Preliminary Ecological Appraisal (PEA), to assess the potential for the proposals to affect protected/ notable species and designations of conservation concern, and supports the recommendations and conclusions set out in this report.

Table 2.1 Summary of resources used and information requested during the desk study (2022)

Organisation/ Resource	Information Assessed (search distance from site boundary)
MAGIC website ²	• International statutory designations (1km) • National statutory designations (1km) • Significant standing water bodies (250m)

- All pertinent information obtained during the desk study is referenced within **Section 3**, **Section 5**, **Appendix 3** and **Appendix 4** of this report.

2.2 PRELIMINARY ECOLOGICAL APPRAISAL (PEA)

- This level of survey does not aim to provide a complete floral and faunal inventory present on site but to identify field signs of, or habitats with the potential to support, protected species, thereby determining the need for further species survey(s).
- The main habitat types and plant species present were identified and mapped in **Plan 1**, summarised in **Section 3** and illustrated using photographs included within this report, according to the guidelines set out by the Chartered Institute of Ecology and Environmental Management (CIEEM)³.
- The survey was undertaken by T Pearce MCIEEM MRSB, during a daytime visit on 8th April 2022. This visit was carried out at a temperature of 10°C and in dry sunny conditions.

² Multi-Agency Geographic Information for the Countryside website (www.magic.gov.uk/)

³ Guidelines for Preliminary Ecological Appraisal (2013). CIEEM. Technical Guidance Series, 1-8.

2.3 SPECIES SURVEYS

Bats

Preliminary Bat Roost Assessment: Built Structures

- A daytime assessment of all built structure(s) on the site was undertaken to determine their potential to support roosting bats. All external features considered potentially suitable for bats were identified and assessed. An internal assessment of all accessible areas (including loft spaces and basements/ cellars, where appropriate) was undertaken. Signs of bat activity including droppings, feeding remains, scratch marks, staining and urine spots were searched for around all accessible areas. The potential suitability of the structures investigated was assigned a rating of low-to-high in accordance with section 5.2 of the Bat Conservation Trust's *Good Practice Guidelines*⁴ (**Appendix 2**).
- Recommendations for further survey requirements are based on guidelines summarised in Table 7.3 of the Bat Conservation Trust's *Good Practice Guidelines*.

Preliminary Bat Roost Assessment: Trees

- An assessment from the ground of any suitable tree(s) was undertaken to determine their potential to support roosting bats. All trees examined were categorised based on the number and type(s) of feature(s) known to be suitable to support roosting bats and assigned a rating of low-to-high, in accordance with Section 5.5, Section 6.2.4 and Table 4.1 of the Bat Conservation Trust's *Good Practice Guidelines*. Suitable roost features include cracks and splits in limbs, cavities, woodpecker holes, loose bark and thick-stemmed ivy.
- Recommendations for further survey requirements are based on guidelines summarised in Table 7.3 of the Bat Conservation Trust's *Good Practice Guidelines*.

⁴ Collins J. (Ed.) (2016) Bat Surveys for Professional Ecologist: Good Practice Guidelines (3rd Ed.) The Bat Conservation Trust, London.

Foraging/ Commuting Assessment

- The suitability of the site and immediate surrounds for foraging and commuting bats was assessed, based on the presence/ absence of potential foraging/ commuting habitats such as trees/ woodland, hedgerow(s), grassland and watercourses/ waterbodies. Connectivity to the wider landscape was evaluated.

Great Crested Newts

- A desk-based study was undertaken using OS maps and online mapping resources to identify any waterbodies within 250m of the site boundaries.

Habitat Suitability Index (HSI)

- Those waterbodies identified within the search area not considered to be separated from the application site by major dispersal barriers were assessed for their potential to support great crested newts (GCN; *Triturus cristatus*) using the Habitat Suitability Index (HSI), developed by Oldham et al. (2000)⁵. This assessment uses a scoring system, derived from several criteria including pond area, water quality, fish/ waterfowl presence and the value of the surrounding, terrestrial habitat. Waterbodies with high scores are considered more likely to support GCN than those with lower scores.
- This tool has been developed to provide a quantitative measure of the suitability of a waterbody to support GCN and should not be used as a substitute for presence/ absence surveys where they are required.
- HSI scores relating to the suitability of the waterbodies assessed to support GCN are described in **Table 2.2**.

Table 2.2 Pond suitability for great crested newts determined using HSI scoring system

HSI Score	Waterbody Suitability to Support GCN
<0.5	Poor suitability
0.5 – 0.59	Below average suitability
0.6 – 0.69	Average suitability
0.7 – 0.79	Good suitability
>0.8	Excellent suitability

- Appropriate biosecurity measures were taken during waterbody visits, where necessary.

⁵ Oldham et al. (2000). Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). Herpetological Journal 10 (4), 143-155.

Nesting Birds

- An internal and external assessment of any built structure(s) on the site was undertaken by an experienced ecologist, to identify the presence of habitat/ features suitable for nesting birds.
- An assessment from the ground of all trees/ boundary vegetation located on or immediately adjacent to the site was undertaken during the PEA, to identify the presence of habitat/ features suitable for nesting birds.
- A search for active/ disused bird nests was undertaken, where appropriate. Observations of birds flying over or around the site were also noted.

Badger

- A thorough site walkover was undertaken to determine the status of badgers (*Meles meles*) and their setts on the site. Where present, an assessment of any sett entrances was made, taking into account the shape of the entrance, the quantity of spoil and freshness of its excavation, the presence of fresh bedding, the presence of badger hair and the presence of badger claw marks. Additional badger field signs such as badger paths, scrapings produced during foraging behaviour, latrines/ dung pits, scratching trees and diurnal resting places were also searched for.

Reptiles

- A thorough site walkover was undertaken to assess the habitat suitability for common reptile species. A terrestrial hand search was carried out during the PEA for reptiles basking or seeking refuge beneath debris. An assessment of the quality of reptile habitat present upon the site was carried out, providing a classification of low-to-high.

Invasive Weeds

- A search for signs of invasive species of plant including Japanese knotweed (*Fallopia japonica*), Himalayan balsam (*Impatiens glandulifera*), rhododendron (*Rhododendron ponticum*) and giant hogweed (*Heracleum mantegazzianum*), was undertaken during the PEA.
- Appropriate biosecurity measures were undertaken, where appropriate.

Botanical Survey

- An assessment of the species present within any grassland habitats on the site was undertaken. This utilised the DAFOR scale (Dominant, Abundant, Frequent, Occasional, Rare) to record the approximate abundance(s) of each species.

Other Species

- Observations of any other notable flora and fauna were noted during the PEA.

2.4 LIMITATIONS

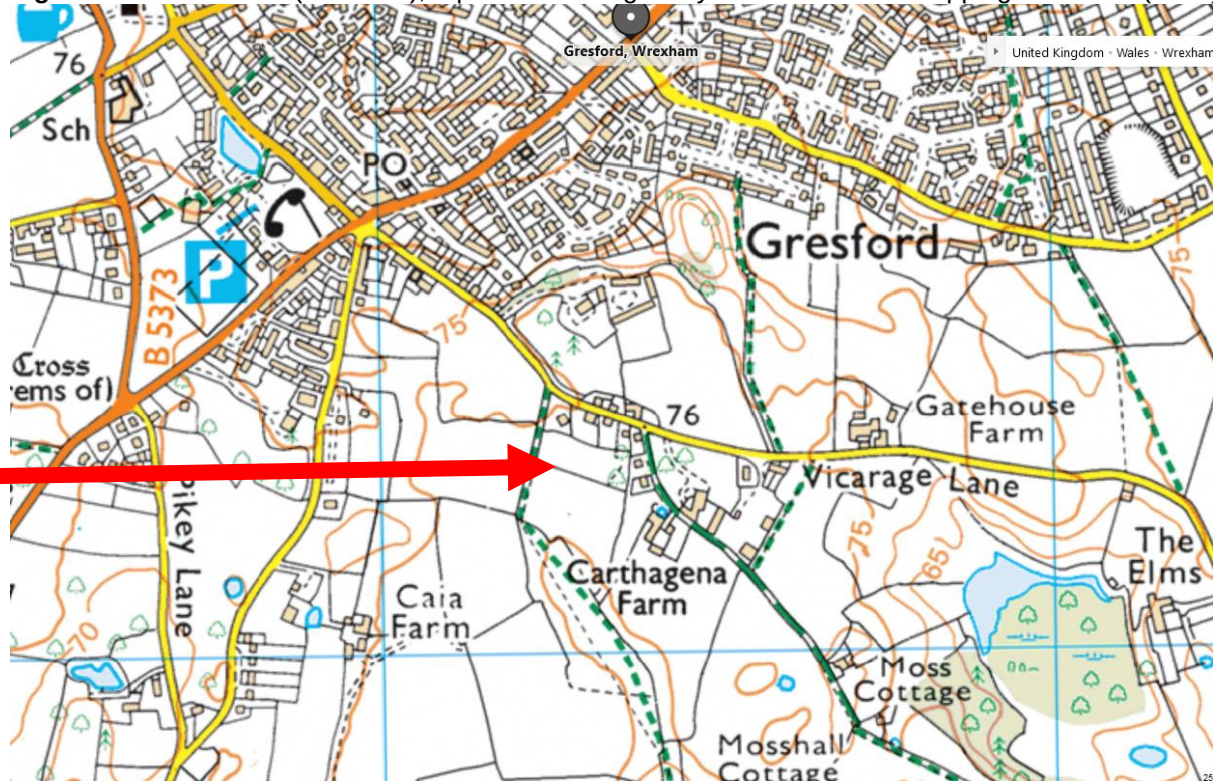
- April is considered to be optimal period for undertaking a PEA. Therefore, the PEA is not considered to have been too limited by seasonal or climatic factors.
- All remaining aspects of the site itself and immediate surrounds were fully accessible during the survey(s), unless otherwise stated within this report.
- Whilst we make every effort to meet the client brief, no site visit can ensure prediction of the natural environment such as movement of species in response to variables such as weather and seasonality.
- As with any survey, it is a documentation of what the surveyor observes on the specific survey day and their interpretation of those observations.

3. RESULTS AND RECOMMENDATIONS

3.1 SITE DESCRIPTION

- The site is set in an rural environment, off Vicarage Lane Road, Gresford. (**Figure 3.1**).

Figure 3.1 Site location (indicated), reproduced using freely-available online mapping resources (2022)



- The site is immediately surrounded north by garden, lawns with ornamental borders, a tennis court and an outbuilding. To the south, west and east by arable fields of maize production, (fallow at time of writing). Vicarage lane (road) is further north with housing and residential gardens north, east. (**Figure 3.2**).
- Existing access into the site is gained via a gateway just northeast of the site. (**Image 3.3**).
- The site itself (0.043 acres) consists of area of arable field and improved grassland and species poor hedgerow. The following range of broad habitats are present on the site (**Plan 1**):
 - Amenity grassland (off site but a lawn where the electricity trench would be dug to the property)
 - Intact, hedgerow species poor;
 - Improved Grassland
 - Arable land

Figure 3.2 Aerial view of the site (indicated in red) and immediate surrounds, reproduced using freely available online mapping resources (2022)



Image 3.3 Existing access via a stone gateway



3.2 BROAD HABITATS

Improved Grassland

- A small section of the site, a margin of the arable field had been left to grass over with it appeared actively managed by mowing.
- Dominated by perennial ryegrass (*Lolium perenne*), with frequent Yorkshire fog (*Holcus lanatus*) and cock's-foot (*Dactylus glomerata*), occasional red fescue (*Festuca rubra*), meadow foxtail (*Alopecurus pratensis*) and meadow fescue (*Festuca pratensis*). Occasional herbs/forbs including ribwort plantain (*Plantago lanceolata*), dandelion (*Taraxacum officinale*), cleavers (*Galium aparine*), Occasional patches of ruderals including frequent creeping thistle (*Cirsium arvense*), common nettle (*Urdita dioica*) and broadleaved dock (*Rumex obtusifolius*).

Intact Hedgerow(s)

- A single section of around 60m of intact native hedgerow (species poor) bound the site and forms the northern hedgerow:
- The hedgerow is hawthorn (*Crataegus monogyna*), dominant, with occasional privet, infrequently holly and sycamore
- It has an understory of common nettle, cleaver, broad leaved dock, hogweed (*Heracleum sphondylium*), cow parsley (*Anthriscus sylvestris*), white dead nettle (*Lamium album*)
- It is of around 2 m height and 1.5m wide, is machine cut.

3.3 OTHER OBSERVATIONS

- No further observations pertinent to this study were made during the PEA.

Image 3.4 hedgerow, grassland and arable looking east



Image 3.5 B2 hedgerow, grassland and arable looking west



3.4 DESK STUDY RESULTS

Statutory Designations

- A desk-based study was undertaken to identify the presence of statutory designations, which include:

International Recognised Statutory Designations

- Special Protection Areas (SPAs)
- Special Areas of Conservation (SACs)
- RAMSAR Sites

National Recognised Statutory Designations

- Sites of Special Scientific Interest (SSSIs)
- National Nature Reserves (NNRs)

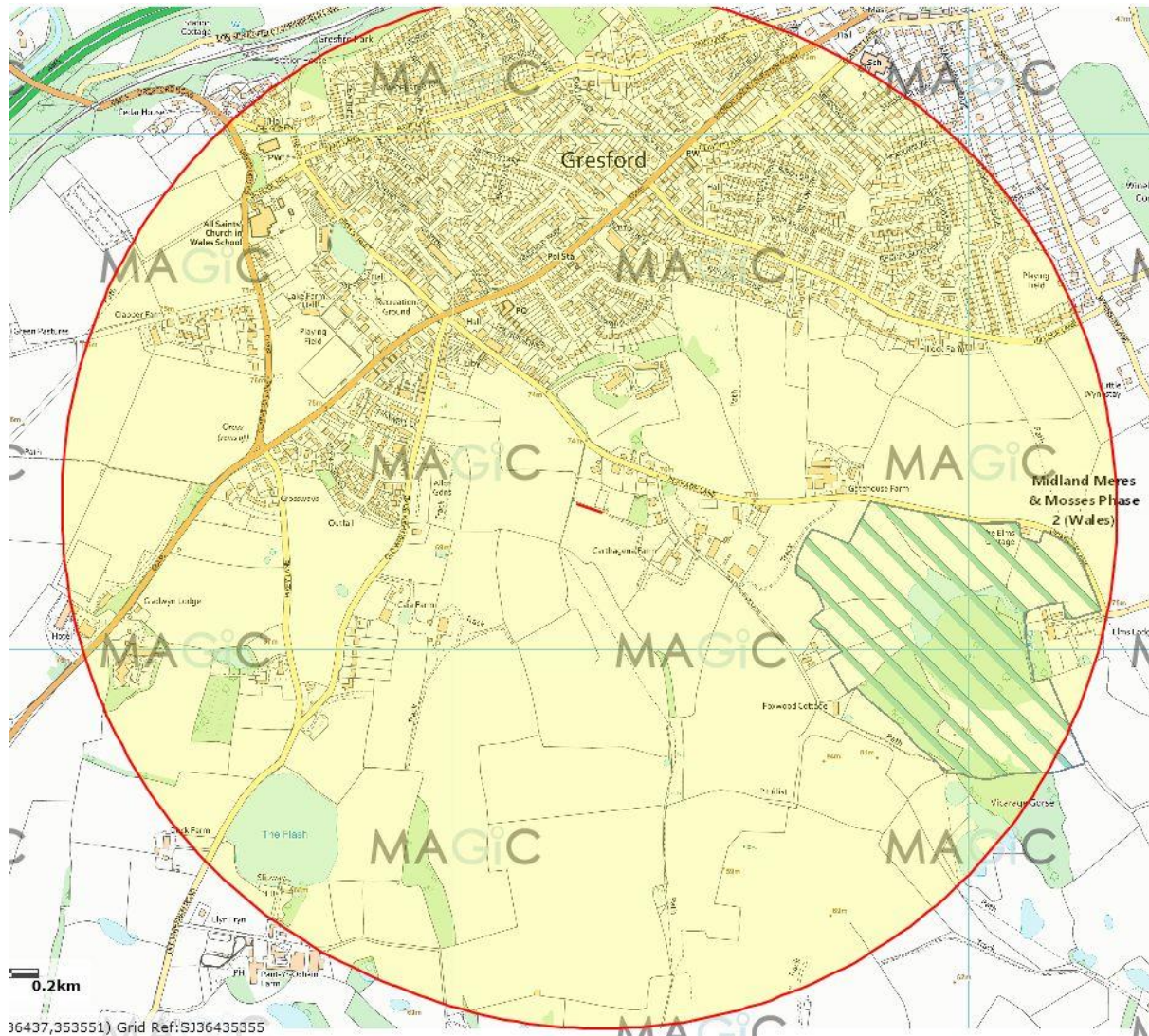
Local Level Statutory Designations

- Local Nature Reserves (LNRs)
- A review of information available from freely-available online resources search identified the presence of one statutory designation of conservation concern within 1km of the site (**Figure 3.17**; **Table 3.18**).
- Given the small scale of the works and distance from statutory designations of biological/ ecological importance within 1km of the site, no negative impacts upon such designations are anticipated as a result of the proposals.

Non-Statutory Designations

- A search identified the presence of no non- statutory within 1km of the site. (Table 3.19; Appendix 3).

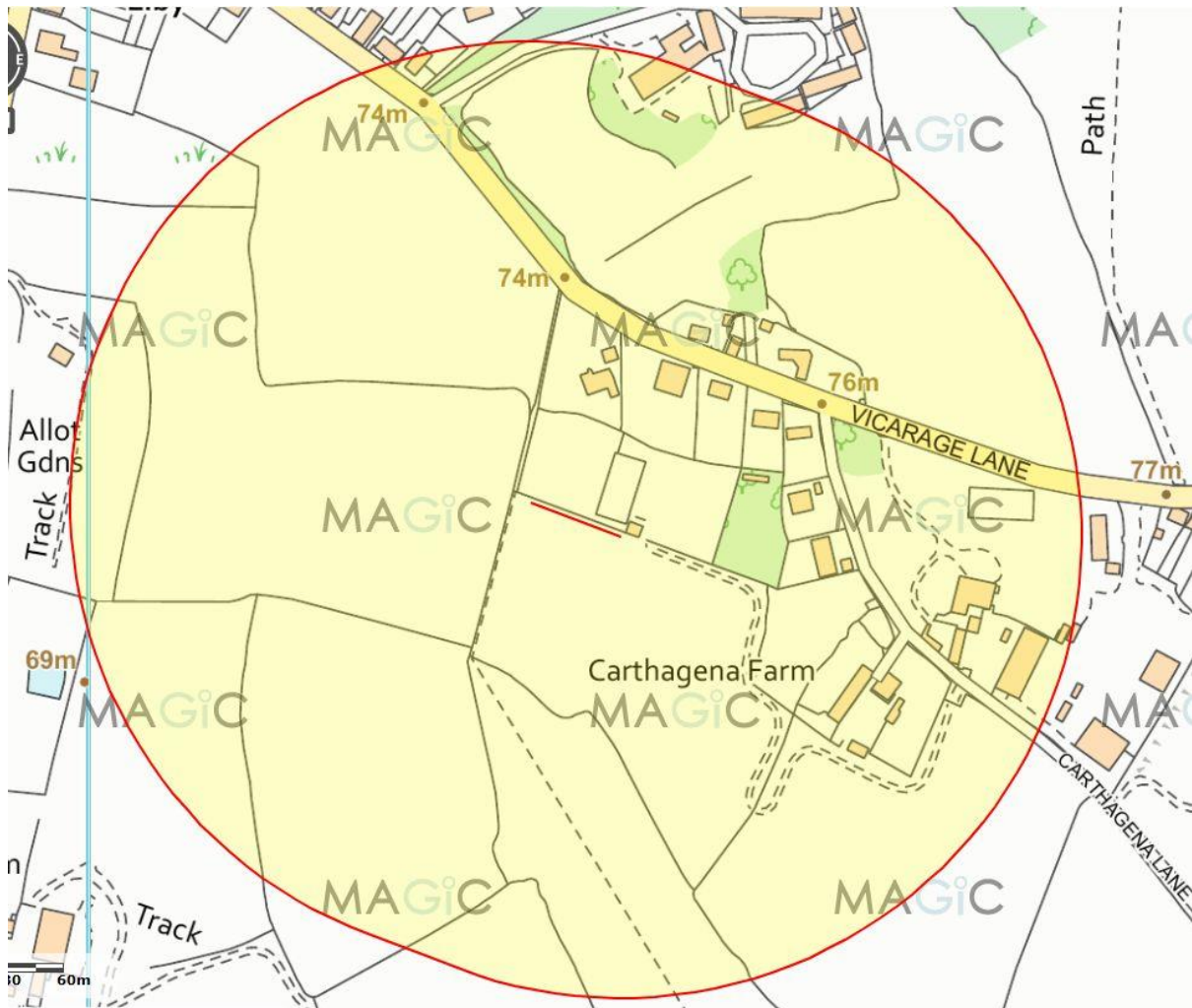
Non-statutory designations within 1km of the site



Habitats of Importance

- An assessment of the surrounding habitats using OS maps and online mapping resources, in combination with a walkover during the site visit, identified no potential significant bodies of standing water within a 250m zone of influence (**Figure 3.20**).

Figure 3.20 Proximity check of standing waterbodies within 250m of the site, reproduced using freely-available online resources (2022)



3.5 PRELIMINARY ROOST ASSESSMENT (PRA)

- A daytime inspection was undertaken on 8th April 2022 to assess the potential of any structure(s) on the site to support roosting bats. No buildings or suitable trees were found on site. Two trees a sycamore and a cherry are located just north of the site but off site, these are both considered to offer 'negligible' bat roosting potential and is generally considered to be poor for roosting bats, owing to size, type and an absence of potential bat roost features noted during the PRA.
- The site itself offers poor potential foraging and commuting habitat for bat species, by virtue of species poor linear feature on the northern boundary and lack of any other boundaries. Connectivity to the wider landscape is poor with exception of the western to eastern direction.

3.6 NESTING BIRDS

- No active/ disused bird nests were noted within or upon the site during the nesting bird inspection. Overall limited potential opportunities were noted throughout the site other than the hedgerow and trees off site to be retained by the proposals.

3.7 SPECIES CONSTRAINTS

- Potential species constraints are detailed below, informed by the findings of the desk study combined with observed field signs or actual presence of protected species identified during the Preliminary Ecological Appraisal (PEA) and Preliminary Roost Assessment (PRA).

Bats

- Adjacent Sycamore and Cherry trees are all considered to provide 'negligible' bat roosting potential and are proposed as retained.
- The site offers moderate potential commuting and foraging habitat on it's only boundary for common bat species, as well as forming poor connectivity with the wider landscape.

Legislation

- All species of British bat are listed as a European Protected Species (EPS) on Schedule 2 of the Conservation Regulations (Annex IV (a) to the Habitats Directive) and are afforded full protection under both Regulation 43 of the Conservation of Habitats and Species Regulations (2017) and the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to:
 - i. Deliberately capture, injure or kill a bat;
 - ii. Deliberately disturb in a way that would significantly affect their local distribution or abundance, or affect their ability to survive, breed or rear young;
 - iii. Deliberately damage or destroy a bat roost;

- iv. Possess, control, transport, sell, exchange or offer for sale/ exchange any live or dead bat or part thereof; and
 - v. Intentionally or recklessly disturb bats whilst they are occupying a structure or place which is used for shelter or protection, or to obstruct access to this structure or place.
- Furthermore, several UK bat species are listed as Priority Species on the UK BAP, highlighting them as species of conservation concern.

Impacts

- The proposals involve the erection of 60 x low level angled solar panels over 60m in length, also digging in in of a cable to the property at 300mm depth.
- Bats can be impacted by solar panels (more so on solar farms) in two ways, direct collision and loss of foraging habitat (Natural England 2011). Direct collision occurs when bats attempt to drink from a horizontal panel they perceive as water (*Grief and Siemers, 2010*) or collide with vertical panels (*Grief et al., 2017*). However, solar panels will not be mounted vertically or horizontally, they are tilted, so no potential impacts on bats with regard to solar panels in this context can be inferred from the research (*Taylor et al., 2019*).

Recommendations

- No further survey with regard to bats is considered necessary.
- Trees, with perceived negligible bat roost potential nest to the proposed site will be retained as part of the proposed works. These areas will not be illuminated and there will be suitable space around these features so as to not impact on any potential future roost.
- Hedgerow will be retained to continue to provide potential commuting routes and additional windflower seeding will provide suitable further habitat for invertebrate prey. The space between panels and the arable land immediately surrounding (for circa ¼ acre) will be enhanced with nectar rich margins to the north, these will improve the suitability of the grassland for invertebrates, increasing the foraging resources for bats. The grassland is currently mown resource. If the construction practices and mitigation are adhered to, as described above, bats are not considered to be a constraint to proposals.
- The provision of a minimum of one (1) new bat box suitable for common crevice roosting bat species is recommended as an enhancement for the site. We would recommend Schwegler 2F bat box (for trees), although any suitable equivalent is acceptable (Image 3.13). It is recommended that this is fitted upon the sycamore tree north of the site, within the hedgerow, which are to be retained. Bat boxes must be installed at a height of no less than 4m and orientated in a southerly or westerly direction.

- Any bat boxes must be retained in perpetuity and their exact location/ specification may be discussed with a suitably-qualified ecologist and alternative options can be considered.

Image 3.13 Examples of a Schwegler 2F



Great Crested Newt

- A desk-based assessment using OS maps and online mapping resources, in combination with a walkover during the site visit, identified no potential significant bodies of standing water within 250m of the site, as illustrated in **Figure 3.20**.

Terrestrial Habitat

- The suitability of the terrestrial habitat for GCN/ amphibians on the site itself is poor, given the presence of short sward patchy grassland and arable.
- The boundaries comprise one species poor hedge, 65 m long with no gaps, restricting potential amphibian movement.
- No GCN/ amphibians were found during a hand search and no potential refugia was present on site during the PEA.

Legislation

- The great crested newt (GCN; *Triturus cristatus*) is listed as a European Protected Species (EPS) on Schedule 2 of the Conservation Regulations (Annex IV (a) to the Habitats Directive) and is afforded full protection under both Regulation 43 of the Conservation of Habitats and Species Regulations (2017) and the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to:
 - i. Deliberately or recklessly capture, kill, injure or disturb GCN(s);
 - ii. Deliberately or recklessly damage or destroy a breeding or resting place of GCN(s);
 - iii. Deliberately or recklessly obstruct access to a breeding or resting place of GCN(s);

- iv. Deliberately take or destroy the eggs of a GCN(s);
- Furthermore, GCN(s) are listed as Priority Species on the UK BAP, highlighting them as species of conservation concern.

Impacts

- The proposals involve the erection of 60 x low level angled solar panels over 60m in length, also digging in in of a cable to the property at 300mm depth.
- Amphibians are not considered to be a constraint to the works.

Recommendations

- The nectar rich margin discussed previously will provide more habitat for invertebrates and if the sward is maintained at a relatively reasonable height this will provide potential terrestrial habitat for amphibians.

Nesting Birds

- The tree(s)/ hedgerow on the site provide overall 'low' bird nesting potential, although no active bird nests were found during the nesting bird inspection.

Legislation

- All wild birds, their nests and eggs are protected under Part 1 (Section 1) of the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to:
 - i. Intentionally kill, injure or take any wild bird;
 - ii. Take, damage or destroy the nest of any wild bird while it is in use or being built;
 - iii. Take, damage or destroy the egg of any wild bird; and
 - iv. To have in one's possession, or control, any wild bird (dead or alive) or egg or any part of a wild bird or egg.
- In addition, further legal protection is afforded to those wild bird species listed on Schedule 1, which prohibits the intentional or reckless disturbance to a bird while it is nest building, or at a nest containing eggs or young, or to recklessly disturb the dependent young of such a bird.

Impacts

- The proposals involve the erection of 60 x low level angled solar panels over 60m in length, also digging in in of a cable to the property at 300mm depth.
- The grassland is unlikely to support ground nesting species.
- Nesting birds are not considered to be a constraint to the works.

Recommendations

- No further survey(s) with regard to nesting birds is considered necessary.
- It was concluded in the review by *Taylor et al., 2019* that the most likely effect of solar farms on birds in the UK would be displacement through habitat alteration. There is no conclusive evidence that suggests that waterfowl are attracted to such structures (*Birdlife Europe 2011*), however, birds with large wing loadings may collide with any fixed object, including buildings and pylons. Such structures are already present near the site of the proposed area; therefore, the risk of collisions is not considered further.
- All significant tree(s) and boundary hedgerow are to be retained.
- The provision of a minimum of 2 (2) bird nesting boxes suitable for passerine bird species is recommended as a further enhancement for the site. We recommend Schwegler Woodcrete 1B nest boxes (for trees) or Schwegler Bird House nest boxes (for buildings) for common passerine species (**Image 3.14**), although a suitable alternative is acceptable. It is recommended that these are installed upon the new nearby multi stem cherry tree. Bird boxes must be installed at a height no less than 2m and orientated in a southerly or westerly direction.

Image 3.14 Examples of Schwegler 1B Woodcrete boxes



- Any bird boxes must be retained in perpetuity and their exact location/ specification may be discussed with a suitably-qualified ecologist and alternative options can be considered.

Reptiles

- The grassland on site was assessed as having negligible potential to support reptiles.
- The rest of the site is considered to provide overall poor reptile habitat.
- No reptiles were found during a hand search of potential refugia during the PEA.

Legislation

- All species of native UK reptile, including common lizard (*Zootoca vivipara*), slow-worm (*Anguis fragilis*), grass snake (*Natrix helvetica*) and adder (*Vipera berus*), receive some degree of protection under the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to:
 - i. Intentionally kill or injure any UK native reptile; and
 - ii. Sell, barter, exchange, transport for sale or advertise to sell or to buy any UK native reptile.

It is not an offence under the Wildlife and Countryside Act 1981 to possess these animals.

- Full protection under both the Conservation of Habitats and Species Regulations (2017) and Wildlife and Countryside Act, 1981 (as amended) is afforded to sand lizard (*Lacerta agilis*) and smooth snake (*Coronella austriaca*). This makes it an offence to:
 - i. Intentionally kill, injure or take either of these species;
 - ii. Possess either of these species or any part thereof;
 - iii. Intentionally damage or destroy the breeding or places of shelter/ protection of either of these species;
 - iv. Intentionally disturb either of these species whilst occupying a place used for shelter or protection; and
 - v. Sell, barter, exchange, transport for sale or advertise to sell or to buy either of these species.
- In addition, all species of reptile native to the UK are also listed as Priority Species on the UK BAP, highlighting them as species of conservation concern.

Impacts

- The proposals involve the erection of 60 x low level angled solar panels over 60m in length, also digging in in of a cable to the property at 300mm depth.
- Reptiles are not considered to be a constraint to the works.

Recommendations

- The nectar rich margin discussed previously will provide more habitat for invertebrates and if the sward is maintained at a relatively reasonable height this will provide potential terrestrial habitat for amphibians.

Badger

- No badger setts were noted upon the site but evidence of badger was noted, passing through the site.
- A badger path was noted north to south at SJ 35256 54279 passing under the hedgerow, with one snuffle hole nearby.



- The path continued to the corner of the field at SJ 35234 54287, where it met the public footpath and badger hair was noted in the barbed wire fence.



- A further badger path was noted at SJ 35285 54313, (NW of tennis court) off site but on the lawn crossing west to east where the proposed trench will go.



- A red fox scat and feeding remains (bone) was also noted on the grassland section of site at SJ 35277 54269.

Legislation

- Badgers and their setts are specifically protected under the Protection of Badgers Act (1992). This makes it an offence to:
 - i. Wilfully kill, injure or take, or attempt to kill, injure or take, a badger;
 - ii. Possess a dead badger or any part or derivative of a badger;
 - iii. Cruelly ill-treat a badger;
 - iv. Dig for a badger;
 - v. Damage a badger sett or any part of it;
 - vi. Destroy a badger sett;
 - vii. Obstruct access to, or any entrance of, a badger sett;
 - viii. Cause a dog to enter a badger sett; or
 - ix. Disturb a badger when it is occupying a badger sett.

Impacts

- The proposals involve the erection of 60 x low level angled solar panels over 60m in length, also digging in in of a cable to the property at 300mm depth.
- Badgers are not considered to be a constraint to the works provided the recommended RAMMS are followed (Reasonable Avoidance Measures Method Statement).

Recommendations

A pre commencement survey(s) with regard to badgers is not considered necessary but the reasonable avoidance measures below must be adhered to, this is to ensure impacts upon badger(s) are avoided during the period of the proposed works:

- An appointed badger ecologist shall be appointed to ensure RAMMS are enforced;
- A copy of this method statement must be kept on site (we suggest having a laminated copy in the site compound/ vehicles);
- All work is to occur during daylight hours;
- Artificial lighting will be directed away from the boundaries;
- Badger paths will not be blocked at any time;
- Any trenches will be either backfilled the same day, or covered at the end of each working day, or if not covered MUST include a means of escape for any animal falling in (badgers will continue to use established paths across a site even when construction work has started);
- Contractors are advised not to handle any badger, in the unlikely event one becomes trapped in an excavation during the works – Pearce Environment Ltd are to be contacted immediately for advice;
- Any dangers within the work site to badgers will be identified and reported to the appointed ecologist and measures undertaken to minimise any such risk;
- No dogs to be taken onto the site by any of the workforce.

Invertebrates

- The habitats present were considered of low value to invertebrates, due to the improved grassland and arable being the dominant habitat types and short sward of the grassland. The hedgerow, trees, provide habitat for invertebrate species which is being retained.

Dormouse, Otter and water vole

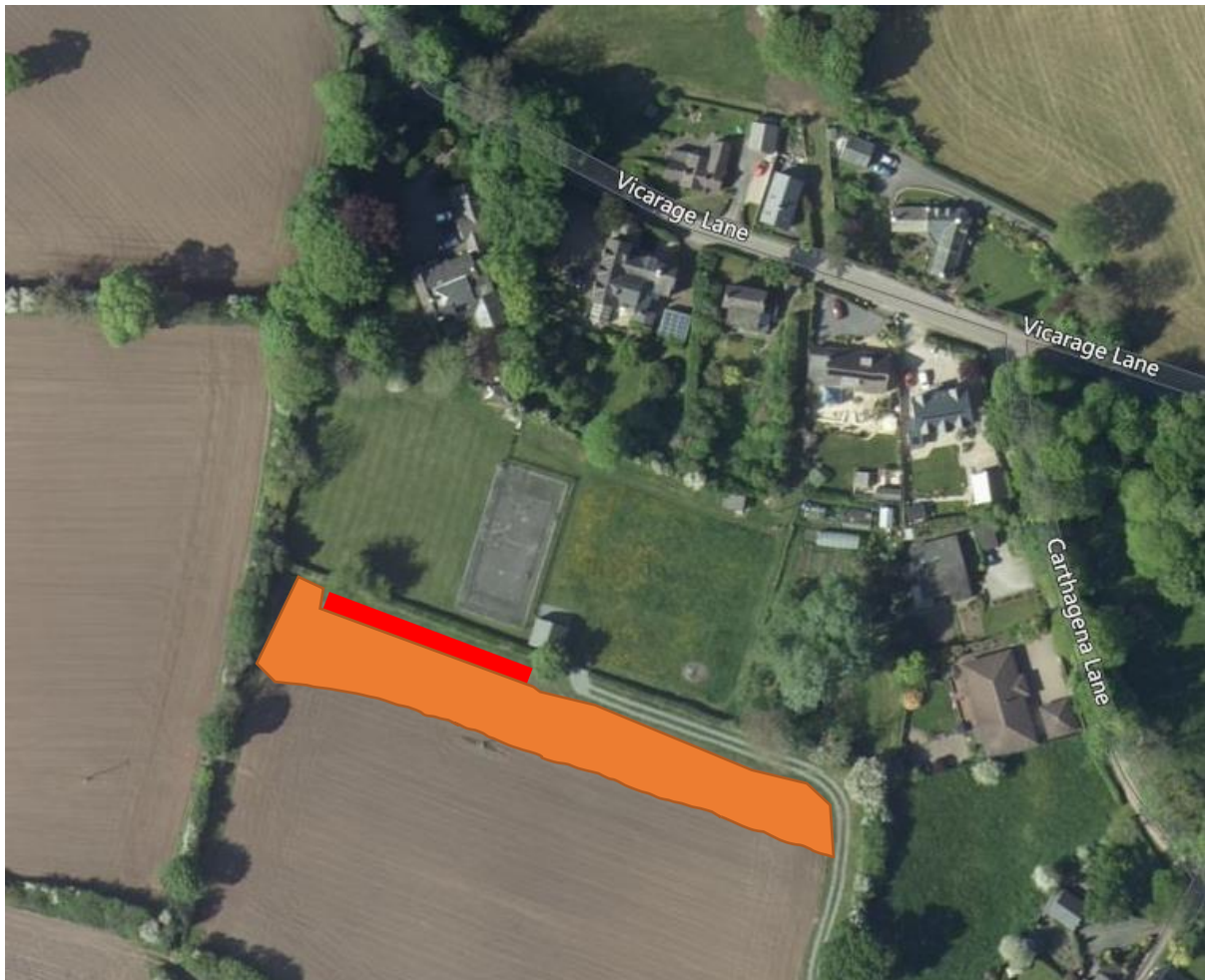
- The site had no potential to support any of the above species and no evidence of them was noted.

Other mammals

- The proposed development site had the potential to support brown hare within the improved grassland and arable (only when at short enough sward) to a very limited extent owing to the small scale of the site.
- Limited hedgehog habitat was noted only in the hedgerow habitat to be retained.

Other Habitats/ Enhancements

- Opportunities to enhance the site for biodiversity and nature conservation exist, and these comprise:
- Improving the diversity of the grassland sward, by creating a wildflower area to the surrounds of the solar panels (shown in red), after discussion with the applicant they are proposing a significant enhancement to the arable land by creating a $\frac{1}{4}$ acre wildflower strip/meadow as seen in orange in the figure below (TBC):



- Areas of bare ground created during the construction stage will be reseeded as soon as possible post construction to ensure injurious or ruderal weeds do not establish.
- A wildflower seed mix appropriate to the local area, including **yellow rattle**, will be used in order to increase the diversity of the grassland, also include other species such as:

Clover	Common sorrel	Oxeye daisy
Hawkbit (Rough and Autumn)	Trefoil	Campion (White, Red and Bladder)
Knapweed	Poppy	Cowslip
Scabious	Musk Mallow	Marjoram
Vetch (Kidney, Tufted and Common)	Cranesbill	Ragged Robbin
Self Heal	Salad Burnett	Borage
Yarrow	Toadflax	yellow rattle

- In terms of the grassland to be sown under shade of panels, we recommend a mix such as Emorsgate EG10- Tussock Grass Mixture. The aim is to establish a grassland sward with greater ecological value than the existing arable land.
- Growth and establishment of wild grasses may be slow initially, there will often be a flush of annual weeds from the soil in the first growing season. This weed growth is easily controlled by topping or mowing. Mow all plant growth (sown grasses and weeds) regularly to 40-60mm throughout the first growing season to prevent weeds smothering the slower growing grasses. Remove cuttings if dense, more frequent and regular topping will minimise the amount of cuttings produced each time so they can be left to disperse. Once established, tussocky grassland requires minimal maintenance. The above cutting regime will likely be only for Year 1 or 2, then the regime would fall back to one annual cut as per for the wildflower mixes.
- For areas outside of shading by panels we recommend, Emorsgate EM3 – General-Purpose Meadow Mixture:

- Cutting of the grasses would be advised as August or September Cut once the wildflowers have seeded, but a cut may be taken prior to this should the sward height cause shading problems. Consideration should be given to cutting the grass along the front edge of the panels only.
- The intensity and timings of grazing and mowing may be modified in order to create a sward which does not shade the solar panels, however, the site should not be cut between early March and the end of August to ensure plants can flower and set seed. Should shading of the panels become a problem, a strip directly in front of the panels may be cut which will resolve the shading problems, but allow plants within the rest of the site to establish.
- It is recommended that retained trees, hedgerow and shrubs should be protected during works in accordance with BS5837:2012 'Trees in relation to construction' or seek the recommendations of a suitably qualified arborist.
- No further species pertinent to this study were found and no field signs of other protected or notable species were observed during the PEA.

CONCLUSIONS

3.1 SUMMARY OF THE SITE'S ECOLOGICAL SIGNIFICANCE

- In terms of the underlying botanical value, the loss of the existing habitats on site was not deemed to be of detriment to local biodiversity. Much of the area proposed for loss to development comprises of species poor grassland, along with arable.
- The grassland and ruderal vegetation are relatively common habitat types and their loss could be easily addressed through mitigation measures. Namely the wildflower seeding as outlined earlier, which would enhance local biodiversity.
- Given the lack of any field signs or suitability for bats, it was concluded that there would be no impact on roosting bat species or nesting bird species as a result of the proposed works.
- Badgers would be protected by adherence to the RAMMS in this report.
- There would be no impact on herptiles (reptiles/ amphibian species) as a result of the proposed works.
- No other habitat features or evidence of pertinent protected species were identified during the PEA and PRA (Table 5.1).

Table 5.1 Summary of the status of protected/ notable species and sites on and near to the site

Species/ Group	Local Records	Suitable Habitat on Site	Field Signs	Recommendations
Habitats/ Designations	No:	No :	N/A	Appropriate landscaping scheme for the site is recommended & tree retention.
Invasive Plants	No:	Yes	No	<i>No further action required</i>
Bats	Yes:	No: 'negligible' bat roosting potential and poor foraging/ commuting opportunities	No	Retain significant trees/ hedgerow, no lighting. Bat box provision as an enhancement
Nesting Birds	Yes:	Yes: 'poor' nesting potential in trees / hedgerow	Yes: small number of passerine species observed flying over/ around the site	Retain trees/ hedgerow, + bird box provision as an enhancement
Barn Owl	Yes:	No	No	<i>No further action required</i>
Badgers	Yes:	Yes:	Yes	<i>Works must follow the RAMMS</i>
Amphibians (including GCN)	Yes:	No	No	<i>No further action required</i>
Reptiles	Yes:	No	No	<i>No further action required</i>

- Subject to the implementation of those provisions, further survey recommendations and working methodologies given in this report, it is considered that any detrimental effects regarding protected/ notable species can be avoided and/ or mitigated for.
- Should the development proposals be altered significantly, such that changes to the working area and/ or duration of the works arise, then a re-assessment of the likely impacts arising by a suitably experienced ecologist will be required.

4. BIBLIOGRAPHY

Multi-Agency Geographic Information for the Countryside website, 2017 (www.magic.gov.uk/).

Department for communities and Local Government, (2019). National Planning Policy Framework.

Shropshire Environmental Network website (2019) (<https://shropshire.gov.uk/environment/biodiversity-ecology-and-planning/shropshire-environmental-network/>)

Guidelines for Preliminary Ecological Appraisal (2013). CIEEM. Technical Guidance Series, 1-8.

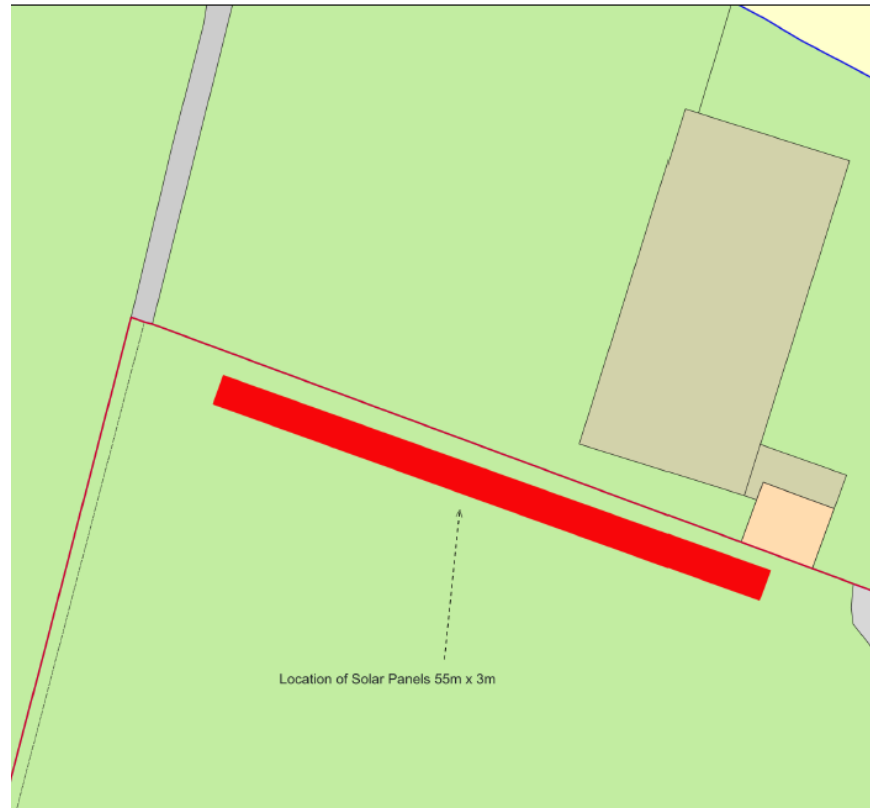
Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). Herpetological Journal 10 (4), 143-155.

Collins J. (Ed.) (2016) Bat Surveys for Professional Ecologist: Good Practice Guidelines (3rd Ed.) The Bat Conservation Trust, London.

Bats and Lighting in the UK (2009). Bat Conservation Trust.

Appendix 1 Proposed Site Plan (provided by client)

Site Plan - Bryn Issa, Gresford



Examples of wildflower seeding around solar panels

