PRELIMINARY ECOLOGICAL APPRAISAL

at

Woolgreaves Hall
South Lane
Barnsley
South Yorkshire
S75 4EF

Client:
Chris Beck

Client Address:
Woolgreaves Hall
South Lane
Cawthorne
Barnsley
S75 4EF

JCA Ref:
18648/AuB

Date of Report:
03/08/22

JCA Limited
Arboricultural & Ecological Consultants

Quality Assurance

Version	**Desktop Survey Completed:**		**Site Surveyed:**		**Report Completed:**		**Reviewed:**	
	Date	Name	Date	Name	Date	Name	Date	Name
Planning	02/08/22	Audrey Bourdais Paull	03/08/22	Audrey Bourdais Paull	03/08/22	Audrey Bourdais Paull	04/08/22	Helen Chambers
							09/08/22	Adam West

This report has been prepared and provided in accordance with the *British Standard 42020: Biodiversity – Code of practice for planning and development 2018* and the *CIEEM's Code of Professional Conduct.*

Risk Assessment Completed	ABB
Bio-security Procedure Completed	
Lone Worker Procedure Completed	

Summary

JCA Limited has been commissioned by **Chris Beck** to undertake a Preliminary Ecological Appraisal (PEA) of a site located at **Woolgreaves Hall, South Lane**. The site is located at Ordnance Survey (OS) National Grid Reference SE 26725 06104 with nearby postcode S75 4EF.

A desk study and field survey were undertaken in order to assess the potential of the site to support protected habitats and species and species of conservation concern. Recommendations for further survey, avoidance, mitigation and enhancement – where appropriate - have been made and are summarised in Table 1 on the following page and are detailed in full in Chapter 6 of this report.

Table 1: summary of ecological receptors at the site and recommended mitigation.

Receptor	Potential Risk to Project if No Action Taken	Cause of Impact Description of Effect	Further Survey Required	Mitigation Required
Designated sites				
Statutorily protected	Negligible	None	No	N/A
Non-statutorily protected	Low	Wool Greaves Meadows lies in close proximity to the site. Inappropriate lighting during construction phase devalues this resource for local wildlife populations.	No	See Bats.
S41 habitat	Negligible	None	No	N/A
Other habitats	Negligible	None	No	N/A
Protected species				
Flora (WCA Sch 8, CHSR Sch 5)	Negligible	None	No	N/A
Invertebrates	Low	Loss of ragwort, the food for cinnabar moth caterpillars, leading to local decline in population numbers.	No	Mitigation may be stipulated by the Local Authority
White-clawed crayfish	Negligible	None	No	N/A
Fish	Negligible	None	No	N/A
Great crested newt	Negligible	None	No	N/A
Reptiles	Negligible	None	No	N/A
Birds	Low	Potential for commuting and foraging birds onsite was identified.	No	N/A
Bats	Moderate	Potential for commuting and foraging bats onsite was identified. Any disturbance to bats or disruption to their roosts	No	To limit the amount of light present onsite, no night time working should take place.

		results in a breach of legislation.		
Badgers	Moderate	Moderate potential to support badgers was given to the site due to records received and the woodland to the south providing a suitable habitat for them. It is likely that badgers are foraging and commuting onsite.	No	Any excavation of the site should be covered overnight, or if not possible, a safe exit route provided for badgers to leave the site, such as an artificial ramp to aid their exit.
Otters	Negligible	None	No	N/A
Water voles	Negligible	None	No	N/A
Other Species e.g. S41 species	Negligible	None	No	N/A
Invasive Species (WCA Sch 9) Injurious Weeds (Weeds Act, 1959)				
	Negligible	None	No	N/A
Key: S41 habitat/species – habitats and species listed as priority for conservation importance under Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act 2006. WCA Sch – Wildlife and Countryside Act 1981 (as amended) Schedule CHSR Sch – Conservation of Habitats and Species Regulations 2017 Schedule				

Contents

1. Introduction

1.1 Background

1.1.1 In July 2022, JCA Limited was instructed by **Chris Beck** to undertake a Preliminary Ecological Appraisal (PEA) of a site located at **Woolgreaves Hall**, **South Lane** hereafter referred to as 'the site'. The purpose of the survey is to establish a baseline of ecological information and assess whether the proposed works, hereafter referred to as 'the scheme', have the potential to adversely affect any protected or notable habitats or species.

1.2 Scheme Description and Location

1.2.1 The site is located at Ordnance Survey (OS) National Grid Reference SE 26725 06104, with nearby postcode S75 4EF. The site is bordered to all sides by agricultural fields.

1.2.2 The scheme is for the construction of two solar photovoltaic (PV) panels in a section of a field to the west of the site, and another section to the east.

1.3 Aims and Objectives

1.3.1 The purpose of the survey is to establish a baseline of ecological information and assess whether the proposed development activities have the potential to adversely affect any protected or notable habitats or species. The following tasks have been undertaken:

- Desktop study – a review of environmental records for the surrounding area to obtain existing information on statutory and non-statutory designated sites of nature conservation interest, and the presence of protected and notable habitats and species within the site and its environs.
- Field surveys – an Extended Phase 1 Habitat survey involving a site visit to record habitat types and dominant vegetation, including any invasive species. During this survey evidence of protected or notable fauna and habitats or habitat capable of supporting protected or notable fauna was recorded.
- Ecological report – an assessment of the potential ecological constraints to the proposed works at the site and recommendations for

further survey, avoidance, mitigation, and enhancement where appropriate. Locations of any features constituting ecological constraints or of other ecological interest and vegetation recorded on and around the development are included in an accompanying Phase 1 Habitat Map (Appendix 1). This report and the maps are supported by photographs (Appendix 3) and information regarding current legislation (Appendix 6).

2. Methodology

2.1 Desktop Study

2.1.1 The desktop study involved conducting database searches for statutory and non-statutory designated sites and European Protected Species (EPS) licensing applications within a 2km radius of the site. In addition, international sites designated for bats within 30km of the site were searched for. The baseline conditions are based on a review of existing available information including:

- MAGIC (Multi-Agency Geographical Information for the Countryside) website (to identify statutory designated sites and EPS licences).
- Ordnance Survey mapping (to identify potentially notable habitats including ponds).
- Aerial photography (to identify potentially notable habitats).
- Data search for records of protected/notable species on and within 2km of the site within the last ten years (exempting bat roosts, of which all records are included) obtained from Barnsley Biological Record Centre, the local environmental records centre for Barnsley, along with information for non-statutory wildlife sites.

2.1.2 The records were checked against species listed as priority species under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 and the Barnsley Biodiversity Action Plan (LBAP) to assess national and regional habitat and species status.

2.2 Field Survey

2.2.1 A Phase 1 survey of the site was conducted on 03/08/22. All areas of the site were investigated and areas around the site where access permitted.

2.2.2 The vegetation and habitat types within the site were noted during the survey in accordance with the categories specified for a Phase 1 Vegetation and Habitat Survey (Joint Nature Conservation Committee, 2010). Dominant and abundant plant species were recorded for each habitat present.

2.2.3 The site was inspected for evidence of, and its potential to support, protected or notable species, especially those listed under the

Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, the Wildlife & Countryside Act (WCA) 1981 (as amended), including those given a higher level of legal protection under the NERC Act 2006 and Countryside & Rights of Way (CRoW) Act 2000, and those listed on the LBAP. The following species were considered:

- Invertebrates (including white-clawed crayfish *Austropotamobius pallipes*).
- Great crested newt *Triturus cristatus* freshwater habitat potential within 500m of the site.
- Reptile habitat within the site.
- Nesting and foraging habitat for birds within the site.
- Bat roost potential and foraging habitat within the site.
- Badger *Meles meles* setts within 30m of the site, where accessible.
- Otters *Lutra lutra* and suitable habitat within 30m of the site, where accessible.
- Water vole *Arvicola amphibius* habitat within 20m of the site, where accessible.
- Other notable species.
- Invasive species.

2.3 Survey Constraints

2.3.1 To determine presence or likely absence of protected species usually requires multiple visits at suitable times of the year. As a result, the survey undertaken focused on assessing the potential of the site to support species of note, which are considered to be of principal importance for the conservation of biodiversity with reference to the National Planning Policy Framework (Ministry of Housing, Communities and Local Government, 2018), especially those given protection under UK wildlife legislation.

2.3.2 The optimum time of year for completing the survey is between April and September, as many plant species have a seasonal expression in spring and summer only. The survey was undertaken on 03/08/22.

2.3.3 The weather in the days prior and on the day of survey were dry and sunny, having little effect on any field signs that may be present.

2.3.4 The details of this report will remain valid for a period of 18 months. If works have not commenced within this period or land use on site changes, it is recommended that a new review of the ecological conditions is undertaken.

3. Desk Study Results

3.1 Statutory Designated Sites

3.1.1 The MAGIC website revealed no internationally designated sites within 2km of the site.

3.1.2 The MAGIC website revealed one nationally designated site within 2km of the site. Pye Flatts Meadows is a Site of Special Scientific Interest (SSSI), designated for its meadows and located 925m south of the site.

3.2 Non-statutory Designated Sites

3.2.1 Records received from BBRC revealed five non-statutory designated sites within 2km of the site, detailed in Table 2 below.

Table 2: Non-statutory designated sites within 2km of the site, returned from BBRC.

Site Name	Distance (m) from Site	Reasons for Designation
Wool Greaves Meadows	200	N/A
Daking Brook	1300	N/A
North Wood	1350	N/A
Royd, Vicar, Lindley and Coates Great Woods	1750	N/A
Gunthwaite Dam and Clough Wood	2000	N/A
Key: LWS – Local Wildlife Site		

3.3 Protected and Notable Species

3.3.1 <u>European Protected Species (EPS) Licence Applications</u>

- The MAGIC website revealed one EPS licence application within 2km of the site; a licence granted in May 2018 and ending in December 2018 to allow for the destruction of a resting place used by Natterer's bats. Licence reference: 2018-34184-EPS-MIT.

3.3.2 <u>Records of Protected and Notable Species</u>

3.3.3 <u>Flora</u>

15 records of bluebell *Hyacinthoides non-scripta,* a schedule 8 (WCA, as amended) species, were returned by BBRC. The most recent record was made in 2021, and the closest record was made 471m from the site.

3.3.4 Invertebrates (including white-clawed crayfish)

Two records of cinnabar *Tyria jacobaeae*, a Barnsley BAP species, were returned by BBRC. The most recent record was made in 2021, and the closest record was made 1503m from the site.

46 records of freshwater crayfish *Austropotamobius pallipes*, a Barnsley BAP and WCA (as amended) species, were returned by BBRC. The most recent record was made in 2016, and the closest record was made 1396m from the site.

Four records of wall *Lasiommata megera*, a Barnsley BAP species, were returned by BBRC. All records were made in 2021, 887m from the site.

3.3.5 Fish

No records of protected or notable fish were returned by BBRC.

3.3.6 Amphibians

Five records of common frog *Rana temporaria,* a WCA (as amended) species, were returned by BBRC. The most recent record was made in 2021, and the closest record was made 1612m from the site.

14 records of common toad *Bufo bufo*, a WCA (as amended) and Barnsley BAP species, were returned by BBRC. The most recent record was made in 2019, and the closest record was made 1825m from the site.

3.3.7 Reptiles

No records of protected or notable reptile species were returned by BBRC.

3.3.8 Birds

The following records were received from BBRC:

Table 3: Bird Records Received from BBRC.

Scientific name	Common name	Designation	Latest Date	Number of records	Distance from site (m)
Cuculus canorus	Cuckoo	LBAP	2020	2	551
Numenius arquata	Curlew	LBAP	2012	1	1165
Prunella modularis	Dunnock	LBAP	2017	1	1543
Turdus pilaris	Fieldfare	LBAP	2013	1	1588
Perdix perdix	Grey partridge	LBAP	2018	1	2000
Anser answer	Greylag goose	LBAP	2016	2	1578
Passer domesticus	House sparrow	LBAP	2021	2	1243

Alcedo atthis	Kingfisher	WCA	2019	1	1791
Vanellus vanellus	Lapwing	LBAP	2021	7	1125
Pandion haliaetus	Osprey	WCA	2021	1	1335
Peregrine	Falco peregrinus	WCA	2012	2	1943
Turdus iliacus	Redwing	WCA	2013	1	1588
Passer montanus	Tree sparrow	LBAP	2018	1	840
Emberiza citronella	Yellowhammer	LBAP	2012	2	1425
Tyto alba	Barn owl	WCA, LBAP	2005	12	378

Key:
WCA: Schedule 1 of the Wildlife & Countryside Act 1981 (as amended)
LBAP: Local Biodiversity Action Plan

3.3.9 Bats

The following records were received from BBRC:

Table 4: Bat Records Received from BBRC.

Scientific Name	Common Name	Designation	Latest Date	Number of records	Distance from Site (m)
Myotis	Unidentified *Myotis* spp	WCA	2020	1	1816
Myotis mystacinus	Whiskered bat	WCA	2012	2	937
Nyctalus leisleri	Leisler's bat	WCA	2021	1	1785
Nyctalus noctula	Noctule bat	WCA, LBAP	2021	1	1840
Pipistrellus pipistrellus	Common pipistrelle	WCA	2021	12	798
Pipistrellus pygmaeus	Soprano pipistrelle	WCA, LBAP	2021	3	937
Plecotus auritus	Brown long-eared bat	WCA, LBAP	2012	1	937

Key:
WCA: Wildlife & Countryside Act 1981 (as amended)
LBAP: Local Biodiversity Action Plan

3.3.10 Bat Roosts

The following records were received from BBRC:

Table 6: Bat Records Received from BBRC.

Scientific name	Common name	Date	Roost type	Distance from site (m)
Pipistrellus pipistrellus	Pipistrelle	2002	Roost in adjacent house gable.	1683

Plecotus auritus	Brown long-eared bat	2021	Six bats.	1839
Plecotus auritus	Brown long-eared bat	2021	Maternity roost.	1959
Plecotus auritus	Brown long-eared bat	2021	Possible maternity roost.	1840
Plecotus auritus	Brown long-eared bat	2005	Seen inside roof.	1933
Pipistrellus pipistrellus	Pipistrelle	2004	Droppings (assume a roost)	1593
Pipistrellus pygmaeus	Soprano pipistrelle	2020	Four bats.	1816
Myotis	Unidentified bat	2021	Day roost.	1785
Myotis	Unidentified bat	2021	Day roost.	1940

3.3.11 Badgers

Records of badger setts and activity within influencing distance were returned by BBRC, however exact locations are confidential. The last recorded date of activity was in 2021.

3.3.12 Otters

No records of otters were returned by BBRC.

3.3.13 Water Voles

No records of water voles were returned by BBRC.

3.3.14 Other Notable Species

Four records of hedgehog Erinaceus europaeus, a Barnsley BAP species, were returned by BBRC. The most recent record was made in 2014, and the closest record was made 872m from the site.

One record of brown hare Lepus europaeus, a Barnsley BAP species, was returned by BBRC. The record was made in 2017, 1402m from the site.

3.3.15 Invasive Species

No records of invasive species were returned by BBRC.

4. Field Survey Results

4.1 Habitats

Woolgreaves Hall is a Grade II listed building with 85 acres of connected land. The buildings have been recently renovated and a biomass system has been installed. To further evolve the sustainability of the site, two Solar PV have been proposed, located to the west and east of the main house.

4.1.1 Improved grassland

The first proposed Solar PV location, located to the west of the site, lies in an area of improved grassland. The red line boundary for the proposed Solar PV location is within an area of improved grassland, located to the west of the site. It has been used for agricultural purposes for many years and was recently harvested. The area is predominantly orchard grass *Dactylis glomerata*, with creeping thistle *Cirsium arvense* and English ivy *Hedera helix.*

4.1.2 Tall ruderal

The second proposed Solar PV location lies within an area of tall ruderal, located to the east of the site. Species include creeping thistle, nettle *Urtica dioica*, creeping buttercup *Ranunculus repens*, ragwort *Jacobaea vulgaris*, bitter dock *Rumex obtusifolius*, common velvet grass *Holcus lanatus*, dog rose *Rosa canina,* lesser knapweed *Centaurea nigra* and hairy willowherb *Epilobium hirsutum.*

4.2 Protected and Notable Species

4.2.1 Flora

Generalist floral species were identified onsite, however, no protected or notable floral species were noted onsite. Flora will, therefore, not be mentioned further in this report.

4.2.2 Invertebrates (including white-clawed crayfish)

Numerous insects were observed utilising the flowers within the tall habitat onsite, including a cinnabar caterpillar *Tyria jacobaeae* identified on a stem of ragwort (see Appendix 3, Photo 3). Ragwort is the food plant for caterpillars of the cinnabar moth. Cinnabar moth is a species of principal importance for the conservation of biodiversity in England.

4.2.3 Fish

No suitable habitat that could support protected or notable fish species is found onsite. Fish will, therefore, not be mentioned further in this report.

4.2.4 Amphibians

No suitable habitat that could support protected or notable amphibian species is found onsite. Amphibians will, therefore, not be mentioned further in this report.

4.2.5 Reptiles

No suitable habitat that could support protected or notable reptile species is found onsite. Reptiles will, therefore, not be mentioned further in this report.

4.2.6 Birds

A number of swallows *Hirundo rustica* were observed foraging over the improved grassland habitat, and reports from residents suggest barn owls, a WCA and LBAP species, use the adjacent fields for foraging. Whilst the red line boundaries are small, the trees and scrub surrounding the fields onsite are suitable habitats to support nesting birds.

4.2.7 Bats

There are no trees within the red line boundaries, however the trees and scrub bordering the fields onsite could provide suitable commuting and foraging habitats for bats. As such, there is potential bats could be found utilising the site for commuting and/or foraging purposes.

4.2.8 Badgers

No signs of badger activity or setts were noted during the survey. However, badgers could be found utilising the site for commuting and/or foraging purposes. Potential for their migration onto site is provided by the woodland to the south of the site.

4.2.9 Otters

No suitable habitat to support otters was identified onsite. Otters will, therefore, not be mentioned further in this report.

4.2.10 Water Voles

No suitable habitat to support water voles was identified onsite. Water voles will, therefore, not be mentioned further in this report.

4.2.11 Other Notable Species

The woodland adjacent to the southern border of the site has high potential for biodiversity due to its stream, scrub, and tree habitats.

4.2.12 Invasive Species

No evidence for invasive species under WCA Schedule 9 presence was identified during the survey. It is, therefore considered unlikely that invasive species are present on this site. Invasive species will, therefore, not be mentioned further in this report.

5. Assessment

5.1 Designated Sites

5.1.1 Statutory designated sites

One SSSI site, Pye Flatts Meadows, was returned by MAGIC during the desk study. However, this designated site is not deemed vulnerable to adverse impacts from the proposed development due to the small-scale nature of the development, limited connecting habitat and the distance to the designated site.

5.1.2 Non-statutory designated sites

Five non-statutory designated sites were returned by BBRC during the desk study. Wool Greaves Meadows lies in close proximity to the site, however given the small-scale nature of the proposed Solar PV installation, none of the non-statutory sites are deemed vulnerable to any adverse impacts. However, works must not devalue Wool Greaves Meadows for local populations and as such, recommendations are given in Section 6.2.

5.2 Habitats

5.2.1 The most valuable habitat for biodiversity within the development site boundary is the tall ruderal. The proposed works will impact this by removing it.

5.2.2 The other habitats described in Chapter 4, Section 4.1 have lower biodiversity and provide less opportunity to support protected or notable species. The flora recorded in these habitats is considered to be locally common and widespread and they do not fall into any of the NERC S41 or Local BAP Priority Habitat descriptions.

5.3 Protected and Notable Species

5.3.1 Invertebrates (including white-clawed crayfish)

Ragwort, the food species for the priority species the cinnabar moth, has been identified on site within the tall ruderal. The Solar PV will see the removal of some this species from the site. However, some of the surrounding fields also contain ragwort so would provide a suitable and alternative habitat for invertebrates. Invertebrates will, therefore, not be mentioned further in this report.

5.3.2 Birds

The grassland and tall ruderal habitats provide good foraging opportunities for birds. However, given the small impact the Solar PV will have on the site, the effect of the removal of these habitats to facilitate their installation is expected to have a minute impact on the bird populations that use the site for foraging and commuting purposes. It is considered that there is adequate alternative habitat around the site for birds. Birds will, therefore, not be mentioned further in this report.

5.3.3 Bats

Records from BBRC revealed bats are in the area, with the closest record made less than 800m from the site. As in Section 5.1.2, there is adequate alternative habitat available around the site for foraging and commuting bats, and the removal of a small section of grassland and ruderal will have a very limited effect on the bat populations. However, inappropriate and obtrusive lighting during the construction phase of this development would devalue the surrounding area for local bat populations.

5.3.4 Badgers

The site was considered to hold potential for foraging and commuting badgers due to the proximity of local records and favourable habitat within proximity of the site. It is highly likely that badgers use the site for foraging and commuting purposes. Only the construction phase of the development is likely to have an impact on badgers. Should badgers find their way onto the site during development works, the following guidance should be followed to ensure their safe passage and usage of the site.

6 Recommendations

6.1 Habitats

6.1.1 If works have not commenced within 18 months, or land use on site changes, it is recommended that a new review of the ecological conditions is undertaken.

6.2 Protected and Notable Species

6.2.1 It is recommended that no night working take place and no additional lighting be used at the site to avoid disturbance to commuting bats. If it is necessary to install additional lighting on site, these should be fitted with hoods, cowls or shields to direct light into the working areas only.

6.2.2 Owing to the potential of badgers to be found utilising the site for foraging and/or commuting purposes, any excavation of the site should be covered overnight, or if not possible, a safe exit route provided for badgers to leave the site, such as an artificial ramp to aid their exit.

7 References

Guidelines for surveys and report writing:

British Standards Institute (BSI), (2013) *BS 42020:2013, Biodiversity - Code of practice for planning and development*. London.

Chartered Institute of Ecology and Environmental Management (CIEEM), (2015) *Guidelines for Ecological Report Writing*. Winchester.

Joint Nature Conservation Committee (JNCC), (2010) *Handbook for Phase 1 habitat survey: A technique for environmental audit*.

Websites:

Advice on protected species is consolidated at:
Environmental management: Wildlife and habitat conservation - GOV.UK (2016) *Gov.uk*. Available at: https://www.gov.uk/topic/environmental-management/wildlife-habitat-conservation

Magic Map Application (2016) *Magic.defra.gov.uk*. Available at: http://magic.defra.gov.uk/MagicMap.aspx

The RSPB (2016). Available at: http://www.rspb.org.uk/

Surveys and mitigation plans: protected species - Detailed guidance (2015) *Gov.uk*. Available at: https://www.gov.uk/guidance/surveys-and-mitigation-plans-protected-species

Within this detailed guidance on surveys and mitigation information is available on the following protected species:

- Bats
- Natterjack toads
- Otters
- Reptiles
- Water voles
- White-clawed crayfish
- Wild birds
- Hazel dormice
- Great crested newts
- Badgers

Wildlife licences: when you need to apply - Detailed guidance (2014) *Gov.uk*. Available at: https://www.gov.uk/guidance/wildlife-licences

Within this detailed guidance on licensing information is available on licences for the following protected species:

- Bats
- Natterjack toads
- Otters
- Reptiles
- Water voles
- White-clawed crayfish
- Wild birds
- Hazel dormice
- Great crested newts
- Badgers

As well as:

- Non-native Bumblebee species
- Deer
- Freshwater fish
- Invertebrates
- Mink, coypu, muskrat and grey squirrel
- Plants

Species Specific Information:

Badgers:

Natural England, (2007) Badgers and Development: A Guide to Best Practice and Licensing.

Competencies for Species Survey: Badger, Chartered Institute of Ecology and Environmental Management CIEEM, 2013

Bats:

Bat Conservation Trust, (2007) Bats, Development & Planning in England. London.

Bat Conservation Trust and Institute of Lighting Professionals (2018) Guidance Note 08/18: Bats and artificial lighting in the UK. ILP, Rugby

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

Mitchell-Jones, A.J. & McLeish, A.P. (2012) The Bat Workers' Manual. Pelagic Publishing, Exeter.

Bats: surveys and mitigation for development projects, https://www.gov.uk/guidance/bats-surveys-and-mitigation-for-development-projects Accessed 2018-06-21

Dormice:

Bright, P., Morris, P. and Mitchell-Jones, A. (1996) The dormouse conservation handbook. Peterborough: English Nature.

Great Crested Newts:

Langton, T., Beckett, C. and Foster, J. (2001) Great Crested Newt Conservation Handbook. Halesworth: Froglife. pdf

Advice note 4 (revised) - Amphibian Disease Precautions, A Guide for UK Fieldworkers, Amphibian and Reptile Conservation trust, 2017. Accessed 2018-06-21

Otters: *Natural England, (2007) Species Information Note SIN006, Otter: European protected species.*

Reptiles and Amphibians:

Baker, J., Beebee, T., Buckley, J., Gent, T. and Orchard, D. (2011) Amphibian Habitat Management Handbook. 1st ed. Bournemouth: Amphibian and Reptile Conservation.

Edgar, P., Foster, J. and Baker, J. (2010) Reptile Habitat Management Handbook. 1st ed. Bournemouth: Amphibian and Reptile Conservation.

English Nature, (2004). Reptiles: guidelines for developers. Peterborough.

Gent, T. and Gibson, S. (ed.) (2003) Herpetofauna Workers Manual. Bournemouth: JNCC.

Water Voles:

Natural England, (2008) Water voles - the law in practice. Guidance for planners and developers.

Water Vole Conservation and Management: Lessons From Four Case Studies, Jemma Louise Gaskin, 2016

Stoddart, D.M. (1970), Individual range, dispersal in a population of water voles (Arvicola terrestris (L.)). Journal of Animal Ecology 39, 403-425.

Strachan, R. (2009), Populations and Persistence – Developing a Strategy for Conserving Water Voles in the UK, Presentation to Warwickshire Wildlife Trust, 2nd April 2009, Environment Agency, Wales

Strachan, R. and Holmes-Ling, P (2003), Restoring water voles and other biodiversity to the wider countryside. Wildlife Conservation Research Unit, Oxford.

Strachan, R., Moorehouse, T. and Gelling, M. (2011), Water Vole Conservation Handbook, 3rd Edn, WILDCRU

White-clawed Crayfish:

Peay, S. (2002) Guidance on Habitat for White-clawed Crayfish and its Restoration. Kendal: English Nature

Relevant Legislation:

Wildlife and Countryside Act 1981, (c. 69) (as amended). Available at: http://www.legislation.gov.uk/ukpga/1981/69

Countryside and Rights of Way Act 2000 (c.37). Available at: http://www.legislation.gov.uk/ukpga/2000/37/contents

The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. Available at: https://www.legislation.gov.uk/ukdsi/2019/9780111176573

Conservation of natural habitats and of wild fauna and flora Council Directive (92/43/EEC) (The Habitats Directive) (as amended) Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31992L0043

Protection of Badgers Act 1992 (c. 51). Available at: http://www.legislation.gov.uk/ukpga/1992/51/contents

The Hedgerow Regulations 1997 (No. 1160). Available at: http://www.legislation.gov.uk/uksi/1997/1160/contents/made

Appendices

Appendix 1: Phase 1 Habitat Map

Habitat map for Woolgreaves Hall

N

W E

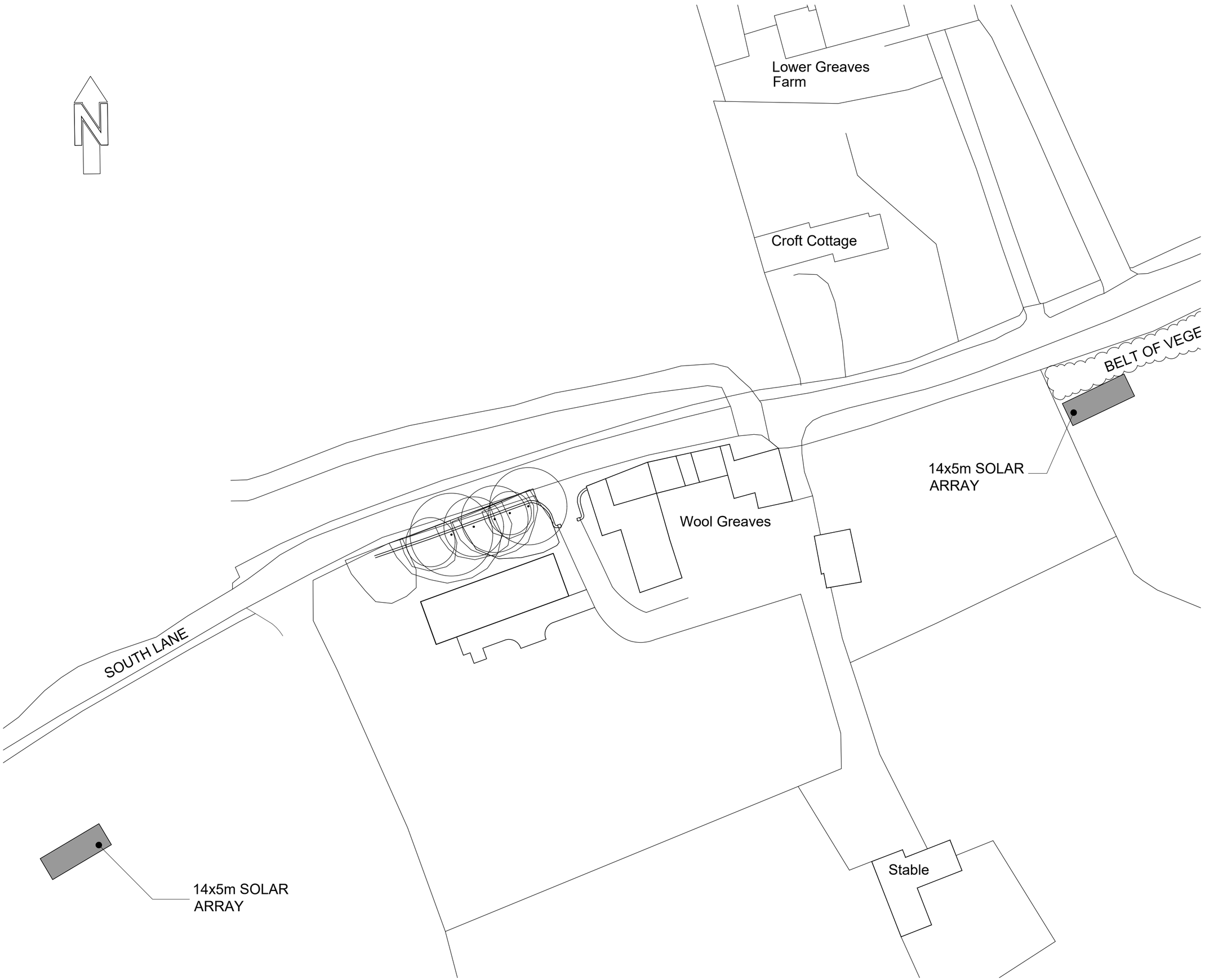
S

0 25 50 m

Key:

- Improved grassland
- Tall ruderal
- Proposed Solar PV Locations

Appendix 2: Proposed Development Plan



NOTES

1 ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE BUILDING REGULATIONS AND THE REQUIREMENTS OF THE LOCAL AUTHORITY.

2 NO DIMENSIONS TO BE SCALED FROM THIS DRAWING.

3 THE CONTRACTOR SHALL VERIFY ALL LEVELS AND DIMENSIONS ON SITE BEFORE COMMENCEMENT OF WORK.

4 ON SITE ALTERATIONS TO THE CONSTRUCTION OR FINISHES SHOWN OR IMPLIED ON THIS DRAWING MUST BE DRAWN TO THE ATTENTION OF THE ARCHITECT BEFORE SUCH WORK IS IMPLEMENTED.

5 ALL TIMBERS REQUIRE PRESERVATIVE TREATMENT

Rev	Date	Details

Drawing Status:

PLANNING

Progressive Design & Build

4 Lewisham Road, Slaithwaite, West Yorkshire HD7 5AL. Tel: 01484 846786

Client:

Chris Beck

Site:

Solar Installation
Woolgreaves Hall

Drawing Title:

Block Plan

Project Number:	Drawing Number:	Revision:
P899	200	-
Date:	Scale:	Drawn:
30-06-22	1:500 @ A2	IWW

Appendix 3: Photographic Evidence

Photo 1: Tall ruderal habitat parcel to the east of the site, with a view of the proposed solar PV location.

Photo 2: Improved grassland to the west of the site, with a view of the proposed solar PV location.

Photo 3: Cinnabar caterpillar identified on ragwort in the tall ruderal habitat.

Photo 4: One of the fields that surrounds the site, this example is adjacent to the tall ruderal habitat.

Photo 5: Woolgreaves Hall.

Appendix 4: Bat Survey Calendar

Figure 1: Survey timings calendar (taken from BCT: Bat surveys for professional Ecologists, Good Practice Guidelines; 3rd Edition).

Survey type	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
Preliminary ecological appraisal - fieldwork												
Preliminary roost assessment – structures[a]												
Emergence/re-entry survey for maternity or summer roosts[b]												
Emergence/re-entry[c] survey for transitional roosts[b]												
Emergence survey for mating roosts[b]												
Hibernation survey – structures[a]												
Preliminary ground level roost assessment - trees[d]												
Potential roost feature (PRF) inspection survey - trees												
Ground level bat activity survey – transects and automated/static												
Pre-, during and post-hibernation – automated/static bat activity survey												
Swarming survey												
Back-tracking survey												
Trapping survey[e]												
Radio tagging and tracking survey[e]												

= optimal period = sub-optimal period

= weather or location dependent (i.e. may not be suitable due to spring and autumn conditions in any one year or in more northerly latitudes). Note that October surveys are not acceptable in Scotland.

[a] Not including trees

Appendix 5: Glossary

Activity surveys - are used to assess the level of bat activity at a site. This can be done either by using equipment such as an AnaBat device, or manually walking around a site with a heterodyne detector, documenting the number of bat passes and interceptions.

Dawn surveys - begin around 2 hours before and up to sunrise when bats are returning to their roosts from foraging, and swarming behaviour can be seen close to roost entrances.

Dusk surveys - begin around 30 minutes before sunset and up to 2 hours afterwards. These are done in order to see bats emerging from their roost sites at night.

Echolocation – is a system similar to sonar that allows bats to travel and forage even in total darkness. Bats make a call and then listen to the returning echoes in order to build up a map of their surrounding area. This allows bats to gauge the identity and distance of an object by how long the echo takes to return to them.

Habitat - the ecological or environmental area that is inhabited by a particular species of animal, plant or other type of organism.

Hibernation - is a state of inactivity and metabolic depression characterized by lower body temperature, slower breathing, and lower metabolic rate. Hibernating animals conserve energy, especially during winter when food is short, tapping energy reserves, i.e. body fat, at a slow rate.

Hibernacula - typically consist of underground sites, such as caves and cellars, which remain relatively cold and humid. Bats will hibernate to conserve energy over the winter months when falling temperatures cause a drop in the abundance of insects. These will typically be colonised around November to around March.

Insectivorous – is when an organism feeds exclusively on insects.

Nocturnal - a behaviour characterized by being active during the night and sleeping during the day.

Maternity roosts – colonised around late May early June and consist of mature females and their young. These roosts need to be warm and quiet, and are used up until around August, with females typically leaving first and then the young.

Mating roosts – mating begins around late October to November. Males of most species use special mating calls to attract females. These can include purrs, clicks and buzzing.

Roost – a site where bats live during the day, rear young and hibernate. These can be in man made structures, such as buildings, bridges, tunnels, cellars and mines, or natural features such as mature trees and caves.

Roosts in buildings – many types of buildings will be used by bats. The most likely sites are agricultural buildings (e.g. farmhouses and barns), buildings with exposed wooden beams (greater than 20cm thick), buildings with weather boarding and/or hanging tiles, and buildings close to woodland and/or water.

Roosts in trees – these are typically in mature trees with deep sheltered cracks, under loose sections of bark, or in woodpecker holes.

Species – a group of organisms in which all members can interbreed and produce viable offspring.

Summer roosts (non-breeding) - these are generally occupied by groups of males and immature females during the summer, and are usually only occupied for a short period before the group moves to another location.

Swarming – a behaviour exhibited by bats returning to their roost sites at dawn. Bats can be seen repeatedly flying to and from the roost entrance, making it much easier for consultants to identify where roosts are on a building or structure.

Temporary/Transitory roosts – These are used after hibernation (March – April) before mature females disperse to maternity roosts and male/immature females colonise summer (non-breeding) roosts. Similarly, temporary roosts form before hibernation (August -October).

Underground Roosts – these are typically used during the winter and can be mines, caves, tunnels or cellars.

Appendix 6: Protected Species Information

The following species are fully protected in UK law, under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019:

- All UK bat species
- Dormouse
- Great Crested Newt and Natterjack Toad
- Large Blue Butterfly
- Otter
- Pine Marten
- Polecat
- Scottish Wild Cat
- Smooth Snake and Sand Lizard
- Various aquatic and plant species

These species are afforded the highest protection in the UK. Under this protection it is an offence to; deliberately capture, injure or kill any wild animal of a European protected species; deliberately disturb wild animal of any such species; deliberately take or destroy the eggs of such an animal, or damage or destroy a breeding site or resting place of such an animal.

In addition to this it is an offence to be in possession of, or to control, transport, sell or exchange, or to offer for sale or exchange, a European Protected species.

The following species are protected under UK law, such as the Wildlife and Countryside Act 1981 (as amended):

- Badger
- Nesting birds
- Red Squirrel
- Reptiles (Adder, Common lizard, Grass snake, Slow worm)
- Water Vole
- White Clawed Crayfish
- Various bird species i.e. Barn Owl
- Various plant species

Therefore under this protection it is an offence to; kill, injure or take any of the above species.

Nesting birds are only protected during the breeding season whilst on their nest. In addition to the adults being protected, the eggs, young and nest itself whilst in use are protected.

The Wildlife and Countryside Act 1981 also contains measures to prevent the establishment of non-native species which may be detrimental to native wildlife, prohibiting the release of animals and planting of plants listed in Schedule 9 in England and Wales (e.g. Japanese Knotweed and Himalayan Balsam).

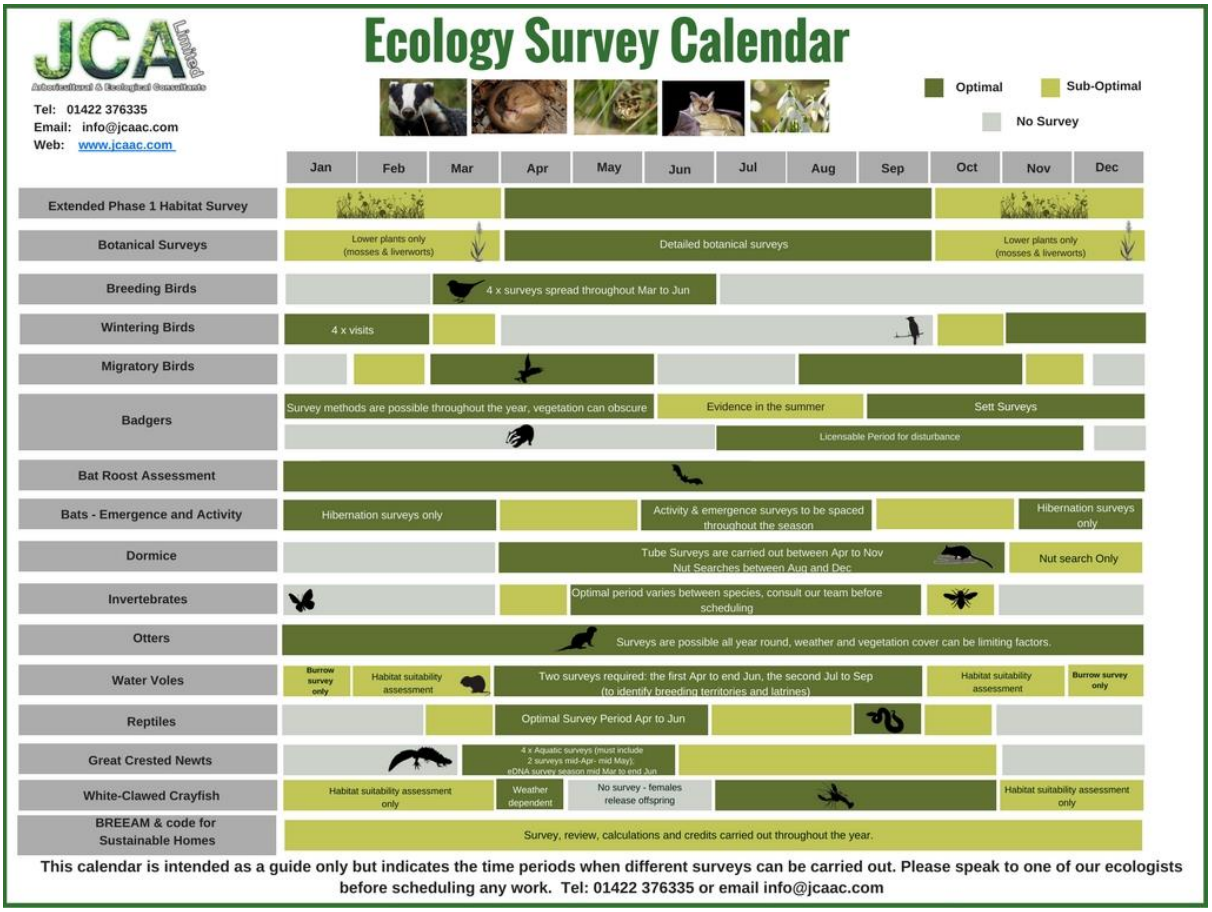
Badgers are protected under The Protection of Badgers Act 1992. Under this legislation it is an offence to; take, injure, kill, or cruelly ill-treat a badger; interfere with a badger sett; sell or possess a live badger; or mark or ring a badger.

The following habitat types are protected under UK Law:

- Habitats that are used by protected species
- Habitats that fall within designated sites
- Hedgerows
- Individual trees/woods can be protected under Tree Preservation Orders

Appendix 7: Survey Calendar

Figure 2: Survey calendar for protected species and habitat surveys.



Appendix 7: Author Qualifications

Adam West, Principal Ecologist

BSc (Hons) Animal and Wildlife Management.

Adam joined JCA to lead the expanding ecology department. Having returned to education as a mature student, Adam studied Countryside Management for two years before undertaking a Batchelor's degree, for which he was awarded First Class Honours. Adam has many years' experience in ecological consultancy, working on projects ranging from individual planning applications to national infrastructure projects. Adam holds a Natural England Level 1 great crested newt survey class licence, a Natural England Level 2 bat survey class licence (and the Scottish and Welsh equivalents) and a CSCS card.

Audrey Bourdais Paull, Graduate Ecologist

BSc (Hons) Zoology.

Audrey graduated in 2020 in Zoology at the University of Leeds and joined JCA in 2022. Audrey volunteered for many years with various wildlife conservation and rescue organisations, as well as working on various projects to develop a variety of field survey techniques, report writing and data analysis skills. Audrey is looking forward to developing her ecology consultancy experience with JCA, as well as combining her previous dog training and detection work with ecology to expand into ecology detection dogs.

Helen Chambers, Seasonal Ecologist

MSc by Research in Environmental Studies, BSc (Hons) Wildlife Conservation with Zoo Biology.

Helen joined JCA in 2022 after completing her master's by research degree at the University of Salford. In 2019 Helen graduated with First Class Honours BSc Wildlife Conservation with Zoo Biology, where she gained theoretical knowledge of, and practical experience with, wildlife monitoring and wildlife legislation. She is hoping to further develop her ecological surveying and report writing skills at JCA.

The information and advice which we have prepared and provided is true and has been prepared and provided in accordance with the CIEEM's Code of Professional Conduct. We confirm that the opinions expressed are our true and bona fide opinions.

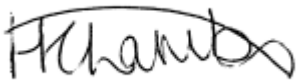
Signed

.....

Audrey Bourdais Paull

03/08/22

Reviewed by



.....

Helen Chambers

04/08/22

Reviewed and authorised by

.....

Adam West *ACIEEM*

09/08/2022

For and on behalf of ***JCA Ltd***

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ECOLOGICAL SERVICES

Ecological Pre-Planning Services

- Phase 1 Habitat Surveys
- Great Crested Newt eDNA Sampling
- Protected species: Bat, Wintering and Nesting Bird, Badger, Amphibian, Otter, Water Vole, White-Clawed Crayfish, Dormice and Reptile Surveys.
- Preparation for Environmental Impact Assessment (EIA)
- Invasive Species Surveys
- Code for Sustainable Homes
- Butterfly & Insect Surveys

Ecological Post-Planning Services

- Biodiversity Enhancement Plans
- Protected Species Mitigation
- Ecological Management (Bat and Bird box installation and inspection)
- Planting Schemes
- Monitoring of bird or bat boxes.

ARBORICULTURAL SERVICES

Guidance for Architects & Developers

- British Standard 5837 Surveys
- Arboricultural Implications Assessments (AIA)
- Arboricultural Method Statements (AMS)

Advice for Engineers, Loss Adjusters and Insurers

- Tree Surveys for Subsidence
- Heave Assessment
- Tree Root Identification

Advice for Local Authorities and Social Housing

- Tree Safety Surveys
- Specialist Decay Detection
- Landscape and Orchard Design

Tree Advice for the Legal Profession

- Subsidence Litigation
- Personal Injury and Accident Investigation
- Expert Witness, Planning Inquiries and Appeals

Veteran Tree Management

- Ancient Woodland Management
- Veteran Tree Management

Tree Health and Pest and Disease Management

- Pest and Disease Surveys
- Tree Health Checks
- Disease Mitigation and Control

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