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Land at Sherbourne, Warwick, CV35 8AD

Prepared for Pelagic Energy

Preliminary Ecological Appraisal

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Executive Summary

Midland Ecology undertook a Preliminary Ecological Appraisal of a site known as ‘Land at Sherbourne, Warwick, CV35 8AD’. This included an extended Phase 1 Habitat Survey (P1HS). Preliminary Ecological Appraisals are used during the site development process to gather data on existing conditions, with the intention of conducting a preliminary assessment of likely impacts of development schemes or establishing the baseline for future monitoring. As a precursor to a proposed project, evaluation can be made within these appraisals of the ecological features present, as well as scoping for notable species or habitats, identification of potential constraints to proposed development schemes, and recommendations for mitigation.

The development proposal briefly comprises a planning application for a new solar farm.

Baseline Conditions	
Designated Sites	The survey area is not on or adjacent to any statutory or non-statutory sites designated for nature conservation. The site falls within the Impact Risk Zones (IRZ) of one Site of Special Scientific Importance (SSSI); and the proposals are of a type that require further consultation with Natural England on the likely impacts of the proposals.
Habitats	The P1HS identified arable fields with field margins and hedgerows with veteran trees.
Species	The site supports breeding birds and badgers and may support reptiles, bats, GCN, otters, water vole, barn owls and hedgehogs. All other protected species are likely absent from the site, due to unsuitable habitats, levels of disturbance, species range and landscape context.
Invasive and non-native species	No schedule 9 species were identified on site on the 28 th of July 2021.

Discussion of Impacts and Recommendations	
Discussion of Impacts	The site is the subject of a planning application for a new solar farm, which would cover the majority of the fields with arrays of freestanding solar panels. Potential (at varying levels of likelihood) for impacts on Breeding birds, Hedgehog, Great crested newt, Bats, Otter, Water Vole, Reptiles, Badgers and Barn Owls has been identified.

<p>Recommendations</p>	<p>A camera trap should be set up to monitor activity at the outlier sett present at Target note 5 and an appropriate buffer used to work around this sett. A pre-commencement badger survey will need to take place to determine activity level and if any new setts have appeared, particularly along the hedges of the site.</p> <p>Any trenches left overnight should be covered or provided with ramps to prevent badgers from becoming trapped. These must be checked in the morning prior to commencing work within the trench.</p> <p>Provision should be made for some rough grassland and deadwood piles to be incorporated into the development on the northern site to compensate for any loss of badger foraging habitat.</p> <p>The veteran trees and all lengths of hedgerow should be protected during works, in line with BS 5837: 2012 Trees in relation to design, demolition and construction. There is to be no loss or major severance (>10m) of any hedgerow, as far as practicable. The use of artificial lighting is to follow the protocols outlined in Institution of Lighting Professionals document: Guidance Note 08/18 “Bats and Artificial Lighting in the UK: Bats and the Built Environment Series” (2018) to minimise disturbance and sky-glow across the site; and onto the boundaries in particular.</p> <p>Should the above protections not be possible for any of the target-noted trees, then two presence/likely-absence bat surveys (one dusk, one dawn) would be required during the survey period for bats (May-Sept inclusive).</p> <p>Nesting birds may be present during the bird breeding season (March to August inclusive) in the following areas (although this list is not exhaustive); trees, hedgerows, bramble banks, long grass, and brash piles. If the afore mentioned habitat types are to be removed during the active bird breeding season, then a prior check (within a 24-hour period preceding works) for nesting birds should be undertaken. The open fields should also be checked by an ECoW for ground nesting birds such as Skylark and meadow pipits and work should be timed to avoid the skylark and meadow pipit breeding.</p> <p>The veteran trees along the hedgerows and in the arable fields should be preserved and protected from root damage and incorporated into any landscape plan and the hedgerows planted up with additional whips and managed through laying. The pollarded willows along Target note 8 should be kept and continue to be pollarded to maintain their value to the landscape.</p> <p>Avoidance measure recommendations;</p> <p>Great crested newt:</p> <ul style="list-style-type: none"> Site induction / toolbox talk for all contractors Timing of clearance works to avoid the amphibian hibernation period (November to February inclusive) in sensitive areas
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	<p>Finger-tip search by a suitably qualified Ecologist of areas of suitable habitat (trees, hedgerows, bramble banks, long grass or brash piles) to be cleared</p> <p>5m buffer at site boundaries</p> <p>Works protocols for plant, storage of materials and handling of waste</p> <p>Water Vole and Otter</p> <p>Avoidance methods to ensure the Sherbourne Brook does not become polluted with soil, chemicals, petrol/diesel, hydraulic fluid etc</p> <p>No vehicle can enter the five-meter buffer zone without supervision.</p> <p>All vehicles must have their wheels washed before entering site to limit contamination entering the tributary.</p> <p>Site induction/toolbox talk for contractors</p> <p>All works must be completed five meters away from the tributary edge. A high visibility barrier must be installed that indicates this buffer zone</p> <p>Should any evidence of barn owl or reptile presence be found at any stage during works, then all works must cease, and the advice of a suitably qualified Ecologist sought.</p>
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1.0 Introduction and Context

1.1 Background

Midland Ecology were commissioned by Pelagic Energy, to undertake a Preliminary Ecological Appraisal (PEA) of a site known as 'Land at Sherbourne, Warwick, CV35 8AD' (hereafter referred to as 'the site' or 'site') and surrounding land within 50m, where accessible, of the red line boundary. The survey included an Extended Phase 1 Habitat Survey, in line with methodology set out in JNCC's Handbook for Phase 1 habitat survey – a technique for environmental audit (JNCC, 2010); the assessment is based on the Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017).

This is the first ecological survey to be undertaken on the site by Midland Ecology. The author is not aware of any previous ecological surveys having been undertaken at this site.

1.2 Scope of the Report

This report describes the baseline ecological conditions at the site; evaluates habitats within the survey area in the context of the wider environment; and describes the suitability of those habitats for notable or protected species. It identifies significant ecological impacts as a result of the development proposals; summarises the requirements for further surveys and mitigation measures, to inform subsequent mitigation proposals, achieve Planning or other statutory consent, and to comply with wildlife legislation.

The aim of the PEA was to obtain data on existing ecological conditions, and to conduct a preliminary assessment of the likely significance of ecological impacts on the proposed development. To achieve this, the following steps were taken:

- The desk study area and field survey area (generally 50m from the site boundary/proposed footprint and including the 'zone of influence' of the scheme) have been identified

- A desk study has been carried out, relating to the site and a surrounding 2km radius.

- Baseline information on the site and surrounding area has been recorded through an 'Extended Phase 1 Habitat Survey', including a Phase 1 Habitat Survey (JNCC 2010) and recording further details in relation to notable or protected habitats and species

- The ecological features present within the survey area have been evaluated, where possible (IEEM, 2006)

- Invasive plant and animal species (such as those listed on Schedule 9 of the Wildlife & Countryside Act [WCA]) have been identified

- Likely impacts on features of value, as a result of the development proposals, have been identified

- Recommendations for further survey and assessment have been made

Recommendations for mitigation and opportunities for enhancement have been provided based on current information

The Phase 1 habitat map of the survey area, with supporting target notes, is included in Appendix 1, photographs taken during the site survey are included in Appendix 2 and species lists from the site visit in Appendix 3. A description of relevant legislation, planning policy, and nature conservation Status' is included in Appendix 4, GCN HSI indices and risk assessment in Appendix 5 and desk study information is in Appendix 6.

1.3 Site Context

The site is located at National Grid Reference SP258627 and SP255621, and comprises an area of approximately 11ha for the northern part of the site and 13ha for the southern part of the site. The site is situated on the outskirts of Sherbourne. This is a rural location with a mix of farms and residential houses. The Sherbourne Brook is located on the boundary of the southern part of the site.

1.4 Project Description

The site is the subject of a planning application for a new solar farm, which would cover the majority of the fields with arrays of freestanding solar panels.

All works areas, storage and haul routes will be included within the site boundary; access will be provided by the existing access track, and as such no additional working footprints are anticipated.

2.0 Methods

2.1 Desk Study

A desk study relating to the site and a surrounding 2km radius (the study area) was undertaken. The study area has been defined at this scale as an assessment of any trees suitable for roosting bats is included within this report. There are no statutory designated sites for bats or birds within 10km of the site. This data search is confidential information that is not suitable for public release; therefore only a summary is given within this report.

Freely available information on designated sites, habitats and species of Principal Importance was reviewed, including a search on Magic.defra.gov.uk and using OS OpenData (2010). Information obtained from the desk study included:

- Landscape structure

- Habitats and species of Principal Importance (as listed on S41 of the Natural Environment and Rural Communities (NERC) Act 2006 (habitats and species of Principal Importance)

- Information on designated sites

- Information on the surrounding area, including water bodies

2.2 Extended Phase 1 Habitat Survey

The survey was undertaken by Phillip Playford BSc (Hons) MSc MCIEEM (Bat licence number 2020-44658-CLS-CLS, Great Crested Newt licence number 2015-16699-CLS-CLS and White Clawed Crayfish licence number 2019-43665-CLS-CLS) on the 28th of July 2021.

The survey area generally comprised all land that will be impacted by the proposals; in this instance taken to be the site boundary and a buffer of 50m. For details of the site boundary and survey area, please refer to Appendix 1.

2.2.1 Habitats and flora

The methodology for the Phase 1 Habitat Survey (P1HS) was based on the best practice publication Phase 1 Habitat Survey methodology (JNCC, 2010). All land parcels were described and mapped according to JNCC P1HS habitat types. Target notes provide supplementary information on habitat conditions, features too small to map, species composition, structure and management. Scientific names are given after the first mention of a species in this report, subsequently common names are used.

2.2.2 Protected species and Species of Principal Importance

During the survey, habitats were assessed for their suitability to support protected species and notable species assemblages, and field signs indicating their presence or absence recorded. This assessment took into consideration findings of the desk study, habitat conditions on site and in the context of the surrounding landscape, and the ecology of the species. Special attention was made to the following features suitable for protected species:

Ponds or other water bodies within 500m of the site were identified. The suitability of these and the available terrestrial habitat for great crested newt was assessed; along with considerations of connectivity. Natural England's Great Crested Newt Mitigation Guidelines (English Nature, 2001) recommend that any water bodies within 500m of a site, and sites with suitable terrestrial habitats within 500m of a water body should be assessed for great crested newt potential.

Any habitat complexes with a diverse structure and features suitable for basking, foraging and hibernating reptiles were recorded.

Any suitable foraging, refuge and/or hibernation areas for hedgehogs were inspected for signs of use. Evidence of bird nesting/breeding activity on or adjacent to site.

Due to the lack of suitable habitat, field signs, and their known distribution, it is considered unlikely that the survey area supports any other protected species. Therefore, only those species listed above are considered further in this report.

2.2.3 Invasive / non-native species

The distribution and extent of any invasive species listed on Schedule 9 of the Wildlife and Countryside Act (1981) were also noted throughout the survey area.

2.3 Suitability Assessment and Ecological Value

2.3.1 Likelihood of the presence of protected species

The likelihood of occurrence of protected species is ranked according to the criteria listed in Table 1. The habitats on site were evaluated as to their likelihood to provide sheltering, roosting, foraging, basking or nesting habitat.

Table 1: showing criteria considered when assessing the likelihood of occurrence of protected species

Present	Species are confirmed as present from the current survey or recent confirmed records.
High	The site is of high quality for a given species/species group, due to the presence of e.g. Habitat and features of high quality for species/species assemblage. Species known to be present in wider landscape (desk study records). Good quality surrounding habitat and good connectivity.
Medium	The site is of moderate quality for a given species/species group, due to the presence of e.g. Habitat and features of moderate quality. The site in combination with surrounding land provides all habitat/ecological conditions required by the species/assemblage. Within known national distribution of species and local records in desk study area. Factors limiting the likelihood of occurrence may include small habitat area, habitat isolation, and/or disturbance.
Low	Habitats within the site are of poor to moderate quality for a given species/species group. Few or no records from data search. Despite above, presence cannot be discounted as within national range, all required features/conditions present on site and in surrounding landscape. Limiting factors could include isolation, poor quality landscape, or disturbance.
Negligible	Whilst presence cannot be absolutely discounted, the site includes very limited or poor-quality habitat for a particular species or species group. No local records from desk study; site on edge of, or outside, national range. Surrounding habitats considered unlikely to support species/species assemblage.

2.3.2 Assessment of Ecological Value

The ecological value of the survey area has been assessed based on the Guidelines for Ecological Impact Appraisal (CIEEM, 2017) and Handbook of Biodiversity Methods: Survey, evaluation and monitoring (David Hill, 2005), using geographic frames of reference. The biodiversity value of the identified designated sites, habitat types and associated species/assemblages has been considered. The criteria listed below have been used to reach an evaluation; examples under each category of biodiversity value are provided in Table 2.

- Presence of designated sites or features

- Presence of UK priority habitats and species (S41 of the NERC Act), and species listed as Birds of Conservation Concern (Eaton et al 2009)

- Size of habitat, diversity of species, or population

- Habitats or species which are rare, species which are on the edge of their range

- Large populations of uncommon species, or plant communities that are typical of valued natural/semi-natural vegetation types

- Habitats or features that have supporting value for high value habitats, designated sites or protected species, e.g. buffer habitat to ancient woodland

- Presence of legally protected species

Table 2: Examples of criteria defining conservation evaluation

Evaluation on geographical scale	Examples of criteria defining evaluation
International	Biodiversity feature that is designated or warrants designation as a European Protected Site
National	Biodiversity feature that is designated or warrants designation as a National designated site (Site of Special Scientific Interest (SSSI) or National Nature Reserve (NNR))
Metropolitan or County	Biodiversity feature that is designated or warrants designation as a county wildlife site, local nature reserve, or a Site of Metropolitan Importance for Nature Conservation (SMI). Species and habitats of principle importance.
Borough	Biodiversity feature that is designated or warrants designation as a Site of Importance for Nature Conservation (SNCI), or other feature which is one of the best examples of its type within the Borough. Diverse and/or ecologically valuable hedgerow network, or ancient woodland greater than 0.25ha
Local	Biodiversity feature which is one of the best examples of its type within a local context (i.e. within ~1km of the scheme extent)/local Parish. Habitat complex considered to enrich the habitat/biodiversity resource within the context of the local neighbourhood.
Within the vicinity of the site	Biodiversity features of value within the zone of influence (site plus approximately 50m buffer).
Negligible	Biodiversity features of negligible value.

Following CIEEM guidance it should be noted that legal protection or UK Biodiversity Action Plan (BAP) status does not necessarily imply biodiversity status at the equivalent scale. For example, a badger *Meles meles* sett would receive legal protection at a national scale and a native hedgerow would be a UK BAP priority habitat, but neither feature is likely to be of biodiversity value at a national scale.

Where this report accompanies a planning application, the ecological interest of the study area and the proposed development has also been evaluated in terms of the planning policies relating to biodiversity. It will be clearly stated where a preliminary value can be given and where further information is required.

2.4 Limitations

It should be noted that whilst every effort has been made to describe the baseline conditions within the survey area, and evaluate these features, this report does not provide a complete characterisation of the site.

Where only four figure grid references are provided for biological data, it is not possible to determine their precise location as they could be present anywhere within the given 1km x 1km National Grid square.

This survey provides a preliminary view of the likelihood of protected species being present. This is based on suitability of the habitats on the site and in the local area, the ecology and biology of species as currently understood, and the known distribution of species as recovered during the desk study.

Ecological surveys are limited by a variety of factors, which affect the presence of flora and fauna (e.g. climatic variation, season and species behaviour). A lack of evidence of a protected species during a survey does not mean that the species is absent; hence the surveys also records and assess' the ability of habitats to support such species. The time frame in which the survey is conducted provides a snapshot of activity within the survey area and cannot necessarily detect all evidence of use by a species. The survey was completed in July so at the optimal time.

It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no investigation can ensure the complete characterisation of the natural environment. The Extended Phase 1 habitat survey does not constitute a full botanical survey. Some plant species may have been under-recorded, unidentifiable or not visible due to the time of year the survey was carried out; i.e. some wildflowers may have already flowered by July.

3.0 Results and Evaluation

3.1 Desk Study

Further desk study data is reproduced in Appendix 6.

3.1.1 Designated sites

The survey area is not subject to any statutory or non-statutory nature conservation designations. There is one statutory designated site; these are described in Table 3.

Table 3: Designated Nature Conservation sites within the study area

Designated site name	Distance from site (approximately)	Reasons for notification and integral value
Statutory designated site (Site of Special Scientific Interest)		
Sherbourne Meadows SSSI	870m west	Sherbourne Meadows comprises a series of eight adjoining unimproved fields lying on either side of Sherbourne Brook. Seven of the fields have a long history of management as hay meadows, the other is now grazed. Five of the fields along the brook, on alluvium overlying the Mercia Mudstone, have a vegetation characteristic of meadow foxtail–great burnet flood meadow. The other three fields on higher land not adjoining the brook have ridge and furrow topography and overlie Mercia Mudstone. Their herb-rich neutral grassland vegetation is of the common knapweed-crested dog’s-tail meadow and pasture type.

The site also falls within the Impact Risk Zones (IRZ) of this Site of Special Scientific Importance (SSSI): Sherbourne Meadows SSSI. The proposals are of a type that require further consultation with Natural England on the likely impacts of the proposals as all planning applications trigger these IRZs. It should be noted however that the site does not share similar habitats, nor strong connectivity with these SSSI; reducing the likelihood of such impacts.

3.1.2 Habitats of principal importance

A search of the Magic.defra.gov.uk database shows numerous areas of deciduous woodland present throughout the study area (the closest lying directly adjacent to the north-east of site), one of which is ancient woodland (located approx. 1.8km to the south of the site). There are two swathes of wood pasture/parkland (the closest lying approx. 670m to the south-east of site), an area of lowland meadow (900m west of the site), a belt of floodplain grazing marsh (closest located approx. 1.3km south-east), and two areas of good quality semi-improved grassland (closest located approx. 1.2km west of the site). Also present is some small traditional orchards (the closest lying directly adjacent to the south-west of site). These habitats are likely to be classified as Priority habitats of principle importance, and of particular value to variety of wildlife.

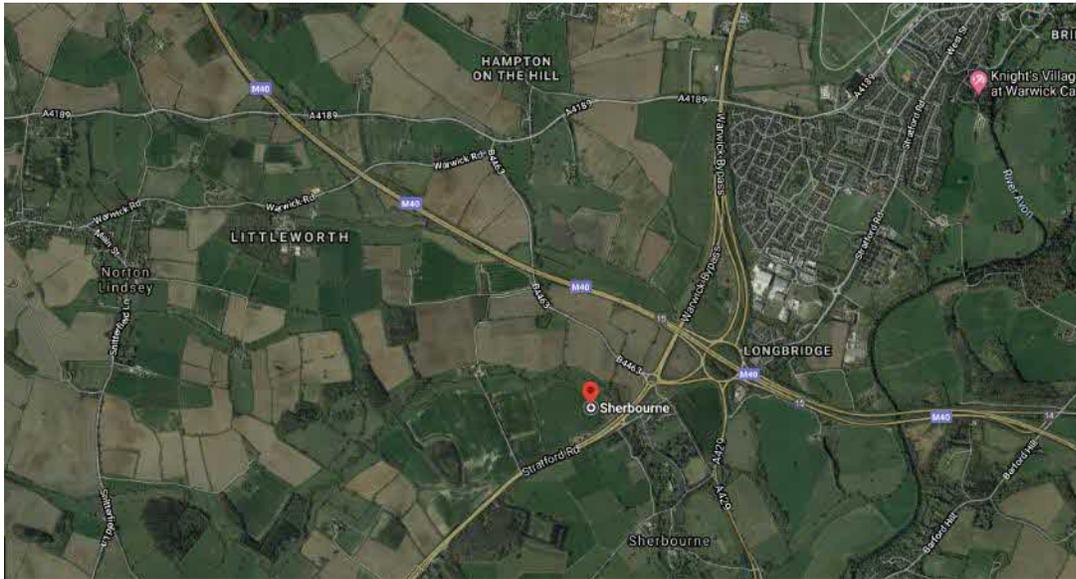
3.1.3 Historical Records

A search of the Magic.defra.gov.uk database shows two European Protected Species Mitigation Licences (EPSML) that have been granted within 2km of site. The first was issued in 2011 for a project impacting brown long-eared *Plecotus auritus* at a location approx. 135m to the south-east of site. The second was issued in 2013 for a project impacting brown long-eared and common pipistrelle *Pipistrellus pipistrellus* at a location approx. 1.5km to the south of site.

3.1.4 Landscape structure

A review of aerial photographs (Figure 1) and OS maps shows the site is likely to be of moderate importance in the context of the local surrounding landscape. Potentially the site's arable fields could provide winter bird nesting/foraging opportunities, the hedgerows offer connectivity for bats/birds, and wildlife corridors for reptiles, and the site's ditches offer foraging/breeding opportunities for great crested newts and potentially water vole.

Figure 1: Aerial photographs of site, showing landscape structure © Google 2021



3.2 Phase 1 Habitat Survey

3.2.1 Summary

The survey area was dominated by arable fields with a mix of species poor hedges, lines of trees, tall ruderal/scrub and species rich hedges along the boundaries with fences, including otter/deer proof fences along the M40 boundary and ditches. Several veteran trees were present along the boundaries with one within the arable field at Target Note 1.

3.2.2 Arable field

The northern part of the site was dominated by two arable fields with the predominant plant barley, but wheat and a variety of common arable weed species were also present (Target Note 1).

The southern part of the site was dominated by an arable field with barley and some wheat and common arable weeds present (Target note 10).

Some arable weeds identified within the site include Ragwort *Senecio jacobaea*, Broadleaved Dock *Rumex obtusifolius*, Cock's-foot *Dactylis glomerata*, Stinging Nettle *Urtica dioica*, Creeping Thistle *Cirsium arvense*, Cow Parsley *Anthriscus sylvestris*, Bramble *Rubus fruticosus* agg., Hedge Bindweed *Calystegia sepium*, Oxeye Daisy *Leucanthemum vulgare*, Field Sow Thistle *Sonchus arvensis*, Dove's foot cranesbill *Geranium molle*, Ribwort Plantain *Plantago lanceolata*, Creeping Buttercup *Ranunculus repens* and Scarlet Pimpernel *Anagallis arvensis*.

3.2.3 Species rich hedge with fence

Along the southern boundary of the northern site was a species rich hedge (Target Note 2). Species present include Hawthorn *Crataegus monogyna*, Sycamore *Acer pseudoplatanus*, Wild Privet *Ligustrum vulgare*, Field Maple *Acer campestre* and Blackthorn *Prunus spinosa*.

3.2.4 Line of trees with ditch

Running along to the east of the eastern boundary of the northern site was a line of trees with a ditch (Target Note 3). There was a lot of standing deadwood present along this boundary of the field. Species present include Hawthorn, Birch species *Betula* sp., Ash *Fraxinus excelsior*, Oak *Quercus* sp., Elder *Sambucus nigra*, Hazel *Corylus avellana*, Sycamore, Willow *Salix* sp., Blackthorn and Elm *Ulmus minor*.

3.2.5 Fence with scrub and tall ruderal

Along the northern boundary of the northern site was an otter/deer proof fence with scrub and tall ruderal (Target Note 4). Species identified include Bramble, Stinging Nettle, Broadleaved Dock, Elder, Burdock *Arctium lappa*, Cow Parsley, White Deadnettle *Lamium album*, Teasel *Dipsacus fullonum*, Prickly Sow Thistle *Sonchus asper*, Barren Brome *Bromus sterilis* and Fat Hen *Chenopodium album*.

3.2.6 Semi-improved neutral grassland with scrub

Along the northern boundary of the northern site was a patch of semi-improved neutral grassland and scrub (Target Note 5). Species identified include Cock's-foot, Rosebay Willowherb *Chamaenerion angustifolium*, Yorkshire Fog *Holcus lanatus*, Red Fescue *Festuca rubra*, Perennial Ryegrass *Lolium perenne*, Wavy hair-grass *Deschampsia flexuosa*, Curled Dock *Rumex crispus*, Burdock, Ragwort, Prickly Sow Thistle, Bramble, Teasel and Broadleaved Dock.

3.2.7 Line of trees

Along the western boundary of the northern site was a line of trees (Target Note 6). Species present include Hawthorn, Ash, Elder, Bramble, Dogwood *Cornus sanguinea*, Apple *Malus domestica*, Field Rose *Rosa arvensis*, Crab Apple *Malus sylvestris* and Elm.

3.2.8 Species rich hedge with veteran trees and fence

Along the south-west boundary of the northern site was a species rich hedge with several veteran trees and a fence (Target note 7). This hedge qualifies as important under the Hedgerow regs (1997) due to the number of woody plant species per 30m. Species present include Blackthorn, Birch species, Ash, Oak, Elder, Apple, Crab Apple, Elm, Hazel, Holly *Ilex aquifolium*, Sycamore and Hawthorn.

3.2.9 Line of trees with ditch

Through the centre of the northern site was a line of old pollarded willow trees and a ditch (Target note 8). Other species recorded include Oak, Ash, Elder, Apple, Field Maple, Hawthorn, Blackthorn and Gorse *Ulex europaeus*.

3.2.10 Species poor hedge with veteran trees and fence

Along the southern boundary of the northern site between Target note 8 and Target note 2 was a section of species poor hedge with veteran trees and a fence (Target note 9). Species identified include Ash, Oak, Hawthorn and Blackthorn.

3.2.11 Fence with scrub and tall ruderal

Along the eastern boundary of the site was a fence with scrub and tall ruderal separating the site from an area of rough grassland and a pond (Target note 11). Species identified include Dog Rose *Rosa canina*, Elder, Dogwood, Greater Willowherb *Epilobium hirsutum*, Bramble, Birch species, Cleavers *Galium aparine*, Teasel, Blackthorn, Hawthorn, Burdock and Cow Parsley.

3.2.12 Line of trees with fence

Along the northern boundary of the southern site, there was a line of trees with a fence bordering the Sherbourne Brook (Target note 12).

Along the western and southern boundary of the southern site, there was a line of trees with a fence (Target note 13). A metal barn and storage shed building was located in the southern boundary of the southern site.

Species identified include Oak, Ash, Bracken *Pteridium aquilinum*, Hawthorn, Birch and Elder.

3.3 Protected Species and Species of Principal Importance

The protected species/species groups considered potentially present within the survey area are:



Widespread species of reptiles

Invasive species

The likelihood of these species being present, or invasive species, is evaluated in Table 4.

Table 4: Assessment of likelihood of protected and invasive species occurrence

Species/ group	Likelihood of occurrence	Justification for evaluation	Legislation/policy
Bats	Foraging/ commuting: High Roosting: High	The fields and trees on site provide excellent foraging opportunities for bats. The metal barn and storage shed building to the south of the southern site both showed negligible likelihood for supporting roosting bats. Several trees were observed on site that had features suitable for use by roosting bats.	Wildlife and Countryside Act 1981 (as amended). The Conservation of Habitats and Species Regulations 2017.
Breeding birds	Confirmed	Several active and old birds' nests were observed in the trees and the habitat provides suitability for a range of nesting birds.	Wildlife and Countryside Act 1981 (as amended).
Barn Owl	Foraging/ commuting: High Nesting: Moderate	The rough grassland and tall ruderal have the potential to support field voles and provide suitable foraging grounds for barn owls. Several of the large trees had features suitable for nesting barn owls No signs of barn owls were observed during the site visit.	Wildlife and Countryside Act 1981 (as amended) Schedule 1.
Great crested newt	High	No evidence was found of GCN during the site visit but the grassland, hedges, lines of trees and ditches provide some suitable foraging habitat and some of the debris on site may provide suitable hibernacula opportunities. The pond accessible to the east of the southern site (WB1) scored good on the HSI (Appendix 5). Other ponds are present within 500m but cut off from the site by the M40. The ditches were dry at the time of the survey but may offer some potential if they hold water earlier in the season.	Wildlife and Countryside Act 1981 (as amended). The Conservation of Habitats and Species Regulations 2017.
Hedgehog	High	No evidence was found of hedgehogs during the site visit, but the fields and hedges provide some suitable foraging habitat and	Wildlife and Countryside Act 1981 (as amended).

		some of the debris on site may provide suitable hibernacula opportunities.	The Conservation of Habitats and Species Regulations 2017.
Otters	Moderate	No evidence was found of otters, but it is possible they are present along the Sherbourne brook.	Wildlife and Countryside Act 1981 (as amended) Schedule 1.
Water Vole	Low	No evidence was found of water vole on site, but suitable habitat is present along the Sherbourne Brook.	Wildlife and Countryside Act 1981 (as amended) Schedule 1.
Other small mammals	Confirmed	Several rabbit burrows were observed along the hedges and deer faeces and footprints were found within the fields.	Wild Mammals Act 1996
Widespread reptiles	High	No evidence was found of reptiles during the site visit, but the hedges and grassland provide some suitable foraging habitat and some of the debris on site may provide suitable hibernacula opportunities especially for common lizards and slow worms. The Sherbourne Brook also has suitable habitat for grass snake.	Wildlife and Countryside Act 1981 (as amended).
Invasive plant species	Low	No schedule 9 plants were found on site on the 28 th of July 2021.	Section 14 and Part II of Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

3.4. Evaluation

Habitats and species across the survey area were evaluated; this evaluation is described in Table 5.

Table 5: Evaluation of ecological receptors

Evaluation	Description of features and explanation of evaluation
International	The site is not designated for its international nature conservation importance. There are no international statutory designated sites within the 2km study area. No species listed on Annex II of the Habitats Directive have been recorded within the survey area; no habitats on site are considered likely to support these species.
National	The site is not subject to any national statutory nature conservation designations, and it is not considered that any habitats or species within the site would meet the criteria for the designation of a SSSI.
Metropolitan or County (e.g. Northamptonshire)	The site is not subject to any non-statutory nature conservation designations such as Local Wildlife Sites. There are no habitats or species recorded on site considered likely to be of Metropolitan importance.
Borough or District (e.g. Northampton)	The site is not subject to any non-statutory nature conservation designations such as LWS; nor does it share similar habitats or strong connectivity with nearby LWS. The site's hedgerows (and the adjacent tributary) are likely to serve a landscape-scale role in connecting the nearby habitats to the wider landscape, and so is ecologically valuable green infrastructure when evaluated at the District scale.
Local	The site's hedgerows and trees are known support protected species (breeding birds) and have the potential to support other protected species (bats, great crested newt and hedgehog). The adjacent tributary also has potential to support otter and water vole. As such, these features are considered to be of importance locally.
Within the vicinity of the site (approx. 50m)	With the exception of the boundary habitats described above, all habitats within the survey area are considered to be of value within the vicinity of the site only.

4.0 Discussion and Recommendations

4.1 Discussion

The site is not subject to any statutory or non-statutory designations. The site supports breeding birds and badgers, and has the potential to support reptiles, bats, GCN, otters, water vole, barn owls and hedgehogs. All other protected species are likely absent from the site, due to unsuitable habitats, levels of disturbance, species range and landscape context.

4.1.1 Discussion of impacts and the mitigation hierarchy

A description of significant impacts on habitats and species at value greater than the vicinity of the site (that cannot be avoided and can be identified at this stage of the assessment) is provided below. This impact assessment is based on current design proposals; please refer to the project plan in Appendix 2 illustrating and further describing the proposed works. Where sufficient information exists to design mitigation, this is also discussed. Any requirements for further survey to inform detailed mitigation proposals are provided in 4.2. Where further surveys for a particular habitat/complex or species are required prior to Planning Application, mitigation is not discussed in detail at this stage.

Designated sites

The development is unlikely to directly impact any of the designated sites. Impacts are likely to be very low due to the type of development taking place – solar panel installation.

Habitats and plants

The UK BAP Priority Habitats include all hedgerows with at least 80% cover of at least one woody UK native species (JNCC, 2015). All of the hedgerows had at least 80% cover of native species and as such qualify as UK BAP Priority Habitats. All of the hedgerows are to be retained and existing entranceways utilised as best as possible (i.e. there will be no major severance of hedgerows). Provided that this remains the case, no further assessment of the hedgerows is considered necessary.

If any hedgerow is to have a section of 10 meters or over removed, then it is recommended that a hedgerow assessment be carried out in accordance with the Hedgerows Regulations 1997 in order to establish whether it qualifies as important. The existing hedgerows on site should be enhanced by additional planting of whips as part of the landscape proposals for the site, using the following species - rich mix: 50% common hawthorn, 20% field maple, 15% blackthorn and 15% mix of hazel, spindle, dog rose and holly (Gilbert and Anderson, 1998).

Management practices for both new and existing hedgerows include laying the hedgerows to encourage bushy growth low down, trimming only every three years (or less if possible), and maintaining them at a height of at least three, and preferably four, metres. About one third of the hedgerows on site should be left to grow for seven to ten years and only one third should be cut in any one year so that at least some heavily fruiting hedgerows are always present.

Mature trees within the hedgerows and the mature oak within the arable field at Target note 1 will require protection during the construction works by establishing root protection zones in accordance with BS 5837:2012, where appropriate, and as best practicable. The pollarded willows along Target note 8 should be kept and continue to be pollarded to maintain their value to the landscape.

Depending on their management, arable field margins can be a UK BAP Priority Habitat. Qualifying arable field margins are herbaceous strips or blocks around arable fields that are managed specifically to provide benefits for wildlife. The margins on site are therefore unlikely to qualify at present but there is potential to increase the ecological value of the margins by controlling grazing and allowing the margins to develop to create areas of semi-improved grassland. This could be aided by seeding with an appropriate seed mix followed by a sympathetic grazing or mowing regime. Lighter grazing in the summer followed by a late summer cut once wildflowers have seeded will provide significantly better habitat for invertebrates than that which currently exists on site, and would be beneficial to local bat and bird populations.

The Sherbourne Brook is adjacent to the site, to the east and north of the southern site. During the construction phase of the project or any on-going maintenance works, on no account should any chemicals, including vehicle fuels or lubricants be left on site at night where they might be accessed by accident or deliberately (e.g. vandals) resulting in spillage to the river either directly or as run off. Any contractors engaged in works on the site should have in place secure storage facilities and an agreed pollution prevention plan. Appropriate pollution control equipment should be available at the site to control spillages if they do occur.

No invasive plant species were identified either on or within the vicinity of the site. The presence of the Sherbourne Brook and ditches within the vicinity of site present an increased risk of such plants colonising the site however. Contractors should be made aware, and provided with reference materials to help identify any invasive plant species that may become evident during works.

Protected species and species of principal importance

Breeding birds: Any tree or hedge works would likely affect birds that use the site for breeding by causing a decrease in nesting sites. Loss of these habitats may directly harm nesting birds if carried out during the breeding season (March to August inclusive).

Hedgehog: In the event that hedgehogs are present hibernating on site, then there is potential for disturbance and/or direct harm if any works are carried out during their hibernation season (September - March).

Great crested newt: In the event that great crested newts are present hibernating on site, then there is potential for disturbance and/or direct harm if any works are carried out during their hibernation season (November-February). At other times of year, newts transiting the site at night could fall into any open groundworks

Bats: Works to the trees with potential roosting features would have the potential for disturbance/damage/destruction of any bat roost(s) present; as well as potential for disturbance or direct harm to any bat(s) present during works. Loss or severance of hedgerows may affect bat commuting routes. An increase in general light levels could also affect bat foraging and commuting. These impacts are unlikely under the current design proposal.

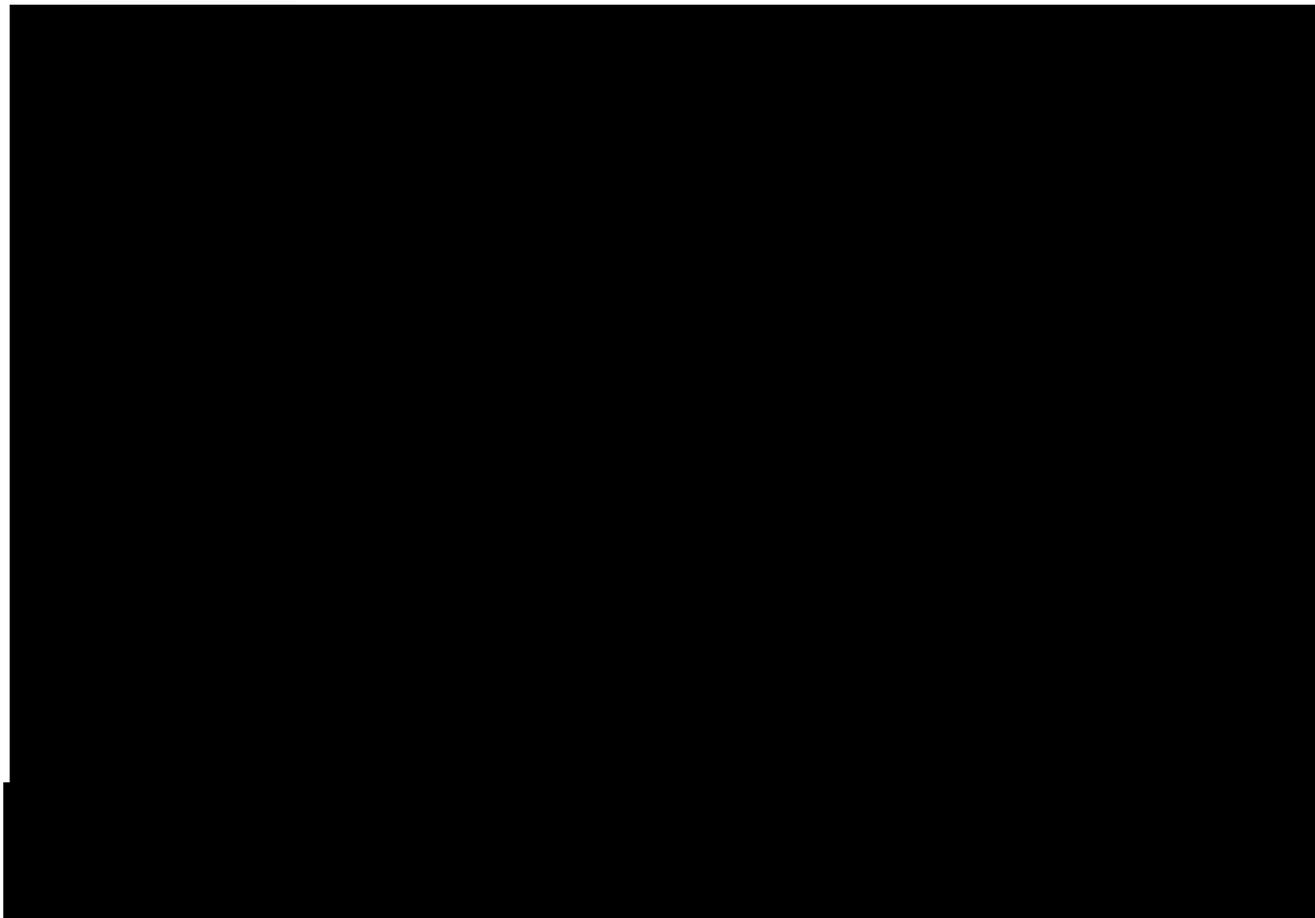
Otter & Water Vole: While long-term impacts on these species are not anticipated, the close proximity of the tributary (target notes nine and ten) presents potential for very short-term impacts during works, from lighting, excavator/moling and night-time disturbance.

Reptiles: In the event that reptiles are present hibernating on site, then there is potential for disturbance and/or direct harm if works are carried out during their hibernation season (November-February).

Barn Owls: Removal of the grassland would reduce potential foraging habitat for barn owls if present.

4.2 Recommendations – further surveys

The sections below provide an outline of the additional survey work that should be carried out prior to development, and also a suggested outline for the development of an Ecological Opportunities and Constraints Plan (recommended under BS 42020:2013). Where surveys are required prior to Planning Application, this is clearly stated.



4.2.2 Bat surveys

Further surveys for bats are not considered to be necessary, provided the following avoidance measures can be accommodated:

The veteran trees and all lengths of hedgerow should be protected during works, in line with BS 5837: 2012 Trees in relation to design, demolition and construction. There is to be no loss or major severance (>10m) of any hedgerow. The use of artificial lighting is to follow the protocols outlined in Institution of Lighting Professionals document: Guidance Note 08/18 “Bats and Artificial Lighting in the UK: Bats and the Built Environment Series” (2018) to minimise disturbance and sky-glow across the site; and onto the boundaries in particular.

Should the above protections not be possible for any of the target-noted trees, then two presence/likely-absence surveys (one dusk, one dawn) would be required during the survey period for bats (May-Sept inclusive).

4.2.3 Breeding bird surveys

Further surveys for birds within the hedgerows and trees are not considered necessary, as long as all mature trees retained and protected in line with BS 5837: 2012 Trees in relation to design, demolition and construction. If any hedgerow is to be severed, causing a gap of 10 meters or over, then further survey work on nesting birds would be required. Where possible, all hedgerows should be kept intact.

Nesting birds may be present during the bird breeding season (March to August inclusive) in the following areas (although this list is not exhaustive); trees, hedgerows, bramble banks, long grass, and brash piles. If the afore mentioned habitat types are to be removed during the active bird breeding season, then a prior check (within a 24-hour period preceding works) for nesting birds should be undertaken. The open fields should also be checked by an ECoW for ground nesting birds such as Skylark and meadow pipits and work should be timed to avoid the skylark and meadow pipit breeding.

4.2.4 Great crested newts

Although no great crested newts were observed on the site at the time of the survey, they could potentially hibernate (November-February) in some of the debris on the site. The pond (WB1) to the east of the southern site scored good on the HSI index. The works are temporary, low impact, and no terrestrial habitat or ponds are proposed for removal. Overall, the nature of the site, particularly with regard to amphibians, is expected to remain similar. Using Natural England's Great Crested Newt Rapid Risk Assessment, where no land (not just newt habitat) is to be lost or damaged but where there is a risk of minor disturbance of newts, the risk of an offence (in the absence of avoidance measures) is classed as 'likely'. Even if newts are present however, an EPSM licence is unlikely to be required, provided that works are carried out in accordance with a non-licensed method statement detailing Reasonable Avoidance Measures and a precautionary method of working. It is recommended that the Reasonable Avoidance Measures Statement (RAMS) include survey of the ditches and ponds for Great Crested Newt. Given the low impact nature of the proposed works, further surveys to conclusively determine the presence/likely-absence of great crested newt are considered to be disproportionate. A precautionary approach should instead be taken; in which great crested newt are assumed to be present locally. The method statement should therefore detail the precautionary methods of working, and reasonable avoidance measures, as well as any proposed enhancements to the site such as hedge planting or field margin establishment. Agreement and implementation of this method statement should be made a condition of any planning consent granted.

The Reasonable Avoidance Measures Statement will detail a precautionary method of working, including;

- Site induction / toolbox talk for all contractors

- Timing of clearance works to avoid the amphibian hibernation period (November to February inclusive) in sensitive areas

- Finger-tip search by a suitably qualified Ecologist of areas of suitable habitat (trees, hedgerows, bramble banks, long grass or brash piles) to be cleared

- 5m buffer at site boundaries

- Works protocols for plant, storage of materials and handling of waste

4.2.5 Hedgehog

Although no hedgehogs were observed on the site at the time of the survey, they could potentially hibernate (September-March) in some of the debris in and around the buildings on the site. No further surveys would be needed but reasonable avoidance methods (RAMs) would need to be undertaken if works were to take place.

4.2.6 Reptiles

Although no reptiles were observed on the site at the time of the survey, they could potentially hibernate (November-February) in some of the debris on the site. No further surveys would be needed but reasonable avoidance methods (RAMs) would need to be undertaken for works.

4.2.7 Otters and Water Voles

It is reasonable to assume that otters are within the local vicinity, and potentially water voles. The disturbance of water voles occupying a place of shelter or protection can constitute an offence under the Wildlife and Countryside Act. The Water Vole Mitigation Handbook suggests however that only operations with the potential to disturb a water vole to the point where it abandons its burrow should be considered as part of an impact assessment. The Water Vole Mitigation Handbook's recommendations for avoiding impacts specifically include a 3-5m buffer from the watercourse's banks, and directional drilling in order to avoid the need for more intrusive techniques.

In order to ensure minimal potential disturbance to these species therefore, no works within 5m of the watercourse will be permitted. The five-meter buffer is to be implemented from the top of the bank of the tributary into the adjacent land. All works will take place outside of this buffer zone.

A precautionary method of working is to be implemented to ensure the above mitigation methods are implemented, including:

Avoidance methods to ensure the tributary does not become polluted with soil, chemicals, petrol/diesel, hydraulic fluid etc

No vehicle can enter the five-meter buffer zone without supervision.

All vehicles must have their wheels washed before entering site to limit contamination entering the tributary.

Site induction/toolbox talk for contractors

— Timing of works, outside of the water vole breeding season (March to October, inclusive)

All works must be completed five meters away from the tributary edge. A high visibility barrier must be installed which indicates this buffer zone

If the above guidance is followed, then impacts on water vole and otters are unlikely.

4.2.8 Barn owl

Although no barn owls were observed on the site at the time of the survey, the site would provide good foraging habitat for them. Should any evidence of barn owl presence be found at any stage during works, then all works must cease, and the advice of a suitably qualified Ecologist sought.

4.3 Recommendations – opportunities for enhancement

Ecological Constraints and Opportunities Plan

The bullet points below represent some broad suggestions that could be included within an ECOP to inform the development proposals. These recommendations should be developed further in coordination with the landscape designers and other specialists as the design progress. It is acknowledged that not all may prove suitable or practical for this development.

- design of wildlife friendly lighting;

- measures to protect trees/hedgerows from construction activities;

- erection of bird and bat boxes, on the outskirts of woodland, on large mature trees, and/or on purpose-built poles;

- inclusion of plant species of known value to wildlife in any landscape design proposals, the “RHS plants for pollinators guide” offers a variety of suitable species;

- creation of wildlife refuge areas (habitat piles);

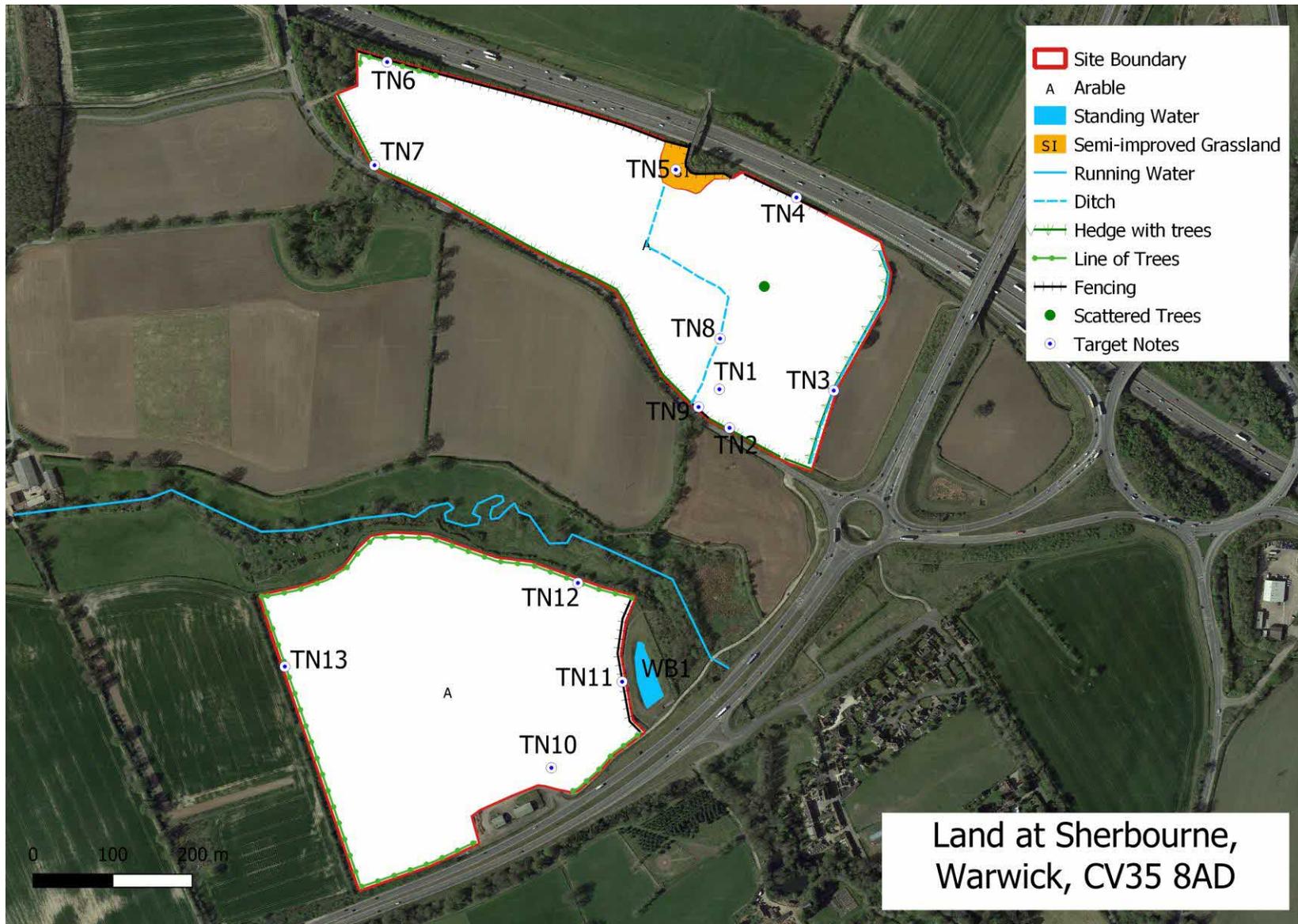
- design and implementation of measures to improve ecological connectivity; such as strengthening boundary hedgerows and laying where appropriate.

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Appendices

Appendix 1: Phase 1 Habitat Map (current site conditions)



Appendix 3: Photographs



Image 1: Target note 1 (Arable field)



Image 2: Target note 2 (Species rich hedge with fence)



Image 3: Target note 3 (Line of trees)



Image 4: Target note 3 (Line of trees). Tree with low bat potential at SP25992 62504



Image 5: Target note 3 (Line of trees). Tree with low bat potential at SP25999 62507



Image 6: Target note 3 (Line of trees). Tree with high bat potential at SP26032 62605



Image 7: Target note 3 (Line of trees). Tree with high bat potential at SP26047 62622



Image 8: Target note 4 (Fence and tall ruderal/scrub)



Image 9: Target note 5 (Semi-improved neutral grassland)



Image 10: Target note 5 (Semi-improved neutral grassland). Outlier badger sett at SP25823 62841



Image 11: Target note 6 (Line of trees).



Image 12: Target note 6 (Line of trees). Tree with high bat potential at SP25395 62935



Image 13: Target note 6 (Line of trees). Tree with high bat potential at SP25395 62935



Image 14: Target note 6 (Line of trees). Tree with high bat potential at SP25437 62837



Image 15: Target note 7 (Species rich hedge with veteran trees and fence).



Image 16: Target note 8 (Line of trees with ditch)



Image 17: Target note 8 (Line of trees with ditch). Tree with high bat potential at SP25833 62533



Image 18: Target note 8 (Line of trees with ditch). Tree with high bat potential at SP25836 62547



Image 19: Target note 8 (Line of trees with ditch). Tree with high bat potential



Image 20: Target note 8 (Line of trees with ditch). Tree with high bat potential



Image 21: Target note 8 (Line of trees with ditch). Tree with high bat potential



Image 22: Target note 8 (Line of trees with ditch). Tree with high bat potential



Image 23: Target note 1 (arable field). Tree with high bat potential at SP25917 62680



Image 24: Target note 1 (arable field). Tree with high bat potential at SP25917 62680



Image 25: Target note 9 (Species poor hedge with veteran trees and fence)



Image 26: Target note 9 (Species poor hedge with veteran trees and fence). Tree with high bat potential at SP25865 62509



Image 27: Target note 9 (Species poor hedge with veteran trees and fence). Tree with high bat potential at SP25899 62496



Image 28: Target note 9 (Species poor hedge with veteran trees and fence). Tree with high bat potential at SP25927 62480



Image 29: Target note 10 (Arable field).



Image 30: Target note 11 (Fence with scrub and tall ruderal).



Image 31: Target note 12 (Line of trees with fence).



Image 32: Target note 12 (Line of trees with fence). Tree with bat potential at SP25745 62293



Image 33: Target note 12 (Line of trees with fence). Tree with bat potential at SP25745 62293



Image 34: Target note 13 (Line of trees).



Image 35: Target note 13 (Line of trees). Debris pile



Image 36: Target note 13 (Line of trees). Horse manure pile



Image 37: Target note 13 (Line of trees). Building with negligible bat potential



Image 38: Target note 13 (Line of trees). Building with negligible bat potential



Image 39: Target note 13 (Line of trees). Building with negligible bat potential



Image 40: Target note 13 (Line of trees). Building with negligible bat potential



Image 41: Target note 13 (Line of trees). Building with negligible bat potential



Image 42: Target note 13 (Line of trees). Building with negligible bat potential



Image 43: WB1 at SP25776 62155



Image 44: WB1 at SP25776 62155

Appendix 4: Species lists from site visit.

Table 1: Plant species on site 28/07/2021

Target note 1 (Arable field): Grid reference SP25966250	
Scientific Name	Common Name
<i>Hordeum vulgare</i>	Barley
<i>Dactylis glomerata</i>	Cocksfoot
<i>Taraxacum officinale</i> agg.	Dandelion
<i>Senecio jacobaea</i>	Ragwort
<i>Rumex obtusifolius</i>	Broad-leaved dock
<i>Cirsium arvense</i>	Creeping thistle
<i>Urtica dioica</i>	Stinging nettle
<i>Rubus fruticosus</i> agg.	Bramble
<i>Anthriscus sylvestris</i>	Cow Parsley
<i>Dipsacus fullonum</i>	Teasel
<i>Calystegia sepium</i>	Hedge bindweed
<i>Veronica chamaedrys</i>	Germander Speedwell
<i>Heracleum sphondylium</i>	Hogweed
<i>Leucanthemum vulgare</i>	Ox eye daisy
<i>Galium aparine</i>	Cleavers
<i>Matricaria discoidea</i>	Pineappleweed
<i>Matricaria chamomilla</i>	Scented mayweed
<i>Sonchus arvensis</i>	Field sow thistle
<i>Sonchus asper</i>	Prickly sow thistle
<i>Arctium lappa</i>	Burdock
<i>Bromus sterilis</i>	Barren Brome
<i>Lamium album</i>	White dead nettle
<i>Convolvulus arvensis</i>	Field Bindweed
<i>Euphorbia</i> sp.	Spurge
<i>Anagallis arvensis</i>	Scarlet pimpernel
<i>Geranium molle</i>	Dove's foot cranesbill
<i>Geranium dissectum</i>	Cut-leaved cranesbill
<i>Glechoma hederacea</i>	Ground Ivy
<i>Plantago lanceolata</i>	Ribwort plantain
<i>Plantago major</i>	Broad leaved plantain
<i>Ranunculus repens</i>	Creeping buttercup
<i>Triticum aestivum</i>	Wheat
Target note 2 (Species rich hedge with fence): Grid reference SP25966245	

Scientific Name	Common Name
<i>Crataegus monogyna</i>	Hawthorn
<i>Betula</i> sp.	Birch
<i>Rumex obtusifolius</i>	Broad-leaved dock
<i>Urtica dioica</i>	Stinging nettle
<i>Rubus fruticosus</i> agg.	Bramble
<i>Hedera helix</i>	Ivy
<i>Galium aparine</i>	Cleavers
<i>Acer pseudoplatanus</i>	Sycamore
<i>Ligustrum vulgare</i>	Wild privet
<i>Leucanthemum vulgare</i>	Ox eye daisy
<i>Galium verum</i>	Lady's bedstraw
<i>Acer campestre</i>	Field maple
<i>Prunus spinosa</i>	Blackthorn
<i>Cirsium arvense</i>	Creeping thistle
Target note 3 (Line of trees with ditch): Grid reference SP25996247	
Scientific Name	Common Name
<i>Crataegus monogyna</i>	Hawthorn
<i>Betula</i> sp.	Birch
<i>Rumex obtusifolius</i>	Broad-leaved dock
<i>Urtica dioica</i>	Stinging nettle
<i>Rubus fruticosus</i> agg.	Bramble
<i>Hedera helix</i>	Ivy
<i>Galium aparine</i>	Cleavers
<i>Fraxinus excelsior</i>	Ash
<i>Quercus</i> sp.	Oak
<i>Sambucus nigra</i>	Elder
<i>Corylus avellana</i>	Hazel
<i>Acer pseudoplatanus</i>	Sycamore
<i>Senecio jacobaea</i>	Ragwort
<i>Dactylis glomerata</i>	Cocksfoot
<i>Calystegia sepium</i>	Hedge bindweed
<i>Cirsium arvense</i>	Creeping thistle
<i>Lamium album</i>	White dead nettle
<i>Lamium purpureum</i>	Red dead nettle
<i>Stachys sylvatica</i>	Hedge woundwort
<i>Arctium lappa</i>	Burdock
<i>Anthriscus sylvestris</i>	Cow Parsley

Holcus lanatus	Yorkshire Fog
Salix sp.	Willow
Ulmus minor	Elm
Rosa arvensis	Field rose
Prunus spinosa	Blackthorn
Target note 4 (Fence and tall ruderal/scrub): Grid reference SP26066274	
Scientific Name	Common Name
Rumex obtusifolius	Broad-leaved dock
Urtica dioica	Stinging nettle
Rubus fruticosus agg.	Bramble
Galium aparine	Cleavers
Sambucus nigra	Elder
Sonchus arvensis	Field sow thistle
Sonchus asper	Prickly sow thistle
Chenopodium album	Fat hen
Arctium lappa	Burdock
Bromus sterilis	Barren Brome
Lamium album	White dead nettle
Persicaria bistorta	Common bistort
Anthriscus sylvestris	Cow Parsley
Dipsacus fullonum	Teasel
Calystegia sepium	Hedge bindweed
Target note 5 (Semi improved neutral grassland): Grid reference SP25836283	
Scientific Name	Common Name
Dactylis glomerata	Cocksfoot
Taraxacum officinale agg.	Dandelion
Senecio jacobaea	Ragwort
Rumex obtusifolius	Broad-leaved dock
Cirsium arvense	Creeping thistle
Chamaenerion angustifolium	Rosebay willowherb
Epilobium hirsutum	Greater willowherb
Betula sp.	Birch
Urtica dioica	Stinging nettle
Rubus fruticosus agg.	Bramble
Anthriscus sylvestris	Cow Parsley
Dipsacus fullonum	Teasel
Crataegus monogyna	Hawthorn
Sonchus arvensis	Field sow thistle

<i>Sonchus asper</i>	Prickly sow thistle
<i>Arctium lappa</i>	Burdock
<i>Rumex crispus</i>	Curled dock
<i>Holcus lanatus</i>	Yorkshire Fog
<i>Festuca rubra</i>	Red Fescue
<i>Lolium perenne</i>	Perennial Rye grass
<i>Deschampsia flexuosa</i>	Wavy hair grass
<i>Plantago lanceolata</i>	Ribwort plantain
<i>Plantago major</i>	Broad leaved plantain
Target note 6 (Line of trees): Grid reference SP25406295	
Scientific Name	Common Name
<i>Crataegus monogyna</i>	Hawthorn
<i>Rumex obtusifolius</i>	Broad-leaved dock
<i>Urtica dioica</i>	Stinging nettle
<i>Rubus fruticosus</i> agg.	Bramble
<i>Hedera helix</i>	Ivy
<i>Galium aparine</i>	Cleavers
<i>Fraxinus excelsior</i>	Ash
<i>Sambucus nigra</i>	Elder
<i>Calystegia sepium</i>	Hedge bindweed
<i>Cornus sanguinea</i>	Dogwood
<i>Malus domestica</i>	Apple
<i>Malus sylvestris</i>	Crab apple
<i>Rosa arvensis</i>	Field rose
<i>Ulmus minor</i>	Elm
Target note 7 (Species rich hedge with veteran trees and fence): Grid reference SP25456282	
Scientific Name	Common Name
<i>Prunus spinosa</i>	Blackthorn
<i>Betula</i> sp.	Birch
<i>Rumex obtusifolius</i>	Broad-leaved dock
<i>Urtica dioica</i>	Stinging nettle
<i>Rubus fruticosus</i> agg.	Bramble
<i>Hedera helix</i>	Ivy
<i>Galium aparine</i>	Cleavers
<i>Fraxinus excelsior</i>	Ash
<i>Quercus</i> sp.	Oak
<i>Sambucus nigra</i>	Elder
<i>Malus domestica</i>	Apple

<i>Malus sylvestris</i>	Crab apple
<i>Lamium purpureum</i>	Red deadnettle
<i>Glechoma hederacea</i>	Ground Ivy
<i>Stachys sylvatica</i>	Hedge woundwort
<i>Ulmus minor</i>	Elm
<i>Ilex aquifolium</i>	Holly
<i>Anthriscus sylvestris</i>	Cow Parsley
<i>Corylus avellana</i>	Hazel
<i>Acer pseudoplatanus</i>	Sycamore
<i>Rosa arvensis</i>	Field rose
<i>Calystegia sepium</i>	Hedge bindweed
<i>Lamium album</i>	White dead nettle
<i>Sisymbrium officinale</i>	Hedge mustard
<i>Crataegus monogyna</i>	Hawthorn
Target note 8 (Line of trees with ditch): Grid reference SP25846254	
Scientific Name	Common Name
<i>Salix</i> sp.	Willow
<i>Rumex obtusifolius</i>	Broad-leaved dock
<i>Urtica dioica</i>	Stinging nettle
<i>Rubus fruticosus</i> agg.	Bramble
<i>Hedera helix</i>	Ivy
<i>Galium aparine</i>	Cleavers
<i>Fraxinus excelsior</i>	Ash
<i>Quercus</i> sp.	Oak
<i>Sambucus nigra</i>	Elder
<i>Malus domestica</i>	Apple
<i>Malus sylvestris</i>	Crab apple
<i>Lamium purpureum</i>	Red deadnettle
<i>Glechoma hederacea</i>	Ground Ivy
<i>Stachys sylvatica</i>	Hedge woundwort
<i>Arum maculatum</i>	Wild arum
<i>Sonchus arvensis</i>	Field sow thistle
<i>Sonchus asper</i>	Prickly sow thistle
<i>Arctium lappa</i>	Burdock
<i>Epilobium hirsutum</i>	Greater willowherb
<i>Acer campestre</i>	Field maple
<i>Rosa arvensis</i>	Field rose
<i>Sisymbrium officinale</i>	Hedge mustard

<i>Crataegus monogyna</i>	Hawthorn
<i>Prunus spinosa</i>	Blackthorn
<i>Ulex europaeus</i>	Gorse
Target note 9 (Species poor hedge with veteran trees and fence): Grid reference SP25866250	
Scientific Name	Common Name
<i>Rumex obtusifolius</i>	Broad-leaved dock
<i>Urtica dioica</i>	Stinging nettle
<i>Rubus fruticosus</i> agg.	Bramble
<i>Hedera helix</i>	Ivy
<i>Galium aparine</i>	Cleavers
<i>Fraxinus excelsior</i>	Ash
<i>Quercus</i> sp.	Oak
<i>Lamium purpureum</i>	Red deadnettle
<i>Glechoma hederacea</i>	Ground Ivy
<i>Stachys sylvatica</i>	Hedge woundwort
<i>Crataegus monogyna</i>	Hawthorn
<i>Prunus spinosa</i>	Blackthorn
Target note 10 (Arable field): Grid reference SP25676209	
Scientific Name	Common Name
<i>Hordeum vulgare</i>	Barley
<i>Dactylis glomerata</i>	Cocksfoot
<i>Taraxacum officinale</i> agg.	Dandelion
<i>Senecio jacobaea</i>	Ragwort
<i>Rumex obtusifolius</i>	Broad-leaved dock
<i>Cirsium arvense</i>	Creeping thistle
<i>Urtica dioica</i>	Stinging nettle
<i>Rubus fruticosus</i> agg.	Bramble
<i>Anthriscus sylvestris</i>	Cow Parsley
<i>Dipsacus fullonum</i>	Teasel
<i>Calystegia sepium</i>	Hedge bindweed
<i>Veronica chamaedrys</i>	Germander Speedwell
<i>Heracleum sphondylium</i>	Hogweed
<i>Leucanthemum vulgare</i>	Ox eye daisy
<i>Galium aparine</i>	Cleavers
<i>Matricaria discoidea</i>	Pineappleweed
<i>Matricaria chamomilla</i>	Scented mayweed
<i>Sonchus arvensis</i>	Field sow thistle
<i>Sonchus asper</i>	Prickly sow thistle

<i>Arctium lappa</i>	Burdock
<i>Bromus sterilis</i>	Barren Brome
<i>Lamium album</i>	White dead nettle
<i>Convolvulus arvensis</i>	Field Bindweed
<i>Euphorbia</i> sp.	Spurge
<i>Anagallis arvensis</i>	Scarlet pimpernel
<i>Geranium molle</i>	Dove's foot cranesbill
<i>Geranium dissectum</i>	Cut-leaved cranesbill
<i>Glechoma hederacea</i>	Ground Ivy
<i>Plantago lanceolata</i>	Ribwort plantain
<i>Plantago major</i>	Broad leaved plantain
<i>Ranunculus repens</i>	Creeping buttercup
<i>Triticum aestivum</i>	Wheat
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Centaurea nigra</i>	Black knapweed
<i>Senecio vulgaris</i>	Groundsel
Target note 11 (Fence with scrub and tall ruderal): Grid reference SP25746213	
Scientific Name	Common Name
<i>Betula</i> sp.	Birch
<i>Rumex obtusifolius</i>	Broad-leaved dock
<i>Urtica dioica</i>	Stinging nettle
<i>Rubus fruticosus</i> agg.	Bramble
<i>Galium aparine</i>	Cleavers
<i>Sambucus nigra</i>	Elder
<i>Rosa canina</i>	Dog rose
<i>Crataegus monogyna</i>	Hawthorn
<i>Prunus spinosa</i>	Blackthorn
<i>Cornus sanguinea</i>	Dogwood
<i>Sonchus arvensis</i>	Field sow thistle
<i>Sonchus asper</i>	Prickly sow thistle
<i>Arctium lappa</i>	Burdock
<i>Epilobium hirsutum</i>	Greater willowherb
<i>Cirsium arvense</i>	Creeping thistle
<i>Dipsacus fullonum</i>	Teasel
<i>Anthriscus sylvestris</i>	Cow Parsley
<i>Chamaenerion angustifolium</i>	Rosebay willowherb
Target note 12 (Line of trees with fence): Grid reference SP25696230	
Scientific Name	Common Name

Rumex obtusifolius	Broad-leaved dock
Urtica dioica	Stinging nettle
Rubus fruticosus agg.	Bramble
Hedera helix	Ivy
Galium aparine	Cleavers
Sambucus nigra	Elder
Quercus sp.	Oak
Fraxinus excelsior	Ash
Achillea millefolium	Yarrow
Pteridium aquilinum	Bracken
Crataegus monogyna	Hawthorn
Target note 13 (Line of trees): Grid reference SP25426193	
Scientific Name	Common Name
Betula sp.	Birch
Rumex obtusifolius	Broad-leaved dock
Urtica dioica	Stinging nettle
Rubus fruticosus agg.	Bramble
Hedera helix	Ivy
Galium aparine	Cleavers
Fraxinus excelsior	Ash
Quercus sp.	Oak
Sambucus nigra	Elder
Lamium purpureum	Red deadnettle
Glechoma hederacea	Ground Ivy
Stachys sylvatica	Hedge woundwort
Crataegus monogyna	Hawthorn
Prunus spinosa	Blackthorn

Table 2: Birds species on site 28/07/2021

Scientific Name	Common Name
Columba palumbus	Woodpigeon (direct observation)
Pica pica	Magpie (direct observation)
Parus major	Great Tit (direct observation)
Turdus merula	Blackbird (direct observation)
Erithacus rubecula	Robin (direct observation)
Troglodytes troglodytes	Wren (direct observation)
Buteo buteo	Buzzard (direct observation)
Corvus corone	Carrion crow (direct observation)

<i>Cyanistes caeruleus</i>	Blue tit (direct observation)
<i>Prunella modularis</i>	Dunnock (direct observation)
<i>Aegithalos caudatus</i>	Long tailed tit (direct observation)
<i>Larus argentatus</i>	Herring gull (direct observation)
<i>Garrulus glandarius</i>	Jay (direct observation)
<i>Phylloscopus collybita</i>	Chiffchaff (direct observation)
<i>Emberiza citrinella</i>	Yellowhammer (direct observation)
<i>Sylvia communis</i>	Whitethroat (direct observation)
<i>Hirundo rustica</i>	Swallow (direct observation)
<i>Sylvia atricapilla</i>	Blackcap (direct observation)
<i>Phylloscopus trochilus</i>	Willow warbler (direct observation)
<i>Motacilla alba</i>	Pied wagtail (direct observation)
<i>Dendrocopos major</i>	Great spotted woodpecker (direct observation)

Table 3: Invertebrate species on site 28/07/2021

Scientific Name	Common Name
<i>Cepaea nemoralis</i>	Brown lipped snail (direct observation)
<i>Limacus maculatus</i>	Green cellar slug (direct observation)
<i>Arion ater</i>	Great black slug (direct observation)
<i>Porcellio scaber</i>	Common rough woodlouse (direct observation)
<i>Oniscus asellus</i>	Common shiny woodlouse (direct observation)
<i>Stimella aurella</i>	Bramble leaf miner (direct observation of leaf mines)
<i>Vespula vulgaris</i>	Common wasp (direct observation)
<i>Trochulus striolatus</i>	Strawberry snail (direct observation)
<i>Araneus diadematus</i>	Garden orb web weaver spider (direct observation)
<i>Pararge aegeria</i>	Speckled Wood (direct observation)
<i>Aglais urticae</i>	Small tortoiseshell (direct observation)
<i>Thymelicus sylvestris</i>	Small skipper (direct observation)
<i>Pieris napi</i>	Green veined white (direct observation)
<i>Vanessa atalanta</i>	Red Admiral (direct observation)
<i>Aphantopus hyperantus</i>	Ringlet (direct observation)
<i>Maniola jurtina</i>	Meadow brown (direct observation)
<i>Pyronia tithonus</i>	Gatekeeper (direct observation)
<i>Tyria jacobaeae</i>	Cinnabar moth (direct observation)
<i>Bombus lucorum</i> agg.	White tailed bumblebee (direct observation)
<i>Bombus lapidarius</i>	Red tailed bumblebee (direct observation)
<i>Bombus pascuorum</i>	Common Carder bee (direct observation)
<i>Apis mellifera</i>	Honey bee (direct observation)

<i>Bombus terrestris</i>	Buff tailed bumblebee (direct observation)
<i>Episyphus balteatus</i>	Marmalade fly (direct observation)
<i>Eristalis tenax</i>	Drone fly (direct observation)

Table 4: Mammal species on site 28/07/2021

Scientific Name	Common Name
<i>Talpa europaea</i>	Mole (mole hills)
<i>Sciurus carolinensis</i>	Grey squirrel (direct observation)
<i>Meles meles</i>	Badger (outlier sett, trails and feeding signs)
<i>Oryctolagus cuniculus</i>	Rabbits (burrows)
	Bank/field Voles (burrows)
	Deer (footprints and faeces)

Table 5: Fungi species on site 28/07/2021

Scientific Name	Common Name
<i>Trametes versicolor</i>	Turkeytail fungus (direct observation)
<i>Puccinia phragmitis</i>	Dock rust fungus (direct observation)
<i>Trochila craterium</i>	Ascomycete on dead ivy leaves (direct observation)
<i>Diatrype stigma</i>	(direct observation)
<i>Mycena</i> sp.	Bonnet fungi (direct observation)
<i>Auricularia auricula-judae</i>	Jelly ear fungus (direct observation)

Appendix 5: Legislation and Planning Policy

LEGAL PROTECTION

Legislation Afforded to Habitats

National Statutory Designations

Sites of Special Scientific Interest (SSSI) are designated by nature conservation agencies in order to conserve key flora, fauna, geological or physio-geographical features within the UK. The original designations were under the National Parks and Access to the Countryside Act 1949 but SSSIs were then re-designated under the Wildlife & Countryside Act 1981 (as amended). As well as reinforcing other national designations (including National Nature Reserves), the system also provides statutory protection for terrestrial and coastal sites which are important within the European Natura 2000 network and globally. Further provisions for the protection and management of SSSIs have been introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and the Nature Conservation (Scotland) Act 2004.

Local Statutory Designations

Local authorities in consultation with the relevant nature conservation agency can declare Local Nature Reserves (LNRs) under the National Parks and Access to the Countryside Act 1949. LNRs are designated for flora, fauna or geological interest and are managed locally to retain these features and provide research, education and recreational opportunities.

Non- Statutory Designations

All non-statutorily designated sites are referred to as Local Wildlife Sites (LWS) and can be designated by the local authority for supporting local conservation interest. Combined with statutory designation, these sites are considered within Local Development Frameworks under the Town and Country Planning system and are a material consideration during the determination of planning applications. The protection afforded to these sites varies depending on the local authority involved.

National and European Legislation Afforded to Species

The Habitats Directive

The EC Habitats Directive aims to promote the maintenance of biodiversity by requiring Member States to take measures to maintain or restore wild species listed on the Annexes to the Directive at a favourable conservation status, introducing robust protection for those species of European importance. The Directive is transposed into UK law by The Conservation of Habitats and Species Regulations 2010 (the Conservation Regulations) and the Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007 (as amended). The following notes are relevant for all species protected under the EC Habitats Directive: In the Directive, the term ‘deliberate’ is interpreted as being somewhat wider than intentional and may be thought of as including an element of recklessness.

The Habitats Regulations do not define the act of ‘migration’ and, therefore, as a precaution, it is recommended that short distance movement of animals for e.g. foraging, breeding or dispersal purposes are also considered.

In order to obtain a European Protected Species Mitigation (EPSM) licence, the application must demonstrate that it meets all of the following three ‘tests’:

the action(s) are necessary for the purpose of preserving public health or safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequence of primary importance for the environment;

there is no satisfactory alternative; and

The action authorised will not be detrimental to the maintenance of the species concerned at a favourable conservation status in their natural range.

The Wildlife and Countryside Act (WCA) 1981 (as amended) implements the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and implements the species protection requirements of EC Birds Directive 2009/147/EC on the conservation of wild birds in Great Britain (the birds Directive). The WCA 1981 has been subject to a number of amendments, the most important of which are through the Countryside and Rights of Way (CROW) Act (2000) and Nature Conservation (Scotland) Act 2004.

Other legislative Acts affording protection to wildlife and their habitats include:

Deer Act 1991

Natural Environment & Rural Communities (NERC) Act 2006

Protection of Badgers Act 1992

Wild Mammals (Protection) Act 1996

Birds

With certain exceptions, all birds, their nests and eggs are protected under Sections 1-8 of the WCA. Among other things, this makes it an offence to:

Intentionally (or recklessly in Scotland) kill, injure or take any wild bird

Intentionally (or recklessly in Scotland) take, damage or destroy (or, in Scotland, otherwise interfere with) the nest of any wild bird while it is in use or being built

Intentionally take or destroy an egg of any wild bird

Sell, offer or expose for sale, have in his possession or transport for the purpose of sale any wild bird (dead or alive) or bird egg or part thereof.

In Scotland only, intentionally or recklessly obstruct or prevent any wild bird from using its nest

Certain species of bird, for example the barn owl, bittern and kingfisher receive additional protection under Schedule 1 of the WCA and Annex 1 of the European Community Directive on the Conservation of Wild Birds (2009/147/EC) and are commonly referred to as “Schedule 1” birds. This affords them protection against:

Intentional or reckless disturbance while it is building a nest or is in, on or near a nest containing eggs or young

Intentional or reckless disturbance of dependent young of such a bird

In Scotland only, intentional or reckless disturbance whilst lekking

In Scotland only, intentional or reckless harassment

Effects on development works

Works should be planned to avoid the possibility of killing or injuring any wild bird, or damaging or destroying their nests. The most effective way to reduce the likelihood of nest destruction in particular is to undertake work outside the main bird nesting season which typically runs from March to August¹. Where this is not feasible, it will be necessary to have any areas of suitable habitat thoroughly checked for nests prior to vegetation clearance.

Schedule 1 birds are additionally protected against disturbance during the nesting season. Thus, it will be necessary to ensure that no potentially disturbing works are undertaken in the vicinity of the nest. The most effective way to avoid disturbance is to postpone works until the young have fledged. If this is not feasible, it may be possible to maintain an appropriate buffer zone or standoff around the nest.

Bats

All species are fully protected by Habitats Regulations 2010 as they are listed on Schedule 2. Regulation 41 prohibits:

Deliberate killing, injuring or capturing of Schedule 2 species (e.g. all bats)

Deliberate disturbance of bat species in such a way as:

- to impair their ability to survive, breed, or reproduce, or to rear or nurture young;
- to impair their ability to hibernate or migrate
- to affect significantly the local distribution or abundance of the species

Damage or destruction of a breeding site or resting place

Bats are afforded the following additional protection through the WCA as they are included on Schedule 5:

Intentional or reckless disturbance (at any level)

Intentional or reckless obstruction of access to any place of shelter or protection

Effects on development works

Works which are liable to affect a bat roost or an operation which are likely to result in an illegal level of disturbance to the species will require an EPSM licence. The licence is to allow derogation from the legislation through the application of appropriate mitigation measures and monitoring.

¹It should be noted that this is considered the main breeding period. Breeding activity may occur outside this period (depending on the particular species and geographical location of the site) and thus due care and attention should be given when undertaking potentially disturbing works at any time of year.

Wild Mammals (Protection Act) 1996

All wild mammals are protected against intentional acts of cruelty under the above legislation. This makes it an offence to mutilate, kick, beat, nail or otherwise impale, stab, burn, stone, crush, drown, drag or asphyxiate any wild mammal with intent to inflict unnecessary suffering.

To avoid possible contravention, due care and attention should be taken when carrying out works (for example operations near burrows or nests) with the potential to affect any wild mammal in this way, regardless of whether they are legally protected through other conservation legislation or not.

NATIONAL PLANNING POLICY (ENGLAND)

National Planning Policy Framework

The National Planning Policy Framework promotes sustainable development. The Framework specifies the need for protection of designated sites and priority habitats and species. An emphasis is also made on the need for ecological infrastructure through protection, restoration and re-creation. The protection and recovery of priority species (considered likely to be those listed as UK Biodiversity Action Plan priority species) is also listed as a requirement of planning policy.

In determining a planning application, planning authorities should aim to conserve and enhance biodiversity by ensuring that: designated sites are protected from harm; there is appropriate mitigation or compensation where significant harm cannot be avoided; opportunities to incorporate biodiversity in and around developments are encouraged; and planning permission is refused for development resulting in the loss or deterioration of irreplaceable habitats including aged or veteran trees and also ancient woodland.

The Natural Environment and Rural Communities Act 2006 and The Biodiversity Duty

Section 40 of the Natural Environment and Rural Communities (NERC) Act, 2006, requires all public bodies to have regard to biodiversity conservation when carrying out their functions. This is commonly referred to as the 'biodiversity duty'.

Section 41 of the Act (Section 42 in Wales) requires the Secretary of State to publish a list of habitats and species which are of 'principal importance for the conservation of biodiversity.' This list is intended to assist decision makers such as public bodies in implementing their duty under Section 40 of the Act. Under the Act these habitats and species are regarded as a material consideration in determining planning applications. A developer must show that their protection has been adequately addressed within a development proposal.

Appendix 6 GCN HSI calculations and risk assessment

Pond Name	WB1
Grid Ref	SP25776 62155
Description	Pond to the east of the southern site
SI Description	SI Value
Geographic location	1
Pond area	0.9
Pond permanence	0.5
Water quality	0.67
Shade	1
Waterfowl effect	0.67
Fish presence	0.67
Pond Density	0.7
Terrestrial habitat	1
Macrophyte cover	0.8
HSI Score	0.77
Pond suitability (see below)	Good

Categorisation of HSI Score by Lee Brady	
HIS Score	Pond Suitability
< 0.50	Poor
0.50 - 0.59	Below average
0.60 - 0.69	Average
0.70 - 0.79	Good
> 0.80	Excellent

GCN rapid risk assessment (If WB1 is used by GCN)

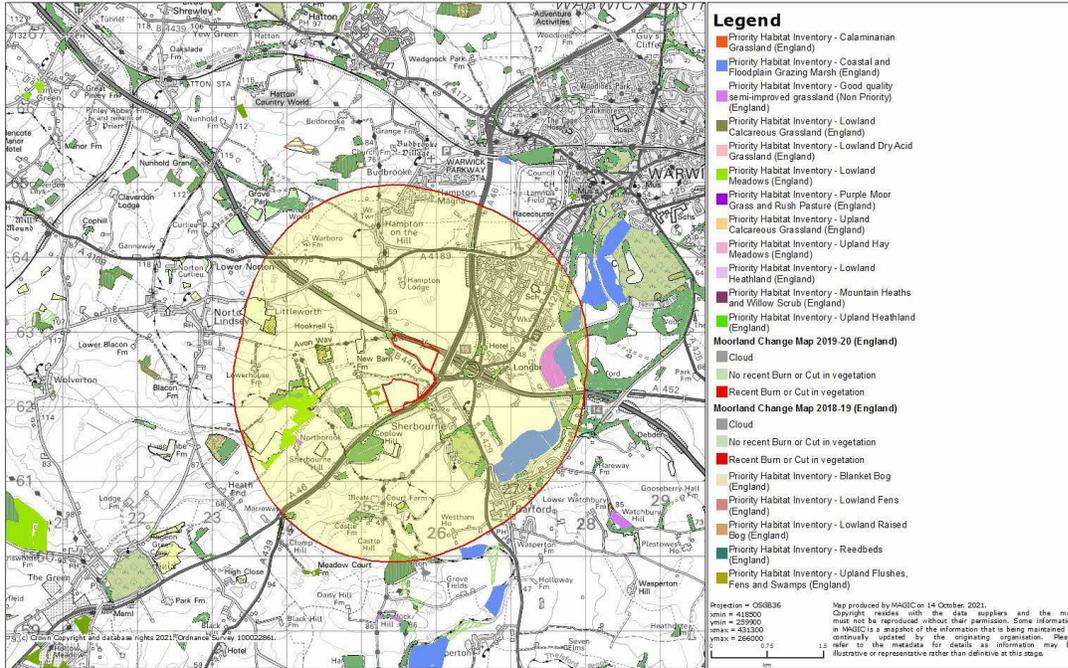
Component	Likely effect (select one for each component; select the most harmful option if more than one is likely; lists are in order of harm, top to bottom)	Notional offence probability score
Great crested newt breeding pond(s)	No effect	0
Land within 100m of any breeding pond(s)	>1 ha lost or damaged	0.9
Land 100-250m from any breeding pond(s)	No effect	0
Land >250m from any breeding pond(s)	No effect	0
Individual great crested newts	Capture of newts in excavations etc	0.8
	Maximum:	0.9
Rapid risk assessment result:	RED: OFFENCE HIGHLY LIKELY	

Appendix 7: Desk study data (Designated sites and Priority habitats)

Full historical records can be provided upon request (not suitable for public release).

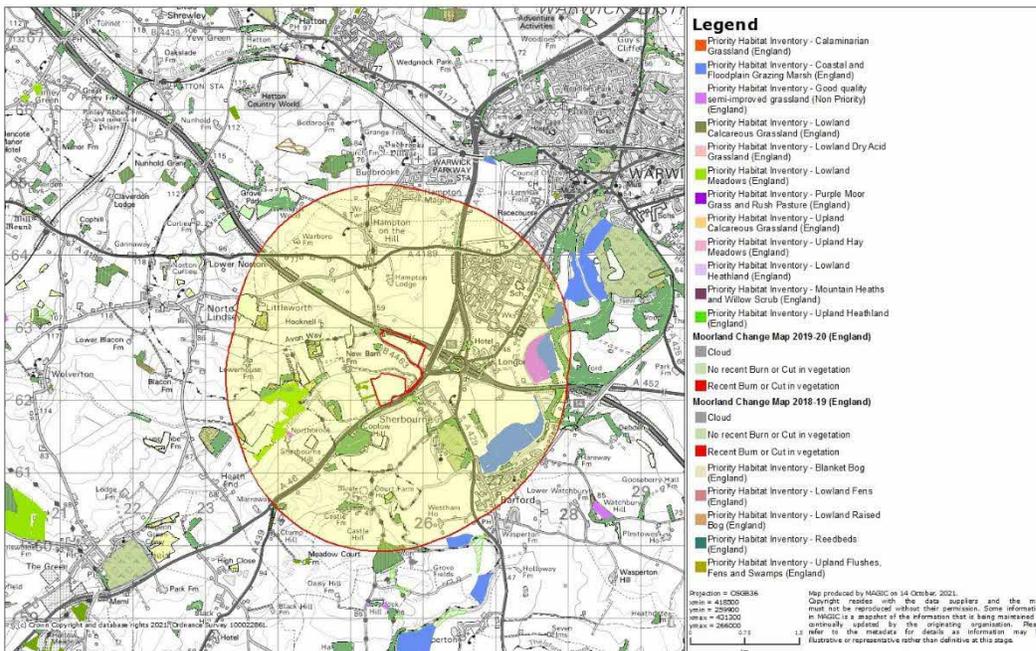
MAGIC

Priority Habitats



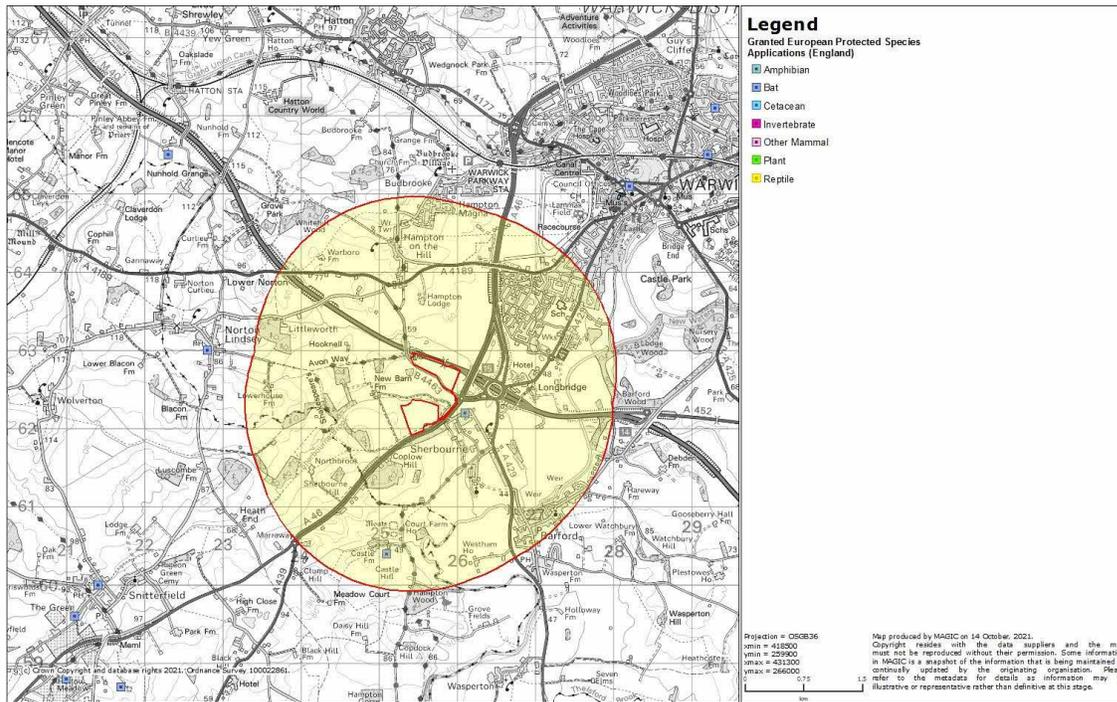
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Priority Habitats



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EPSML



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Ponds within 500m

