Elite Ecology

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Land off Barnfields Lane,

Kingsley



Preliminary Ecological Appraisal

February 2023

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0. Executive Summary

This report has been prepared at the request of Ms. Kelly Jeffery (proprietor). It relates to the proposed re-development works at Land off Barnfields Lane, Kingsley, Stoke-on-Trent, Staffordshire, ST10 2DG (OS Grid Reference: SK 00617 46780). This survey effort involved both a desktop study and field survey being undertaken.

Under the current proposals, the plans are to construct four bungalows on the land. See **Figure 1** for more details.

Staffordshire Ecological Record (SER) was commissioned to carry out an ecological data search of all protected species and sites recorded within a 2km radius of the site. No records lay on the proposed re-development site itself, although a number of records are present in close proximity. Please see **Section 3** for a review of the records revealed.

The preliminary ecological appraisal survey revealed multiple habitats on site. The phase 1 habitat map, habitat codes and target notes for the site are located within **Appendix D**. The following habitats were recorded on site (in habitat code order):

- **A2.1** – Scattered Scrub
- **A3.1** – Scattered Trees
- **B4** – Improved Grassland
- **J1.2** – Amenity Grassland
- **J2.1.2** - Species Poor Hedge
- **J2.3.2** – Species Poor Hedge with Trees
- **J2.4** – Fence
- **J5** – Other (brash pile)

Designated Sites:
No designated sites that were revealed by the ecological data search provided by SER fell on the proposed re-development site itself.

Habitats:
Priority Habitats: No habitats of conservation concern were located on the site itself. Therefore, the proposed scheme of works will not impact upon any rare or valuable habitats.

Trees: Although no Tree Protection Orders have been identified, current proposals see the two trees in the hedgerow retained. It has been noted that the root protection areas for trees needs to be identified and adhered to for the installation of the solar farm. This is to protect the trees and ensure that their growth is not inhibited.

Wildlife Corridors: It is recommended that designated wildlife corridors are incorporated into the design scheme of the site. This will be identified within a soft landscaping plan that will also offer a management strategy that is required to be adhered to.

Species:

Amphibians: Due to the suitable water features within the local landscape, it will be necessary to undertake eDNA surveys of the waterbodies within 500m radius of the site. Four ponds and two ditches have been identified within 500m of the site. These surveys can be done from mid-April to late-June. If the results from these assessments come back positive, then further presence/absence surveys are required to establish a population count.

Badgers (*Meles meles*): Although no badger setts were observed on or immediately offsite at the time of the survey, activity patterns of this species can change over a short time. It is therefore recommended that an updated badger survey is undertaken if works do not commence within six months of the survey date (8th of February 2023).

Additionally, during construction works, excavations should be left closed overnight, or a mammal ladder installed. The ladder needs to be of a size suitable for badgers and can be constructed out of a piece of wood/timber.

Bats: The site itself has a low potential for bats, with the scattered trees scrub and hedgerows having potential for foraging bats, and the mature trees on the hedgerow providing suitable roosting habitats. As the trees are being retained under current proposals, no bat surveys are required on the trees. On the site itself, no artificial lighting is to be shone on any scattered trees, shrubs, linear features such as the hedgerows. An artificial lighting plan is required. All lighting must avoid the features of interest for the local bat populations. This is required due to the suitable habitats within the local landscape meaning there is likely to be foraging and commuting bats present in the area.

Birds: Due to the nests found in the scattered trees as well as suitable bird foraging/breeding habitat being present on site in the form of hedgerows and improved grassland, the site is of a high priority to nesting birds.

As a precautionary measure, it is recommended that any vegetation removal is undertaken outside of the bird breeding season (March to August, inclusive). If these features are required to be altered during the bird breeding season, then a further inspection by a suitably qualified ecologist is required no more than twenty-four hours before this process commences. This is to ensure that no active nest site is illegally destroyed, due to the protection afforded to all active bird nests under the Wildlife and Countryside Act 1981. If an active nest is found by a site inspection, an exclusion zone around the nest will be necessary to preserve this feature until the chicks have fledged the nest.

Hedgehogs (*Erinaceus europaeus*): If the trees, brash pile, or other dense vegetation is cleared between the 1st of November and the 31st of March, then an inspection by a suitably qualified ecologist is required to ensure no hibernating hedgehogs are present on site.

It is recommended that precautionary measures are incorporated if construction is undertaken at other times of the year. This will be to create provisions for hedgehogs to escape from all trenches dug into the ground, by creating slopes or providing ramps at the end of each working day. Additionally, any pipework left on site that is greater than 150mm in diameter will need to be planked off. Should this information be strictly adhered to, then the development works will not negatively impact on the local mammal populations.

Reptiles: The site itself is considered to contain the potential to support local reptilian populations. Due to the impacts being incurred during the construction phase, a reptile method statement will be required for the phasing of the works to ensure that no reptiles are harmed by the works. The necessary habitat features, management and connectivity for reptiles during the operational phase will be secured within the Biodiversity Net Gain Scheme.

Site Enhancements:

For the proposed site enhancements, please see **Section 5.4** of this report.

Biodiversity Net Gain:

Biodiversity Net Gain needs to be ensured within the scheme of works and this will be devised utilising the latest DEFRA metric.

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1. Introduction

1.1 Report Rationale

This report has been prepared at the request of Ms Kelly Jeffery (proprietor). It relates to the proposed re-development works at the Land off Barnfields Lane, Kingsley, Stoke-on-Trent, Staffordshire, ST10 2DG (OS Grid Reference: SK 00617 46780). This survey effort involved both a desktop study and field survey being undertaken.

The main purpose of this assessment was to identify the broad habitats (as stated in the JNCC Phase 1 Handbook) and the flora species present within the survey area, with any further evidence of protected species usage and/or features of potential ecological interest also included. The field survey was carried out on the 8th of February 2023 by **Mr. Richard Millington:** BSc (Hons), ACIEEM, CERPIT, Principal Ecologist and **Mr. Lewis Simpson:** BSc (Hons), Assistant Ecologist.

1.2 Site Description and Works

The site is located in the small village of Kingsley, which is situated within the Staffordshire Moorlands near to the town of Cheadle, which is found 3km to the south.

The site, measuring approximately 0.24ha, contains a number of habitats. These include amenity grassland, brash pile, fence, improved grassland, scattered scrub, scattered trees, species-poor hedge and species-poor hedge with trees. The habitats on site could have the potential to support a number of protected species. Photographs of the site are found within **Appendix E**.

Within the wider landscape, further habitats are present. These come in the form of amenity grassland, arable land, buildings (and their associated gardens/yards), hard standing ground, hedgerows, scrubland, scattered trees, standing water and woodland. The habitats that surround the site also have the potential to be utilized by a variety of protected species.

Under the current proposals, the plans are to construct four bungalows on the land. This will result in both the permanent and temporary loss and/or alteration of some of the habitats located on the proposed re-development site.

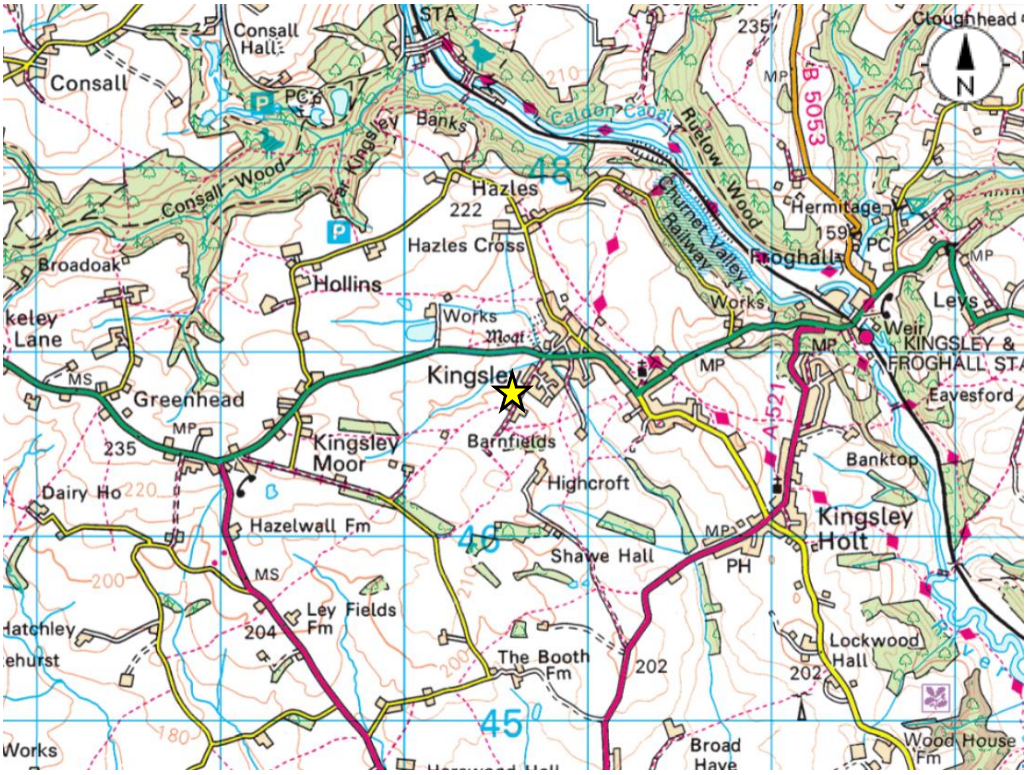
Figure 1: An aerial map showing the boundary of the site at Land off Barnfields Lane, Kingsley (as shown by the red outline).



Figure 2: An aerial map showing the boundary of the site at Land off Barnfields Lane, Kingsley (as shown by the yellow star) in relation to some of the local landscape.



Figure 3: An OS map obtained from Bing showing the location of Land off Barnfields Lane, Kingsley (yellow star).



2. Survey Methodology

2.1 Desktop Survey

A variety of resources were independently consulted to assess the known local records within the nearby area and the importance of the site within the local landscape from an ecological perspective. The resources used were the Local Records Centre, www.naturalengland.org.uk, www.ordnancesurvey.co.uk, Google Maps, Google Earth, and Bing Maps. A search of other relevant nature conservation information was made through the use of the Multi-Agency Geographic Information for the Countryside (MAGIC) database.

The local records centre was contacted to provide data on all protected species and sites within 2km of the proposed development site. Staffordshire Ecological Record (SER) was the relevant local record centre for this project.

2.2 Field Survey

A Preliminary Ecological Appraisal (previously referred to as an Extended Phase 1 Habitat Survey) was carried out using the method outlined in the JNCC Handbook for *Phase 1 Habitat Survey: a technique for environmental audit (2010)*. This method aims to map and describe the broad habitat types and notable features present on the surveyed site.

As part of the field survey, the floral species will be identified and noted down. This will consider the dominant, abundant, frequent, occasional, and rare (DAFOR) species within each habitat on the survey site. The impacts of the proposed development scheme will be assessed by this report.

Each habitat will be assessed for the presence and/or the potential presence of protected species. The impacts of the proposed scheme of works on all potential protected species on site will be assessed. From this, either remedial action or recommended phase 2 presence/absence surveys will be devised.

Some of the classification codes and colours listed within the JNCC handbook may have been slightly modified for this project.

Habitat Surveys can be carried out at any time of the year, with the optimal time period falling between the months of April through until September. This survey was carried out in February 2023, which is outside the optimal time period for flora surveys. However, Elite Ecology feels confident that this report reflects an accurate representation of the site's suitability for protected species to be present.

All sites surveyed by Elite Ecology will be run against the relevant Local Wildlife Site Criteria to assess whether or not they meet the required standards.

3. Desktop Survey Results

3.1 Statutory Sites

The ecological data received from SER revealed three statutory protected site (e.g. LNR, SSSI, SPA, SAC or Ramsar) within the 2km radius of the site. These were as follows:

Site Name	Designation	Approx. Distance (m)	Heading
Churnet Valley	SSSI	1,400	N
Consall LNR	LNR	1,280	NW
Froghall Meadow and Pastures	SSSI	1,620	E

3.2 Non-statutory Sites

The ecological data received from SER confirmed the presence of eleven non-statutory protected site within 2km of the site. These were in the form on Local Wildlife Sites (LWS) and Retained BAS. They are as follows:

Site Name	Designation	Approx. Distance (m)	Heading
Adams Hollow	Retained BAS	795	SE
Bank Sprink	Retained BAS	1,090	NE
Brough's Wood	Local Wildlife Site	1,630	W
Coldley Banks	Local Wildlife Site	1,330	NE
Consall Forge	Retained Grade 1 SBI	2,000	NW
Coombes & Churnet Valleys	RSPB Reserve	1,400	N
Dale Sprink Pastures	Local Wildlife Site	1,910	NW
Gorsey Wood	Retained BAS	1,950	SE
Hazlescross (east of)	Local Wildlife Site	951	N
Kingsley Holt (east of)	Local Wildlife Site	1,930	SE
Whiston Bridge (west of)	Local Wildlife Site	1,730	E

3.3 Woodland Sites

The information provided by SER revealed sixteen Ancient and Semi-natural Woodland (ASNW) and Ancient Replanted Woodland sites within the 2km search radius. They are as follows:

Site Name	Designation	Approx. Distance (m)	Heading
Bank Sprink	Ancient & Semi-Natural Woodland	1,160	NE
Crowgutter and Booth's Woods	Ancient & Semi-Natural Woodland	1,660	N
Hazles Wood	Ancient & Semi-Natural Woodland	1,180	N
Lawn and Ladyparks Woods	Ancient & Semi-Natural Woodland	1,790	NW
Lawn and Ladyparks Woods	Ancient Replanted Woodland	1,920	NW
Moseymoor Wood	Ancient Replanted Woodland	1,970	NE
Ruelow Wood	Ancient & Semi-Natural Woodland	1,670	NE
Ruelow Wood	Ancient & Semi-Natural Woodland	1,550	NE
Ruelow Wood	Ancient & Semi-Natural Woodland	1,630	NE
Ruelow Wood	Ancient & Semi-Natural Woodland	1,860	NE
Ruelow Wood	Ancient & Semi-Natural Woodland	1,930	NE
Ruelow Wood	Ancient Replanted Woodland	1,490	NE
Ruelow Wood	Ancient Replanted Woodland	1,650	NE
Ruelow Wood	Ancient Replanted Woodland	1,790	NE
Waste Wood	Ancient & Semi-Natural Woodland	814	SW
Waste Wood	Ancient & Semi-Natural Woodland	686	SW

3.4 Regionally Important Geological Sites (RIGS)

The information provided by SER revealed two RIGS within the 2km search radius. These were as follows:

Site Name	Designation	Approx. Distance (m)	Heading
Far Kingsley Banks	RIGS	1,520	N
Hazles Wood	RIGS	1,720	NW

3.5 Species Records

3.5.1 Amphibians

Within the ecological data search provided by SER, two amphibian species have been identified within 2km of the survey site. These come in the form of common toad (*Bufo bufo*) and great crested newt (*Triturus cristatus*). The closest record is of great crested newt located approximately 200m to the south-east of the site centroid.

3.5.2 Birds

Within the ecological data set received by SER, eighty-six bird species were revealed. The closest records to the proposed works site are of greenfinch (*Chloris chloris*), hawfinch (*Coccothraustes coccothraustes*), redwing (*Turdus iliacus*), and woodpigeon (*Columba palumbus*), which were all recorded approximately 630m to the north-east of the site centroid. A table with the collated bird species recorded can be found within **Appendix B**.

3.5.3 Bony Fish (Actinopterygii)

Within the ecological data search provided by SER, two records of bony fish species were revealed within the 2km search radius of the site centroid. These were brown trout (*Salmo trutta subsp. fario*) and bullhead (*Cottus gobio*). The nearest record was of brown trout which was located approximately 1,959m to the east of the site centroid.

3.5.4 Flora

Within the ecological data search provided by SER, twenty-one floral species have been revealed, of which eight are invasive. The closest of the higher plants was bluebell (*Hyacinthoides non-scripta*) which was located approximately 779m to the south-west of the site centroid.

3.5.5 Fungi

Within the ecological data search provided by SER, one fungi species has been revealed within 2km of the site. This was pink meadow cap (*Hygrocybe calyptriformis var. calyptriformis*). No distance has been provided.

3.5.6 Invertebrates

Within the ecological data search provided by SER, seventy-seven records have been identified within a 2km radius of the site. The closest record was of hornet (*Vespa crabro*) which was recorded approximately 564m to the north-east of the site centroid. A table with the collated invertebrate species recorded can be found within **Appendix B**.

3.5.7 Liverworts

Within the ecological data search provided by SER, one liverwort species has been revealed within 2km of the site. This was Meylan's pouchwort (*Calypogeia integristipula*). Due to the four-figure grid reference provided in the ecological data, an accurate distance of this record from the site could not be determined.

3.5.8 **Mammals**

Bats

Within the ecological data search provided by SER, fourteen species of bat were revealed within the 2km search radius.

The UKBAP species recorded in the search were brown long-eared (*Plecotus auritus*), noctule (*Nyctalus noctula*) and soprano pipistrelle (*Pipistrellus pygmaeus*) bats.

The non-BAP species recorded in the search were Brandt's (*Myotis brandtii*), common pipistrelle (*Pipistrellus pipistrellus sensu stricto*), Daubenton's (*Myotis daubentonii*), Leisler's (*Nyctalus leisleri*), Natterer's (*Myotis nattereri*), whiskered (*Myotis mystacinus*), and whiskered/Brandt's (*Myotis mystacinus/brandtii*) bats.

Also recorded were bats (Chiroptera), pipistrelle bat species (*Pipistrellus sp.*), pipistrelle (Pipistrellus pipistrellus sensu lato), and unidentified Myotis bat (*Mytois sp.*).

The closest record to the survey site was of unidentified Myotis bat (*Myotis sp.*) found approximately 477m to the north-east of the site centroid.

Other Mammals

The ecological data search provided by SER, revealed ten other mammals within the 2km search radius. These come in the form of American mink (*Neovison vison*), brown hare (*Lepus europaeus*), Eurasian badger (*Meles meles*), European otter (*Lutra lutra*), European water vole (*Arvicola amphibius*), harvest mouse (*Micromys minutus*), hazel dormouse (*Muscardinus avellanarius*), pine marten (*Martes martes*), polecat (*Mustela putorius*), and west European hedgehog (*Erinaceus europaeus*). The closest record to the proposed site is of west European Hedgehog located approximately 283m to the north-east of the site centroid.

3.5.9 **Mollusc**

Within the ecological data search provided by SER, three mollusc species were identified within 2km of the survey site. These were large black slug (*Arion (Arion) ater*), marsh pond snail (*Stagnicola palustris/fuscus/corvus agg*.) and mud snail (*Omphiscola glabra*). The nearest record to the site was of marsh pond snail which was recorded approximately 1,799m to the north of the site centroid.

3.5.10 **Moss**

Within the ecological data search provided by SER, five moss species were identified within 2km of the survey site. These were blunt-leaf tufa moss (*Gymnostomum calcareum*), bright silk-moss (*Plagiothecium laetum*), many-flowered Leskea (*Pylaisia polyantha*), marsh thyme-moss (*Plagiomnium ellipticum*), and tiny feather-moss (*Amblystegium confervoides*). Due to the four-figure grid references provided in the ecological data, the closest record to the site could not be determined.

3.5.11 **Reptiles**

Within the ecological data search provided by SER, two reptile species have been identified within 2km of the survey site. These were adder (*Vipera berus*) and grass snake (*Natrix helvetica*). The closest recorded was of grass snake which was recorded approximately 1,201m to the north-west of the site centroid.

4. Field Survey

4.1 Habitats

The preliminary ecological appraisal survey revealed multiple habitats on site. The phase 1 habitat map, habitat codes and target notes for the site are located within **Appendix D**. The following habitats were recorded on site and in the surrounding area (in habitat code order):

On Site:

4.1.1 A2.2 – Scattered Scrub

Scattered scrub can be found in patches on the boundary of the site. One patch can be found in the north-eastern corner and one can be found along the western border. Bramble (*Rubus fruiticosus*) was the dominant species found in this habitat with dogrose (*Rosa canina*) and rosebay willowherb (*Chamaenerion angustifolium*) being found occasionally. This habitat has the potential to support a number of protected species such as birds and herptiles by providing cover.

4.1.2 A3.1 – Scattered Trees

A patch of immature scattered trees can be found at the north of the site. This habitat was dominated by hawthorn (*Crataegus monogyna*), although English oak (*Quercus robur*) was found occasionally, with blackthorn (*Prunus spinosa*) and holly (*Ilex aquifolium*) were found rarely. In the understory ivy (*Hedera helix*) was found frequently and bracken (*Pteridium aquilinum*) was found rarely. This habitat has the potential to be used by protected species such as birds and hedgehogs. Several bird nests were found in the trees.

4.1.3 B4 – Improved Grassland

The majority of the site is made of improved grassland. Grass species found within this habitat include cock's-foot (*Dactylis glomerata*) which was found abundantly. Annual meadow grass (*Poa annua*), fescue (*Festuca sp.*) and perennial ryegrass (*Lolium perenne*) were also found occasionally. Several other plant species were found occasionally within this habitat. These were broadleaved dock (*Rumex obtusifolius*), cleavers (*Galium aparine*), common hogweed (*Heracleum sphondylium*), cow parsley (*Anthriscus sylvestris*), dandelion (*Taraxacum officinale*), meadow buttercup (*Ranunculus repens*), rosebay willowherb (*Chamaenerion angustifolium*), and soft rush (*Juncus effusus*) occurred rarely.

Towards the southern end of the site, the grassland has started succeeding into scrub with bramble present throughout, although at this stage the bramble cover is too insufficient to class the area as scrub.

This habitat is likely to be used by commuting and foraging herptile and mammal species. The sward height is also high enough to provide cover for ground nesting birds.

4.1.4 **J1.2 – Amenity Grassland**

Amenity grassland can be found as a roadside verge that runs along the eastern edge of the site. Cock's-foot (*Dactylis glomerata*) was found abundantly, with common nettle (*Urtica dioica*), cleavers (*Galium aparine*), and primrose (*Primula vulgaris*) were found occasionally. This habitat is unlikely to support protected species due to the short sward height, although animals be commute across it to access the site.

4.1.5 **J2.1.2 – Species-poor Hedge**

A species-poor hedgerow can be found running along the southern boundary of the site. Species in this habitat include holly (*Ilex aquifolium*) which was found abundantly, and wild privet (*Ligustrum vulgare*) was found occasionally. This habitat has the potential to support a number of protected species by providing cover and connectivity for invertebrates, herpetofauna and small mammals, as well as commuting and foraging for bats and nesting for birds.

4.1.6 **J2.3.2 – Species-poor Hedge with Trees**

A species-poor hedge with trees runs along the eastern boundary of the site. The hedge is made of up of hawthorn (*Crataegus monogyna*) and holly (*Ilex aquifolium*) which are both found in abundance, with the southern part of the hedge being mainly hawthorn, and the northern part of the hedge containing mostly holly. Yew (*Taxus baccata*) was also found rarely. A mature English oak (*Quercus robur*) and sycamore (*Acer pseudoplanatus*) are found within the hedge. This habitat has the potential to support a number of protected species by providing cover and connectivity for invertebrates, herpetofauna, and small mammals, as well as commuting and foraging for bats and nesting for birds. Both trees have a low bat roosting potential.

4.1.7 **J2.3.4 – Fence**

A post and wire fence runs along the western boundary of the site. A fence with wooden posts and wire mesh can also be found close to the access track. These habitats are of no ecological significance and pose no barriers to prevent protected species commuting through the site.

4.1.8 **J5 – Other (Brash Pile)**

A brash pile can be found within the scattered trees to the north of the site. This habitat has the potential to support herptile species as well as hibernating hedgehogs.

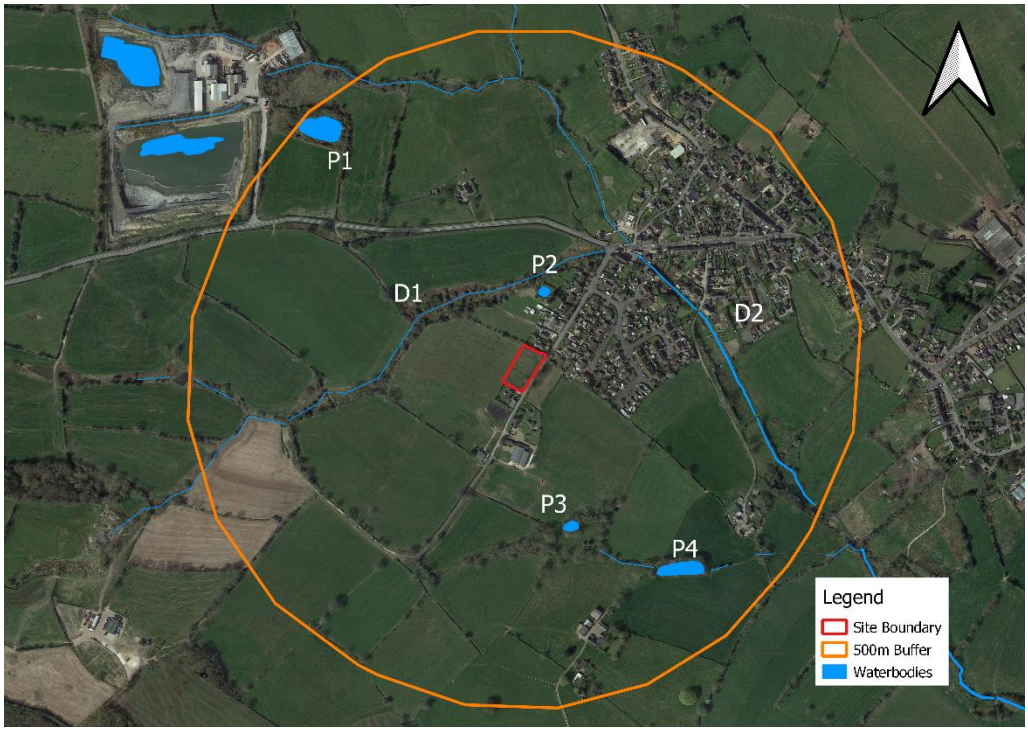
4.2 Species

The preliminary ecological appraisal survey revealed that the habitats that have been outlined for the proposed development area do contain protected species potential. The following assessment has also considered the adjacent habitats and connectivity to the wider landscape for all protected and rare species.

4.2.1 Amphibians (including great crested newts)

The survey uncovered terrestrial habitats suitable to great crested newts (*Triturus cristatus*), such as the scattered scrub and hedgerows. There are no ponds or ditches present on site, however four ponds (**P1**-**P4**) and two ditches (**D1** and **D2**) have been identified within 500m of the survey site (**Figure 4**). Due to amphibians being recorded in the local landscape, including great crested newts, further survey effort is required for the survey site (please see **Section 5.3**).

Figure 4: A map showing the locations of the waterbodies recorded within 500m of the survey site.



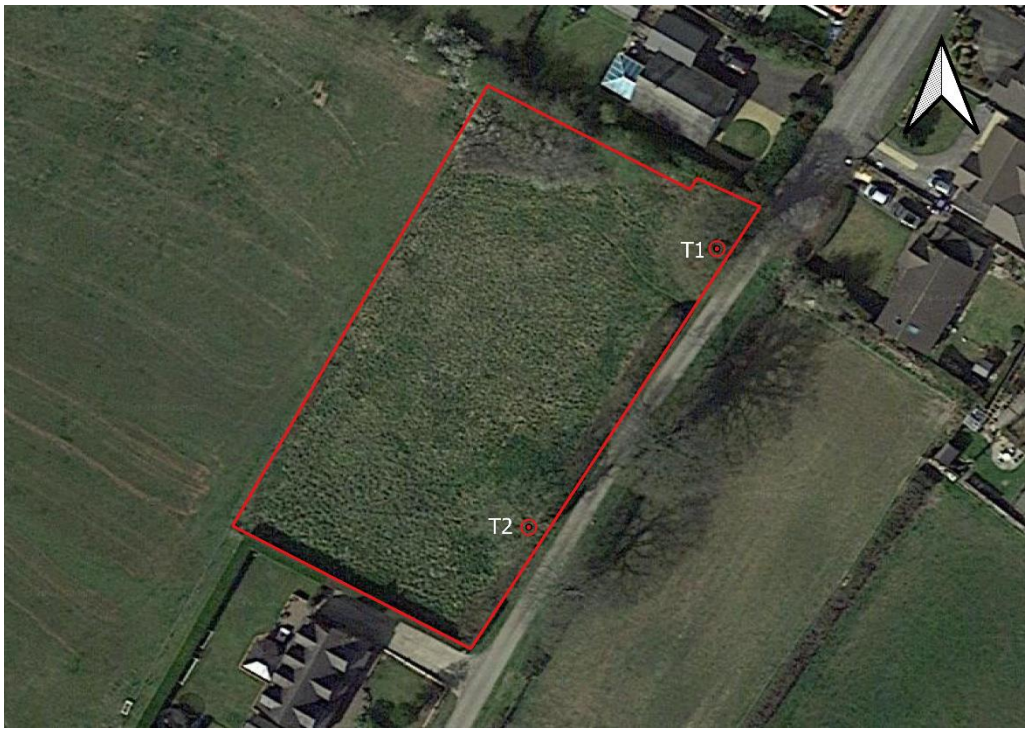
4.2.2 Badgers (*Meles meles*)

During the site visit no setts or signs were observed. While several mammal tracks were identified they could not be attributed to badgers. It is possible that badgers would commute across the site. As such, further recommendations are given (please see **Section 5.3**).

4.2.3 Bats

The habitats on site are likely to support a number of common bat species within the area for foraging and commuting purposes. Both the sycamore (**T1**) and oak (**T2**) trees have low bat roosting potential (**Figure 5**). Further recommendations are given for bats in **Section 5.3**.

Figure 5: A map showing the locations of the trees with low bat roosting potential.



4.2.4 Birds

Several bird nests were identified within the scattered trees found on site as well as in **T1**. Other habitats on site such as the hedgerows also hold potential for nesting birds. Therefore, further recommendations are given (see **Section 5.3**).

4.2.5 Flora

The site contains no protected floral species. The habitats are not considered likely to support any protected floral species, with no additional survey work required to ascertain the impacts of the works to flora.

4.2.6 Hedgehogs (*Erinaceus europaeus*)

The site has suitable hibernation habitats for hedgehogs in the form of hedgerows, scattered trees, and brash pile. Woodland can also be found within 2km of the site. Therefore, further precautionary measures are required for the survey site (please see **Section 5.3**).

4.2.7 **Invertebrates**

The habitats on site have the potential to support a variety of common invertebrate species. Therefore, no further survey effort is required.

4.2.8 **Molluscs**

Due to the habitats on site, molluscs are likely to be common species, meaning no further survey effort is required.

4.2.9 **Reptiles**

The habitats on site such as the scattered scrub, hedgerows, and brash pile have the potential to support reptile species. Due to this, further action is required (please see **Section 5.3**).

4.3 Potential Impacts of the Works

Based upon the results from the desktop survey, field survey and using a degree of academic supposition, the uncompensated development impacts have been summarised as follows:

- Amphibians – **Low**
- Badgers – **Moderate**
- Bats – **Low**
- Birds – **High**
- Crustaceans – **Negligible**
- Fish – **Negligible**
- Flora – **Low**
- Hedgehogs – **Moderate**
- Invertebrates – **Low**
- Molluscs – **Negligible**
- Reptiles – **Low**

5. Recommendations

5.1 Designated Sites

No designated sites that were revealed by the ecological data search provided by SER fell on or adjacent to the proposed re-development site itself. Therefore, the proposed re-development will have no impact upon any local designated sites as the works are due to remain within the site boundary.

5.2 Habitats

5.2.1 Priority Habitats

No habitats of conservation concern were located on the site itself. Therefore, the proposed scheme of works will not impact upon any rare or valuable habitats.

5.2.2 Trees

Although no Tree Protection Orders have been identified, current proposals see the two trees in the hedgerow retained. It has been noted that the root protection areas for trees needs to be identified and adhered to for the installation of the solar farm. This is to protect the trees and ensure that their growth is not inhibited.

5.2.3 Wildlife Corridors

It is recommended that designated wildlife corridors are incorporated into the design scheme of the site. This will be identified within a soft landscaping plan that will also offer a management strategy that is required to be adhered to. Linear features that enhance the site for a number of species should also be maintained during and after the scheme of works.

5.3 Species

The site was found to contain the potential to support protected and/or rare species. Therefore, the following recommendations are required for the site:

5.3.1 Amphibians

Due to the suitable water features within the local landscape, it will be necessary to undertake eDNA surveys of the waterbodies within 500m radius of the site. Four ponds and two ditches have been identified within 500m of the site. These surveys can be done from mid-April to late-June. If the results from these assessments come back positive, then further presence/absence surveys are required to establish a population count.

5.3.2 **Badgers (*Meles meles*)**

Although no badger setts were observed on or immediately offsite at the time of the survey, activity patterns of this species can change over a short time. It is therefore recommended that an updated badger survey is undertaken if works do not commence within six months of the survey date (8th of February 2023).

Additionally, during construction works, excavations should be left closed overnight, or a mammal ladder installed. The ladder needs to be of a size suitable for badgers and can be constructed out of a piece of wood/timber.

5.3.3 **Bats**

The site itself has a **low** potential for bats, with the scattered trees scrub and hedgerows having potential for foraging bats, and the mature trees on the hedgerow providing suitable roosting habitats. As the trees are being retained under current proposals, no bat surveys are required on the trees.

On the site itself, no artificial lighting is to be shone on any scattered trees, shrubs, linear features such as the hedgerows. An artificial lighting plan is required. All lighting must avoid the features of interest for the local bat populations. This is required due to the suitable habitats within the local landscape meaning there is likely to be foraging and commuting bats present in the area.

5.3.4 **Birds**

Due to the nests found in the scattered trees as well as suitable bird foraging/breeding habitat being present on site in the form of hedgerows and improved grassland, the site is of a high priority to nesting birds.

As a precautionary measure, it is recommended that any tree removal is undertaken outside of the bird breeding season (March to August, inclusive). If these features are required to be altered during the bird breeding season, then a further inspection by a suitably qualified ecologist is required no more than twenty-four hours before this process commences. This is to ensure that no active nest site is illegally destroyed, due to the protection afforded to all active bird nests under the Wildlife and Countryside Act 1981. If an active nest is found by a site inspection, an exclusion zone around the nest will be necessary to preserve this feature until the chicks have fledged the nest.

5.3.5 **Hedgehogs (*Erinaceus europaeus*)**

If the trees, brash pile, or other dense vegetation is cleared between the 1st of November and the 31st of March, then an inspection by a suitably qualified ecologist is required to ensure no hibernating hedgehogs are present on site. It is recommended that precautionary measures are incorporated if construction is undertaken at other times of the year. This will be to create provisions for hedgehogs to escape from all trenches dug into the ground, by creating slopes or providing ramps at the end of each working day. Additionally, any pipework left on site that is greater than 150mm in diameter will need to be planked off. Should this information be strictly adhered to, then the development works will not negatively impact on the local mammal populations.

5.3.6 **Reptiles**

The site itself is considered to contain the potential to support local reptilian populations. Due to the impacts being incurred during the construction phase, a reptile method statement will be required for the phasing of the works to ensure that no reptiles are harmed by the works.

The necessary habitat features, management and connectivity for reptiles during the operational phase will be secured within the Biodiversity Net Gain Scheme.

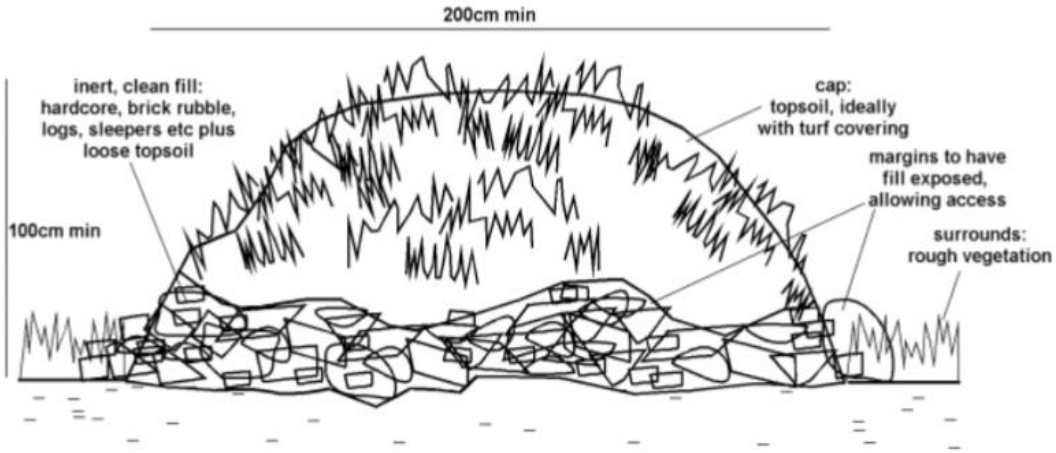
5.4 Site Enhancements

For the proposed development works, the following site enhancement measures could be incorporated into the site post-development. These measures are optional but are bespoke to the site surveyed for the enhancement of biodiversity. Once the options have been finalised, the locations of these features should be placed on a master plan.

5.4.1 **Amphibians**

It is recommended that hedgerows, rough grassland, scrubland, and/or woodland is included around the site. It is also recommended that a hibernaculum is included into the design scheme. These are usually comprised of rubble, rock, log piles, and earth banks. An example design for the hibernacula can be seen within **Figure 6**.

Figure 6: A diagram illustrating the recommended hibernacula (GCN Mitigation Guidelines)



5.4.2 Bats

The site can be enhanced by introducing a bat friendly planting scheme in the soft landscaping plan. The table below outlines species recommended by the Bat Conservation Trust, all of which could be incorporated into the site post development.

Flowers for borders	Trees, shrubs & climbers
Aubretia	Bramble
Candytuft	Common alder
Cherry pie	Dogrose
Corncockle	Elder
Corn marigold	English oak
Corn poppy	Gorse
Echniacea	Guelder rose
English bluebell	Hawthorn
Evening primrose	Hazel
Field poppies	Honeysuckle (native)
Honesty	Hornbeam
Ice plant 'pink lady'	Ivy
Knapweed	Jasmine
Mallow	Pussy willow
Mexican aster	Rowan
Michaelmas daisy	Silver birch
Night-scented stock	**Herbs**
Ox-eye daisy	Angelica
Phacelia	Bergamot
Poached egg plant	Borage
Primrose	Coriander
Red campion	English marigolds
Red valerian	Fennel
Scabious	Feverfew
St. John's Wort	Hyssop
Sweet William	Lavenders
Tobacco plant	Lemon balm
Verbena	Marjoram
Wallflowers	Rosemary
Wood forget-me-not	Sweet Cicely
Yarrow	Thyme

5.4.3 Birds

The site could be enhanced for birds by installing a variety of bird boxes on site, such as an Apex Bird Box and an Apex Robin Box. Boxes can be ordered by contacting Elite Ecology at: admin@eliteecology.co.uk.

5.4.4 Flora

At present, the site is not considered to have a diverse range of flora. Therefore, it is recommended that a small section of the site is converted into a 'wild meadow' that uses native wildflower seed mixes. A variety of these can be found on the Meadowmania or Wildflower Turf webpages.

To enhance the site for the local bat and bird populations several native shrubs and herbs could be included within the 'wild meadow' which will provide excellent foraging habitat. More information on shrubs for bats can be found on the Wildlife Trust website and more information on shrubs for birds can be found on the RSPB website.

There are several different shrubs to choose from but it is important to avoid invasive species such as buddleia, more information on invasive flora can be found on the RSPB website.

5.4.5 Hedgehogs (*Erinaceus europaeus*)

The site could be enhanced for the local hedgehog population by installing at least two Eco Hedgehog Nest Boxes around the site. These can be ordered by contacting Elite Ecology at: admin@eliteecology.co.uk. This will create more opportunities for hedgehogs within the local landscape.

5.4.6 Invertebrates

At present, the site is not considered to be of any importance to local invertebrate populations. In conjunction with the wildflower planting, it is recommended that at least two Bumblebee Boxes are incorporated into the scheme, along with at least two Bug Hotels. These can be ordered by contacting Elite Ecology at: admin@eliteecology.co.uk This will enhance the site for the local invertebrate populations, which will thus attract species further up in the trophic level. The site would benefit from plants rich in a pollen source throughout the year to enhance the area for the potential of bees. In order to ensure a nectar source year-round it is important to use plants that are relevant to the season. The table below includes just a few examples of which plants thrive through the different seasons to ensure a bee friendly area.

SPRING	SUMMER	AUTUMN	WINTER
• Flowering Cherry • Crab Apple • Hawthorn • Bugle • Daffodils • Pulmonaria • Sea Thrift • Alliums • Grape Hyacinth	• Lavender • Agastache • *Erysimum* 'Bowles' Mauve' • Scabious • Comfrey • Foxgloves • Cardoon • Echinops	• Sedums • Single-flowered Dahlias • *Verbena bonariensis* • Japanese Anemones • Autumn Asters • *Actaea simplex*	• Snowdrops, • Winter Aconites, • Ivy, • Crocuses, • Winter Honeysuckle, • Hellebores, • Mahonia, • *Clematis cirrhosa*

5.4.7 Reptiles

As reptiles are likely to occur on the survey site, the site could be enhanced for the local populations. This should be done by retaining or creating new areas of rough grassland and scrubland, ensuring connectivity with nearby reptile habitats. These should have interfaces between the scrubland and grassland as these transitional zones create a range of microhabitats and microclimates that are favoured by reptile species.

This habitat section will need to have the natural succession ceased to ensure that the habitats remain suitable to the local reptile populations. On this site, this should come in the form of mowing/strimming the habitats on site. This should be done over the winter months when reptiles will be hibernating. Mowing of the grassland should be undertaken every twelve months in November and February of every year. The cuttings from this mowing regime should be left on site in the least disturbed locations to act as potential grass snake (*Natrix helvetica*) egg-laying features. These should measure at least $1m^3$ (the larger the better) and be situated in a sunny location.

Half of the scrubland habitat (and any natural regeneration of trees) should be cut back between mid-September and February once every two years, with the remaining half of this habitat being cut back the following two years (cutting should continue on a rotational basis between these sections). If any reptiles are found during this management process, then Elite Ecology should be contacted immediately to deal with the impacts. It is imperative that the cutting regime is adhered to, as any deviation from the months may result in the direct killing of reptiles.

In this section of habitat, it is recommended that log piles and brash piles are left in scattered locations. These create cover, add structure to the habitats and enhance the availability of food to the reptiles. For this project, a minimum of two of these would be necessary.

Hibernacula should also be scattered though the aforementioned habitats. The hibernacula can be made of cut timber, brash, inert hardcore, bricks, rubble, rocks, tree roots, and building rubble. A minimum of one of these is advised for this project.

The key design features include:

- A sunny location.
- A well-drained section of the site.
- One of the long sides faces south.
- Access for reptiles through openings.
- Location within suitable habitat (rough grassland and scrubland in this scenario).
- Minimal anthropogenic disturbance.
- Measure at least 4m length x 2m width x 1m height, but the larger the better.

Incorporating the above site enhancement features would benefit the local herptile populations and improve their conservation status within the area.

5.5 Biodiversity Net Gain

Biodiversity Net Gain needs to be ensured within the scheme of works and this will be devised utilising the latest DEFRA metric.

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7. Appendices

Appendix A: Site Plans

Appendix B: Desktop Study Table

Appendix C: Desktop Study Maps

Appendix D: Phase 1 Habitat Map

Appendix E: Site Photographs

Appendix F: Biodiversity Legislation and Policy

Appendix G: Bat and Artificial Light

Appendix A: Site Plans



Appendix B: Desktop Study Tables

The results within the following table are a collation of the species identified within the desktop search, undertaken by Staffordshire Ecological Record (SER).

Amphibians	
Common Name	**Latin Name**
Common Toad	*Bufo bufo*
Great Crested Newt	*Triturus cristatus*
Birds	
Common Name	**Latin Name**
Barn Owl	*Tyto alba*
Black-headed Gull	*Chroicocephalus ridibundus*
Brambling	*Fringilla montifringilla*
British Dipper	*Cinclus cinclus subsp. gularis*
Bullfinch	*Pyrrhula pyrrhula*
Common Crossbill	*Loxia curvirostra*
Common Gull	*Larus canus*
Common Sandpiper	*Actitis hypoleucos*
Common Tern	*Sterna hirundo*
Cuckoo	*Cuculus canorus*
Curlew	*Numenius arquata*
Dipper	*Cinclus cinclus*
Dunlin	*Calidris alpina*
Dunnock	*Prunella modularis*
Fieldfare	*Turdus pilaris*
Goshawk	*Accipiter gentilis*
Grasshopper Warbler	*Locustella naevia*
Greenfinch	*Chloris chloris*
Grey Partridge	*Perdix perdix*
Grey Wagtail	*Motacilla cinerea*
Greylag Goose	*Anser anser*
Hawfinch	*Coccothraustes coccothraustes*
Herring Gull	*Larus argentatus*
Hobby	*Falco subbuteo*
Hoopoe	*Upupa epops*
House Martin	*Delichon urbicum*
House Sparrow	*Passer domesticus*
Kestrel	*Falco tinnunculus*
Kingfisher	*Alcedo atthis*
Lapwing	*Vanellus vanellus*

Lesser Black-backed Gull	*Larus fuscus*
Lesser Redpoll	*Acanthis cabaret*
Linnet	*Linaria cannabina*
Little Egret	*Egretta garzetta*
Mallard	*Anas platyrhynchos*
Marsh Harrier	*Circus aeruginosus*
Marsh Tit	*Poecile palustris*
Meadow Pipit	*Anthus pratensis*
Mealy Redpoll	*Acanthis flammea subsp. flammea*
Merlin	*Falco columbarius*
Mistle Thrush	*Turdus viscivorus*
Moorhen	*Gallinula chloropus*
Osprey	*Pandion haliaetus*
Oystercatcher	*Haematopus ostralegus*
Peregrine	*Falco peregrinus*
Pied Flycatcher	*Ficedula hypoleuca*
Pink-footed Goose	*Anser brachyrhynchus*
Poecile montana subsp. kleinschmidti	*Poecile montanus subsp. kleinschmidti*
Red Kite	*Milvus milvus*
Redshank	*Tringa totanus*
Redstart	*Phoenicurus phoenicurus*
Redwing	*Turdus iliacus*
Reed Bunting	*Emberiza schoeniclus*
Ring Ouzel	*Turdus torquatus*
Ringed Plover	*Charadrius hiaticula*
Rook	*Corvus frugilegus*
Ruddy Shelduck	*Tadorna ferruginea*
Sedge Warbler	*Acrocephalus schoenobaenus*
Shelduck	*Tadorna tadorna*
Short-eared Owl	*Asio flammeus*
Skylark	*Alauda arvensis*
Snipe	*Gallinago gallinago*
Song Thrush	*Turdus philomelos*
Sparrowhawk	*Accipiter nisus*
Spotted Flycatcher	*Muscicapa striata*
Starling	*Sturnus vulgaris*
Stock Dove	*Columba oenas*
Swift	*Apus apus*
Tawny Owl	*Strix aluco*
Teal	*Anas crecca*
Tree Pipit	*Anthus trivialis*
Troglodytes troglodytes subsp. indigenus	*Troglodytes troglodytes subsp. indigenus*
Wheatear	*Oenanthe oenanthe*
Whinchat	*Saxicola rubetra*

White Stork	*Ciconia ciconia*
Whooper Swan	*Cygnus cygnus*
Willow Tit	*Poecile montanus*
Willow Warbler	*Phylloscopus trochilus*
Wood Warbler	*Phylloscopus sibilatrix*
Woodcock	*Scolopax rusticola*
Woodpigeon	*Columba palumbus*
Wren	*Troglodytes troglodytes*
Yellow Wagtail	*Motacilla flava*
Yellow Wagtail	*Motacilla flava subsp. flavissima*
Yellowhammer	*Emberiza citrinella*
Yellow-legged Gull	*Larus michahellis*
Bony Fish (Actinopterygii)	
Common Name	**Latin Name**
Brown Trout	*Salmo trutta subsp. fario*
Bullhead	*Cottus gobio*
Flora	
Common Name	**Latin Name**
Bluebell	*Hyacinthoides non-scripta*
Canadian Waterweed	*Elodea canadensis*
Dyer's Greenweed	*Genista tinctoria*
Floating Water-plantain	*Luronium natans*
Fringed Water-lily	*Nymphoides peltata*
Frogbit	*Hydrocharis morsus-ranae*
Galingale	*Cyperus longus*
Good-King-Henry	*Chenopodium bonus-henricus*
Greater Butterfly-orchid	*Platanthera chlorantha*
Green-leaved Hawkweed	*Hieracium acuminatum*
Heath Dog-violet	*Viola canina*
Indian Balsam	*Impatiens glandulifera*
Japanese Knotweed	*Fallopia japonica*
Large-flowered Hemp-nettle	*Galeopsis speciosa*
Marsh Stitchwort	*Stellaria palustris*
Monkeyflower	*Mimulus guttatus*
Rhododendron ponticum	*Rhododendron ponticum*
Rhododenron	*Rhododendron*
Shrubby Cinquefoil	*Potentilla fruticosa*
Wild Pansy	*Viola tricolor*
Winter Heliotrope	*Petasites fragrans*

Fungi	
Common Name	**Latin Name**
Pink meadow cap	*Hygrocybe calyptriformis var. calyptriformis*
Invertebrates	
Common Name	**Latin Name**
Alder Leaf Beetle	*Agelastica alni*
Ancistrocerus oviventris	*Ancistrocerus oviventris*
Argent & Sable	*Rheumaptera hastata*
Ashy Mining Bee	*Andrena cineraria*
Autumnal Rustic	*Eugnorisma glareosa*
Bloomed Furrow Bee	*Lasioglossum albipes*
Blue Mason Bee	*Osmia caerulescens*
Brown-footed Leafcutter Bee	*Megachile versicolor*
Buff Ermine	*Spilosoma lutea*
Buffish Mining Bee	*Andrena nigroaenea*
Buff-Tailed Bumble Bee	*Bombus terrestris*
Bumble Bee	*Bombus*
Chocolate Mining Bee	*Andrena scotica*
Chrysis ignita	*Chrysis ignita*
Cinnabar	*Tyria jacobaeae*
Clarke's Mining Bee	*Andrena clarkella*
Comfrey Ermel	*Ethmia quadrillella*
Common Carder Bee	*Bombus pascuorum*
Common Darter	*Sympetrum striolatum*
Common Fan-foot	*Pechipogo strigilata*
Common Wasp	*Vespula vulgaris*
Ctenophora pectinicornis	*Ctenophora pectinicornis*
Davies' Colletes	*Colletes daviesanus*
Dicranomyia chorea	*Dicranomyia chorea*
Dicranomyia lucida	*Dicranomyia lucida*
Dicranota robusta	*Dicranota robusta*
Dingy Skipper	*Erynnis tages tages*
Dolichovespula media	*Dolichovespula media*
Dusky Brocade	*Apamea remissa*
Dusky Thorn	*Ennomos fuscantaria*
Ear Moth	*Amphipoea oculea*
Early Bumble Bee	*Bombus pratorum*
Feathered Gothic	*Tholera decimalis*
Field Digger Wasp	*Argogorytes mystaceus*

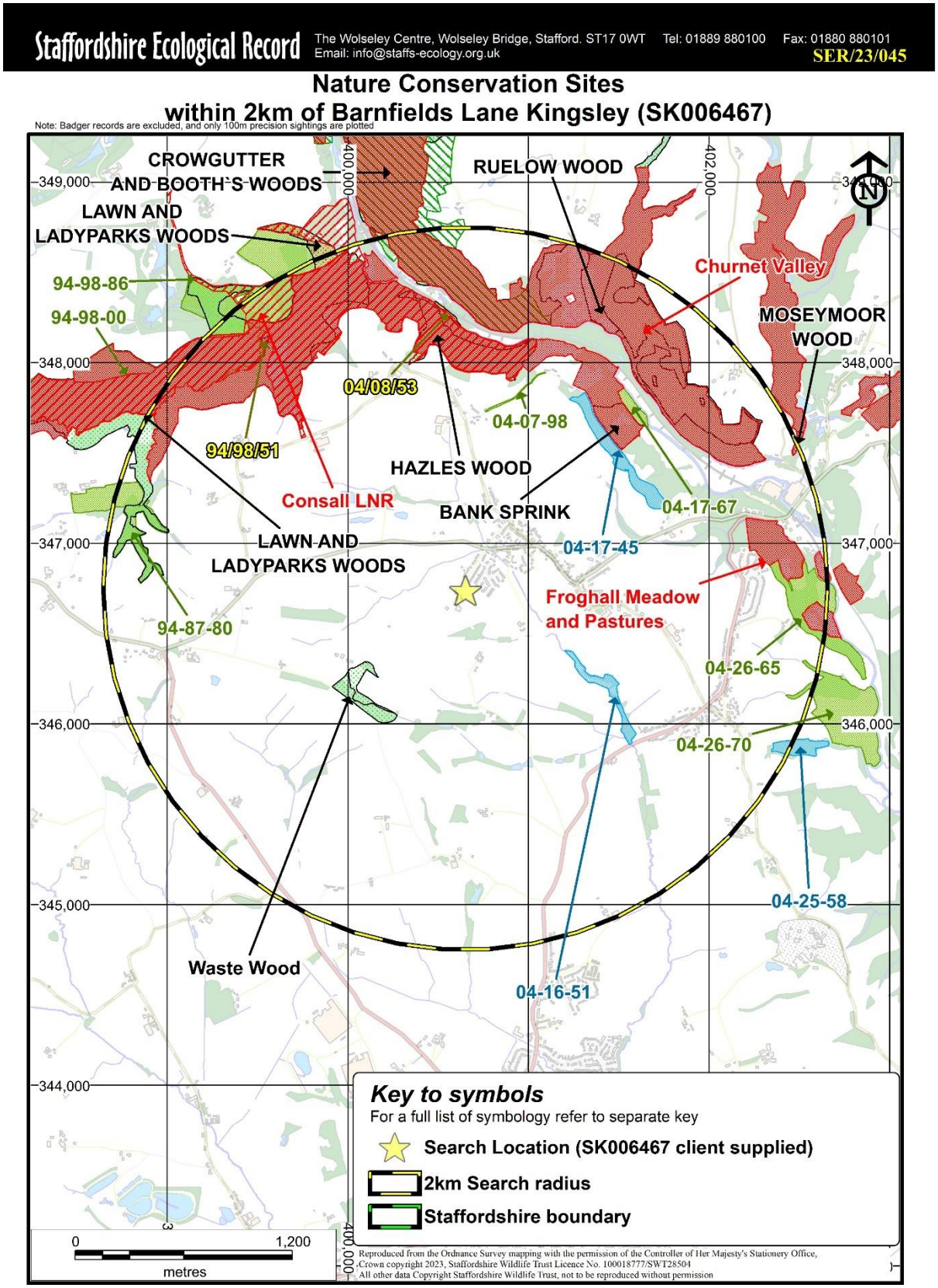
Forest Cuckoo Bee	*Bombus sylvestris*
Forester	*Adscita statices*
Fork-tailed Flower Bee	*Anthophora furcata*
Ghost Moth	*Hepialus humuli*
Grey Dagger	*Acronicta psi*
Grey-patched Mining Bee	*Andrena nitida*
Hawksbeard Mining Bee	*Andrena fulvago*
Hilara merula	*Hilara merula*
Hornet	*Vespa crabro*
Large Red Tailed Bumble Bee	*Bombus lapidarius*
Little Bluebottle	*Calliphora stelviana*
Mouse Moth	*Amphipyra tragopoginis*
Myllaena elongata	*Myllaena elongata*
Nephrotoma crocata	*Nephrotoma crocata*
Northern Yellow Splinter	*Lipsothrix errans*
Oak Hook-tip	*Watsonalla binaria*
Orange-horned Nomad Bee	*Nomada fulvicornis*
Orange-tailed Mining Bee	*Andrena haemorrhoa*
Red Mason Bee	*Osmia bicornis*
Red Wasp	*Vespula rufa*
Rosy Rustic	*Hydraecia micacea*
Rustic	*Hoplodrina blanda*
Sarcophaga villeneuvei	*Sarcophaga villeneuvei*
Sepedophilus bipunctatus	*Sepedophilus bipunctatus*
September Thorn	*Ennomos erosaria*
Shaded Broad-bar	*Scotopteryx chenopodiata*
Small Garden Bumble Bee	*Bombus hortorum*
Small Heath	*Coenonympha pamphilus*
Small Pearl-bordered Fritillary	*Boloria selene*
Small Phoenix	*Ecliptopera silaceata*
Small Square-spot	*Diarsia rubi*
Tanyptera atrata	*Tanyptera atrata*
Tawny Mining Bee	*Andrena fulva*
Thaumastoptera calceata	*Thaumastoptera calceata*
Tree Bumblebee	*Bombus hypnorum*
Vestal (Southern) Cuckoo Bee	*Bombus vestalis*
Wall	*Lasiommata megera*
White Ermine	*Spilosoma lubricipeda*
White-letter Hairstreak	*Satyrium w-album*
White-Tailed Bumble Bee	*Bombus lucorum*
Wool Carder Bee	*Anthidium manicatum*
Yellow Meadow Ant	*Lasius flavus*
Yellow-legged Mining Bee	*Andrena flavipes*

Liverwort	
Common Name	**Latin Name**
Meylan's Pouchwort	*Calypogeia integristipula*
Mammals	
Common Name	**Latin Name**
American Mink	*Neovison vison*
Bats	*Chiroptera*
Brandt's Bat	*Myotis brandtii*
Brown Hare	*Lepus europaeus*
Brown Long-eared Bat	*Plecotus auritus*
Common Pipistrelle	*Pipistrellus pipistrellus sensu stricto*
Daubenton's Bat	*Myotis daubentonii*
Eurasian Badger	*Meles meles*
European Otter	*Lutra lutra*
European Water Vole	*Arvicola amphibius*
Harvest Mouse	*Micromys minutus*
Hazel Dormouse	*Muscardinus avellanarius*
Lesser Noctule	*Nyctalus leisleri*
Natterer's Bat	*Myotis nattereri*
Noctule Bat	*Nyctalus noctula*
Pine Marten	*Martes martes*
Pipistrelle	*Pipistrellus pipistrellus sensu lato*
Pipistrelle Bat species	*Pipistrellus*
Polecat	*Mustela putorius*
Soprano Pipistrelle	*Pipistrellus pygmaeus*
unidentified Myotis bat	*Myotis*
West European Hedgehog	*Erinaceus europaeus*
Whiskered Bat	*Myotis mystacinus*
Whiskered/Brandt's Bat	*Myotis mystacinus/brandtii*
Molluscs	
Common Name	**Latin Name**
Large Black Slug	*Arion (Arion) ater*
Marsh Pond Snail	*Stagnicola palustris/fuscus/corvus agg.*
Mud Snail	*Omphiscola glabra*
Moss	
Common Name	**Latin Name**

Blunt-leaf Tufa-moss	*Gymnostomum calcareum*
Bright Silk-moss	*Plagiothecium laetum*
Many-flowered Leskea	*Pylaisia polyantha*
Marsh Thyme-moss	*Plagiomnium ellipticum*
Tiny Feather-moss	*Amblystegium confervoides*
Reptiles	
Common Name	**Latin Name**
Adder	*Vipera berus*
Grass Snake	*Natrix helvetica*

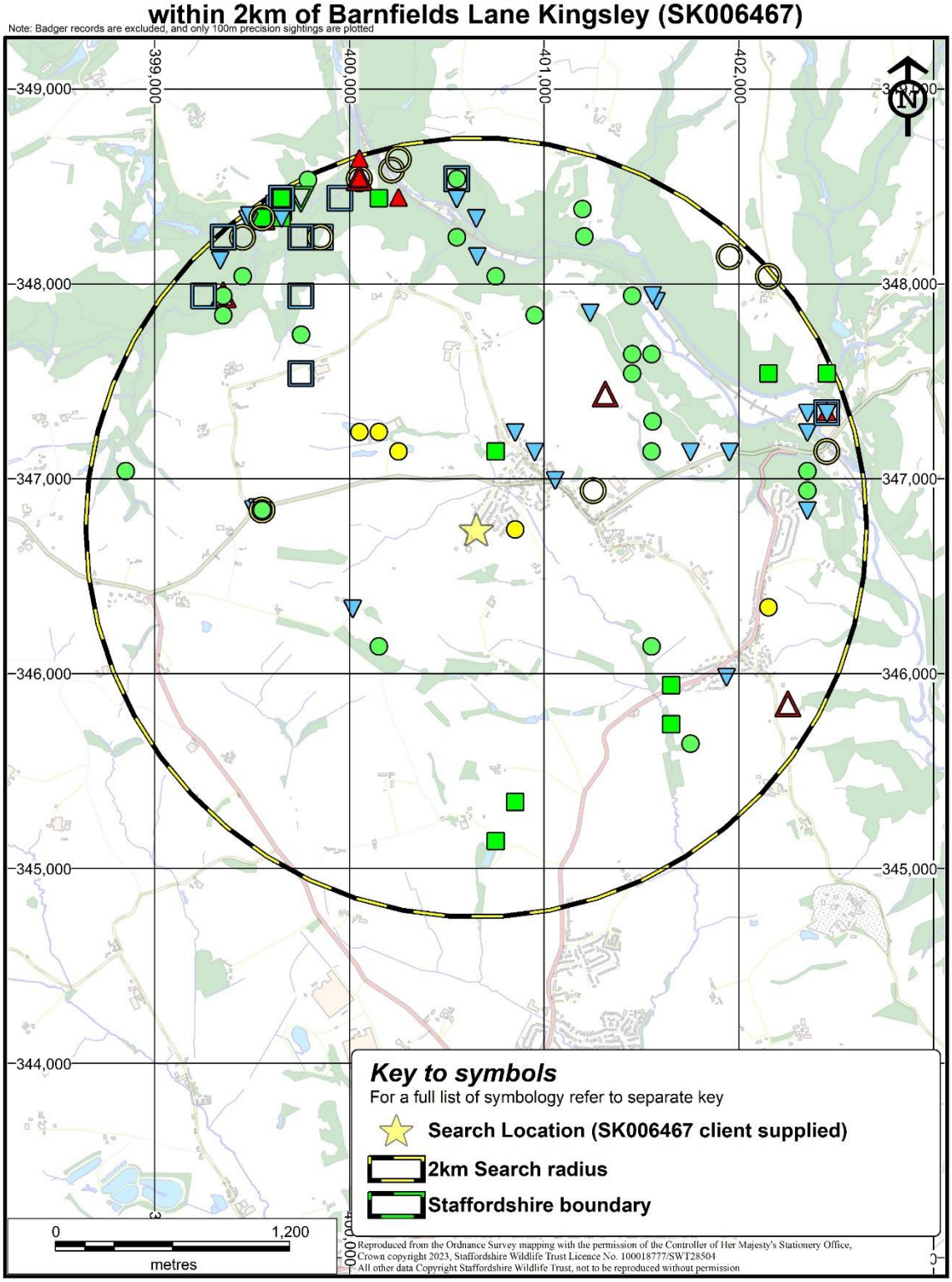
Appendix C: Desktop Study Maps

These maps have been produced by SER. All rights regarding the maps belong to them.



Staffordshire Ecological Record The Wolseley Centre, Wolseley Bridge, Stafford. ST17 0WT Tel: 01889 880100 Fax: 01880 880101
Email: info@staffs-ecology.org.uk
SER/23/045

Protected Species
within 2km of Barnfields Lane Kingsley (SK006467)



Staffordshire Ecological Record
The Wolseley Centre, Wolseley Bridge,
Stafford. ST17 0WT
Tel: 01889 880100 Fax: 01889 880101
Email: info@staffs-ecology.org.uk

A legend to the map showing Nature Conservation Sites and Species

Introduction

These colours are used on the site alert mapping within the SWT GIS, but SER cannot guarantee the same colours are used in any other mapping system, particularly those based on ArcView.

Statutory Designations from Natural England's web-site

- National Nature Reserves
- Sites of Special Scientific Interest
- Local Nature Reserves
- NNR (boundary not available owing to OS restrictions)
- SSSI (boundary not available owing to OS restrictions)
- LNR (boundary not available owing to OS restrictions)

Non-statutory Designations from the Staffordshire Grading System (1995 onwards)

- Site of Biological Importance (ex Grade 1 SBI) equivalent to "Local Wildlife Site"
- Biodiversity Alert Site (ex Grade 2 SBI)
- Proposed/potential Site of Biological Importance

Geological Sites

- Regionally Important Geological/geomorphological Site (= Local Geological Site)

Staffordshire Wildlife Trust Sites

- SWT Nature Reserves

Other Nature Reserves

- Royal Society for the Protection of Birds

Ancient Woodland Inventory

- Ancient & Semi-natural Woodland
- Ancient Replanted Woodland

Species Information

- Mammals excluding those listed below
- Otter (Lutra lutra)
- Badger (Meles meles) - not normally supplied
- Water Vole (Arvicola terrestris)
- All bat species
- All bird species
- Any other protected species (precise to 100m)
- All Protected Species Records (precise to 1km)
- Amphibians and reptiles excluding those below
- Great Crested Newt (Triturus cristatus)
- Native Crayfish (Austropotamobius pallipes)
- Flowering plants except those below
- Bluebell (Hyacinthoides non-scripta)
- Butterflies and Moths
- BAP Species Records (precise to 100m)
- BAP Species Records (precise to 1km)

Notes:

The Local Nature Reserve and other nature reserve boundaries can overlay the current grading when both layers are actively visible

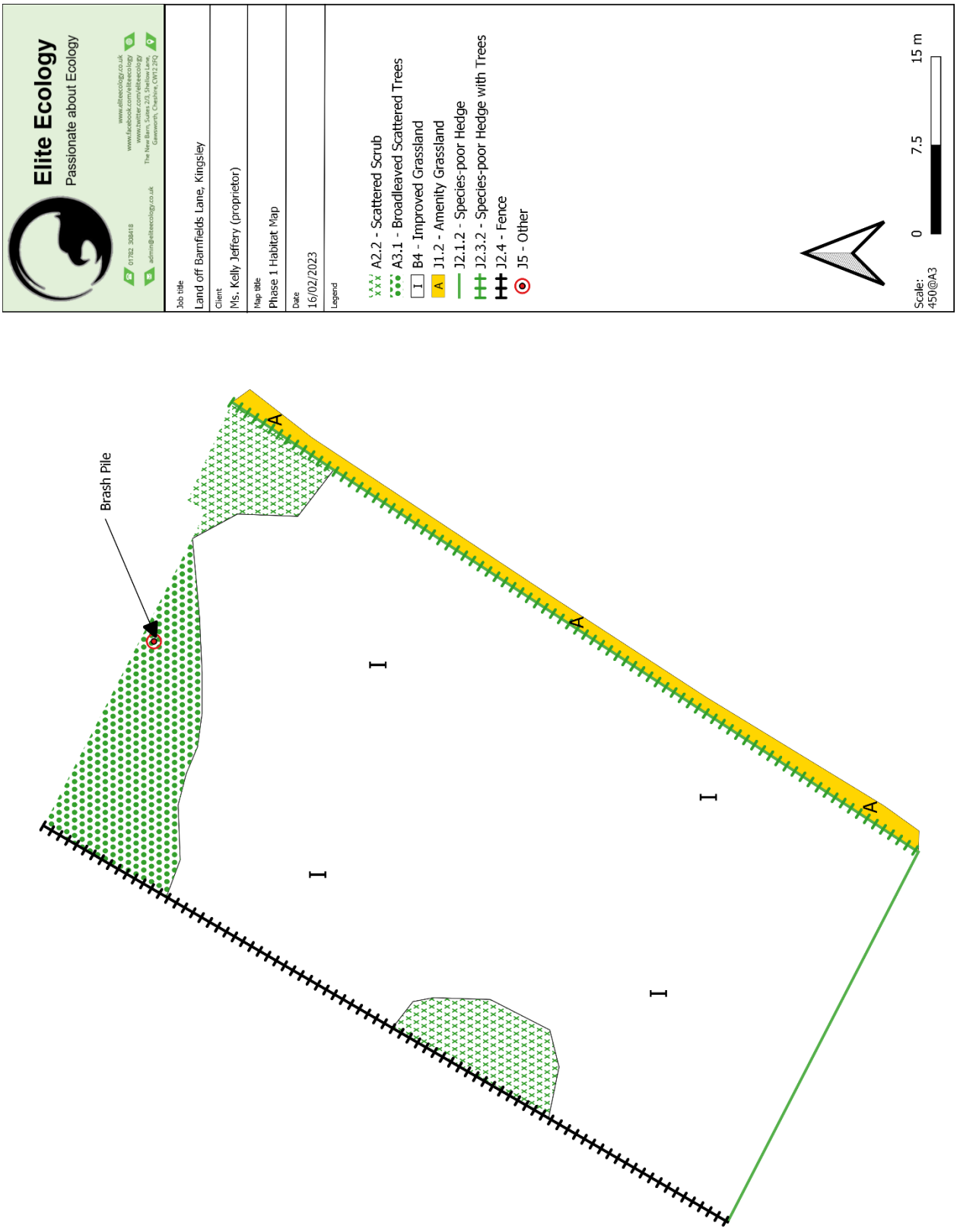
Where there are multiple species records for the same grid reference the dot for one species may obscure the dots for other species - all species records will be displayed in the accompanying spreadsheet

Not all the above categories may be present on the accompanying map

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Appendix D: Phase 1 Habitat Map



Appendix E: Site Photographs

Plate 1: Image showing the improved grassland habitat on site.



Plate 2: Image showing the improved grassland towards the southern end of the site, where the succession of bramble can be seen.



Plate 3: Image showing the fence running along the north-western boundary of the site.



Plate 4: Image showing the scattered scrub in the north-eastern corner of the site.



Plate 5: Image showing the bird nest in **T1** along with the ivy on the trunk which could support roosting bats.



Plate 6: showing the hedges running along the south-western and south-eastern site boundaries.



Appendix F: Biodiversity Legislation and Policy

General Legislation and Policy:

The framework of legislation and policy which underpins nature conservation in England. This is a material consideration in the planning process in England.

Conservation of Habitats and Species Regulations 2017 (Habitats Regulations 2010 as amended)

The Conservation of Habitats and Species Regulations 2017 consolidate and update the Conservation Regulations 1994 and the conservation of habitats and species regulations 2010 (and all their amendments). The Conservation of Habitats and Species Regulations 2017 are the principal means by which the EEC Council Directive 92/43 (The Habitats Directive) as amended is transposed into English and Welsh law.

The Conservation of Habitats and Species Regulations 2017 place duty upon the relevant authority of government to identify sites which are of importance to the habitats and species listed in Annexes I and II of the Habitats Directive. Those sites which meet the criteria are, in conjunction with the European Commission, designated as Sites of Community Importance, which are subsequently identified as Special Areas of Conservation (SAC) by the European Union member states. The regulations also place a duty upon the government to maintain a register of European protected sites designated as a result of EC Directive 79/409/EEC on the Conservation of Wild Birds (The Birds Directive). These sites are termed Special Protection Areas (SPA) and, in conjunction with SACs, form a network of sites known as Natura 2000. The Habitats Directive introduces for the first time for protected areas, the precautionary principle; that is that projects can only be permitted having ascertained no adverse effect on the integrity of the site. Projects may still be permitted if there are no alternatives, and there are imperative reasons of overriding public interest.

The Conservation of Habitats and Species Regulations 2017 also provide for the protection of individual species of fauna and flora of European conservation concern listed in Schedules 2 and 5 respectively. Schedule 2 includes species such as otter and great crested newt for which the UK population represents a significant proportion of the total European population. It is an offence to deliberately kill, injure, disturb or trade these species. Schedule 5 plant species are protected from unlawful destruction, uprooting or trade under the regulations.

The Wildlife and Countryside Act (WCA) 1981 (As amended)

The WCA, as amended, consolidates and amends pre-existing national wildlife legislation in order to implement the Bern Convention and the Birds Directive. It complements the Conservation (Natural Habitats. & c.) Regulations 1994 (as amended), offering protection to a wider range of species. The Act also provides for the designation and protection of national conservation sites of value for their floral, faunal or geological features, termed Sites of Special Scientific Interest (SSSIs).

Schedules of the act provide lists of protected species, both flora and fauna, and detail the possible offences that apply to these species.

The Countryside and Rights of Way (CRoW) Act 2000

The CROW Act, introduced in England and Wales in 2000, amends and strengthens existing wildlife legislation detailed in the WCA. It places a duty on government departments and the National Assembly for Wales to have regard for biodiversity, and provides increased powers for the protection and maintenance of SSSIs.

The Act also contains lists of habitats and species (Section 74) for which conservation measures should be promoted, in accordance with the recommendations of the Convention on Biological Diversity (Rio Earth Summit) 1992.

The Natural Environment and Rural Communities (NERC) Act 2006

Section 40 of the NERC Act places a duty upon all local authorities and public bodies in England and Wales to promote and enhance biodiversity in all of their functions. Sections 41 (England) and 42 (Wales) list habitats and species of principal importance to the conservation of biodiversity. These lists supersede Section 74 of the CRoW Act 2000. These species and habitats are a material consideration in the planning process.

The Hedgerow Regulations 1997

The Hedgerow Regulations make provision for the identification of important hedgerows which may not be removed without permission from the Local Planning Authority.

UK Biodiversity Action Plan

The United Kingdom Biodiversity Action Plan (UKBAP), first published in 1994 and updated in 2007, is a government initiative designed to implement the requirements of the Convention of Biological Diversity to conserve and enhance species and habitats. The UKBAP contains a list of priority habitats and species of conservation concern in the UK, and outlines biodiversity initiatives designed to enhance their conservation status. Lists of Broad and Local habitats are also included. The priority habitats and species correlate with those listed on Section 41 and 42 of the NERC Act.

The UKBAP requires that conservation of biodiversity is addressed at a County level through the production of Local BAPs. These are complementary to the UKBAP, however are targeted towards species of conservation concern characteristic of each area. In addition, a number of local authorities and large organisations have produced their own BAPs. UKBAP and Local BAP targets with regard to species and habitats are a material consideration in the planning process.

Staffordshire Biodiversity Action Plan

The Staffordshire Biodiversity Action Plan (SBAP) was implemented in 1998 in order to co-ordinate conservation efforts in delivering the UK BAP targets at a local level. The SBAP contains a list of habitats and species-specific action plans, assigning specific targets and addressing relevant policy and land management practices pertaining to each.

Planning Policy (England) and National Planning Policy Framework

In early 2012, the National Planning Policy Framework (NPPF) replaced much previous planning policy guidance, including Planning Policy Statement 9: Biological and Geological Conservation. The government circular 06/05: Biodiversity and Geological Conservation - Statutory Obligations and Their Impact within the Planning System, which accompanied PPS9, still remains valid. A presumption towards sustainable development is at the heart of the NPPF. This presumption does not apply however where developments require appropriate assessment under the Birds or Habitats Directives. The latest National Planning Policy Framework was updated in February 2019, with the section in relation to conserving the natural environment being located within section 15.

Section 15, on conserving and enhancing the natural environment, sets out how the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and, where possible, provide net gains in biodiversity. Opportunities to incorporate biodiversity gains into a development should be encouraged.

If a proposed development would result in significant harm to the natural environment which cannot be avoided (through the use of an alternative site with less harmful impacts), mitigated or compensated for (as a last resort) then planning permission should be refused.

Staffordshire Moorlands Local Plan

Adopted in 2020, the Staffordshire Moorlands Local Plan is a District wide development plan which replaces the Staffordshire Moorlands Core Strategy, Biddulph Area Action Plan (AAP) and previous Local Plan to provide a framework for delivering development for the period 2014 to 2033.

The Local Plan sets out the development strategy, strategic and development management policies and land designations for the District. It influences how and where the Staffordshire Moorlands will develop in the future and sets out what the District Council would like to achieve in each of the main towns and the rural areas outside the Peak District National Park. The Local Plan also provides the framework for future detailed guidance to supplement the policies.

Species Specific Legislation

This section contains a summary of legislation with relation to the species present or potentially present in the survey area. The reader should refer to the original legislation for definitive interpretation.

Nesting and Nest Building Birds

Nesting and nest building birds are protected under the Wildlife and Countryside Act WCA 1981 (as amended). Some species (listed in Schedule 1 of the WCA) are protected by special penalties.

Subject to the provisions of the act, if any person intentionally:

- kills, injures or takes any wild bird;
- takes, damages or destroys the nest of any wild bird while that nest is in use or being built; or
- takes or destroys an egg of any wild bird, he shall be guilty of an offence.

'Reckless' offences with regard to the disturbance of nesting wild birds included in Schedule 1 of the Wildlife and Countryside Act were added by the Countryside and Rights of Way Act 2000.

The Natural Environment and Rural Communities (NERC) Act 2006 places a duty on Government Departments to have regard for the conservation of biodiversity and maintains lists of species and habitats which are of principal importance for the purposes of conserving biodiversity in England and Wales. These lists include a number of bird species.

The reader is referred to the original legislation for the definitive interpretation.

Badger

The main legislation protecting badgers in England and Wales is the Protection of Badgers Act 1992 (the 1992 Act). Under the 1992 Act it is an offence to:

- wilfully kill, injure, take or attempt to kill, injure or take a badger;
- possess a dead badger or any part of a badger;
- cruelly ill-treat a badger;
- use badger tongs in the course of killing, taking or attempting to kill a badger;
- dig for a badger;
- sell or offer for sale or control any live badger;
- mark, tag or ring a badger; and
- interfere with a badger sett by:
- damaging a sett or any part thereof;
- destroying a sett;
- obstructing access to a sett;
- causing a dog to enter a sett; and
- disturbing a badger while occupying a sett.

The 1992 Act defines a badger sett as: "any structure or place which displays signs indicating current use by a badger".

Bats

All species of bat are fully protected under a variety of domestic, European and international legislation and conventions. These include:

- Bern Convention (Appendix II)
- Bonn Convention (Appendix II)
- Conservation Regulations (Northern Ireland) 1995
- Conservation of Habitats and Species Regulations 2017
- Countryside Rights of Way Act 2000
- Eurobats Agreement
- Habitats Directive (Annexes IV and II)
- Habitats Regulations 1994 (as amended) Scotland
- NERC Act 2006
- Wildlife and Countryside Act 1981 (as amended)
- Wild Mammals Protection Act

In addition to this, some species have additional protection by being listed on the UK Biodiversity Action Plan (UKBAP).

The legislation afforded to bats makes it illegal to possess or control any live or dead specimens, to damage, destroy or obstruct access to any structure or place used for shelter, protection or breeding, and to intentionally disturb a bat while it is occupying a structure or place which it uses for that purpose.

All nesting birds are protected under the Wildlife and Countryside Act 1981 (as amended), which protects birds, nests, eggs and nestlings from harm. In addition to this, some rarer species, such as barn owls are afforded extra protection.

National Planning Policy Framework, Section 15:

The published framework in 2018 replaces the previous Planning Policy Statement 9 and National Planning Policy (dated 2012).

Section 15: Conserving and enhancing the natural environment reaffirms the government's commitment to maintaining green belt protections and preventing urban sprawl, retains the protection of designated sites and preserves wildlife. It also aims to improve the quality of the natural environment and halt declines in species and habitats, protects and enhances biodiversity and promotes wildlife corridors.

Biodiversity 2020:

This sets out to halt overall biodiversity loss and support healthy well-functioning ecosystems by establishing coherent ecological networks, with more and better places for nature, to the benefit of wildlife and people. The government's policy is aimed at individuals, communities, local authorities, charities, business and government, which all have a role to play in delivering Biodiversity 2020.

Freshwater White-clawed Crayfish

The white-clawed crayfish is partially protected under Wildlife and Countryside Act 1981 (as amended). It is listed on schedule 5 and therefore afforded protection under Section 9 (1 and 5). Therefore, it is an offence to take white-clawed crayfish and to sell, or attempt to sell, any part of the species, alive or dead, or intend to buy or sell.

Great Crested Newt

The great crested newt (*Triturus cristatus*) is fully protected under a variety of legislation and conventions. These include:

- Bern Convention (Appendix II)
- Conservation (Natural Habitats, &c.) Regulations 1994 (as amended)
- Conservation of Habitats and Species Regulations 2017
- EU Habitats Directive (Annex II and IV)
- Nature Conservation (Scotland) Act 2004
- NERC Act 2006 (Section 41 England; Section 42 Wales)
- Wildlife and Countryside Act 1981 (as amended)

In addition to this, the great crested newt has been listed as a priority species on the UK Biodiversity Action Plan (UKBAP).

This legislation covers all aspects of newt life stages (eggs, efts and adult newts) and makes it illegal to damage, destroy or obstruct access to any structure or place used for shelter, protection or breeding, and to intentionally disturb a great crested newt while it is occupying a structure or place which it uses for that purpose.

Licenses can be obtained from Natural England (DEFRA) under the Conservation (Natural Habitats etc.) Regulations 1994, to permit activities for the purposes of:

- Regulation 44(2)(e): Preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment, or
- Regulation 44(2)(f): Preventing the spread of disease
- Regulation 44(2)(g): Preventing serious damage to any form of property or fisheries
  Or
- If there is no satisfactory alternative.

The above regulations allow people to carry out activities which would otherwise be illegal.

Hazel Dormouse

Hazel Dormouse and their habitats are protected by:

- Wildlife and Countryside Act 1981 (as amended)
- Countryside Rights of Way (CROW) 2000
- The Natural Environment and Rural Communities Act 2006
- Conservation of Habitat and Species Regulations 2017

These make it an offence to:

- Capture, injure or kill a Hazel Dormouse
- Disturb a Hazel Dormouse
- Damage or destroy breeding or nesting sites in use by Hazel Dormice
- Disturb a Dormouse whilst it is occupying a structure or place that they use for shelter or protection
- Obstruct access to any structure or place that the Dormouse uses for shelter and protection.
- To possess or control any live or dead specimens.

Otter

Otters are fully protected by the European Habitats Directive (92/43/EEC) by being incorporated in annex II of the legislation. In addition to this, otters are listed on schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to:

- To intentionally kill, injure or take an otter.
- To possess or control any live or dead specimens.
- To intentionally or recklessly damage, destroy or obstruct access to any structure, feature or place of shelter in use by otters.
- To intentionally or recklessly disturb an otter whilst it is in occupation of a feature or structure.
- To sell, possess or transport for the purpose of sale or publicly declare the desire to buy or sell otters.

Reptiles

All six native reptiles within Great Britain are legally protected, with the extent of protection varying dependent upon their rarity and conservation importance.

Those that receive full protection under the Wildlife and Countryside Act 1981 (as amended) are the rare sand lizard and smooth snake. These species also receive protection under the Conservation (Natural Habitats &c.) Regulations 1994 (also referred to as the Habitats Directive). This means that they are protected from deliberate disturbance, killing, injury or capture and the habitat in which they live is also fully protected against damage or destruction. Any activity involving disturbance or damage to habitats utilised by sand lizards or smooth snakes would require a licence issued by the Department of the Environment, Food and Rural Affairs (DEFRA) following consultation with the statutory nature conservation organisation (Natural England).

The remaining four reptile species are ‘partially protected’ under the Wildlife and Countryside Act 1981 (as amended), with these species being slow-worm, common lizard, grass snake and adder. This means that these species are protected against intentional killing, injuring and against sale, but their habitat is not protected. In planning terms this means that the presence of these species is a material consideration and there is a requirement to ensure that any reptile interest is safeguarded. If a proposed development is likely to have an impact on these reptiles, then the statutory nature conservation organisation must be notified, particularly if capture and translocation is being proposed. In some parts of the UK, sites that support common reptile species such as common lizards and slow-worms can qualify as County Wildlife Sites. Sites of this designation may receive protection in planning policy.

Water Voles

Water Voles are fully protected under the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to:

- To intentionally kill, injure or take a water vole.
- To possess or control any live or dead specimens.
- To intentionally or recklessly damage, destroy or obstruct access to any structure, feature or place of shelter in use by water voles.
- To intentionally or recklessly disturb a water vole whilst it is in occupation of a feature or structure.
- To sell, possess or transport for the purpose of sale or publicly declare the desire to buy or sell water voles.

Non-Native Floral Species

It is an offence under schedule 9 of the Wildlife and Countryside Act 1981 (as amended) to plant or otherwise cause non-native flora to grow in the wild. This includes the transportation of earth that has previously had non-native species growing and includes the spread of the species.

All stands of non-native floral species need to be disposed of safely at a licenced landfill site according to the Environmental Protection Act (Duty of Care) Regulations 1991.

Appendix G: Bats and Artificial Light

Artificial lighting is known to affect bat's roosting and foraging behaviour, with lighting resulting in a range of impacts that includes roost desertion (BCT, 2009), delayed emergence of roosting bats (Downs et al., 2003), increased activity of some bat species and decreased activity by others (Stone et al., 2012).

An experimental approach using LED units, demonstrated that relatively fast-flying bat species, including the common pipistrelle, showed no significant impacts as a result of new artificial lighting, even when lighting was set at relatively high levels close to 50 lux.

In contrast, slow flying bats such as the myotid bats (Myotis spp.) showed sharp reductions in presence, even at low light levels of 3.6 lux (Stone et al., 2012).

Current recommendations for all bat species specify that no bat roost should be directly illuminated.

Due to the impacts of lighting, mitigation and sensitive lighting design schemes are required for projects where bats are present. These should include bat friendly lighting plans that should aim to avoid lighting wherever possible. If this is not possible, then the minimisation of any lighting impacts is required by adopting the following measures:

- To introduce lighting curfews or use of PIR sensors.

  Lighting curfews can be an effective way of avoiding impacts on bats. These curfews may involve either turning off lighting or dimming light units at specific times of the night, dimming units at key times of the year, providing the luminaire allows for this option via a control unit. Lighting to be triggered by PIR sensors can be expected to be illuminated only when required and for a low proportion of time.

- To consider no lighting solutions where possible.

  Options such as white lining, good signage and LED cats eyes should be considered as preferable. Reflective fittings may help make use of headlights to provide any necessary illumination in some areas.

- To use only high pressure sodium or warm white LED lamps where possible.

  High pressure sodium and warm white LED lamps emit lower proportions of insect attracting UV light than mercury, metal halide lamps and white LED lighting. Generally, lamps should have a lower proportion of white or blue wavelengths, with a colour temperature <4200 kelvin recommended (BCT, 2014).

- To minimise the spread of light.

  The light spread should be kept at or near horizontal to ensure that only the task area is lit. Flat cut-off lanterns or accessories should be used to shield or direct light to where it is required. Baffles, hoods, louvres and shields should be used where necessary to reduce light spill.

- To consider the height of the lighting column.

  While downward facing bollard lighting is often preferable, it should be noted that a lower mounting height does not automatically reduce impacts to bats as bollard lighting can often be designed to provide up-lighting. Where bollard lighting is considered to be the most appropriate system, bollard spacing or unit density should be kept to a minimum and units should be fitted with the appropriate hoods/deflectors to reduce any up-lighting.

- To avoid reflective surfaces below lights.

  The polarisation of light by shiny surfaces attracts insects increasing bat activity (BCT, 2012). Consequently, surface materials around lighting require consideration.

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The survey results purport the current status of the site and its potential for protected species utilisation at the time of surveying. It should not be viewed as a complete list of the possible flora and fauna species that could be using the site at different times of the year.

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