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PRELIMINARY ECOLOGICAL APPRAISAL

At

Land opposite Stable Cottage
Mentmore
Leighton Buzzard
Buckinghamshire
LU7 0QG

NGR: SP 90334 20095

Prepared for:	Elizabeth Hough c/o Briggs & Stone Ltd
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	[redacted]
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EXECUTIVE SUMMARY

United Environmental Services Ltd (UES) was commissioned by Elizabeth Hough c/o Briggs & Stone Ltd to carry out a baseline ecological survey of a parcel of land opposite Stable Cottage, Mentmore, Leighton Buzzard, Buckinghamshire. A desk study and preliminary ecological appraisal (PEA) survey were undertaken on 14th May 2022, including searches using the Multi Agency Geographic Information Centre (MAGIC) and the Buckinghamshire and Milton Keynes Environmental Records Centre (BMERC).

The PEA provides an assessment of potential ecological impacts associated with the development of the land parcel. There are two proposed planning applications for the site, one for the construction of a single-storey stable building and the other for the construction of an equestrian exercise arena. The planning applications will incorporate the planting of a native species-rich hedgerow along the boundary between the arena and the adjacent offsite cricket pitch, and the enhancement and gapping up of an existing and retained hedgerow with a mix of native shrubs, located within the applicant's ownership boundary.

When considering the potential access routes, the proposed development boundary has a maximum area of 0.96ha. However, the development proposals are small scale and the area of land that will be directly impacted is significantly smaller than this. The survey was extended to cover the wider land within the client's ownership boundary, which measures approximately 9.5ha. Both the proposed development boundary and the wider ownership boundary comprise sheep grazed improved grassland fields. The majority of the site boundaries and internal field boundaries are demarcated by post and wire fences, however a wall, tree lines and small sections of hedgerow are present at some of the boundaries. Four small agricultural buildings are present within the ownership boundary, all of which lie outside of the proposed development boundary.

The results of the survey combined with the results of the desk study have highlighted the requirement for further work in relation to the following habitats and species:

- **Amphibians** – reasonable avoidance measures (RAMs) to be implemented during the construction phase of the development.

[redacted]

- **Bats** – The only building assessed as having bat roosting potential and all trees on site are due to be retained. As such, the works won't have a direct impact on roosting bats. The proposals are small scale and will only impact a small area of improved grassland, as such it is considered that the impacts on bat foraging and commuting habitat will be negligible.

  Care must be taken when installing any new lighting to ensure that light spillage onto any retained tree lines, hedgerows or any installed bat boxes is minimised. This may require the use of cowling or relocation of the bat box or lighting.

- **Hedgerows and trees –** All hedgerows and trees are due to be retained as part of the proposed development. Works should be mindful of root protection areas. If the proposals change and any hedgerows or trees are to be removed, they should be replaced accordingly as part of a detailed landscaping scheme, with only native species to be planted.

The proposals incorporate additional native species hedgerow planting and the gapping up of any defunct with a species-rich mix of native species. This will provide an ecological enhancement and will benefit numerous species locally.

Mitigation measures, as detailed in section 4, should be adhered to, which may in some cases negate the need for further survey work.

The development also presents an opportunity to improve the habitats on site for wildlife, such as bats and birds. The inclusion of nest boxes and bat boxes will provide suitable nesting and roosting features in the long term.

This report should be read with appendices 1 to 10, which include results of the desk study, GIS phase 1 habitat mapping, photographs of site and relevant statutory guidance.

1 INTRODUCTION

1.1 Author, surveyors, qualifications and scope of study area

This report is written by Tom Kenwright BSc MSc, UES Senior Ecologist. Tom holds a level 4 Botanical Society for Britain and Ireland (BSBI) field identification skills certificate (FISC), which certifies him as competent to undertake botanical and habitat surveys up to National Vegetation Classification (NVC) level. Tom is licensed by Natural England to survey all species of bats by observation using an artificial light under licence number 2021-53549-CLS-CLS (level 1). Tom is licensed by Natural England to disturb, take and handle great crested newts (GCN) *Triturus cristatus* under licence number 2019-43876-CLS-CLS (CL08).

Other surveyors present during the site surveys include Alasdair Grubb BSc ACIEEM, UES Ecologist. Alasdair has over 10 years' experience working in the environmental sector and is an experienced field surveyor. He is competent to undertake botanical surveys up to Phase 1 level and to identify other key ecological issues in relation to development. Alasdair is licensed by Natural England to disturb, take and handle GCNs under licence number 2021-53835-CLS-CLS (CL08).

The report provides an assessment of the potential ecological impacts associated with the proposed development of a parcel of land opposite Stable Cottage, Mentmore, Leighton Buzzard, Buckinghamshire.

The zone of influence considered within the scope of the survey includes all land within the red line boundary. Where relevant, other ecological resources, receptors and important habitats which are spatially separate from the site are considered.

1.2 Survey objectives

UES was commissioned in May 2022 to conduct a PEA of the proposed development site. This was completed in order to:

Establish baseline conditions and determine the importance of ecological features present or potentially present within the survey area

Identify key ecological constraints to the project

Make recommendations for design options to avoid significant effects on important ecological resources at an early stage of development planning

Identify potential requirement for further surveys for nationally or internationally protected species which may be present on site

Identify potential requirement for mitigation or compensation, including measures that may be required based on further surveys

1.3 Proposed development

The PEA provides an assessment of potential ecological impacts associated with the development of the land parcel. The development proposals include two planning applications, one for the construction of a single-storey stable building and the other for the construction of

an equestrian exercise arena. The planning applications will incorporate the planting of a native species-rich hedgerows along the boundary between the arena and the adjacent offsite cricket pitch, and the enhancement and gapping up of an existing and retained hedgerow with a mix of native shrubs, located within the applicant's ownership boundary.

1.4 Structure of the report

This report is a baseline appraisal that forms the basis for further ecological surveys and Environmental Impact Assessments (EIA) if required. In the majority of cases the preliminary ecological assessment will not provide all the ecological data required by the Local Planning Authority to determine an application, especially in the event that protected habitat or species issues are present or likely.

This report should be read with appendices 1 to 10, which include results of the desk study, GIS phase 1 habitat mapping, photographs of site and relevant statutory guidance.

2 METHODOLOGY

This PEA comprises a desk study and a field survey. The desk study is conducted in order to collate ecological information on species and / or habitats of interest that may be present. The field survey is conducted in order to assess the habitats and their importance, both on site and in the context of their wider surroundings.

2.1 Desk study

The following resources were used to inform the desk study:

- National – Using the UK government's MAGIC website, statutorily protected sites were scoped to a distance of 10km from the application site.

- Local – a record search of designated sites and protected or otherwise notable species within 2km of the wider survey boundary was undertaken through the Buckinghamshire and Milton Keynes Environmental Records Centre (BMERC). The results of the record search were received on the 20th May 2022.

2.2 Field survey

An ecological walkover survey was carried out on 14th May 2022 by Tom Kenwright and Alasdair Grubb. The purpose of the survey was to identify, record and map dominant habitat types within the development area and highlight any further species surveys that may be required based on the quality of those habitats. When conducting the surveys particular focus was concentrated on the following species and habitat features:

- Amphibians
- Reptiles
- [redacted]
- Bats
- Hazel dormouse
- Birds
- Trees
- Hedgerows
- Plant communities
- Invasive species
- Otter
- Water vole
- White-clawed crayfish

The habitats were assessed by using the phase 1 habitat survey technique, which is a system for environmental audit widely used within the environmental consultancy field. The survey was undertaken in accordance with the methodology in the 'Handbook for phase 1 habitat survey - A technique for environmental audit' (JNCC, 2010) as recommended by Natural England, and in the "Guidelines for Preliminary Ecological Appraisal" (CIEEM, 2017).

The survey area encompasses all of the land within the development footprint and the land to a distance of 30m outside it where accessible. In line with recognised guidelines, ponds were also scoped to a distance of 500m (250m radius from the survey area).

The phase 1 habitat survey methodology was extended to record any signs of habitats suitable to support protected / invasive species and any incidental observations of other noteworthy species.

2.3 GCN Impact Assessment

During the site visit on 14th May 2022, all ponds and aquatic features within 250m of the development boundary were assessed for their potential to support GCNs using the Habitat Suitability Index (HSI). The HSI is a tool used to provide a numerical indication of the quality of a waterbody in terms of GCN breeding and associated habitat requirements on a scale of 0-1 (0 indicating unsuitable habitat, 1 representing optimal habitat).

HSI scores incorporate ten Suitability Indices (SIs), all of which are factors thought to affect GCNs, namely:

SI 1: Site location
SI 2: Size of pond
SI 3: Pond permanence
SI 4: Water quality
SI 5: Perimeter shading
SI 6: Waterfowl presence
SI 7: Fish presence
SI 8: Number of ponds within 1km
SI 9: Terrestrial habitat
SI 10: Macrophyte cover

In some cases, a net may be used to assess certain SIs, such as water quality. Once a measurement or category has been given for each SI this can then be converted to a figure between 0 and 1 for use in the HSI calculation. This figure is either translated from an assigned category or measurement or read from a graph in the case of a percentage or number.

The HSI is then calculated from the following formula:

$$HSI = (SI1 \times SI2 \times SI3 \times SI4 \times SI5 \times SI6 \times SI7 \times SI8 \times SI9 \times SI10)^{1/10}$$

This will give a final HSI result between 0 and 1, providing a measure of habitat suitability for GCN.

The information gathered from the survey was used to provide a likelihood of GCNs and other amphibians being present in the area, in both aquatic and terrestrial habitats.

The proposed development, based on the plans provided, was also assessed for the potential to cause harm to GCNs (if present) using the Natural England Rapid Risk Assessment Tool.

All ponds within 250m are shown on the pond plan (Appendix 6).

2.4 eDNA survey

All ponds within 250m of the proposed development boundary were subject to an environmental DNA (eDNA) survey on the 14th May 2022. eDNA testing provides a GCN presence / absence result from water samples taken from a waterbody, following specific protocols detailed in Biggs *et al.,* 2014. These protocols have been approved by Natural England as a method to determine GCN presence or absence in a waterbody, within the newt breeding season, from 15th April to 30th June. Using the sterile kit provided from a laboratory, 20 water samples were taken from intervals around each pond and then mixed together. From there, a 15ml sample was transferred into each of the 6 sample tubes, which contained a preserving fluid. The samples were kept refrigerated overnight and sent to the laboratory for analysis. This process was repeated for all waterbodies.

2.5 Survey limitations

The survey was conducted in at an appropriate time of year when sufficient vegetative identification was possible, allowing a robust assessment of habitats to be undertaken.

3 RESULTS

3.1 Desk study

A desk study was conducted for the proposed development site and surrounding area. Statutorily protected sites were scoped to a distance of 10km. Further results of the desk study can be found at Appendix 1 – Desk study.

3.1.1 Protected sites

There are no non-statutorily protected sites within 2km of the proposed development site.

There are no statutorily protected sites within 2km of the proposed development site.

The proposed development site lies within a SSSI Impact Risk Zone (IRZ) within which Natural England do not request that they are consulted on developments of this size and scale.

There are eighteen statutorily protected sites (designated for ecological reasons) within 2 – 10km of site:

Aldbury Nowers SSSI
Ashridge Commons and Woods SSSI
Aston Clinton Ragpits SSSI
Chilterns Beechwoods SAC
Dancersend SSSI
Dunstable and Whipsnade Downs SSSI
Ivinghoe Hills SSSI
Kings and Bakers Wood and Heaths SSSI
King's Wood and Rushmere NNR
Nares Gladly Marsh SSSI
Oddly Hill and Tring Park SSSI
Pitstone Hills SSSI
Poker's Pond Meadow SSSI
Totternhoe Chalk Quarry SSSI
Totternhoe Knolls LNR
Totternhoe Knolls SSSI
Tring Reservoirs SSSI
Tring Woodlands SSSI

3.1.2 Protected species

The following records of protected or otherwise notable species were highlighted by the environmental records search:

Amphibians: numerous records of GCNs were returned from within 2km of the proposed development site. The closest record dates from 2007 and is located from a pond at Mentmore Towers, located approximately 280m south-west of the proposed development site. All other GCN records are located over 900m from the site. Records of common frog *Rana temporaria*, common toad *Bufo bufo* and smooth newt *Lissotriton vulgaris* were also returned.

Badgers: nine records of badger *Meles meles* were returned from within 2km of the proposed development site. The closest record to the proposed development site details a dead individual approximately 100m west. All records detail roadkill or sightings of live individuals. No records of badger setts were returned.

Bats: records of brown-long eared bat *Plecotus auritus*, Nathusius pipistrelle *Pipistrellus nathusii*, soprano pipistrelle *Pipistrellus pygmaeus,* serotine *Eptesicus serotinus*, lesser horseshoe *Rhinolophus hipposideros*, noctule *Nyctalus noctula*,

Natterer's *Myotis nattereri* and unidentified *Myotis* and *Pipistrelle* bats were returned from within 2km of the proposed development site. Six records of bat roosts were returned, including common pipistrelle, lesser horseshoe and brown long-eared bats. The closest roost record details a common pipistrelle maternity roost within a residential property approximately 90m south-west of the proposed development site.

Birds: various species, including several NERC Section 41 and Wildlife and Countryside Act 1981 Schedule 1 species. A barn owl *Tyto alba* was ringed from within the building in the north-eastern corner of the land ownership boundary.

Hazel dormouse: no records of hazel dormouse *Muscardinus avellanarius* were returned from within 2km of the proposed development site.

Hedgehog: two records of hedgehog *Erinaceus europaeus* were returned from within 2km of the proposed development site. The first record is a historical record dating from 1986. The record is vague and is only accurate to a 1km grid square. The record is located a minimum of 196m from the proposed development site. The second record dates from 2011 and details a dead hedgehog on the road approximately 570m south-east of the proposed development site.

Otter: two records of otter *Lutra lutra* were returned from within 2km of the proposed development site. Both records date from 2003 are from Ledburn Brook, located approximately 1.6km north-west and 1.85km north of the proposed development site.

Reptiles: no records of any reptile species were returned from within 2km of the proposed development site.

Water vole: two records of water vole *Arvicola amphibius* were returned from within 2km of the proposed development site. The first record is a historical record dating from 1986. The record is vague and is only accurate to a 1km grid square. The record is located a minimum of 196m from the proposed development site. The second record dates from 2003 and is located approximately at Ledburn Brook, approximately 1.6km north-west of the proposed development site.

White clawed-crayfish: no records of white-clawed crayfish *Austropotamobius pallipes* were returned from within 2km of the proposed development site.

3.2 Baseline conditions – Habitats

The results of the PEA are also shown on the accompanying map at Appendix 2 – Phase 1 habitat plan. Habitats are colour-coded in accordance with the phase 1 standard. A full botanical species list for each habitat is provided at Appendix 5.

The local area predominantly consists of arable fields intersected by drainage channels hedgerows and tree lines. The following principle habitat types were characterised on site:

A2.2 Dense scrub
A3.1 Broadleaved scattered trees
A3.2 Coniferous scattered trees
B4 Improved grassland

C3.1 Tall ruderal
J2.1.1 Intact, species-rich hedge
J2.1.2 Intact, species-poor hedge
J2.2.2 Defunct, species-poor hedge
J2.4 Fence
J2.5 Wall
J3.6 Buildings
J5 Hardstanding

3.2.1 A2.2 Scattered scrub

A single stand of hawthorn *Crataegus monogyna* scrub lies outside of the development boundary but at the edge of the northern section of the ownership boundary.

3.2.2 A3.1 Broadleaved scattered trees

A single mature pedunculate oak *Quercus robur* tree lies within the centre of the eastern improved grassland field, outside of the proposed development area. A single semi-mature walnut *Juglans sp.* tree lies along the eastern boundary of ownership boundary but outside of the development boundary.

A number of semi-mature and mature trees are present along the western boundary of the proposed development area. With the exception of three semi-mature pedunculate oak trees, all boundary trees lie offsite but overhang the site. Species present include lime *Tilia sp*., ash Fraxinus excelsior, sycamore *Acer pseudoplatanus*, pedunculate oak, hazel *Corylus avellana* and hawthorn.

3.2.3 A3.2 Coniferous scattered trees

A line of cypress Cupressus sp. trees lie offsite but immediately adjacent to the western edge of the development boundary.

3.2.4 B4 Improved grassland

The majority of the ownership boundary and the entirely of the proposed working area comprises improved grassland. The site is split into two fields by a dividing post and wire fence. Both fields are subject to sheep grazing, however the eastern field appears to have only recently been stocked and the sward was longer as a result. The eastern field and some parts of the western field show ridge and furrow, a remnant of a historic ploughing management technique, often indicating old grassland that has received little improvement through recent ploughing or cultivation. Despite this, the grassland appears to have been subject to agricultural improvement through overgrazing and fertiliser application. The grassland is dominated by perennial ryegrass *Lolium perenne* with some other competitive grass species also present throughout such as meadow foxtail *Alopecurus pratensis*, crested dog's-tail *Cynosurus cristatus* and rough meadow-grass *Poa trivalis*. Fine-leaved grasses and forbs are infrequent within the sward and are predominantly limited to the margins where additional species, albeit species predominantly associated with agricultural improvement, are present. Additional species present include stinging nettle *Urtica dioica*, broadleaved dock

Rumex obtusifolius, common mouse-ear *Cerastium fontanum*, white clover *Trifolium repens*, red fescue *Festuca rubra*, creeping thistle *Cirsium arvense*, ground ivy *Glechoma hederacea* and cow parsley *Anthriscus sylvestris*.

A very small section of the grassland within the north-eastern section of the ownership boundary and outside of the development boundary, measuring approximately 15m^2, contains remnants of less improved grassland (Target Note 2). This is evidenced by the presence of ladies bedstraw *Galium verum* and a yellow wood ant *Lasius flavus* nest mound. Other than these, all other species present are indicative of improved conditions.

3.2.5 C3.1 Tall ruderal

Two small stands of tall ruderal vegetation are present, surrounding the building in the north-eastern corner of the ownership boundary and along the western edge of the access track at the southern section of the site. These areas of vegetation are dominated by a small number of species such as stinging nettle, common hogweed *Heracleum sphondylium*, false oat-grass *Arrhenatherum elatius* and creeping thistle.

3.2.6 J2.1.1 Intact species-rich hedgerow

Hedge 1 is a short section of intact species-rich hedgerow that runs along the northern section of the eastern boundary of the proposed working area. This hedgerow appears largely unmanaged and measures approximately 2-5m in height and 1.5-3m in width. The hedgerow is composed of hawthorn, hazel, blackthorn *Prunus spinosa*, dog rose *Rosa canina* and ash.

3.2.7 J2.1.2 Intact species-poor hedgerow

Hedge 4 is a short section of defunct species-poor hedgerow that runs along part of the northern boundary of the ownership boundary. This hedgerow is largely unmanaged and measures approximately 4-5m in height and 3-4m in width. The hedgerow is dominated by hawthorn with occasional blackthorn and elder *Sambucus nigra*.

3.2.8 J2.2.2 Defunct species-poor hedgerow

Hedge 3 is a short section of defunct species-poor hedgerow that demarcates part of the ownership boundary but lies outside of the development boundary. This hedgerow is largely unmanaged and measures approximately 3-4m in height and 3m in width. The hedgerow is entirely composed of hawthorn and blackthorn.

3.2.9 J2.4 Fence

Post and wire fencing demarcates most of the site boundaries and divides the site into two fields.

3.2.9 J2.5 Wall

A section of brick wall demarcates part of the southern site boundary.

3.2.9 J3.6 Buildings

Four buildings are present on site, all of which lie outside of the proposed working area. These buildings include a wooden shed at the edge of the access track at the southern boundary, two temporary wooden stable structures within the southern section of the site and an old and dilapidated stable / agricultural storage building within the north-eastern corner of the site. The building within the north-eastern corner of the site has been constructed from a wooden frame, wooden slat walls and a corrugated metal roof. No floor is present within the building which is bare earth.

3.2.9 J5 Hardstanding

A small section of narrow gravelled track is present within the southern section of the site.

3.3 Baseline conditions – Protected species or resources

As part of the PEA, specific observations of wildlife were also recorded. Wildlife observations focused on protected species, invasive species or species of conservation concern. Habitats with potential to support protected species were noted with a view to follow up surveys if required.

3.3.1 Amphibians

Numerous records of GCNs were returned from within 2km of the proposed development site. The closest record dates from 2007 and is located from a pond at Mentmore Towers, located approximately 280m south-west of the proposed development site. All other GCN records are located over 900m from the site.

There are four mapped ponds within 250m of the proposed development site, Pond 1 is located immediately adjacent to the northern-eastern corner of the ownership boundary and is approximately 100m north-east of the proposed development area. Ponds 2, 3 and 4 are located within an arable field, approximately 130m, 190m and 250m from the potential access route for the proposed development works (see Appendix 6).

The terrestrial habitats within the proposed working area entirely comprise sheep-grazed improved grassland and a hardstanding access track. These habitats provide very limited foraging, sheltering and commuting opportunities for amphibians and are broadly unsuitable for use by GCNs. The hedgerows and tall ruderal habitats at the boundaries provide some higher quality habitat, although these habitats are very small in area and will all be retained as part of the proposals.

Habitat Suitability Index (HSI) assessment

<u>Pond 1 – Grid reference: SP 90378 20338</u>

This pond is located at edge of an agricultural field and is connected to a wet ditch that runs north away from the development and ownership boundary. The pond is heavily shaded by scrub and mature trees including crack willow *Salix fragilis*, hawthorn, elder and ash. The pond has two lobes and was relatively shallow at the time of the walkover survey, with a maximum depth of 0.5m. A moorhen *Gallinula chloropus* nest was observed at the pond edge. Aquatic

floating or emergent vegetation is absent and is limited to smalls stands of marginal vegetation, much of which is dominated by stinging nettle and other ruderal species. Species present include gypsywort *Lycopus europaeus*, bittersweet *Solanum dulcamara*, celery-leaved buttercup *Ranunculus sceleratus*, soft rush *Juncus effusus* and great willowherb *Epilobium hirsutum*. It is considered that fish are unlikely to be present within the pond.

The pond has a HSI score of 0.62, making it of 'average' suitability for GCNs.

Pond 2 – Grid reference: SP 90556 20082

This pond is located within an arable field. The pond is mapped on Ordnance Survey maps as being relatively long and connecting to an additional smaller pond to the south-east via a continuous band of scrub and trees. During the survey, the majority of this area was found to be dry, including the smaller mapped pond. Only a smaller area, approximately a third the size of the mapped area was holding water. The pond is surrounded and shaded by dense scrub and trees with a ring of tall ruderal vegetation. The pond shows signs of eutrophication and is entirely covered by filamentous algae, likely as a result of fertiliser run off the surrounding arable land. A small section of the pond surface is covered by floating sweet grass *Glyceria fluitans* and some emergent and marginal vegetation is present including watercress *Nasturtium officinale*, bittersweet, stinging nettle, branched bur-reed *Sparganium erectum*, water starwort *Callitriche sp.* and hard rush *Juncus inflexus*.

The pond has a HSI score of 0.67, making it of 'average' suitability for GCNs.

Pond 3 – Grid reference: SP 90593 20000

This pond is located within an arable field and is completely surrounded and overshaded by dense elder and bramble scrub and mature crack willow trees. Due to the high levels of shading and encroaching vegetation, the area of standing water is very small and the pond had a maximum depth of approximately 20cm at the time of the walkover survey. Marginal vegetation is dominated by stinging nettle and other tall ruderal species such as cow parsley and creeping thistle. A small quantity of bittersweet is present.

The pond has a HSI score of 0.41, making it of 'poor' suitability for GCNs

Pond 4 – Grid reference: SP 90593 20000

This pond is located within an arable field and was completely dry at the time of the survey. The pond is heavily chocked by greater reedmace *Typha latifolia* and the margins are being encroached by dense bramble and elder scrub. It is considered likely that the pond is dry for most of the year. As such, the pond could not be subject to a HSI assessment. Additional marginal species present amongst the dominating greater reedmace include bittersweet, curled dock *Rumex crispus*, celery-leaved buttercup, broadleaved dock, stinging nettle creeping thistle, wavy bittercress *Cardamine flexuosa*, cleavers *Galium aparine*, water figwort *Scrophularia umbrosa*, great willowherb and cow parsley.

eDNA survey

The eDNA surveyed returned negative results (0/12 positive replicants) for all three ponds, indicating that GCNs are not present within these ponds and are not using these ponds for breeding purposes. Given that Pond 4 was completely dry at the time of the survey, during the peak GCN breeding period, this pond is considered to be unsuitable for use by breeding GCNs.

Rapid risk assessment

The following rapid risk assessment tool has been developed by Natural England in order to establish whether it is necessary to apply for a licence. It assumes that the pond(s) identified during the site visit are suitable GCN breeding ponds, which in some cases will not be the case.

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)	No effect	0
Land 100-250m from any breeding pond(s)	No effect	0
Land >250m from any breeding pond(s)	0.5 - 1 ha lost or damaged	0.03
Individual great crested newts	No effect	0
	Maximum:	0.03
Rapid risk assessment result:	**GREEN: OFFENCE HIGHLY UNLIKELY**	

"Green: offence highly unlikely" indicates that the development activities are of such a type, scale and location that it is highly unlikely any offence would be committed should the development proceed. Therefore, no licence would be required. However, bearing in mind that this is a generic assessment, you should carefully examine your specific plans to ensure this is a sound conclusion, and take precautions (see **Non-licensed avoidance measures tool**) to avoid offences if appropriate. It is likely that any residual offences would have negligible impact on conservation status, and enforcement of such breaches is unlikely to be in the public interest.

The results of the rapid risk assessment show that the absence of GCNs within all ponds within 250m of the proposed working area makes it highly unlikely that GCNs will be adversely impacted by the proposals. When we consider that the proposed working area is significantly smaller than the area used for the calculation (which includes all potential access routes), coupled with the poor-quality terrestrial habitat present within the working area, it can be considered that the proposals won't have any adverse impacts upon GCNs.

No aquatic habitat will be affected by the works and the only terrestrial habitat to be impacted is improved grassland that lies over 250m from any potential GCN breeding ponds. It is therefore considered that further no GCN surveys, mitigation or compensation measures are required for the works to proceed. There remains some, albeit limited potential for other more common amphibian species to breed within the nearby ponds and hence to be present within the working area at the time of the works.

3.3.2 Reptiles

No records of reptiles were returned from within 2km of the proposed development site. No evidence of reptiles was observed on site during the walkover survey despite checking on and beneath potential basking locations or refugia e.g. discarded sheets or metal and wood in the north-western corner of the survey area.

The proposed development site and the wider survey area almost entirely comprise improved grassland, with only small sections of hedgerow present at the site boundaries. These habitats provide very limited foraging and sheltered commuting opportunities for reptiles.

Reptiles are not considered to be present on site or within the immediate vicinity of the site.

3.3.4 Bats

There are no buildings on or within the immediate vicinity of the proposed development area that could be used by roosting bats. All onsite trees within the proposed development boundary have negligible potential to support roosting bats. However, there are a number of trees located offsite but along the site boundaries that could have the potential to support roosting bats. Trees located offsite were not subject to a full ground level tree assessment of their potential to support roosting bats, however potential roosting features were observed within two sycamore trees at the southern site boundary (see Target Note 1).

The building that lies outside of the proposed development boundary but within the north-eastern corner of the survey boundary has low potential to support roosting bats due to the presence of a small number of mostly superficial potential roosting features.

The site is predominantly composed of improved grassland, with very few vegetative linear features at the boundaries. Whilst the improved grassland provides low quality foraging and commuting habitat for bats, the hedgerows and trees at the boundaries will provide small sections of higher quality habitat, although these are due to be retained as part of the proposals.

3.3.5 Hazel dormouse

The habitats on site are relatively unsuitable for dormice. There is no woodland on site or within the immediate vicinity of the site and the majority of the site boundaries are lacking hedgerows and connected lines of trees. Additionally, the site is isolated from areas of suitable habitat within the wider landscape by large expanses of agricultural fields.

Hazel dormice are not considered to be present on site or within the immediate vicinity of the site.

3.3.6 Birds

Although a targeted bird survey was not conducted during the site visit, the following bird species were recorded whilst on site: woodpigeon *Columba palumbus*, goldfinch *Carduelis carduelis*, skylark *Alauda arvensis*, jackdaw *Corvus monedula*, raven Corvus corax, red kite *Milvus milvus*, blackcap *Sylvia atricapilla*, lesser whitethroat *Sylvia curruca*, house sparrow *Passer domesticus* and pied wagtail *Motacilla alba*.

The building that lies outside of the development boundary but within the north-eastern corner of the ownership boundary contains a barn owl box and two little owl *Athene noctua* boxes. At the time of the walkover survey, the barn owl box and one of the little owl boxes were empty. The second little owl box contained four little owl chicks. Historic use of the building by barn owls is evidenced by the presence of barn owl pellets beneath the barn owl box. Egg shell fragments were also observed immediately below the barn owl box, although due to their condition, these could not be confidently identified to confirm barn owl breeding.

Suitable areas of nesting bird habitat on site are limited to the trees and short sections of hedgerows at the site boundaries. The areas of grassland on site are subject to regular sheep grazing and hence have a relatively short sward, making them unsuitable for use by ground nesting birds.

The building with the owl boxes and all trees and hedgerows are due to be retained as part of the development proposals. As such, it is considered that there will be no impact on nesting birds as a result of the proposals.

3.3.7 Trees

Trees at the site boundaries may be protected by a Tree Preservation Order (TPO), for which a check has not been undertaken.

3.3.8 Hedgerows

There are four short sections of hedgerow at the boundaries of the survey boundary, only one of which borders the proposed development area. It is unlikely that these hedgerows will qualify as “important” for ecological reasons under the Hedgerow Regulations, but they may qualify on historical grounds.

3.3.9 Plant communities

No plant communities or individual species were recorded on site which are afforded statutory protection in their own right.

3.3.10 Invasive species

No invasive species were observed on site or within the immediate vicinity of the site.

3.3.11 Otter, water vole and white-clawed crayfish.

There are no habitats on site or within the immediate vicinity of the proposed development site that are suitable to support otter, water vole or white-clawed crayfish. These species are not considered to be present on site or within the immediate vicinity of the site.

4 EVALUATION AND RECOMMENDATIONS

This section provides a brief assessment of the likely impacts associated with the proposed development on the receptors identified during the walkover survey and desk study. It also includes any mitigation and compensation measures which may be required for the proposed development to proceed.

4.1 Habitats

4.1.1 Designated sites

The sites identified during the desk study were cross-referenced with the survey area relevant to this report. There are no statutorily or non-statutorily protected sites within 2km of the proposed development site.

Given the distances from site and the scale of development, it is considered that the proposed development won't have any direct or indirect impacts on any designated sites.

4.1.2 Hedgerows and trees

There are four hedgerows and numerous scattered trees at the boundaries of the ownership boundary, some of which are present at the boundary of the proposed working area.

Construction impacts

All trees are hedgerows are due to be retained and won't be impacted by the proposals. Construction activities too close to the root protection areas (RPAs) of the retained hedgerows and trees could cause permanent damage.

Mitigation

Any works close to the field boundaries should be mindful of the hedgerows and their root protection areas (RPAs).

Compensation

If the proposals change and any hedgerows or trees are to be removed, they should be replaced accordingly as part of a detailed landscaping scheme, with only native species to be planted.

The proposals incorporate additional native species hedgerow planting and the gapping up of any defunct with a species-rich mix of native species. This will provide an ecological enhancement and will benefit numerous species locally.

Operational impacts

No operational impacts are envisaged.

4.2 Species

4.2.1 Amphibians

Although the presence of GCNs on site is considered unlikely, the works should still be completed under RAMs to ensure that other common amphibian species are not affected by the works.

Construction impacts

Potential impacts include direct harm, injury and / or death to individuals.

Mitigation

The following RAMs should be implemented on site during the construction phase of the development:

- The areas of grassland within the working area to continue to be mown or grazed to have a sward length below 10cm. The mown / grazed area will then be maintained with a short sward until the works on site have been completed.

- No excavations are to be left open overnight. If this is not feasible a plank should be left within the excavation at a 45 degree angle to allow amphibians and other wildlife to escape. Any open excavations should be checked for trapped wildlife in the morning prior to start of works on site.

- Where possible, materials will be stored on pallets off the ground in order to reduce the risk of amphibians sheltering underneath them.

- Any common amphibians observed within the working area are to be translocated to an area of suitable habitat outside of the working area. Suitable habitat to translocate to includes the dense scrub surrounding Pond 1 and the base of hedgerows at the site boundaries.

- UES will remain on-call throughout the development and if any suspected GCNs are encountered, work on site is to stop immediately and ecological advice is to be sought. UES can be contacted directly on **01565 757788**.

Operational impacts

No operational impacts are envisaged.

[redacted]

[redacted]

4.2.3 Bats

The building within the north-eastern corner of the working area has low potential to support roosting bats. A full ground level tree assessment of bat roosting potential was not undertaken as all trees are due to be retained, however potential bat roosting features were observed within two sycamore trees within the southern section of the site. With the exception of the trees and small sections of hedgerow at the site boundaries, the majority of the site provides low quality foraging and commuting opportunities for bats.

Construction impacts

The building assessed as having bat roosting potential and all trees on site are due to be retained. As such, the works won't have a direct impact on roosting bats. The proposals are small scale and will only impact a small area of improved grassland, as such it is considered that the impacts on bat foraging and commuting habitat will be negligible.

Enhancements

The provision of bat boxes as part of the development proposals would increase the roosting opportunities for bats on site but would also increase the ecological value of the site. Examples of bat boxes that could be affixed to trees on site include:

Schwegler 1FF box
Schwegler 2F box

Bat boxes affixed to trees should be fitted at a height of between 5 and 6m metres on a southerly aspect.

It should be noted that once bats inhabit a bat box, they may only be disturbed by a licensed bat worker.

Operational impacts

If any external lighting is installed as part of the development is allowed to overspill onto retained tree lines and hedgerows, it could degrade the suitability of habitats or sever commuting corridors. Light spill onto installed bat boxes would reduce the suitability and likelihood of occupancy.

Mitigation

Care must be taken when installing any new lighting to ensure that light spillage onto any retained tree lines, hedgerows or any installed bat boxes is minimised. This may require the use of cowling or relocation of the bat box or lighting.

5 CONCLUSION

Both the proposed development boundary and the wider ownership boundary predominantly comprise sheep grazed improved grassland fields. The majority of the site boundaries and internal field boundaries are demarcated by post and wire fences, however a wall and some tree lines and small sections of hedgerow are present. Four small agricultural buildings are present within the ownership boundary, all of which lie outside of the proposed development boundary

The preliminary ecological appraisal has highlighted potential issues with the following ecological receptors on or adjacent to site: hedgerows and trees, amphibians, bats, badgers, hedgehogs, brown hare and other mammals. Provided these issues are addressed in accordance with the recommendations detailed in this report, the development may proceed without adversely impacting the aforementioned ecological receptors.

The development also presents an opportunity to enhance the habitats available to wildlife on site. The provisioning of bat and bird nest boxes on site will provide improved roosting and nesting opportunities into the long-term future of the site.

6 REFERENCES

CIEEM (2017). *Guidelines for Preliminary Ecological Appraisal* (Second Edition).

DEFRA (2019). *MAGIC* [online]. Available at: http://magic.defra.gov.uk/.

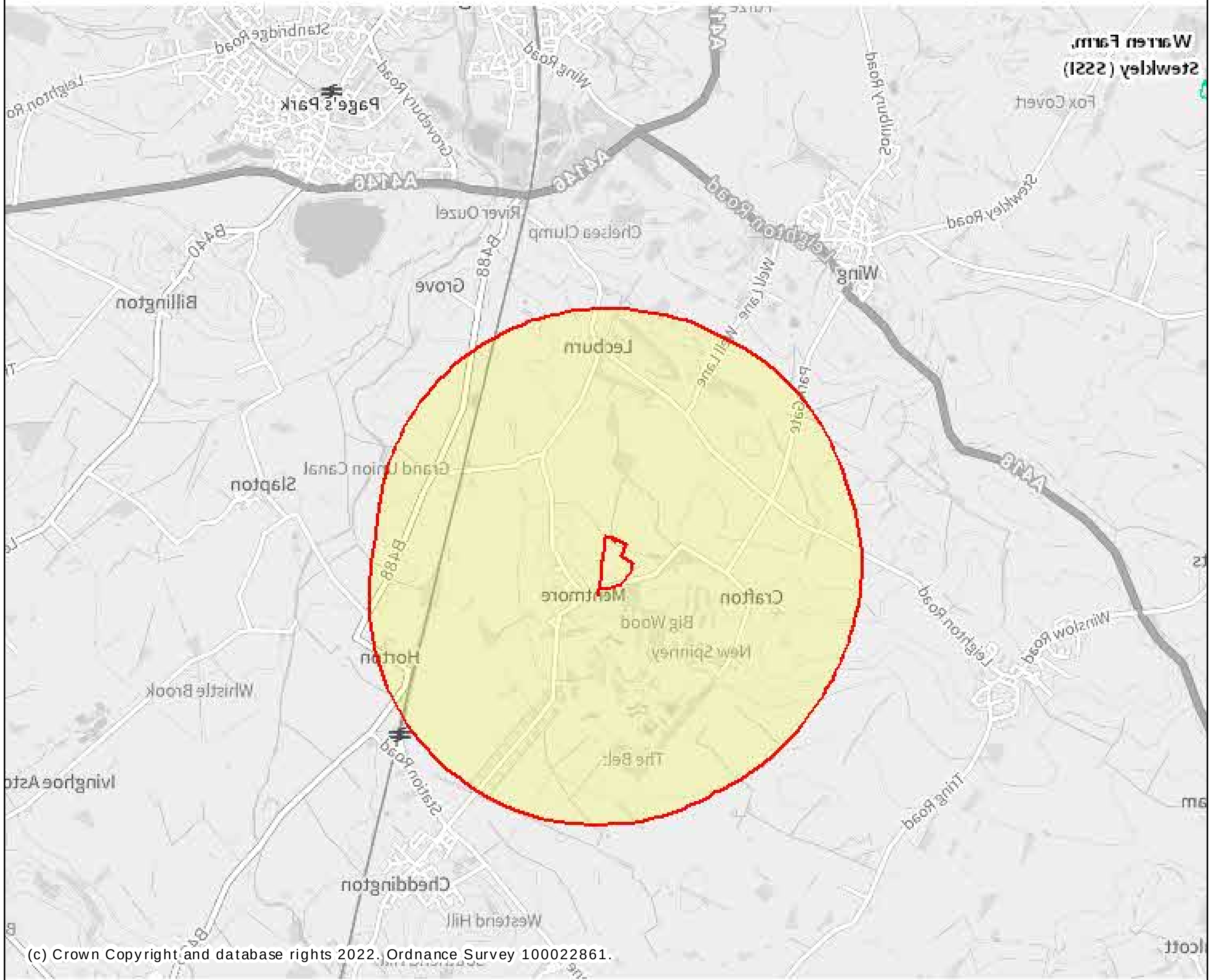
JNCC (2010). *Handbook for Phase 1 habitat survey: A technique for environmental audit*.

MHCLG (2021). National Planning Policy Framework (NPPF).

APPENDICES

Appendix 1 – Desk study

Statutorily designated sites - 2km



Legend

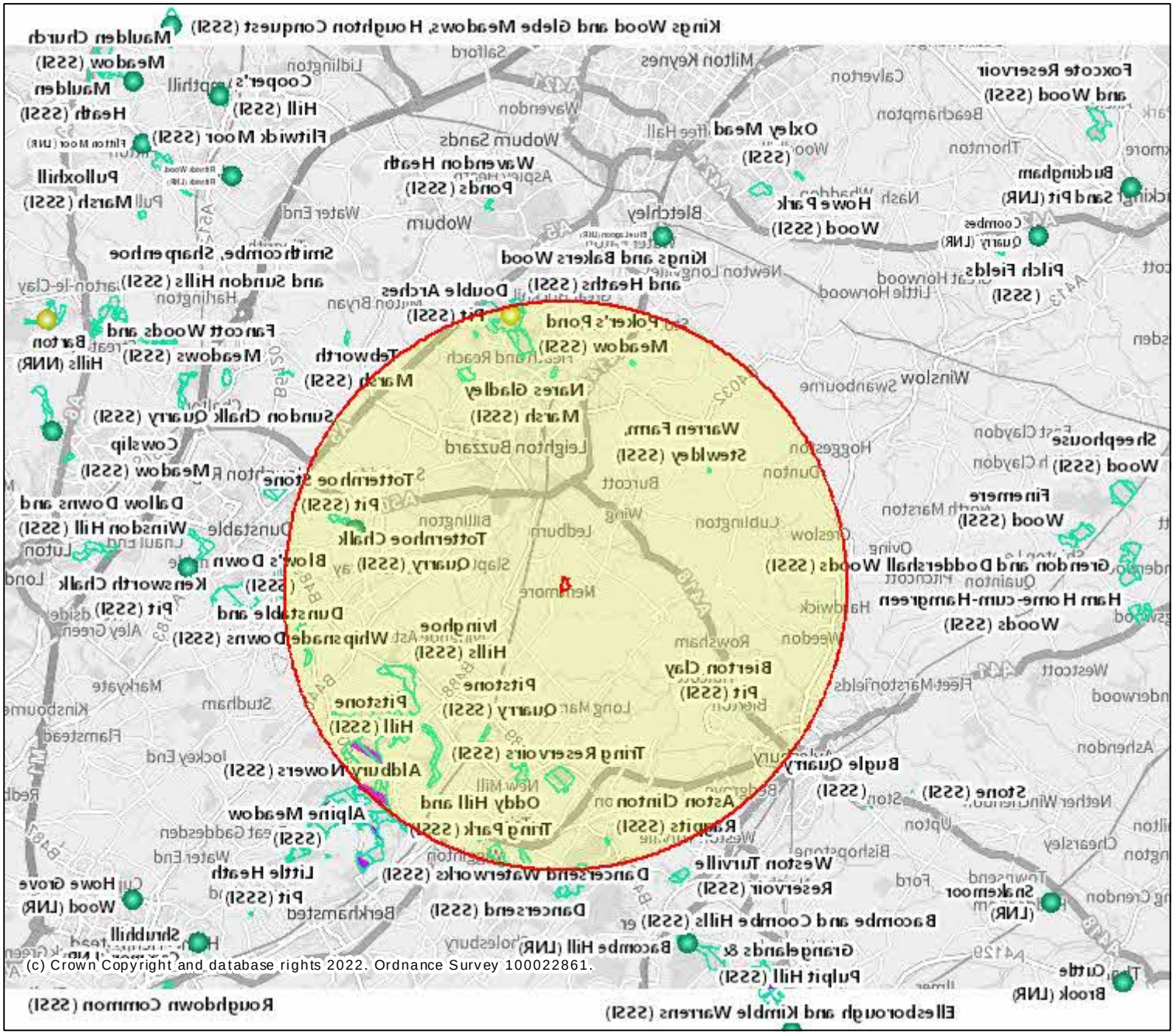
- Local Nature Reserves (England)
- National Nature Reserves (England)
- National Parks (England)
- Ramsar Sites (England)
- Proposed Ramsar Sites (England)
- Sites of Special Scientific Interest (England)
- Sites of Special Scientific Interest (Scotland)
- Special Areas of Conservation (England)
- Possible Special Areas of Conservation (England)
- Special Protection Areas (England)
- Potential Special Protection Areas (England)
- Biosphere Reserves (England)

Projection = OSGB36
xmin = 481600
ymin = 216400
xmax = 499300
ymax = 225000

0 1 2
km

Map produced by MAGIC on 19 May, 2022.

Statutorily designated sites - 10km



Legend

- Local Nature Reserves (England) - points
- National Nature Reserves (England) - points
- National Parks (England)
- Ramsar Sites (England)
- Proposed Ramsar Sites (England)
- Sites of Special Scientific Interest (England)
- Sites of Special Scientific Interest (Scotland)
- Special Areas of Conservation (England)
- Possible Special Areas of Conservation (England)
- Special Protection Areas (England)
- Potential Special Protection Areas (England)
- Biosphere Reserves (England)

Projection = OSGB36
xmin = 454200
ymin = 205500
xmax = 524900
ymax = 239600

0 4 8
km

Map produced by MAGIC on 19 May, 2022.

Appendix 2 – Phase 1 habitat plan

Target Note 1 - Two sycamore trees with potential bat roosting features

Target Note 2 - Yellow meadow ant hill and small area of ladies bedstraw

Target Note 3 - Little owl box with no signs of recent nesting

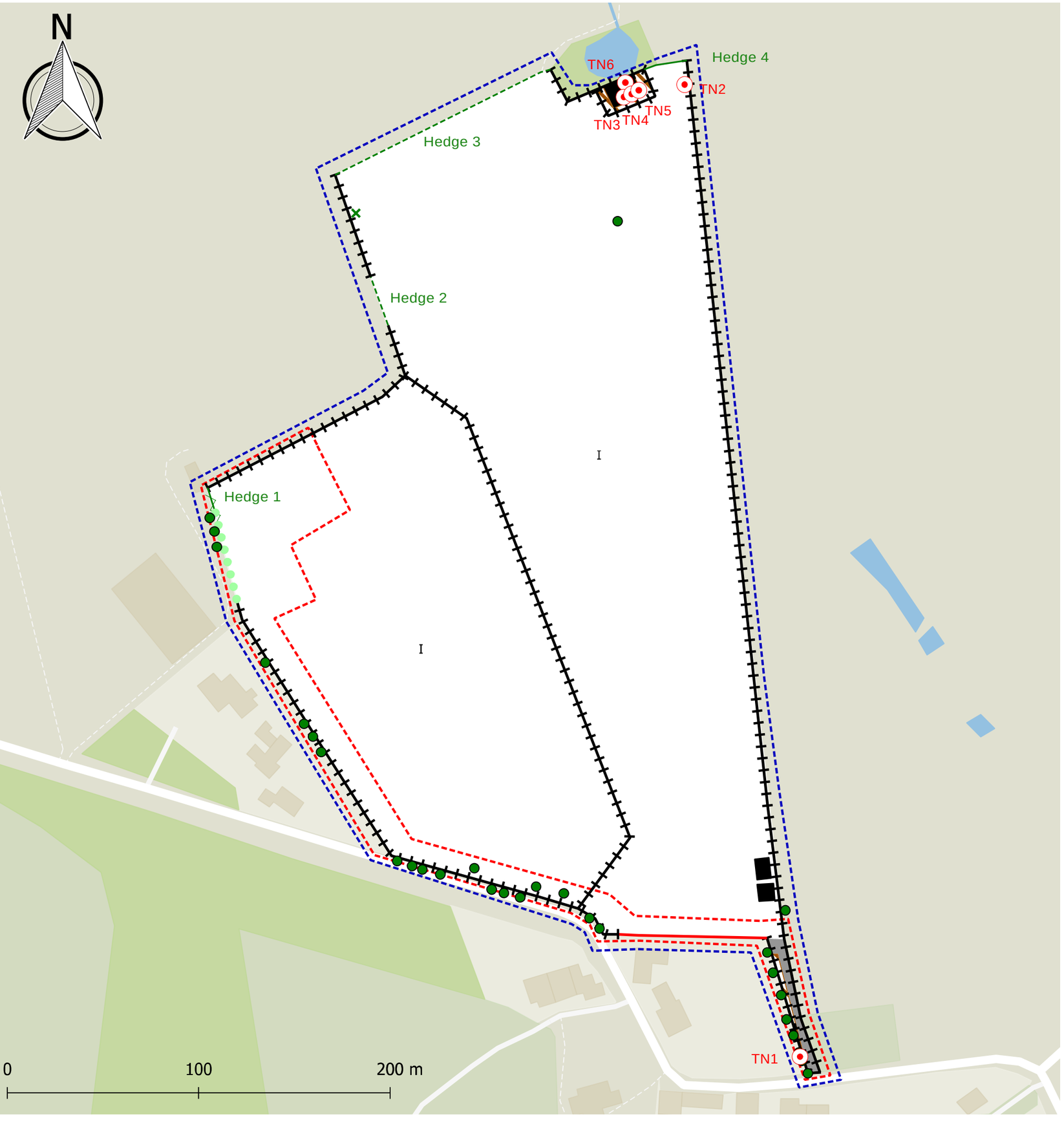
Target Note 4 - Barn owl box with old egg shells and pellets but no evidence of recent use.

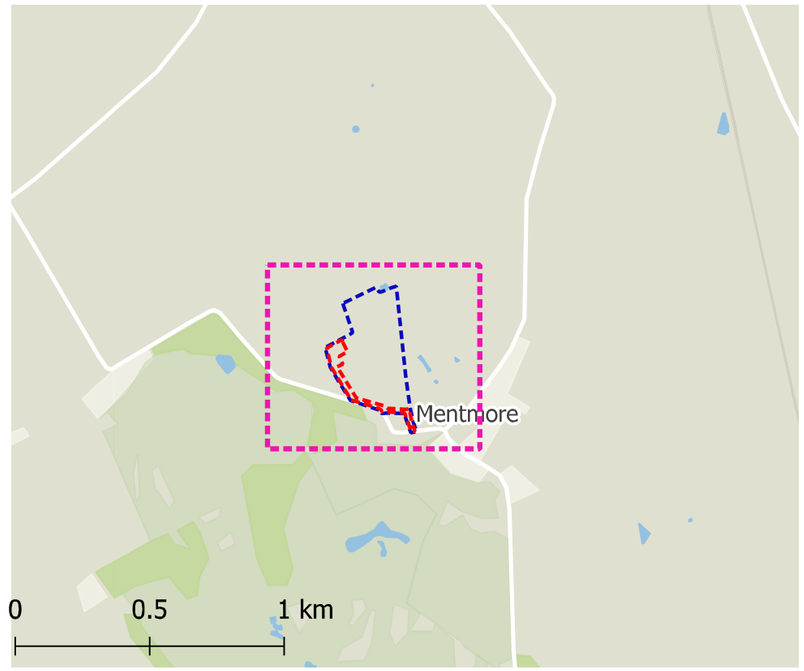
Target Note 5 **-** Little owl box with four little owl chicks

Target Note 6 **-** Inactive mammal burrow, potential historic badger sett

Preliminary Ecological Appraisal

Site: Land opposite Stable Cottage, Mentmore
NGR: SP 90334 20095
Author: Tom Kenwright
Date: 14/05/2022



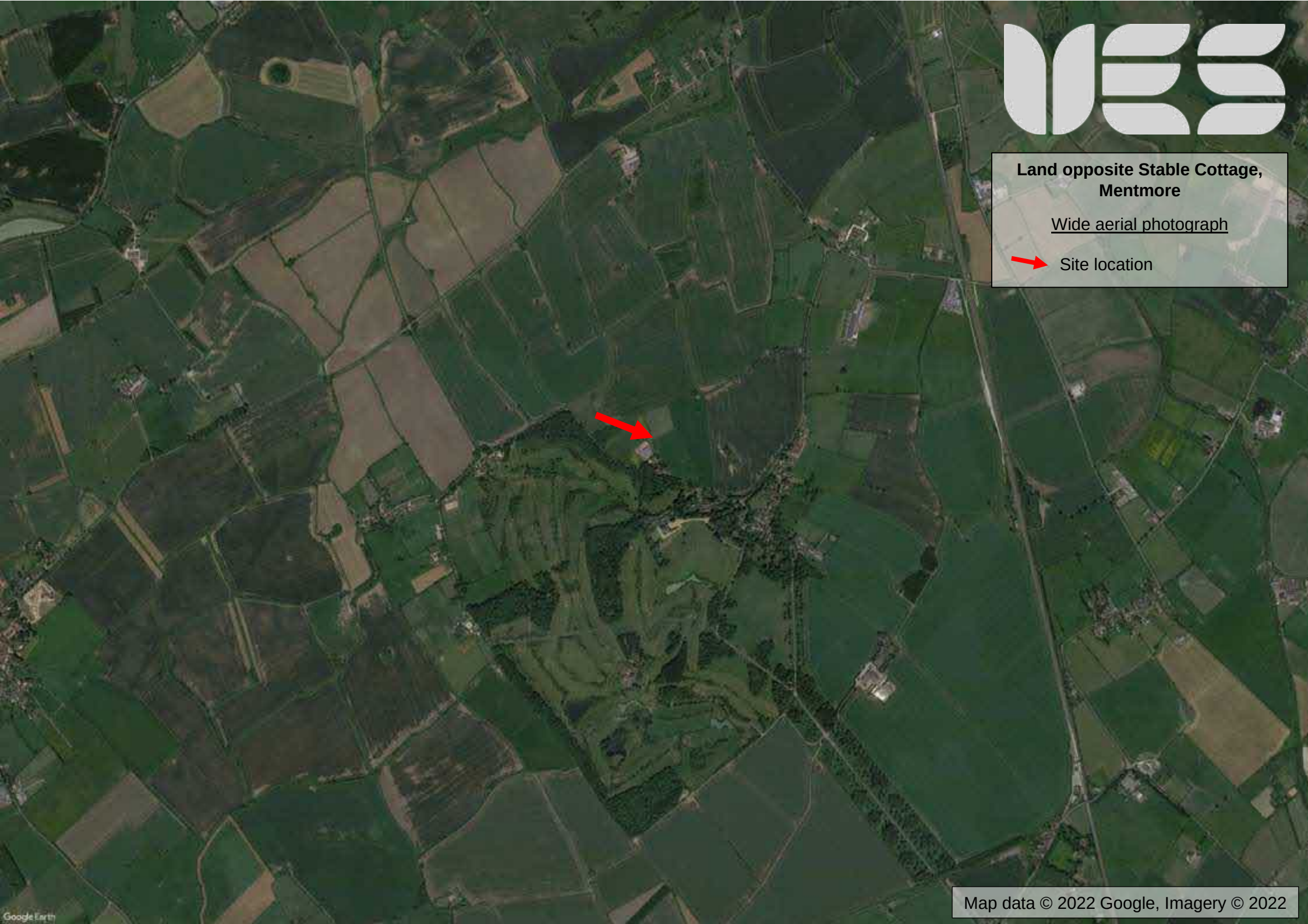


KEY:

- A2.2 - Scrub - scattered
- A3.1 - Broadleaved scattered trees
- A3.2 - Coniferous scattered trees
- B4 - Improved grassland
- C3.1 - Ruderal tall herb and fern
- J2.1.1 - Intact hedge - native species-rich
- J2.1.2 - Intact hedge - species-poor
- J2.2.2 - Defunct hedge - species-poor
- J2.4 - Fence
- J2.5 - Wall
- J3.6 - Buildings
- J5 - Hardstanding
- Development boundary
- Survey / ownership boundary
- Target Notes

Appendix 3 – Aerial photographs


Land opposite Stable Cottage, Mentmore
Close aerial photograph
Development boundary (including potential access routes and enabling works)
Land ownership / survey boundary
Map data © 2022 Google, Imagery © 2022
Google Earth


Land opposite Stable Cottage, Mentmore
Wide aerial photograph
Site location
Map data © 2022 Google, Imagery © 2022
Google Earth

Appendix 4 – Photographs

Photograph 1 – Looking east across the section of improved grassland that lies within the proposed development site.

Photograph 2 – Looking west across the section of improved grassland field that lies within the proposed development boundary.

Photograph 3 – Looking south across the improved grassland fields within the wider ownership boundary.

Photograph 4 – Example of broadleaved and coniferous trees that are located offsite but at the site boundaries.

Photograph 5 – Example of semi-mature oak trees present within the ownership boundary.

Photograph 6 – The building and surrounding tall ruderal vegetation that lie outside of the development boundary but within the north-eastern corner of the ownership boundary.

Photograph 7 – Internal view of the building that lies outside of the development boundary but within the north-eastern corner of the ownership boundary.

Photograph 8 – The temporary stable buildings that lie outside of the development boundary but within the south-eastern section of the ownership boundary.

Photograph 9 – The shed building that lies adjacent to the access track within the southern section of the site.

Photograph 10 – Looking south along Hedgerow 1.

Photograph 11 – Looking north-west towards Hedgerow 2.

Photograph 12 – Looking north-west along Hedgerow 3.

Photograph 13 – The gravel hardstanding access track within the southern section of the site.

Photograph 14 – Two mature sycamore trees observed to contain potential roosting features for bats, located offsite but overhanging the access track at the southern site boundary.

Photograph 15 – One of two little owl boxes within the building located in the north-eastern corner of the ownership boundary.

Photograph 16 – Four little owl chicks observed within the little owl box shown above in Photograph 15.

Photograph 17 – Pond 1.

Photograph 18 – Looking towards Pond 2.

Photograph 19 – Looking towards Pond 3.

Photograph 20 – Showing the very small area of standing water present within Pond 3 at the time of the walkover survey.

Photograph 21 – Looking towards Pond 4, which was completely dry at the time of the walkover survey.

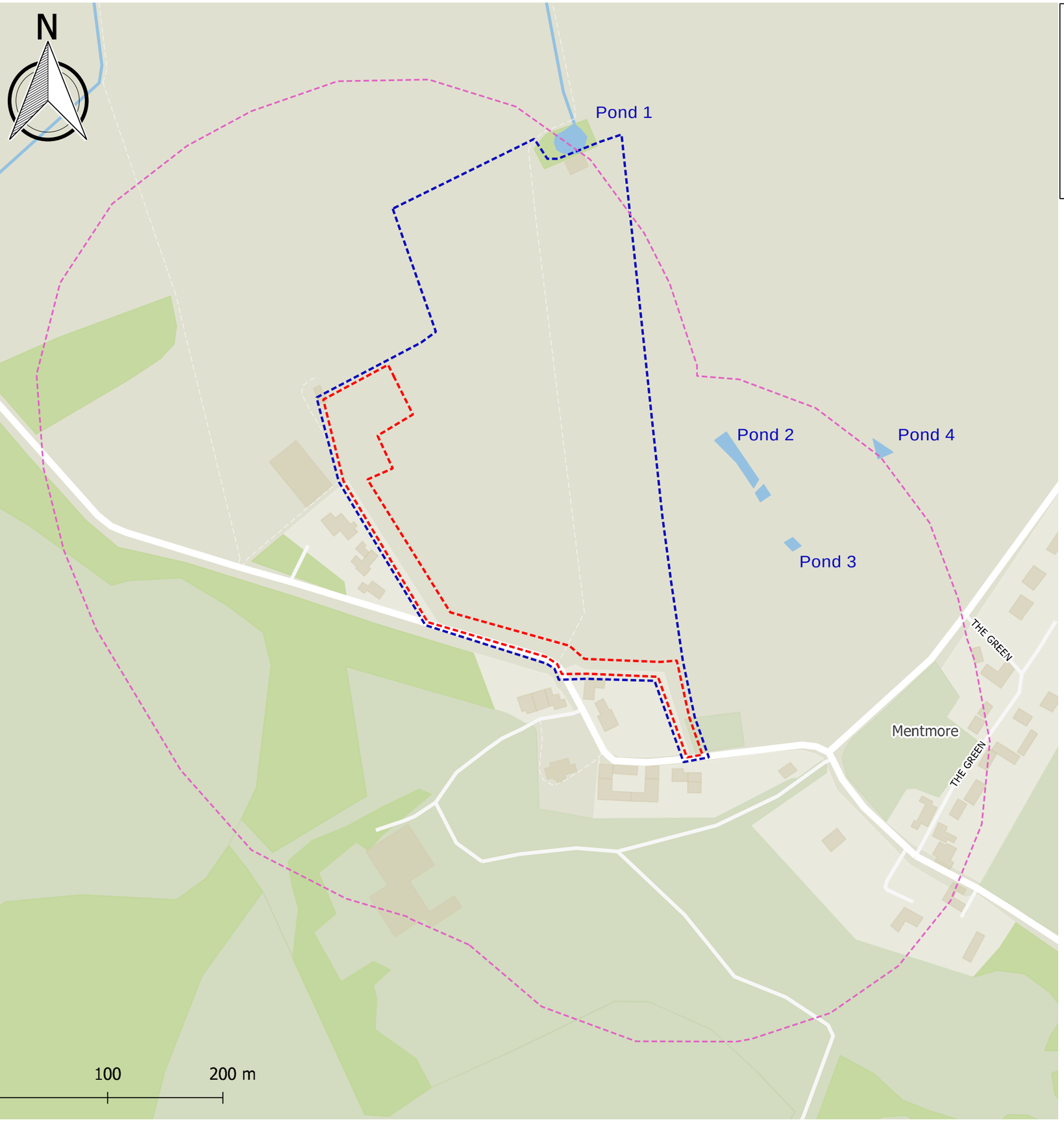
Appendix 5 – Botanical species list

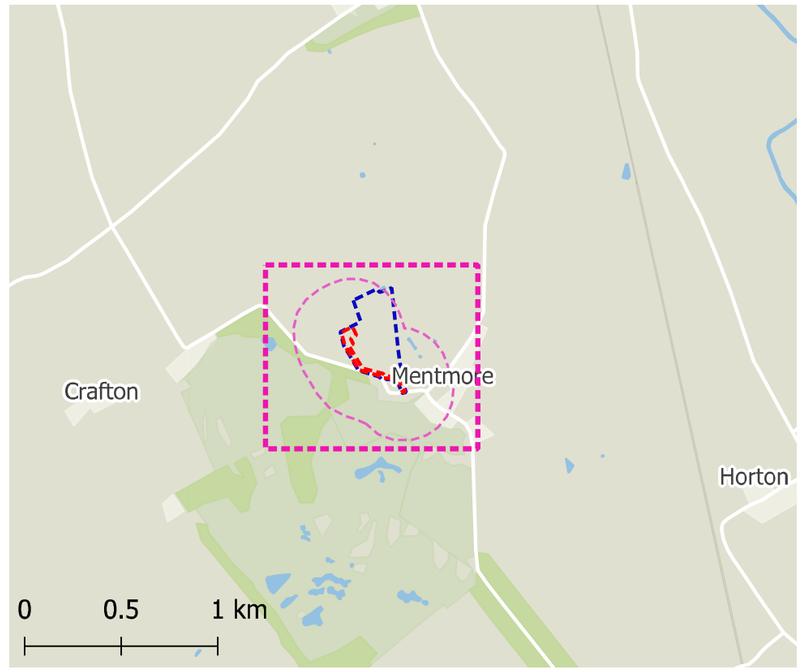
Scientific name	Common name	A2.2 Scattered scrub	A3.1 Broadleaved scattered trees	A3.2 Coniferous scattered trees	B4 Improved grassland	C3.1 Tall ruderal herb and fern	J2.1.1 Intact species-rich hedgerow	J2.1.2 Intact species-poor hedgerow	J2.2.2 Defunct species-poor hedgerow
Poa annua	Annual meadow-grass				X				
Fraxinius excelsior	Ash		X						
Bromus sterilis	Barren brome					X			
Solanum dulcamara	Bittersweet								
Prunus spinosa	Blackthorn							X	X
Rubus fruticosus agg.	Bramble								X
Sparganium erectum	Branched bur-reed								
Rumex obtusifolius	Broad-leaved dock					X			
Ranunculus sceleratus	Celery-leaved buttercup								
Galium aparine	Cleavers					X			
Dactylis glomerata	Cock's foot					X			
Agrostis capillaris	Common bent				X				
Symphytum officinale	Common comfrey					X			
Heracleum sphondylium	Common hogweed				X	X			
Cerastium fontanum	Common mouse-ear				X				
Anthriscus sylvestris	Cow parsley				X	X			
Malus sylvestris	Crab apple							X	
Salix fragillis	Crack willow								
Ranunculus repens	Creeping buttercup				X	X			
Cirsium arvense	Creeping thistle				X	X			
Cynosurus cristatus	Crested dog's-tail				X				
Geranium dissectum	Cut-leaved crane's-bill					X			
Cupressus sp.	Cypress			X					
Taraxacum officinale agg.	Dandelion				X				
Rosa canina	Dog rose						X		
Sambucus nigra	Elder							X	
Arrhenatherum elatius	False oat-grass					X			
Myosotis arvensis	Field forget-me-not				X				
Glyceria fluitans	Floating sweet-grass								
Veronica chamaedrys	Germander speedwell				X				
Epilobium hirsutum	Great willowherb								
Typha latifolia	Greater reedmace								
Salix cinerea	Grey willow								
Glechoma hederacea	Ground ivy				X				
Lycopus europaeus	Gypsywort								
Juncus inflexus	Hard rush								
Crataaegus monogyna	Hawthorn	X	X					X	X
Corylus avellana	Hazel		X						
Galium verum	Ladies bedstraw				X				
Tilia sp.	Lime		X						
Ficaria verna	Lesser celandine					X			
Alopecurus pratensis	Meadow foxtail				X	X			
Artemisia vulgaris	Mugwort					X			
Papaver somniferum	Opium poppy					X			
Quercus robor	Pedunculate oak		X						
Lolium perenne	Perennial ryegrass				X				
Sonchus asper	Prickly sow thistle					X			
Lamium purpureum	Red dead-nettle					X			
Festuca rubra	Red fescue				X				
Poa trivalis	Rough medow-grass				X	X			
Juncus effusus	Soft rush								
Cirsium vulgare	Spear thistle				X				
Urtica dioicia	Stinging nettle				X	X			
Acer pseudoplatanus	Sycamore		X						
Juglans sp.	Walnut		X						
Scrophularia auriculata	Water figwort								
Mentha aquatica	Water mint								
Callitriche sp.	Water starwort								
Nasturtium officinale	Watercress								
Cardamine flexuosa	Wavy bittercress								
Trifolium repens	White clover				X				
Lamium album	White dead-nettle				X				
Epilobium sp.	Willowherb					X			
Holcus lanatus	Yorkshire fog				X				

Appendix 6 – Pond plan

Pond plan

Site: Land opposite Stable Cottage, Mentmore
NGR: SP 90334 20095
Author: Tom Kenwright
Date: 14/05/2022





KEY:

- Development boundary
- Survey / ownership boundary
- 250m development boundary buffer

Appendix 7 – eDNA results

SureScreen Scientifics

Folio No: E13615
Report No: 1
Purchase Order: UES03741
Client: UNITED ENVIRONMENTAL SERVICES LTD
Contact: Jenny Gibbs, Tom Kenwright

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS (TRITURUS CRISTATUS)

SUMMARY

When great crested newts (GCN), *Triturus cristatus*, inhabit a pond, they continuously release small amounts of their DNA into the environment. By collecting and analysing water samples, we can detect these small traces of environmental DNA (eDNA) to confirm GCN habitation or establish GCN absence.

RESULTS

Date sample received at Laboratory: 17/05/2022
Date Reported: 20/05/2022
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
1954	Pond 1 - Land opposite Stable Cottage	SP 90378 20309	Pass	Pass	Pass	Negative	0
1982	Pond 2 - Land opposite Stable Cottage	SP 90525 20061	Pass	Pass	Pass	Negative	0
1983	Pond 3 - Land opposite Stable Cottage	SP 90580 19985	Pass	Pass	Pass	Negative	0

If you have any questions regarding results, please contact us: ForensicEcology@surescreen.com

Reported by: Jennifer Higginbottom **Approved by:** Esther Strafford

METHODOLOGY

The samples detailed above have been analysed for the presence of GCN eDNA following the protocol stated in DEFRA WC1067 'Analytical and methodological development for improved surveillance of the Great Crested Newt, Appendix 5.' (Biggs et al. 2014). Each of the 6 sub-sample tubes are first centrifuged and pooled together into a single sample which then undergoes DNA extraction. The extracted sample is then analysed using real time PCR (qPCR), which uses species-specific molecular markers to amplify GCN DNA within a sample. These markers are unique to GCN DNA, meaning that there should be no detection of closely related species.

If GCN DNA is present, the DNA is amplified up to a detectable level, resulting in positive species detection. If GCN DNA is not present then amplification does not occur, and a negative result is recorded.

Analysis of eDNA requires scrupulous attention to detail to prevent risk of contamination. True positive controls, negative controls and spiked synthetic DNA are included in every analysis and these have to be correct before any result is declared and reported. Stages of the DNA analysis are also conducted in different buildings at our premises for added security.

SureScreen Scientifics Ltd is ISO9001 accredited and participate in Natural England's proficiency testing scheme for GCN eDNA testing. We also carry out regular inter-laboratory checks on accuracy of results as part of our quality control procedures.

INTERPRETATION OF RESULTS

SIC: **Sample Integrity Check** [Pass/Fail]
When samples are received in the laboratory, they are inspected for any tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to inconclusive results.

DC: **Degradation Check** [Pass/Fail]
Analysis of the spiked DNA marker to see if there has been degradation of the kit or sample between the date it was made to the date of analysis. Degradation of the spiked DNA marker may lead indicate a risk of false negative results.

IC: **Inhibition Check** [Pass/Fail]
The presence of inhibitors within a sample are assessed using a DNA marker. If inhibition is detected, samples are purified and re-analysed. Inhibitors cannot always be removed, if the inhibition check fails, the sample should be re-collected.

Result: **Presence of GCN eDNA** [Positive/Negative/Inconclusive]
Positive: GCN DNA was identified within the sample, indicative of GCN presence within the sampling location at the time the sample was taken or within the recent past at the sampling location.
Positive Replicates: Number of positive qPCR replicates out of a series of 12. If one or more of these are found to be positive the pond is declared positive for GCN presence. It may be assumed that small fractions of positive analyses suggest low level presence, but this cannot currently be used for population studies. In accordance with Natural England protocol, even a score of 1/12 is declared positive. 0/12 indicates negative GCN presence.
Negative: GCN eDNA was not detected or is below the threshold detection level and the test result

should be considered as evidence of GCN absence, however, does not exclude the potential for GCN presence below the limit of detection.

Appendix 8 – HSI results

GCN HSI Calculations

	Pond number	P1	P2	P3	P4
	Grid reference	SP 90378 20338	SP 90556 20082	SP 90593 20000	SP 90639 20075
SI number	SI description	SI values			
1	Geographic location	1	1	1	Pond dry and unsuitable for use by breeding GCNs
2	Pond area	0.6	0.4	0.1	
3	Pond permanence	0.5	0.5	0.1	
4	Water quality	0.67	0.67	0.3	
5	Shade	0.4	0.8	0.4	
6	Water fowl	1	1	1	
7	Fish	1	1	1	
8	Pond density	1	1	1	
9	Terrestrial habitat	0.33	0.33	0.33	
10	Macrophyte cover	0.3	0.55	0.3	
HSI score:		0.62	0.67	0.41	N/A
Pond suitability:		Average	Average	Poor	N/A

HSI 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

Appendix 9 – External lighting guidance

Lighting scheme in relation to bats

The two most important features of street and security lighting with respect to bats are:

1. The UV component. Low or zero UV installations are preferred to reduce attraction of insects to lighting and therefore to reduce the attraction of foraging bats to these areas.

2. Restriction of the area illuminated. Lighting must be shielded to maintain dark areas, particularly above lighting installations, and in many cases, land adjacent to the areas illuminated. The aim is to maintain dark commuting corridors for foraging and commuting bats. Bats avoid well lit areas, and these create barriers for flying bats between roosting and feeding areas.

UV characteristics:

Low

- Low pressure Sodium Lamps (SOX) emit a minimal UV component.
- High pressure Sodium Lamps (SON) emit a small UV component.
- White SON, though low in UV, emit more than regular SON.

High

- Metal Halide lamps emit more UV than SON lamps, but less than Mercury lamps
- Mercury lamps (MBF) emit a high UV component.
- Tungsten Halogen, if unfiltered, emit a high UV component
- Compact Fluorescent (CFL), if unfiltered, emit a high UV component.
- Variable
- Light Emitting Diodes (LEDs) have a range of UV outputs. Variants are available with low or minimal UV output.
- Glass glazing and UV filtering lenses are recommended to reduce UV output.

Street lighting

- Low-pressure sodium or high-pressure sodium must be used instead of mercury or metal halide lamps. LEDs must be specified as low UV. Tungsten halogen and CFL sources must have appropriate UV filtering to reduce UV to low levels.
- Lighting must be directed to where it is needed and light spillage avoided. Hoods must be used on each lamp to direct light and contain spillage. Light leakage into hedgerows and trees must be avoided.
- If possible, the times during which the lighting is on overnight must be limited to provide some dark periods. If the light is fitted with a timer this must be adjusted to reduce the amount of 'lit time' and provide dark periods.

Security and domestic external lighting

The above recommendations concerning UV output and direction apply. In addition:

- Lighting should illuminate only ground floor areas. Light should not leak upwards to illuminate first floor and higher levels.
- Lamps of greater than 2000 lumens (150 W) must not be used.
- Movement or similar sensors must be used. They must be carefully installed and aimed, to reduce the amount of time a light is on each night.
- Light must illuminate only the immediate area required, by using as sharp a downward angle as possible. Light must not be directed at or close to bat roost access points or flight paths from the roost. A shield or hood can be used to control or restrict the area to be lit.
- Wide angle illumination must be avoided as this will be more disturbing to foraging and commuting bats as well as people and other wildlife.
- Lighting must not illuminate any bat bricks and boxes placed on buildings, trees or other nearby locations.

Taken from the Bat Conservation Trust

Appendix 10 – Statutory and planning context

Ecological assessments

Ecological assessments play an important part within the planning context; they include an initial assessment which highlights any specific interests of a site. From the initial site assessment, the surveyor assesses the suitability of habitats within the site to support protected species and makes recommendations for further survey works if required. The following paragraphs provide a brief interpretation of legislative protection in relation to the following species and habitats:

Amphibians
Great crested newts
Other amphibians
Reptiles
Badgers
Hazel dormouse
Bats
Birds
Trees
Hedgerows
Invasive plant species
Otters
Water voles
White-clawed crayfish
Planning policy

Amphibians

Great crested newts

Great crested newts (GCN) *Triturus cristatus* and their habitat (aquatic and terrestrial) are afforded full protection by the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Amendment (EU exit) Regulations 2019. If both national and international legislation are taken together, it is an offence to:

- Deliberately, intentionally or recklessly kill, injure or capture GCN
- Deliberately, intentionally or recklessly disturb GCN in such a way to be likely to significantly affect:
    - their ability to survive, breed, reproduce, rear or nurture their young
    - their ability to hibernate or migrate
    - their local distribution or abundance
- Deliberately, intentionally or recklessly take or destroy the eggs of GCN
- Damage or destroy breeding sites or resting places of GCN
- Intentionally or recklessly disturb sheltering GCN, or obstruct access to their resting place
- Keep, transport, sell or exchange, or offer for sale or exchange any live or dead GCN, any part of GCN or anything derived from GCN

Penalties for offences include fines of up to £5000, plus up to six months imprisonment, for each offence committed.

GCN are also protected by the Protection of Animals Act 1911, which prohibits cruelty and mistreatment. Releasing a GCN in such a way as to cause undue suffering may be an offence under the Abandonment of Animals Act 1960.

In addition to the above, there are various statutory provisions relating to the transport of animals, designed to ensure their welfare. GCN are also listed under Section 41 of the NERC Act (see bats section for further details).

It is important to identify the presence of GCN individuals and also to identify suitable habitat on sites so that legal obligations regarding this species can be observed. If a survey identifies the presence of GCN on the site, an assessment of the population size class is required. This can then inform a mitigation scheme, which would need to be developed in liaison with the local Natural England team, and which minimises direct threats to newts and compensates for any loss of habitat. A licence issued by Natural England is required for the legal implementation of a mitigation scheme.

A Natural England mitigation licence application requires a Mitigation Method Statement and a Reasoned Statement of Application. The Mitigation Method Statement contains details of the proposed mitigation works. The Reasoned Statement needs to provide a rational and reasoned justification as to why the

proposed development meets the requirements of the Conservation (National Habitats & c.) regulations 1994, namely Regulations 44(2)(e), (f) or (g), and 44(3)(a).

Other amphibians

More common British amphibians, such as common frog *Rana temporaria*, common toad *Bufo bufo*, smooth newt *Triturus vulgaris* and palmate newt *Triturus helveticus* are protected only by Section 9(5) of the Wildlife and Countryside Act 1981 (as amended). This section prohibits sale, barter, exchange, transporting for sale and advertising to sell or to buy.

The above named species are also listed as UK Species of Conservation Concern. Due to general declines in most British amphibian species in recent years, many local authorities require amphibian surveys as a planning condition, or as part of environmental information submitted as part of a planning application, even where the presence of GCN is ruled out.

Natterjack toad *Bufo calamita* and pool frog *Pelophylax lessonae* are also offered the same level of protection as GCN, through the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017.

Natterjack toad, common toad and pool frog are also listed under Section 41 of the NERC Act (see bats section for further details).

Water bodies that support all five (more common) species of British amphibians in high numbers, may be afforded protection in local plans, as Sites of Importance for Nature Conservation (SINC), or a similar equivalent, for sites of local importance. A site may require statutory protection as a Site of Special Scientific Interest (SSSI).

Reptiles

Common lizard *Zootoca vivipara*, slow-worm *Anguis fragilis*, grass snake *Natrix natrix* and adder *Vipera berus* are protected under the Wildlife and Countryside Act 1981 (as amended). They are listed as a Schedule 5 species therefore part of Section 9(1) and section 9(5) apply. The Countryside and Rights of Way Act 2000 also strengthens their protection. It is offence to:

- Intentionally or recklessly kill or injure any of the species listed above
- Sell, offer, advertise or transport for sale a live or dead animal of the species listed above

If a proposed development is likely to have an impact on these reptiles the local statutory nature conservation organisation must be consulted.

Sand lizard *Lacerta agilis* and smooth snake *Coronella austriaca* receive full protection under the Wildlife and Countryside Act 1981 (as amended) and Conservation of Habitats and Species Regulations 2017. Read together, it is an offence to:

- Deliberately, intentionally or recklessly kill, injure or capture any sand lizards or smooth snakes
- Deliberately, intentionally or recklessly disturb sand lizards or smooth snakes in such a way to be likely to significantly affect:
    - their ability to survive, breed, reproduce, rear or nurture their young
    - their ability to hibernate or migrate
    - their local distribution or abundance
- Deliberately, intentionally or recklessly take or destroy the eggs of such an animal
- Damage or destroy breeding sites or resting places of such animals
- Intentionally or recklessly disturb sheltering sand lizards or smooth snakes, or obstruct access to their resting place
- Keep, transport, sell or exchange, or offer for sale or exchange any live or dead sand lizards or smooth snakes, any part of such an animal or anything derived from such an animal

Penalties for offences include fines of up to £5000, plus up to six months imprisonment, for each offence committed.

All reptile species are also listed under Section 41 of the NERC Act (see bats section for further details).

Hazel dormouse

Hazel dormice *Muscardinus avellanarius* are offered full protection through the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017. If both national and international legislation are taken together, it is an offence to:

- Deliberately, intentionally or recklessly kill, injure or capture dormice
- Deliberately, intentionally or recklessly disturb dormice in such a way to be likely to significantly affect:
    - their ability to survive, breed, reproduce, rear or nurture their young
    - their ability to hibernate or migrate
    - their local distribution or abundance
- Damage or destroy breeding sites or resting places of dormice
- Intentionally or recklessly disturb sheltering dormice, or obstruct access to their resting place
- Keep, transport, sell or exchange, or offer for sale or exchange any live or dead dormouse, any part of a dormouse or anything derived from a dormouse

Penalties for offences include fines of up to £5000, plus up to six months imprisonment, for each offence committed.

Dormice are also listed under Section 41 of the NERC Act (see bats section for further details).

Bats

In the United Kingdom, all species of bat and their roosts are afforded full protection under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (known as the “Habitats Regulations”). The Wildlife and Countryside Act is the domestic implementation of the Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention) and was amended by the Countryside and Rights of Way Act 2000. This makes it an offence to:

- Deliberately, intentionally or recklessly kill, injure or capture a bat

- Deliberately, intentionally or recklessly disturb a bat while it is occupying a structure or place that it uses for shelter or protection
- Deliberately, intentionally or recklessly damage, destroy or obstruct access to any place that a bat uses for shelter or protection (even if the bat is not present at the time)
- Keep, transport, sell or exchange, or offer for sale or exchange any live or dead bat, any part of a bat or anything derived from a bat

Under UK law, a bat roost is *any structure or place which any wild [bat] … uses for shelter or protection*. As bats often reuse the same roosts, legal opinion is that a roost is protected whether or not the bats are present at the time of the activity taking place.

Penalties for offences include fines of up to £5000, plus up to six months imprisonment, for each offence committed.

If an activity is likely to result in any of the above offences, a licence can be applied for to derogate from the protection afforded. These licences must provide appropriate mitigation and are issued by Natural England.

A Natural England mitigation licence application requires a Mitigation Method Statement and, in many cases, a Reasoned Statement of Application. The Mitigation Method Statement contains details of the proposed mitigation works. The Reasoned Statement needs to provide a rational and reasoned justification as to why the proposed development meets the requirements of the Conservation (National Habitats & c.) regulations 1994, namely Regulations 44(2)(e), (f) or (g), and 44(3)(a).

The Natural Environment and Rural Communities (NERC) Act 2006 lists the following bat species as species of principle importance under Section 41:

- Barbastelle *Barbastella barbastellus*
- Bechstein's bat *Myotis bechsteinii*
- Noctule *Nyctalus noctula*
- Soprano Pipistrelle *Pipistrellus pygmaeus*
- Brown Long-eared bat *Plecotus auritus*
- Greater Horseshoe *Rhinolophus ferrumequinum*
- Lesser Horseshoe *Rhinolophus hipposideros*

Section 40 requires every public body in the exercising of its functions 'have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity' (all biodiversity and not just section 41 species and habitats); therefore making these bats a material consideration in the planning process and requiring a detailed ecological bat survey before planning permission can be granted.

Birds

All wild birds, their nests and young are protected throughout England and Wales by the Wildlife & Countryside Act 1981 (as amended). It is illegal to kill, injure or take any wild bird, or damage or destroy the nest or eggs of breeding birds. The legislation applies to all bird species, common and rare.

In addition to the protection afforded to all wild birds, more vulnerable species listed on Schedule 1 of the Act receive enhanced protection when breeding. Schedule 1 species, including their dependent young, are protected from intentional or reckless disturbance whilst at or near the nest, in addition to the protection afforded the more common species.

The NERC Act offers further protection to the nests of some species that regularly re-use their nests, even when the nests are not in use.

The leading governmental and non-governmental conservation organisations in the UK have reviewed the population status' of 244 UK bird species. "Birds of Conservation Concern 4: the Red List for Birds" is the most recent publication summarising their findings. Three lists, Red, Amber and Green, have been produced based on the most up-to-date evidence available and criteria include conservation status at global and European levels and, within the UK: historical decline, trends in population and range, rarity,

localised distribution and international importance. These lists are a valuable resource when considering conservation priorities.

Trees

Trees may be protected on an individual or group level through a Tree Preservation Order (TPO). In order to carry out works to trees with a TPO, prior written consent must be obtained from the Local Planning Authority. Trees may also be protected through a condition of planning consent or designated conservation areas.

Hedgerows

The Hedgerow Regulations are made under Section 97 of the Environment Act 1995 and came into operation on 1st of June 1997. They aim to protect important hedgerows in the countryside by controlling their removal through a system of notification to the Local Planning Authority.

A hedgerow can only be considered for classification as “important” if it, or the hedgerow of which the section belongs to is over 20m in length (or which meets a hedgerow at either end) and has existed for 30 years or more.

Invasive plant species

A number of invasive, non-native plant species are listed under Schedule 9 (Part II) of the Wildlife and Countryside Act 1981 (as amended). The most commonly encountered listed species in ecological surveys are Japanese knotweed *Fallopia japonica*, Montbretia *Crocosmia x crocosmiiflora* and variegated yellow archangel *Lamiastrum galeobdolon subsp. argentatum*. Section 14(2) of this Act makes it an offence to *plant or otherwise cause to grow in the wild* any plant listed on Schedule 9 (Part II). These provisions are necessary to prevent the establishment of non-native species which may be detrimental to our native wildlife.

A number of invasive, non-native plants species are listed under Schedule 2 (Part II) of the Invasive Alien Species (Enforcement and Permitting) Order 2019. The most commonly encountered listed species in ecological surveys are Himalayan balsam *Impatiens glandulifera* and giant hogweed *Heracleum mantegazzianum*. Section 3 of this Act make it an offence to *plant* or *otherwise causes to grow in the wild* any plant which is listed on Schedule 2 (Part II). These provisions are necessary to prevent the establishment of non-native species which may be detrimental to our native wildlife.

Soil or plant material contaminated with non-native and invasive plants can cause ecological damage and may be classified as controlled waste. It is an offence to keep, treat or dispose of waste that could harm the environment or human health. If there is any doubt, contact the local authority or Environment Agency.

Otters

European otter *Lutra lutra* are offered full protection through the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017. If both national and international legislation are taken together, it is an offence to:

- Deliberately, intentionally or recklessly kill, injure or capture otters
- Deliberately, intentionally or recklessly disturb otters in such a way to be likely to significantly affect:
    - their ability to survive, breed, reproduce, rear or nurture their young
    - their ability to migrate
    - their local distribution or abundance
- Damage or destroy breeding sites or resting places of otters
- Intentionally or recklessly disturb sheltering otters, or obstruct access to their resting place
- Keep, transport, sell or exchange, or offer for sale or exchange any live or dead otter, any part of an otter or anything derived from otter

Penalties for offences include fines of up to £5000, plus up to six months imprisonment, for each offence committed.

Otters are also listed under Section 41 of the NERC Act (see bats section for further details).

Water voles

Water voles *Arvicola amphibius* are protected by the provisions of Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to:

- Intentionally kill, injure or take water vole
- Possess or control live or dead water vole or any part of a water vole
- Intentionally or recklessly damage destroy or obstruct access to any structure or place which a water vole uses for shelter or protection, or disturb water vole using such a place
- Sell, offer, advertise or transport live or dead water voles for sale

Licences are available from Natural England to allow activities that would otherwise be an offence, including:

- Scientific or educational purposes
- For the purposes of ringing or marking
- Conserving wild animals or introducing them into particular areas
- Preserving public health or public safety
- Preventing the spread of disease
- Preventing serious damage to any form of property or to fisheries

Penalties for offences include fines of up to £5000, plus up to six months imprisonment, for each offence committed.

Water voles are also listed under Section 41 of the NERC Act (see bats section for further details).

White-clawed crayfish

White-clawed crayfish *Austropotomobius pallipes* are protected under the Wildlife and Countryside Act 1981 (as amended). They are listed as a Schedule 5 species therefore part of Section 9(1) and section 9(5) apply. The Countryside and Rights of Way Act 2000 also strengthens their protection. It is offence to:

- Intentionally or recklessly kill or injure white-clawed crayfish
- Sell, offer, advertise or transport for sale a live or dead white-clawed crayfish

If a proposed development is likely to have an impact on white-clawed crayfish then the local statutory nature conservation organisation must be consulted.

Penalties for offences include fines of up to £5000, plus up to six months imprisonment, for each offence committed.

Their inclusion on the EC Habitats Directive allows areas to be designated as Special Areas of Conservation (SAC) for the presence of white-clawed crayfish. Such a designation brings legal protection under the Conservation of Habitats Regulations 2017, this includes how the site is managed and what development can occur on and in proximity to these sites.

White-clawed crayfish are also listed under Section 41 of the NERC Act (see bats section for further details).

Planning policy

The National Planning Policy Framework 2021 (NPPF) provides guidance on the interpretation of the law in relation to the natural environment and development.

National Planning Guidance is issued in the form of the National Planning Policy Framework 2021 (NPPF). The most relevant section is 15: Conserving and enhancing the natural environment.

Key relevant principles stated in 15: Conserving and enhancing the natural environment are;

174. Planning policies and decisions should contribute to and enhance the natural and local environment by:

a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);
b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;
c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate;
d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;
e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and
f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

179. To protect and enhance biodiversity and geodiversity, plans should:

a) Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity[61]; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation[62]; and
b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity

180. When determining planning applications, local planning authorities should apply the following principles:

a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;
c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons63 and a suitable compensation strategy exists; and
d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.