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Ecological Assessment: Land adjacent to Willington Grange, Horseman's Green, Whitchurch, Shropshire, SY13 3BZ.

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1. SUMMARY

On 23rd March 2015 an Ecological Assessment was carried out of a proposed development site known as 'Land adjacent to Willington Grange', Horseman's Green, Whitchurch, Shropshire, SY13 3BZ.

The Ecological Assessment comprised a Desk Study, an Extended Phase One Habitat Survey, an Initial Bat Survey and a Great Crested Newt Assessment. Historical biodiversity records were purchased from the North Wales Environmental Information Service.

Dr. R. M. Jones, experienced field biologist, surveyor, Natural Resources Wales licensed bat worker (Licence number 60079:OTH:CSAB:2014) and Natural Resources Wales licensed newt worker (Licence number 58741:OTH:SA:2014) carried out the assessment/survey.

The Ecological Assessment was requested by Les Stephan Planning Limited, on behalf of Mr. C. Evans, to inform a proposal to construct a residential dwelling on Land adjacent to Willington Grange.

1.1 Desk Study

There are no County Wildlife Sites or other wildlife designated sites within 1km of the proposed development site.

There are records of Badger, Bird and Great crested newt within 1km of Land adjacent to Willington Grange.

It is not considered that there are records of protected flora or fauna directly on the proposed development site.

It is not considered that development of The Site will adversely affect the conservation status of protected species recorded within the locality.

1.2 Habitat

Briefly, the proposed development site is part of a maintained domestic garden and predominantly consists of amenity grassland and broadleaved ornamental trees.

The habitat of the proposed development site is of low ecological value.

However, the proposed development site provides a valuable resource for small breeding birds, hedgehog and possibly for foraging and/or commuting bats.

Furthermore, Badger may occasionally traverse and/or forage on the proposed development site.

1.3 Initial Bat Survey

Trees on and within the immediate vicinity of the proposed development site were assessed for their potential to be used by bats for roosting purposes.

No potential bat roosting habitat was identified.

No further bat survey work is recommended to inform the proposed development. Mitigation (external lighting) for bats is recommended.

1.4 Great crested newt

There are records of Great crested newt within 1km of Land adjacent to Willington Grange.

There are six mapped ponds within 250m of the proposed development site. However, the closest mapped pond no longer exists and the other ponds are not considered (highly) suitable for Great Crested newt to use for breeding purposes.

There is a low probability of Great crested newts being present on the proposed development site.

However, it is not considered necessary:

- for further Great crested newt survey work to be carried out to inform the proposed development; or,
- for a European Protected Species Licence in respect of Great crested newts to be applied for and authorised by Natural Resources Wales in order for the proposed development proceed lawfully.

It is recommended that mitigation for Great crested newts, in the form of Risk Avoidance Measures, be adopted throughout the proposed development.

1.5 Mitigation

Mitigation is recommended for:

- Badger
- Small Breeding Bird
- Great crested newt
- Bat (external lighting)
- Hedgehog

1.6 Biodiversity Compensation / Enhancement

Compensation and Enhancement measures for wildlife are recommended.

2. INTRODUCTION

Star Ecology was commissioned by Les Stephan Planning Limited, on behalf of Mr. C. Evans, to conduct an Ecological Assessment of a proposed development site known as 'Land adjacent to Willington Grange', Horseman's Green, Whitchurch, Shropshire, SY13 3BZ.

From this point forward the proposed development site 'Land adjacent to Willington Grange' is referred to as 'The Site'.

Dr. R. M. Jones, experienced field biologist, surveyor, Natural resources Wales licensed bat worker (Licence numbers 60079:OTH:CSAB:2014) and Natural Resources Wales licensed newt worker (Licence number 58741:OTH:SA:2014) carried out the assessment/survey.

The Ecological Assessment was requested by Les Stephan Planning Limited, on behalf of Mr. C. Evans, to inform a proposal to construct a residential dwelling on The Site.

The Ecological Assessment comprised a Desk Study, an Extended Phase One Habitat Survey, an Initial Bat Survey and a Great Crested Newt Assessment.

2.1 Site Description

Briefly, The Site is an approximately 0.27 hectares triangular shaped section of the (large) Willington Grange domestic garden which is within the sprawling hamlet of Horseman's Green.

The Site is immediately neighboured by:

- single-vehicle-width highways at the north and west;
- the Willington Grange domestic garden at the east; and,
- a large arable field at the south.

The landscape surrounding The Site consists of agricultural properties, residential properties, (intensively managed) agricultural fields and small mixed-tree-species woodlands.

The surrounding landscape is connected by highways and (managed) agricultural hedgerows – many of which contain mature trees.

There are approximately 25 mapped ponds within 500m of The Site and six mapped ponds within 250m of The Site.

Map 1. Location of The Site.

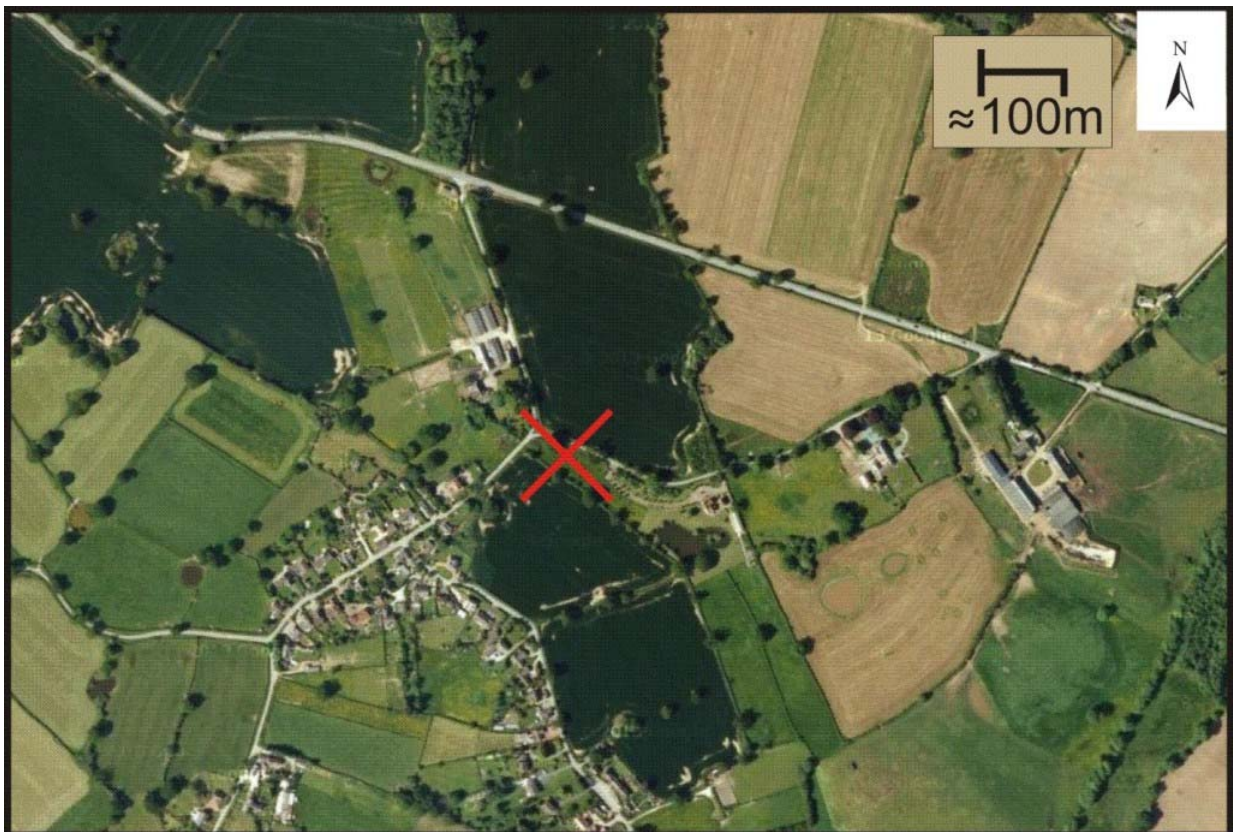
Map 2. Location of The Site and surrounding habitat types.

Please note: the aerial photograph of habitat types is a 'screenshot' from Google Maps.

Map 1. Location of The Site (indicated by a red cross).



Map 2. Location of The Site (indicated by a red cross) and surrounding habitat types.



2.2 Proposed Development

It is understood from Les Stephan Planning Limited that there is a proposal to construct a residential dwelling The Site.

Furthermore, it is understood that, wherever possible, existing hedgerows and (mature) trees are to be retained.

3. DESK STUDY

3.1 Method

A data search was commissioned from North Wales Environmental Information Service (NWEIS) for records of priority/protected species and wildlife sites within a 1km radius of The Site.

3.2 Results

NWEIS provided records to Star Ecology on 27th March 2015.

Those NWEIS records which are for fauna or flora which may be determined to be potentially negatively affected by development on The Site are considered below.

3.2.1 County Wildlife Sites and/or Designated Sites

There are no wildlife sites or ecologically designated sites within 1km of The Site.

3.2.2 Badger

Legalisation

Badgers (*Meles meles*) and their setts are protected by The Protection of Badgers Act 1992.

Under this legislation it is illegal to:

- wilfully kill, injure or take, or attempt to kill, injure or take, a Badger;
- cruelly ill-treating a Badger, digging for Badgers, using Badger tongs, using a firearm other than the type specified under the exceptions within the Act;
- interfere with a Badger sett by damaging, destroying, obstructing, causing a dog to enter a sett, disturbing an occupied sett - either by intent or by negligence;
- sell or offer for sale a live Badger, having possession or control of a live Badger;
- mark, attach a ring, tag, or other marking device to a Badger.

A Natural Resources Wales Badger Disturbance Licence may be required for development works affecting Badgers.

Records

The NWEIS has seven records of Badger within 1km of The Site. The earliest record was recorded in year 2002; the most recent in year 2011.

The closest record of Badger to The Site is approximately 650m north.

3.2.3 Bird

There are 14 records of Bird for 10 species within 1km of The Site.

Of the records of Bird within 1km of The Site:

- the earliest record was collected in year 2009
- the most recent record was collected in year 2011

- there are 10 records with a precision of 1km
- there are four records with a precision of 10km

One species of Bird recorded within 1km of The Site – namely Barn Owl (*Tyto alba*) – is fully protected under the Wildlife and Countryside Act 1981 (as amended).

It is not considered that there are records of Bird collected directly on The Site.

3.2.4 Great Crested Newt

Legislation

The Great crested newt (*Triturus cristatus*) is protected under the Wildlife & Countryside Act 1981(as amended) and the Conservation of Habitats and Species Regulations 2010.

Under this legislation, it is illegal to:

- intentionally kill, injure, or capture Great crested newts or their young; (this includes the eggs of Great crested newts);
- intentionally or recklessly damage, destroy or obstruct access to areas used by Great crested newts for shelter or protection (which is taken to include water-bodies used by the newts);
- intentionally or recklessly disturb Great crested newts while they are occupying a structure or place which is used by them for shelter or protection.

A European Protected Species (EPS) development Licence from Natural Resources Wales may be required for development works affecting Great crested newts.

Records

The NWEIS has 51 records of Great crested newt within 1km of The Site. The earliest record was recorded in year 2008; the most recent in year 2012. The closest record of Great crested newt to The Site is approximately 430m northwest.

3.3 Conclusion

There are no wildlife sites or ecologically designated sites within 1km of The Site

It appears that the NWEIS does not hold records for wildlife directly on The Site.

Records indicate that there may be protected species, particularly Badger and Great crested newt, on and/or within the vicinity of The Site.

Development of The Site will need to be carried out in a manner that will not negatively impact the status of protected fauna and flora within the vicinity of The Site.

4. EXTENDED PHASE ONE HABITAT SURVEY

An Extended Phase One Habitat Survey (JNCC, 1993) of The Site was carried out on 23rd March 2015.

The Extended Phase One Habitat Survey was carried out by Dr. R. M. Jones, experienced field biologist and surveyor.

4.1 Survey Objectives

- a) To determine if The Site contains flora of significant ecological value.
- b) To determine if The Site contains fauna of significant value and/or Protected Species.

4.2 Method

To fulfil the brief of undertaking an ecological assessment of The Site an Extended Phase One Habitat Survey was conducted (JNCC, 1993). This is a standard technique for classifying and mapping British habitats. The aim is to provide a record of habitats that are likely to be ecologically important.

Where appropriate, the extent of each habitat type was mapped, and details of relative plant species abundance within homogenous areas were recorded. If appropriate, species abundance was measured on the DAFOR scale (Dominant, Abundant, Frequent, Occasional and Rare).

In order to allow efficient reporting of the boundaries on or immediately adjacent to The Site; where appropriate boundaries (such as hedges, fences and walls) were recorded and described individually.

In order to allow efficient reporting of trees on or immediately adjacent to The Site; where appropriate individual trees were recorded and described individually.

Please note:

A separate and thorough Tree Survey and/or Arboricultural Assessment (such as a tree survey to BS5837:2012 "Trees in relation to design, demolition and construction. Recommendations") or similar was not carried out by Star Ecology.

During the Extended Phase One Habitat Survey the presence, or potential presence, of protected species, such as Badger and reptiles, was recorded on The Site. Surveyor accessible land within approximately 100m of The Site was also surveyed. Incidental records of birds present on The Site were made throughout the survey.

Where appropriate, Target Note descriptions were recorded for features of nature conservation importance and/or extra-ordinary features of The Site. These include areas of valued vegetation and places that might support notable animal species.

4.3 Limitations

It is not considered that there are any significant limitations to the survey.

4.4 Results

4.4.1 Climate Conditions

During the survey weather conditions were dry and bright. There was no breeze.

4.4.2 Habitat types

Appendix 1 contains an Extended Phase One Habitat Map.

Appendix 2 contains a photographic record of the survey.

The following habitat types and their respective hierarchical alphanumeric codes were recorded at The Site:

Broadleaved parkland/scattered trees (A3.1)

Seven ornamental trees have been planted within the central area of The Site and trees have been left to grow-up within the southwest boundary hedge.

Tree species include:

- Common Ash (*Fraxinus excelsior*)
- English Oak (*Quercus robur*)
- Field Maple (*Acer campestre*)
- Hawthorn (*Crataegus monogyna*)
- Holly (*Ilex aquifolium*)

A large and mature English Oak tree grows within the northeast boundary hedge and two large and mature English Oak trees grow within the southwest boundary hedge.

Amenity grassland (J1.2)

Approximately 95% of The Site consists of amenity grassland.

It is understood that the grassland is regularly mown throughout the summer months. At the time of survey the average sward height was approximately 20mm.

Intact species rich hedge (J2.1.1)

An intact species rich hedge forms the southwest boundary of The Site.

The hedge is approximately 2m high and appears to be annually trimmed; however trees/bushes have been allowed to grow-up above the predominant height of the hedge.

The hedge consists of:

- Blackthorn (*Prunus spinosa*)
- Common Ash
- Dogrose (*Rosa canina* agg.)
- Elder (*Sambucus nigra*)
- Hawthorn (D)
- Hazel (*Corylus avellana*)
- Holly
- Sycamore (*Acer pseudoplatanus*)

Lords-and-Ladies (*Arum maculatum*) and Dog's Mercury (*Mercurialis perennis*) are rare at the base of the hedge.

Intact species poor hedge (J2.1.2)

The northeast and northwest boundaries of The Site are formed by an intact species poor hedge. The hedge is approximately 1.5m in height and appears to be annually trimmed. The hedge is dominated by Hawthorn. Holly is abundant. English Oak and Sycamore are occasional.

Fence (J2.4)

Timber-post and pig-netting-wire fences are situated within the boundary hedges. A timber-post and timber-railing fence forms a boundary at the northeast of the Site.

Wall (J2.5)

A brick wall is situated at the northeast of The Site.

Dry ditch (J2.6)

A highway drainage ditch is situated within the road-side verge at the immediate northeast and northwest of The Site. At the time of survey the ditch was dry. It is thought likely that the ditch contains water at times of high rainfall and/or snowmelt.

Bare ground (J4)

An area of bare ground is situated within the west corner of The Site. It appears that the bare ground has been created by vehicle movements.

4.4.3 Fauna

4.4.3.1 Badger

Legislation

Badgers (*Meles meles*) and their setts are protected by The Protection of Badgers Act 1992.

Under this legislation it is illegal to:

- wilfully kill, injure or take, or attempt to kill, injure or take, a Badger;
- cruelly ill-treating a Badger, digging for Badgers, using Badger tongs, using a firearm other than the type specified under the exceptions within the Act;
- interfere with a Badger sett by damaging, destroying, obstructing, causing a dog to enter a sett, disturbing an occupied sett - either by intent or by negligence;
- sell or offer for sale a live badger, having possession or control of a live Badger;
- mark, attach a ring, tag, or other marking device to a Badger.

A Natural Resources Wales Badger Disturbance Licence may be required for development works affecting Badgers.

Relevant factors

No evidence of Badger was found on The Site or within surveyor accessible land within approximately 50m of it. However, given the location and habitat of The Site, it is possible that Badgers may use The Site for foraging and/or commuting.

4.4.3.2 Hedgehog

Legislation and protection

(European) Hedgehog (*Erinaceus europaeus*) are:

- listed on Appendix III of the Bern Convention;
- protected from harm under Schedule 6 of the Wildlife and Countryside Act 1981;
- are Species of Principal Importance under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006;
- listed as a Priority Species for conservation action under the United Kingdom Biodiversity Action Plan.

Consideration

There are no records of Hedgehog within 1km of The Site (Desk Study – Section 3). Hedgehog may traverse The Site and/or use it for foraging purposes.

4.4.3.3 Reptile

Legislation

Four reptile species, Adder (*Vipera berus*), Grass snake (*Natrix natrix*), Slow-worm (*Anguis fragilis*) and Viviparous (or Common) Lizard (*Lacerta vivipara*), have protection under the Wildlife and Countryside Act 1981 (as amended) and the Countryside and Rights of Way Act 2000.

Their inclusion on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) gives 'partial protection' (i.e. only parts of section 9 apply). In addition to restrictions with respect to trade (prohibition of sale and advertising for sale, etc.) they are also protected from intentional killing or injury.

Natural Environment and Rural Communities Act 2006 lists all reptile species as a species of principle importance.

Reptiles are listed as priority species under the UK Biodiversity Action Plan.

Relevant factors

There are no records of reptiles within 1km of The Site (Desk Study – Section 3).

The Site may be too small to be of significant value to reptiles. Furthermore, considering the location and habitat of The Site and the surrounding habitat; it is not considered likely that reptiles would reside on The Site.

4.4.3.4 Small Breeding Birds

Legislation

Nesting birds are protected by the Wildlife and Countryside Act 1981.

Under the Wildlife and Countryside Act 1981, all birds are protected while breeding.

It is an offence, with certain exceptions to:

- intentionally kill, injure or take any wild bird;
- intentionally take, damage or destroy the nest of any wild bird while it is in use or being built;
- intentionally take or destroy the egg of any wild bird.

Consideration

Vegetation on and bounding The Site provides potential Small Breeding Bird nesting habitat.

4.4.3.5 Other fauna

Evidence of European rabbit (*Oryctolagus cuniculus*) was noted throughout The Site.

4.5 Conclusion

The flora of The Site has a low ecological value.

However:

- The Site and its boundaries may be used by bats for foraging purposes.
- The Site may be traversed by Hedgehog and/or used by Hedgehog for foraging purposes
- vegetation on and bounding The Site may be used by Small Breeding Birds for nesting purposes.

Trees on The Site and trees bounding The Site have been subject to an Initial Bat Survey (Section 5).

5. INITIAL BAT SURVEY

5.1 Introduction

On 23rd March 2015 an Initial Bat Survey was carried out on the trees on (and bounding) The Site.

Dr. R. M. Jones, experienced field biologist, surveyor and Natural Resources Wales licensed bat worker (60079:OTH:CSAB:2014) carried out the Initial Bat Survey.

There are records of bats within 1km of The Site (Desk Study – Section 3).

5.2 Legislation

All bat species (*Rhinolophidae* and *Vespertilionidae*) are protected under the Wildlife and Countryside Act 1981, the Countryside and Rights of Way Act 2000 and the Conservation of Habitats and Species Regulations 2010.

Under this legislation it is illegal to:

- deliberately capture, injure or kill a bat;
- deliberately disturb bats;
- damage or destroy bat roosts or resting places of bats;
- keep, transport, sell or exchange, or offer for sale or exchange, any live or dead bat, or any part of, or anything derived from such a wild animal.
- intentionally or recklessly obstruct access to a bat roost.
- deliberately disturb any bat, in particular any disturbance which is likely to (i) impair their ability to survive, breed, reproduce or to rear or nurture their young; or in the case of hibernating or migratory species, to hibernate or migrate; or (ii) to affect significantly the local distribution or abundance of the species to which they belong.

A bat roost may be any structure a bat uses for breeding, resting, shelter or protection. Roost sites are protected whether or not bats are in occupation, as they may be re-used by bats.

All species of bat are priority species in the UK Biodiversity Action Plan (HM Government 1994 et seq.) and are Species of Principal Importance under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

A European Protected Species (EPS) development Licence from Natural Resources Wales may be required for development works affecting bats.

5.3 Survey objectives

- a) To ascertain if trees on and/or bounding The Site contain features that may potentially be used by bats for roosting purposes.
- b) If possible, to determine if bats are using (the) identified feature(s) for roosting.
- c) Should potential roosting features be identified, if the trees/roosting feature(s) may be negatively affected by the proposed development - to recommend further bat survey work (e.g. Dusk Bat Emergence Surveys).

5.4 Method

Trees were surveyed for their potential to be used by bats for roosting purposes. Trees were surveyed from the ground by unaided human visual perception and, where required, the aid of close-focusing (Zeiss 10x42) binoculars and/or torches, including a Fenix RC40 3800 lumen torch.

Wherever possible; a search was made for physical evidence that may indicate the use of identified potential roosting features by bats.

5.4.1 Limitations of the Initial Bat Survey

Considering the trees surveyed; it is not considered that there are any significant constraints on the survey.

Adequate visibility of tree structures was obtained.

5.5 Results

None of the trees on, bounding or immediately adjacent to The Site provide bat roosting opportunity.

5.6 Conclusion

In accordance with the Bat Conservation Trust's 'Bat Surveys – Good Practice Guidelines' (Hundt, 2012), trees on (and immediately adjacent to) The Site are Category 3 'trees with no potential to support bats'.

6. GREAT CRESTED NEWT ASSESSMENT

6.1 Introduction

On 23rd March 2015 a Great crested newt assessment was carried out on ponds within the vicinity of The Site.

Dr. R. M. Jones, experienced field biologist, surveyor and Natural Resources Wales licensed Great crested newt worker (Licence number 58741:OTH:SA:2014) carried out the Great Crested Newt Assessment.

There are historical records of Great crested newt within 1km of The Site (Desk Study - Section 3).

There are approximately 25 mapped ponds within 500m of The Site and six mapped ponds within 250m of The Site.

Considering the nature and scale of the proposed development of The Site; only ponds within 250m of The Site were considered in the Great Crested Newt Assessment.

The locations of ponds within 250m of The Site and their respective minimum distances from The Site are contained in Table 1.

Table 1. Ponds within 250m of The Site.

Pond number	National Grid Reference		Approximate minimum distance (m) from The Site.
	Easting	Northing	
1	344765	341365	20
2	344740	341405	70
3	344960	341250	80
4	344615	341440	175
5	345075	341250	205
6	345085	341230	220

The locations of Ponds 1 – 6 are shown on Map 3.

Map 3. Locations of ponds within 500m of The Site.

The blue circled 'P#' indicates the locations of Ponds 1 – 6.
The approximate outline of The Site is shown in red.



6.2 Legislation

The Great crested newt (*Triturus cristatus*) is protected under the Wildlife & Countryside Act 1981(as amended) and the Conservation of Habitats and Species Regulations 2010.

Under this legislation, it is illegal to:

- intentionally kill, injure, or capture Great crested newts or their young; (this includes the eggs of Great crested newts);
- intentionally or recklessly damage, destroy or obstruct access to areas used by Great crested newts for shelter or protection (which is taken to include water-bodies used by the newts);
- intentionally or recklessly disturb Great crested newts while they are occupying a structure or place which is used by them for shelter or protection.

A European Protected Species Licence from Natural resources Wales may be required for development works affecting Great crested newts.

6.3 Objectives

- a) If necessary, to assess the suitability of Ponds 1 – 6 to support Great crested newts.
- b) To assess the likelihood of Great crested newts – should they be present – being adversely affected by the proposed development.
- c) To recommend further Great crested newt survey work as appropriate.

6.4 Method

6.4.1 Surveyed Ponds

At the time of survey Pond 1 could not be located; it appeared that the pond had (historically) been infilled.

Permission was granted for Ponds 2, 4, 5 and 6 to be surveyed; however express permission was not granted for photographs of the ponds to be published.

Pond 3 is owned by Mr. C. Evans (the owner of The Site) and was surveyed and photographed).

Pond 5 and Pond 6 are mapped ponds in very close proximity to each other. At the time of survey it was apparent that Pond 5 and Pond 6 were a continuous body of water and, therefore, Pond 5 and Pond 6 are assessed as one pond; Pond 5.

6.4.2 Terrestrial Habitat Assessment

Terrestrial habitat on The Site - between The Site and Ponds 1 – 5 and within the immediate vicinity of Ponds 1 – 5 - was assessed for its suitability to be used by Great crested newts for foraging, rest and/or shelter.

The presence of habitat connectivity between The Site and Ponds 1 – 5 was recorded and assessed for its suitability to be used by Great crested newts for migration/dispersal purposes.

6.4.3 Assessment of Great Crested Newt Breeding Potential

If necessary, the likelihood of Great crested newts using Ponds 1 – 5 for breeding purposes was assessed using the Habitat Suitability Index (HSI).

The HSI for Great crested newts is a measure of habitat suitability, but is not a substitute for newt surveys.

In general, ponds with high HSI scores are more likely to support Great crested newts than those with low scores.

The National Amphibian and Reptile Recording Scheme HSI calculation method was used to calculate the HSI score for the pond.

6.4.4 Rapid Risk Assessment Tool

Assuming:

- that Great crested newts (continue to) use Ponds 1 – 5 for breeding purposes; and,
- the development of The Site was carried out in the absence of Great crested newt specific mitigation measures

if necessary, the Natural England 'rapid risk assessment' tool (contained in the Microsoft Excel document 'wmla14-2_tcm6-4103.xls') was used to qualify the likelihood of a criminal offence against Great crested newts being committed.

6.4.5 Limitations

It is acknowledged that the HSI scoring system cannot provide unequivocal evidence of Great crested newt absence.

However, given that Great crested newt have been historically recorded within 1km of The Site; the constraint of the above limitation is considered to be negligible.

6.5 Results

Appendix 3 contains a photographic record of Pond 3.

6.5.1 Terrestrial Habitat of The Site

Briefly, The Site consists of amenity grassland.
See Section 4.4.2.

6.5.2 Pond 1

At the time of survey Pond 1 could not be located; it appeared that the pond had (historically) been infilled. Therefore, Pond 1 is not considered further.

6.5.3 Pond 2

6.5.3.1 Terrestrial habitat between The Site and Pond 2

Briefly, the habitat between The Site and Pond 2 consists of part of a domestic garden, part of an improved grassland field and a single-vehicle-width highway.

6.5.3.2 Habitat connectivity

Pond 2 is situated within a domestic garden.
Agricultural and domestic garden hedges connect Pond 2 to The Site.
The single-vehicle-width highway between Pond 2 and The Site is not considered to provide a physical barrier to Great crested newt movement/dispersal.

6.5.3.3 Aquatic Habitat of Pond 2

The historical management of Pond 2 is not known; however it is understood that the water level of Pond 2 fluctuates with rainfall and that Pond 2 annually dries.
Pond 2 has an approximate surface area of 30²m.

6.5.3.4 Habitat Suitability Index

The HSI Score for Pond 2 was calculated as follows:

HSI variable	Comment	Score
SI1 - Location	-	1.00
SI2 - Pond area	Default value used	0.05
SI3 - Pond drying	Informed value: 'annually dries'	0.10
SI4 - Water quality	Informed value: 'poor'	0.33
SI4 – Shade	-	1.00
SI6 – Fowl	Informed value: 'minor'	0.67
SI7 – Fish	Informed value: 'absent'	1.00
SI8 – Nearby ponds	Ponds known/considered to exist	1.00
SI9 - Terrestrial habitat	'Moderate'	0.67
SI10 – Macrophytes	-	0.30
HSI		0.43

The HSI score of the Pond 2 is 0.43.
Pond 2 provides 'poor' habitat for Great crested newts to use for breeding purposes.

6.5.3.5 Rapid Risk Assessment Tool

Assuming Pond 2 is used by Great crested newts for breeding purposes:
The Natural England 'rapid risk assessment' tool shows the potential affect of developing the whole of The Site (i.e. 0.27 hectares) on Great crested newts is: 'Amber: Offence Likely'.
Notional offence probability score 0.5.

6.5.4 Pond 3

6.5.4.1 Terrestrial habitat between The Site and Pond 3

Briefly, the habitat between The Site and Pond 3 consists of amenity grassland.

6.5.4.2 Habitat connectivity

Pond 3 is situated within an area of amenity grassland; however the nearest hedgerow is approximately 5m from the pond.

Agricultural and domestic garden hedges connect Pond 3 to The Site.

6.5.4.3 Aquatic Habitat of Pond 3

Pond 3 is a man-made feature and is known to be stocked with approximately 80 Rainbow Trout (*Oncorhynchus mykiss*). It is understood (from Mr. C. Evans) that Pond 3 is fished for recreational purposes.

At the time of survey Canada Goose (*Branta canadensis*), Mallard Ducks (*Anas platyrhynchos*), Moorhen (*Gallinula chloropus*) and Shelduck (*tadorna tadorna*) were present on Pond 3. It is understood (from Mr. C. Evans) that wildfowl that use Hanmer Mere (which is approximately 1.73km southeast of the Site) regularly use Pond 3 and nearby ponds.

Pond 3 has an approximate surface area of 2000²m.

6.5.4.4 Habitat Suitability Index

The HSI Score for Pond 3 was calculated as follows:

HSI variable	Comment	Score
SI1 - Location	-	1.00
SI2 - Pond area	-	0.20
SI3 - Pond drying	Informed value: 'never dries'	0.50
SI4 - Water quality	Informed value: 'poor'	0.33
SI4 – Shade	-	1.00
SI6 – Fowl	Informed value: 'major'	0.01
SI7 – Fish	Informed value: 'absent'	0.01
SI8 – Nearby ponds	Ponds known/considered to exist	1.00
SI9 - Terrestrial habitat	'None'	0.01
SI10 – Macrophytes	-	0.30
HSI		0.16

The HSI score of the Pond 3 is 0.16.

Pond 3 provides 'average' habitat for Great crested newts to use for breeding purposes.

6.5.4.5 Rapid Risk Assessment Tool

Assuming Pond 3 is used by Great crested newts for breeding purposes:
The Natural England 'rapid risk assessment' tool shows the potential affect of developing the whole of The Site (i.e. 0.27 hectares) on Great crested newts is: 'Amber: Offence Likely'.
Notional offence probability score 0.5.

6.5.5 Pond 4

6.5.5.1 Terrestrial habitat between The Site and Pond 4

Briefly, the habitat between The Site and Pond 4 consists of an intensively managed agricultural grassland field and a single-vehicle-width highway.

6.5.5.2 Habitat connectivity

Agricultural and domestic garden hedges connect Pond 4 to The Site.
The single-vehicle-width highway between Pond 2 and The Site is not considered to provide a physical barrier to Great crested newt movement/dispersal.

6.5.5.3 Aquatic Habitat of Pond 4

The historical management of Pond 4 is not known.
Pond 4 has an approximate surface area of 280²m.

6.5.5.4 Habitat Suitability Index

The HSI Score for Pond 4 was calculated as follows:

HSI variable	Comment	Score
SI1 - Location	-	1.00
SI2 - Pond area	-	0.60
SI3 - Pond drying	Informed value: 'never dries'	0.90
SI4 - Water quality	Informed value: 'poor'	0.33
SI4 – Shade	-	1.00
SI6 – Fowl	Informed value: 'minor'	0.67
SI7 – Fish	Informed value: 'absent'	1.00
SI8 – Nearby ponds	Ponds known/considered to exist	1.00
SI9 - Terrestrial habitat	'Moderate'	0.67
SI10 – Macrophytes	-	0.30
HSI		0.69

The HSI score of the Pond 4 is 0.69.
Pond 4 provides 'average' habitat for Great crested newts to use for breeding purposes.

6.5.5.5 Rapid Risk Assessment Tool

Assuming Pond 4 is used by Great crested newts for breeding purposes:
The Natural England 'rapid risk assessment' tool shows the potential affect of developing the whole of The Site (i.e. 0.27 hectares) on Great crested newts is: 'Green: Offence Highly Unlikely'.
Notional offence probability score 0.1.

6.5.6 Pond 5

6.5.6.1 Terrestrial habitat between The Site and Pond 5

Briefly, the habitat between The Site and Pond 5 consists of part of an improved grassland field and amenity grassland within the Willington Grange domestic property.

6.5.6.2 Habitat connectivity

Agricultural and domestic garden hedges connect Pond 5 to The Site.

6.5.6.3 Aquatic Habitat of Pond 5

The historical management of Pond 5 is not known.
At the time of survey a pair of Black-headed Gull (*Chroicocephalus ridibundus*) and a Mute Swan (*Cygnus olor*) were on Pond 5.
Pond 5 has an approximate surface area of 600²m.

6.5.6.4 Habitat Suitability Index

The HSI Score for Pond 5 was calculated as follows:

HSI variable	Comment	Score
SI1 - Location	-	1.00
SI2 - Pond area	-	1.00
SI3 - Pond drying	Informed value: 'never dries'	0.90
SI4 - Water quality	Informed value: 'bad'	0.01
SI4 – Shade	-	0.20
SI6 – Fowl	Informed value: 'major'	0.01
SI7 – Fish	Informed value: 'absent'	1.00
SI8 – Nearby ponds	Ponds known/considered to exist	1.00
SI9 - Terrestrial habitat	'Poor'	0.33
SI10 – Macrophytes	-	0.30
HSI		0.27

The HSI score of the Pond 5 is 0.27.
Pond 5 provides 'Poor' habitat for Great crested newts to use for breeding purposes.

6.5.6.5 Rapid Risk Assessment Tool

Assuming Pond 5 is used by Great crested newts for breeding purposes:
The Natural England 'rapid risk assessment' tool shows the potential affect of developing the whole of The Site (i.e. 0.27 hectares) on Great crested newts is: 'Green: Offence Highly Unlikely'.
Notional offence probability score 0.1.

6.6 Conclusion

There are records of Great crested newt within 1km of The Site (Desk Study - Section 3).

The closest mapped pond to The Site (Pond 1) no longer exists and the two (remaining) ponds (Pond 2 and Pond 3) within 100m of The Site are not considered to provide suitable habitat for Great crested newt to use for breeding purposes. Furthermore:

- whilst Pond 4 provides 'average' Great crested newt breeding habitat, it is too far from The Site to be of concern; and,
- Pond 5 provides 'poor' Great crested newt breeding habitat and, in any event, it is too far from The Site to be of concern.

The Natural England 'rapid risk assessment' tool indicates that, should Great crested newt be present within the local landscape, any negative affect the proposed development may have on Great crested newt may be assuaged by the use of appropriate mitigation.

Considering the scale and location of the proposed development; no further Great crested newt survey is considered necessary to inform the proposed development.

7. ECOLOGICAL ASSESSMENT CONCLUSIONS

7.1 Desk Study (Section 3)

There are no County Wildlife Sites or other wildlife designated sites within 1km of The Site.

It is not considered that there are records of protected flora or fauna directly on The Site; however, there are records of Badger, Bird and Great crested newt within 1km of The Site.

Badger:

There are records of Badger within 1km of The Site.

It is not envisaged that development of The Site would negatively affect the conservation status of Badger identified within the Desk Study.

However, it is possible that Badger may occasionally traverse and/or forage on The Site.

Mitigation for Badger is contained in Section 8.1.

Bird:

There are records of birds within 1km of The Site.

The Site offers nesting opportunity for Small Breeding Birds, and it may be used by birds for foraging.

Mitigation for Small Breeding Birds is contained in Section 8.2.

Great crested newt:

There are records of Great crested newt within 1km of The Site.

It is not considered likely that Great crested newt reside on The Site.

However, Great crested newt breeding habitat exists within 250m of The Site.

Therefore, should the proposed development receive planning approval, mitigation for Great crested newt should be adhered to.

Mitigation for Great crested newt, in the form of Risk Avoidance Measures, is contained in Section 8.3.

7.2 Extended Phase One Habitat Survey (Section 4)

The Extended Phase One Habitat Survey concluded that the flora of The Site is of low conservation value.

However:

- Badger may, occasionally, traverse The Site and/or use it for foraging purposes. Should the proposed development be carried out mitigation for Badger should be adhered to.
Mitigation for Badger is contained in Section 8.1.
- vegetation on and bounding The Site may be used by Small Breeding Birds for nesting purposes. Should the proposed development be carried out mitigation for Small Breeding Birds should be adhered to.
Mitigation for Small Breeding Birds is contained in Section 8.2.
- The Site may be used by bats for foraging purposes. It is recommended that a bat-sensitive external lighting scheme be designed.
Mitigation for bats is contained in Section 8.4.
Trees on and bounding The Site were subject to an Initial Bat Survey (Section 5).

- The Site may be traversed by Hedgehog and/or used by Hedgehog for foraging purposes.
Mitigation for Hedgehog is contained in Section 8.5.

7.3 Initial Bat Survey (Section 5)

Trees on The Site, and trees within its immediate vicinity, were identified as possibly providing bat roosting habitat and were subject to an Initial Bat Survey.

The results of the Initial Bat Survey determined that trees on The Site and trees within the immediate vicinity of The Site do not provide bat roosting potential.

Therefore, it is not considered that bats directly impose a constraint on the potential for trees on The Site to be removed.

It is not considered necessary that further bat-specific survey work of the trees on The Site (or immediately adjacent to it) be carried out to inform the proposed development.

It is not necessary for a European Protected Species Licence for bats to be granted by Natural Resources Wales to allow the trees on The Site to be removed.

Should the proposed development receive planning approval, it is recommended that a bat-sensitive external lighting scheme be designed.
Mitigation for bats is contained in Section 8.4.

7.4 Great crested newt (Section 6)

There are records of Great crested newt within 1km of The Site.

There are six mapped ponds within 250m of The Site.

However:

- the closest pond no longer exists.
- the two (remaining) ponds within 100m of The Site do not provide habitat suitable for Great crested newt to use for breeding purposes.
- ponds further than 100m of The Site are too far away to be of concern.

Furthermore:

- considering the habitat of The Site; it is not considered likely that Great crested newt reside on The Site.
- given the size of The Site and its distance from Pond 4 – the only pond considered to provide possible Great crested newt breeding habitat – no further Great crested newt survey work is considered necessary to inform the proposed development of The Site.
- it is not considered necessary for a European Protected Species Licence for Great crested newt to be granted by Natural Resources Wales to allow the proposed development to lawfully proceed.

Nevertheless, as identified by use of the Natural England 'rapid risk assessment' tool it is possible that the development of (all of) The Site may affect Great crested newts and lead to a breach of the legal protection afforded to Great crested newt.

It is possible that, in the absence of mitigation measures, development of (all of) The Site may lead to the killing and/or injury of Great crested newt.

Therefore, it is considered that any potential risk of the development of The Site affecting Great crested newts may be assuaged by the adoption of Risk Avoidance Measures (RAMs) for Great crested newts.

A set of RAMs for Great crested newts, suitable for the proposed development, are detailed in Section 8.3.

Adoption of RAMs will negate any potential impact of the development on Great crested newts and other wildlife, including common amphibians and small mammals.

7.5 Future ecological value of The Site

It is understood that, wherever possible, existing trees and vegetation are to be retained.

The ecological value of The Site post-development may be enhanced by:

- the installation of purpose-made bird nesting features;
- the installation of purpose-made bat roosting features;
- sympathetic design for Hedgehog;
- the installation of purpose-made Hedgehog nesting features; and,
- the planting of hedges and/or the planting of trees.

Recommendations for biodiversity compensation and/or enhancement are contained in Section 9.

8. MITIGATION

8.1 Badger

8.1.1 Legislation

Badgers (*Meles meles*) and their setts are protected by The Protection of Badgers Act 1992.

Under this legislation it is illegal to:

- wilfully kill, injure or take, or attempt to kill, injure or take, a Badger;
- cruelly ill-treating a Badger, digging for Badgers, using Badger tongs, using a firearm other than the type specified under the exceptions within the Act;
- interfere with a Badger sett by damaging, destroying, obstructing, causing a dog to enter a sett, disturbing an occupied sett - either by intent or by negligence;
- sell or offer for sale a live Badger, having possession or control of a live Badger;
- mark, attach a ring, tag, or other marking device to a Badger.

A Natural Resources Wales Badger Disturbance Licence may be required for development works affecting Badgers.

8.1.2 Mitigation

- 1) All personnel working on the site during development works should be made aware that Badgers use the site and that precautions to minimise the risk of injuring or killing Badgers are to be adopted.
- 2) Excavated footings, post-holes, pipe trenches etc. will need to be filled on the same day as they are opened. Should the time between excavation and filling of foundations or ditches need to be extended, due to unforeseen circumstances, it will be necessary to prevent any chance of Badgers becoming trapped in excavations.

This may be achieved by covering the excavations with ply-board sheeting or similar, ensuring a good seal between the bottom edge of the board and firm ground substrate.

Should it not be possible to cover all excavations, wooden boards should be placed extending from the bottom of excavations to the surrounding surface. Should Badgers become trapped in excavations, these 'ramps' may potentially allow Badgers a method of escaping on their own accord.

Prior to works re-commencing excavations should be inspected for the presence of Badgers.

- 3) As a precaution, in case a Badger falls victim to site conditions, the site management should hold the contact details of a suitably experienced Badger worker. Site personnel should not attempt to remove or recover a trapped or injured Badger.

8.2 Small Breeding Bird

8.2.1 Legislation

Nesting birds are protected by the Wildlife and Countryside Act 1981. Under the Wildlife and Countryside Act 1981, all birds are protected while breeding. It is an offence, with certain exceptions to:

- intentionally kill, injure or take any wild bird;
- intentionally take, damage or destroy the nest of any wild bird while it is in use or being built;
- intentionally take or destroy the egg of any wild bird.

8.2.2 Mitigation

Vegetation clearance (i.e. the removal of trees and/or hedges) may only be carried out when no nesting birds are present i.e. between 1st October and 1st March.

Should it be required that vegetation clearance takes place within the bird breeding season, a survey should be carried out by a suitably qualified ecologist to ascertain whether breeding birds are present or not; should no breeding birds be present, it may be possible for vegetation clearance work to commence.

If it is anticipated that the vegetation is to be removed within the bird breeding season (and there are no birds nesting within it) a physical barrier that prevents birds from gaining access to the structure of the vegetation may be installed, ideally in the February preceding the removal.

Recommended physical barriers include:

- multiple-layers of 'orchard protective netting' – commonly used in the horticultural industry; and,
- 'debris netting' – commonly used in the construction and scaffolding industries.

8.3 Great Crested Newt

8.3.1 Legislation

The Great crested newt (*Triturus cristatus*) is protected under the Wildlife & Countryside Act 1981(as amended) and the Conservation of Habitats and Species Regulations 2010.

Under this legislation, it is illegal to:

- intentionally kill, injure, or capture Great crested newts or their young; (this includes the eggs of Great crested newts);
- intentionally or recklessly damage, destroy or obstruct access to areas used by Great crested newts for shelter or protection (which is taken to include water-bodies used by the newts);
- intentionally or recklessly disturb Great crested newts while they are occupying a structure or place which is used by them for shelter or protection.

A European Protected Species Licence from Natural Resources Wales may be required for development works affecting Great crested newts.

8.3.2 Mitigation – Risk Avoidance Measures

Risk Avoidance Measures (RAMs) for Great Crested Newts

For ease of reference; the development site 'Land adjacent to Willington Grange', Horseman's Green, Whitchurch, Shropshire, SY13 3BZ, is referred to as 'The Site'.

- Adoption of the above Risk Avoidance Measures (RAMs) are *precautionary*, but may avoid the killing or injury of amphibians, mammals and general wildlife that may traverse The Site or be attracted to it during the construction phase. (E.g. animals may seek refuge or shelter within spoil heaps or building materials).

Timing

1. Great crested newts are active on land from approximately mid-February to mid-November and hibernate from approximately mid-November to mid-February (Langton *et al.*).
2. Considering the habitat of The Site; it is not considered that Great crested newt impose a timing constraint on the development of The Site.

Site worker induction

3. All personnel working on The Site shall be made aware of the potential for Great crested newts to be present in the vicinity of The Site and the requirement for RAMs to be adhered to.
4. All site personnel will be informed:
Should Great crested newts, or a suspicion of their presence, be found, work must cease immediately and a Suitably Qualified Ecologist and/or Natural Resources Wales (Telephone 0300 065 3000) be contacted.

Building material storage

5. Building materials will need to be stored on pallets (or similar) and on the existing compacted access track and vehicle parking areas.

Grass/vegetation clearance

6. Trees to be removed should be felled and removed from The Site as soon as possible.
7. Prior to tree stump removal and excavation; the woodland pine needle litter layer should be carefully removed by hand and searched for the presence of Great crested newts. Should Great crested newt be found work must cease immediately and a Suitably Qualified Ecologist and/or Natural Resources Wales (Telephone 0300 065 3000) be contacted.

Excavations

8. Excavated concrete (pad) footings and pipe trenches will need to be filled on the same day as they are opened.

9. Should the time between excavation and filling of foundations or trenches need to be extended, due to unforeseen circumstances, it will be necessary to prevent any chance of Great crested newts, or other wildlife, becoming trapped in excavations.

This may be achieved by:

- a) Covers:
Covering the excavations with ply-board sheeting or similar, ensuring a good seal between the bottom edge of the board and firm ground substrate.
- b) Ramps:
Should it not be possible to cover all excavations, wooden boards (or similar) will be placed extending from the bottom of excavations to the surrounding surface. Should amphibians or small mammals become trapped in excavations, these 'ramps' may potentially allow amphibians and small mammals a method of escaping on their own accord.
- c) Prior to works re-commencing: the Ecological Clerk of Works will inspect all covered or 'ramped' excavations for the presence of Great crested newt (and other wildlife).

Arisings and/or waste materials

10. Excavated soil (and any other arisings) will need to be removed from The Site on the same day as their creation.
11. Waste materials generated within the development process should be stored within purpose-made refuse containers (such as 'skips') and or (a) secure compound(s).

If any protected species is found at any stage of the development, work should immediately cease and a Suitably Qualified Ecologist and/or Natural Resources Wales should be consulted (Telephone 0300 065 3000).

8.4 Bat

External Lighting

In order to avoid any unnecessary disturbance to bats in the future, any external lighting to be installed should be low powered and on short-timed Passive Infrared (PIR) sensitive to large objects only.

Usually, 11 watt low energy lights that are PIR activated may be appropriate for such developments.

Lighting should not be in the vicinity of, or shine towards, Bat Boxes, or bat roost openings, or boundary hedges and/or trees.

8.5 Hedgehog

8.5.1 Legislation and policy

(European) Hedgehog (*Erinaceus europaeus*) are:

- listed on Appendix III of the Bern Convention;
- protected from harm under Schedule 6 of the Wildlife and Countryside Act 1981;
- are Species of Principal Importance under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006;
- listed as a Priority Species for conservation action under the United Kingdom Biodiversity Action Plan.

8.5.2 Mitigation - Clearance of vegetation, piles of debris *et cetera*

Hedgehog nests may be constructed in and around areas of overgrown/scrub vegetation, under brash piles and/or rubble piles *et cetera*.

Hedgehogs are particularly vulnerable to disturbance between May and October when litters of hoglets are born and during the winter months when they may be hibernating.

Where Hedgehog are known to be present on or within the vicinity of the development site, or there is risk of them being present on the development site: the removal of vegetation, piles of debris *et cetera* should be carried out between March and October (i.e. when Hedgehog are active).

However, should Small Breeding Birds be nesting within vegetation, or there is a risk of their presence: removal of vegetation may only be carried out:

- when birds have vacated their nest(s); or,
- between 1st October and 1st November.

To decrease the risk of disturbing Hedgehogs that may reside within vegetation, piles of debris *et cetera*, wherever possible the material to be removed should be (carefully) inspected by hand for the presence of Hedgehog.

Where no Hedgehog are found:

- clearance work may commence with care and caution and site operatives should maintain vigilance for Hedgehog.
- Should Hedgehog be inadvertently found, work should immediately cease and the instructions below followed.

Where Hedgehog are found:

- between 1st November and 1st March:
 - hibernating Hedgehog should be left undisturbed until they naturally awaken and vacate the vegetation, piles of debris *et cetera*. (Development delays will be inevitable until Hedgehog vacate on their own accord).
- between 1st March and 1st November:
 - should non-breeding Hedgehog be found; the animal(s) may be carefully removed out of (imminent) harm's way and moved to another suitable place of rest and shelter.
 - should a breeding nest (with sow and hoglets) be found, and *not* disturbed; the nest and Hedgehogs within it should be left for a period of approximately 28 days, after which the juvenile Hedgehogs should become independent and the nest should be vacant.
 - should a breeding nest (with sow and hoglets) be found and, inadvertently, disturbed: there is a possibility that the sow may abandon the nest risking the survival of the hoglets. Should this be case, professional guidance should be

immediately sought to protect the welfare of the Hedgehog and their long-term survival. (Contact details for professional guidance are provided below).
Hedgehog welfare and protection advice may be sought from:

British Hedgehog Preservation Society
Hedgehog House, Dhustone, Ludlow, Shropshire, SY8 3PL
Telephone: 01584 890 801
Website: <http://www.britishhedgehogs.org.uk/>

Wrexham Hedgehog Rescue
Horsley Cottage, Pistyll Hill, Marford, Wrexham, Clwyd LL12
Telephone: 01978 856237

Cuan Wildlife Rescue
4 Barrow Street, Much Wenlock, Shropshire, TF13 6ES
Telephone: 01952 728070
Website: <http://www.cuanhouse.org.uk/>

8.5.3 Mitigation - Excavations and ground-works

Excavated footings, post-holes, pipe trenches etc. will need to be filled on the same day as they are opened.

Should the time between excavation and filling of foundations or trenches need to be extended, due to unforeseen circumstances, it will be necessary to prevent any chance of Hedgehog, or other wildlife, becoming trapped in excavations.

This may be achieved by:

Covers:

Covering the excavations with ply-board sheeting or similar, ensuring a good seal between the bottom edge of the board and firm ground substrate.

Ramps:

Should it not be possible to cover all excavations, wooden boards (or similar) will be placed extending from the bottom of excavations to the surrounding surface. Should Hedgehog, or small mammals, become trapped in excavations, these 'ramps' may potentially allow Hedgehog, and small mammals, a method of escaping on their own accord.

Each morning; excavations should be inspected for the presence of Hedgehog. Should Hedgehog be present, they should be removed from the excavation and, if they are healthy, released within suitable habitat, away from the development site.

9. BIODIVERSITY COMPENSATION / ENHANCEMENT

9.1 Planning Policy

9.1.1 National Planning Policy Framework

Paragraph 117 of the National Planning Policy Framework states (refer to bullet point three):

“To minimise impacts on biodiversity and geodiversity, planning policies should....promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations....”

Bullet point four of Paragraph 118 of the National Planning Policy Framework states: “opportunities to incorporate biodiversity in and around developments should be encouraged”.

9.1.2 Natural Environment and Rural Communities Act (2006)

Section 40 of the Natural Environment and Rural Communities Act (2006) states:

“Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity”.

Section 40(3) of Natural Environment and Rural Communities Act (2006):

“conserving biodiversity includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat”.

9.2 Small Breeding Bird

In order to encourage wildlife to reside on The Site, or within its immediate surrounds, in the future it is recommended that a minimum number of:

- one Schwegler 1B Bird Nest Box;
- one Schwegler 3SV with Predator Protection Bird Nest Box; and,
- one Schwegler 2H Open Fronted Bird Box

(or similar alternatives) be installed on The Site, or within its immediate vicinity, post-development.

Boxes should be installed at a minimum of 4m from the ground and in locations subject to low future disturbance.

9.3 Bat

In order to encourage wildlife to reside on The Site, or within its immediate surrounds, in the future it is recommended that a minimum number of:

- one Schwegler 1FR Bat Tube or one Wienerberger EcoSurv Bat Box (or similar alternatives) are built into an exterior wall(s) of any proposed new buildings; or,
- one Schwegler 2FN Bat Box and one Schwegler 2F Bat Box (or similar alternatives) are installed on The Site, or within its immediate vicinity, post-development.

Boxes should be installed at a minimum of 4m from the ground and in locations subject to low future disturbance.

If appropriate: in addition or alternatively to purpose-made bat boxes, custom bat roosting provision (such as 'Bat Lofts', 'Eaves Boxes', 'Exterior Common Rafter Bat Crevices', 'Loft Boxes', 'Rafter Boxes', 'Raise Ridge Tiles' and/or 'Soffit Box Bat Roosts') may be installed and/or created within the structural fabric of proposed buildings.

9.4 Hedgehog

Gates proposed to be installed within the development should have a minimum ground clearance of 100mm.

Every 4-6m, ground level holes, a minimum of 100mm high (vertical) and 100mm wide (horizontal), should be created within proposed boundary fencing to be installed.

A minimum of:

- one purpose-made Hedgehog hibernation nest box/refuge (e.g. Schwegler Hedgehog Dome); or,
- one purpose-made Hedgehog summer/breeding nest box/refuge (e.g. Hogitat Hedgehog Home)

should be installed within The Site, post-development.

9.5 Wildlife Hedge and/or Tree Planting

Wherever possible, hedgerows within or bounding The Site should be retained and all existing (mature) trees should be retained.

New hedgerows may be planted and/or existing hedgerows supplementary planted. Recommendations are provided in Section 9.5.1.

Open spaces to be created within the proposed development may be planted within fruit trees.

Recommendations are provided in Section 9.5.2.

9.5.1 Hedgerow/shrub planting

Open spaces may be planted with shrubs to provide shelter and foraging areas for wildlife.

Ideally, a minimum of four species of shrub should be planted.

Native species of local provenance are preferred.

Ideally, potted stock should be in non-peat compost.

Favourable native plant species that may be incorporated in hedgerow boundaries and/or shrubberies include:

Common English Name	Scientific Name
Blackthorn	<i>Prunus spinosa</i>
Common Beech	<i>Fagus sylvatica</i>
Dogwood	<i>Cornus sanguinea</i>
Field Maple	<i>Acer campestre</i>
Field Rose	<i>Rosa arvensis</i>
Guelder Rose	<i>Viburnum Opulus</i>
Hawthorn	<i>Crataegus monogyna</i>
Honeysuckle	<i>Lonicera periclymenum</i>
Oak	<i>Quercus robur/ petraea</i>
Rowan	<i>Sorbus aucuparia</i>
Spindle	<i>Euonymus europaeus</i>
Wayfaring Tree	<i>Viburnum lantana</i>

9.5.2 Standard / Fruit Trees

New native tree planting within (public) open spaces and/or along (retained) boundaries may encourage wildlife to forage on The Site. Trees may be half-standard or standard size. Standard trees provide instant habitat for birds and insects. Species should be those that provide a good mast crop (i.e. seeds), and ideally a mixture of species should be planted.

Tree stakes should be low (maximum 0.60 metres above ground), at an angle to avoid roots, and removed in year three.

The fecundity of trees should be monitored and dead and/or damaged plants suitably replaced.

Ideally, a minimum of three tree species should be planted. Favourable tree species include:

Common English Name	Scientific Name
Apple	<i>Malus sp.</i>
Cherry	<i>Prunus var.</i>
Cobnut / Filbert	<i>Corylus var.</i>
Crab-apple	<i>Malus sylvestris</i>
Damson	<i>Prunus var.</i>
Mountain Ash	<i>Sorbus aucuparia</i>
Mulberry	<i>Morus nigra</i>
Pear	<i>Pyrus sp.</i>
Plum / Greengage	<i>Prunus var.</i>
Silver Birch	<i>Betula pendula</i>
Small-leaved Lime	<i>Tilia cordata</i>
Walnut	<i>Juglans regia</i>
Wild Cherry	<i>Prunus avium</i>

10. RELEVANT PUBLICATIONS

Bat Conservation Trust and Institute of Lighting Professionals (2008). Bats and Lighting in the UK. *Bats and the Built Environment Series*.

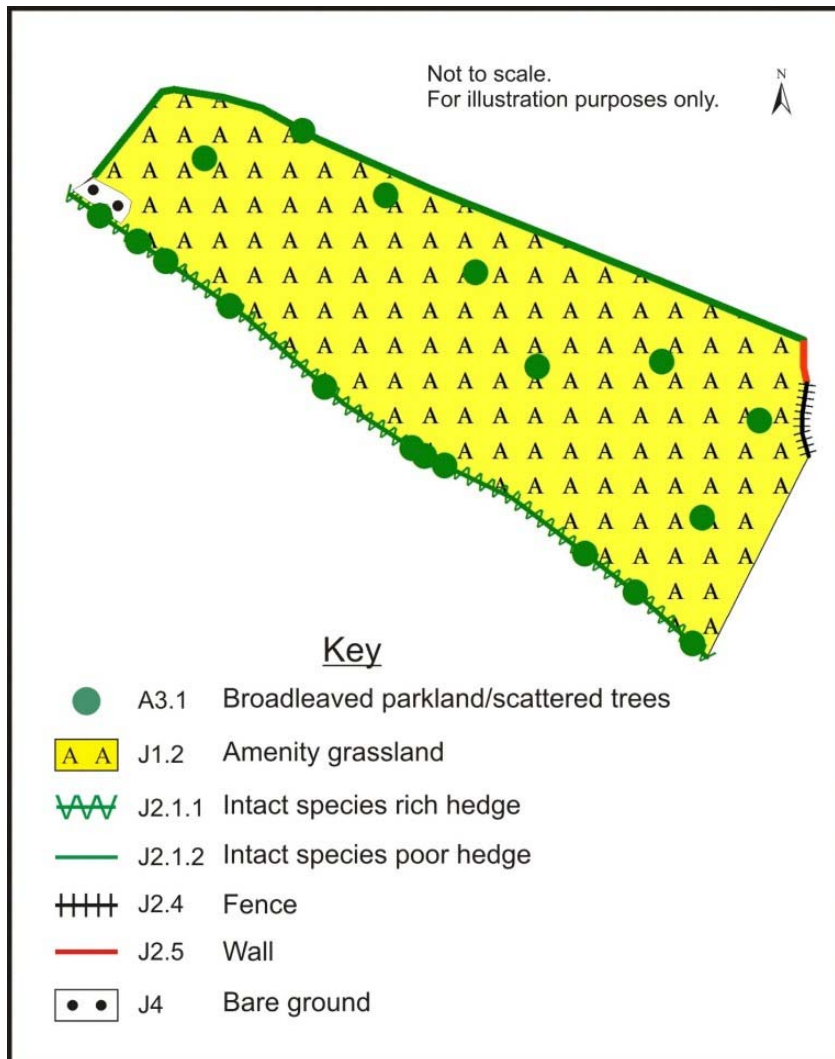
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Hundt, L. (2012) Bat Surveys: Good Practice Guidelines, 2nd ed., Bat Conservation Trust.

JNCC, (1993). Handbook for Phase 1 Habitat Survey: A technique for environmental audit (reprint). Joint Nature Conservation Committee, Peterborough.

Natural England (2010). European Protected Species Method Statement document wmla142-2_tcm6-4103.xls.

APPENDIX 1 – Extended Phase One Habitat Map



APPENDIX 2 – Site Photographs



The Site.

View of the Central area.
Looking northwest southeast.



The Site.

Left: Amenity grassland.
Right: Intact species poor hedge forming the northeast boundary.
Looking northwest from southeast.



The Site.

Lower left: Amenity grassland.

Upper right: Intact species poor hedge forming the northwest boundary.
Looking southwest from northeast.



The Site.

Left: Intact species rich hedge, with trees, forming the southwest boundary.

Right: Amenity grassland.

Looking northwest from southeast.



The Site.

Upper left: Intact species poor hedge forming the northeast boundary.
Centre: Amenity grassland and an area of bare ground within the west corner.
Right: Intact species rich hedge, with trees, forming the southwest boundary.
Looking east from west.

APPENDIX 3 – Pond Photograph



View of **Pond 3**.
Looking west from east.