

ECOLOLOCATION

Protected Species Surveys for Development

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Protected Species Report

at

Warwickshire Nursing Home
Main Street
Thurlaston
Rugby
CV23 9JS

for

Perry Care

(14th November 2011)

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1. Instructions

- 1.1 ECOLOCATION were appointed by Eastdene Investments Ltd, c/o The Warwickshire Nursing Home, Main Street, Thurlaston, Rugby, Warwickshire CV23 9JS to undertake a Protected Species Survey of Warwickshire Nursing Home, Main Street, Thurlaston, Rugby, Warwickshire CV23 9JS following an initial enquiry by Sylvester Estates, Langton House, 208 Hillmorton Road, Rugby CV22 5BB.

2. Purpose and Scope

- 2.1 The purpose of the survey and report was to assess the likelihood of presence of, or use of, the site by protected species and to support a planning application for extensions to the existing building, car park and associated landscaping submitted to Rugby Borough Council.
- 2.2 The scope of the survey was to encompass the areas of the site to be potentially affected by the works as outlined by Bob Law of Sylvester Estates on behalf of Perry Care.
- 2.3 It is understood that Louise Sherwell of Warwickshire County Council Ecology Unit had provided comments on the proposed development in respect of bats, amphibians and reptiles thus all such species were included within the scope of the survey.

3. Timing and Conditions

- 3.1 The site was visited on Monday 31st October 2011 at 09:00am.

Parameter	Recorded Figure
Temperature	14°C
Cloud cover	10%
Precipitation	None
Wind speed (Beaufort Scale)	1-light air

4. The Site

- 4.1 The site was located at Grid Reference SP 467 709 off Main Street in the small village of Thurlaston, Warwickshire some 500m south of the M45 (running east-west) and 400m north of Draycote Water. Residential properties were present to all boundaries with open countryside accessible no further than 200m in any direction.
- 4.2 The site comprised an existing nursing home set in gardens, part of which were formally landscaped with the remaining western half of the site being more informally managed, together with access and car parking. The nursing home had a complex of inter-connected single- and two-storey elements with pitched roofs; approximately half of these elements comprised an original building with the remaining half comprising more modern extensions. Only part of the modern extensions at the western extreme of the building were to be impacted by the proposals and consequently the survey, in respect of bats, focussed on these elements (see plan below). The formal gardens were present immediately adjacent to the building and comprised close mown amenity grassland with planted flower beds and patio areas. An un-metalled access off Main Street and an area of hardstanding for staff car parking was present to the north of the building with a formal car parking area for visitors in a courtyard to the south. The habitat to the west of the site was informally managed as areas of rough, tussocky grassland of false oat-grass, hogweed and common nettle with occasional patches of dense bramble and hawthorn scrub as well as ash and elm present at the western corner. Grass cuttings were kept in compost piles around the edge of these areas and also along the hedgerow fronting Main Street between the staff car park and Biggin Hall Lane. A pond was present on neighbouring land adjacent to the western boundary.
- 4.3 The parts of the building to be affected by the proposals were modern two-storey extensions in cavity brickwork with hipped, plain clay tiled roofs and a projecting gable to the northern elevation. There were five separate roof voids which could be potentially impacted by the works, labelled A-E on the plan below, and all were included within the survey. All voids were constructed from pre-fabricated trusses resulting in a cluttered void and all areas were lined with bituminous felt. Only Void D benefitted from a central ridge board, as this was a pitched, gable-ended roof. All voids had 250mm insulation present between the ceiling joists with the exception of Void A, which had no insulation

present. Voids A-C had a roof height (ceiling to ridge) of 2.5m, Void D was higher with a roof height of 3m and Void E was the smallest with a height of only 1.7m.



Amenity grassland adjacent to staff car park



Area to be impacted by development



Tall ruderal vegetation close to development footprint



Rough grassland



Northern elevation of building to be impacted



West elevation of building to be impacted



South elevation of building to be impacted



Void A



Void B



Void C



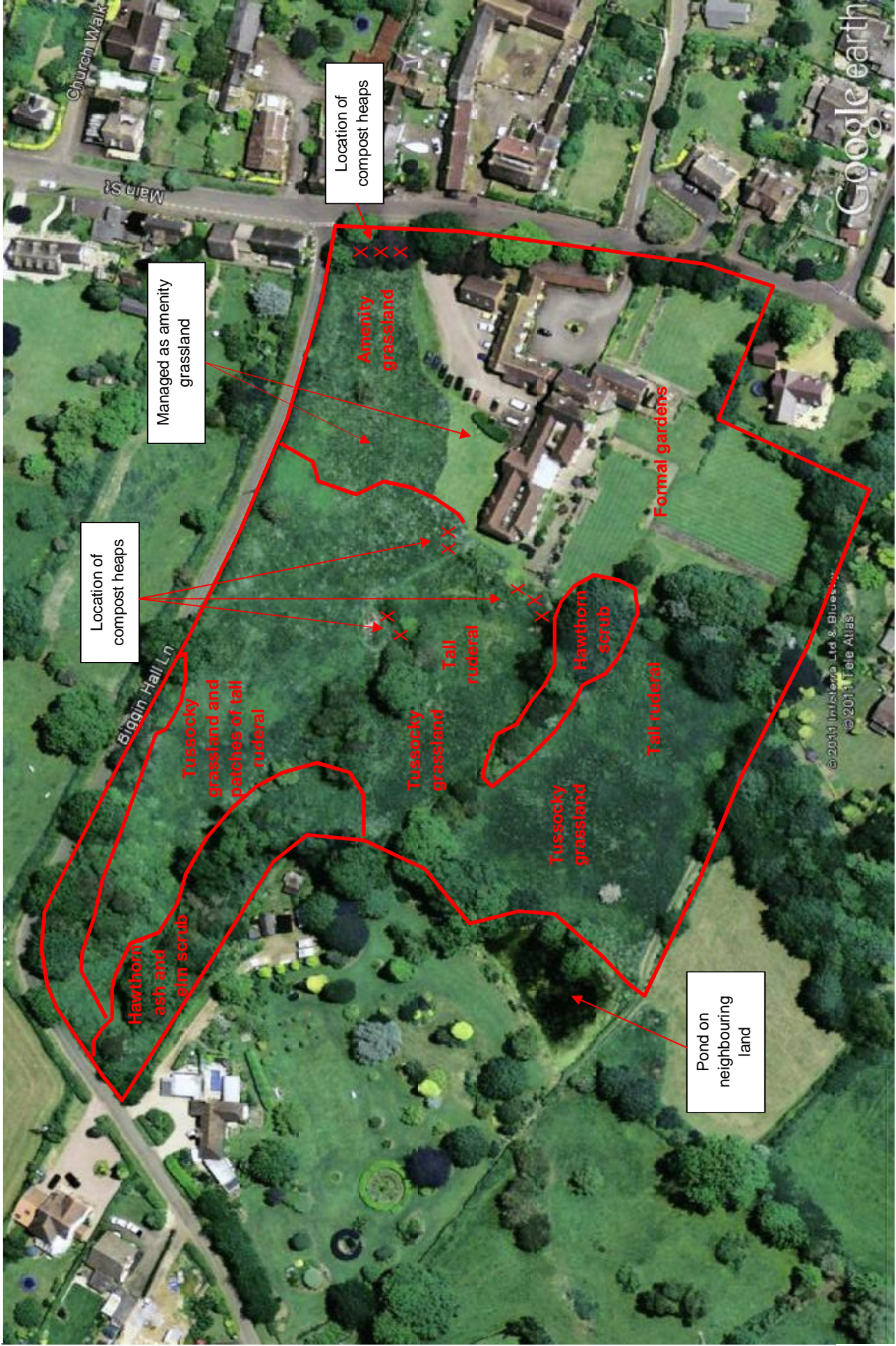
Void D



Void E

ECOLOCATION

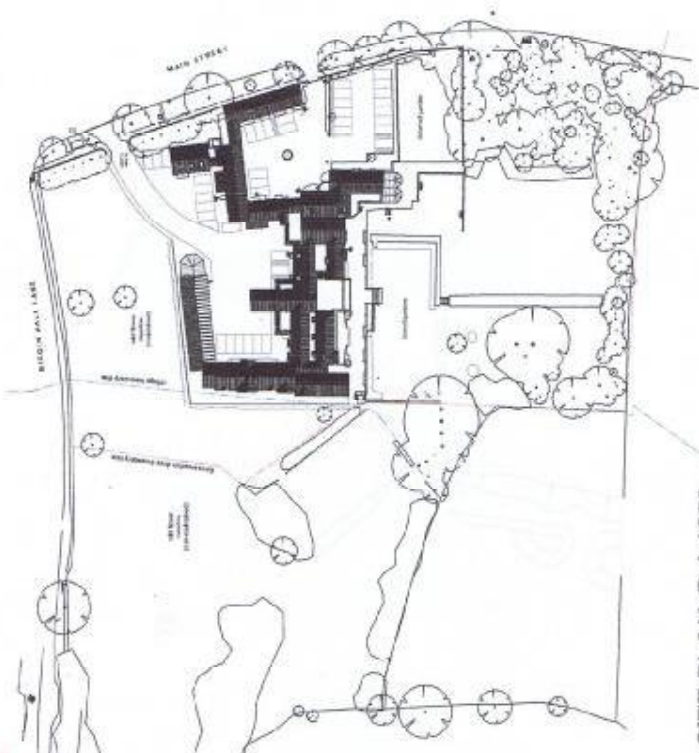
SITE BOUNDARY



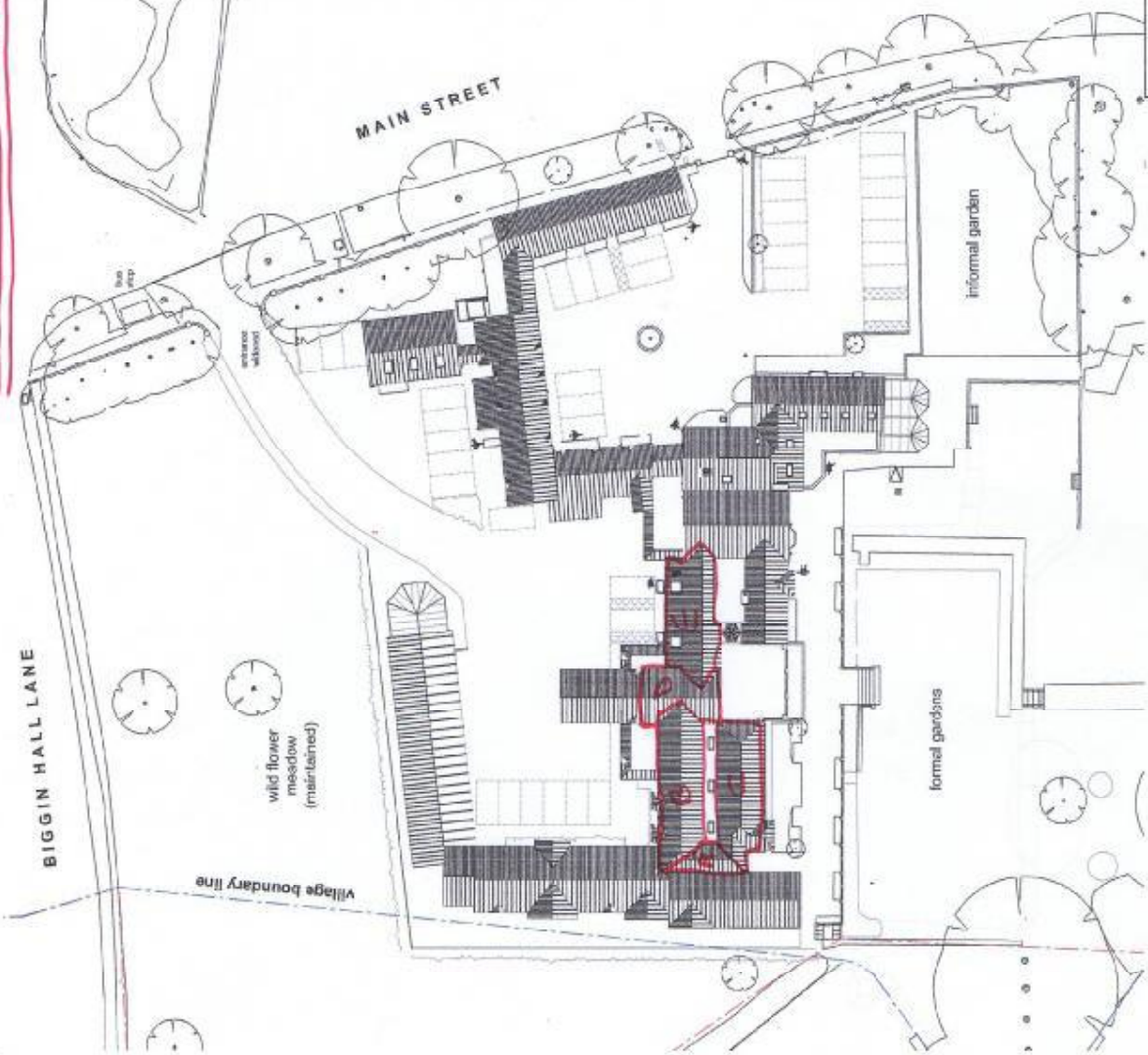
6 N

• ROOF VOIDS SURVEYED •

X



SITE PLAN @ 1:1250



SITE PLAN @ 1:500

<p>alison lamont design <small>alison lamont design ltd 11 Cowley Close, Pough, COB 0JH</small></p>		<p>DATE: 02-08-11 REF: D DRAWING NO: 1107/101 SCALE: ALL</p>	
<p>FOR DISCUSSION</p>			
<p>CLIENT: EASTSTONE INVESTMENTS LTD TITLE: THE WARWICKSHIRE NURSING HOME LOCATION PLANS - PROPOSED</p>		<p>THIS DRAWING IS THE PROPERTY OF ALISON LAMONT DESIGN AND SHOULD NOT BE REPRODUCED OR COPIED IN ANY FORM OR BY ANY MEANS WITHOUT THE WRITTEN PERMISSION OF ALISON LAMONT DESIGN. UNLESS OTHERWISE STATED OTHERWISE, DIMENSIONS SHOULD BE TAKEN AS SHOWN ON THIS DRAWING.</p>	
<p>REVISIONS:</p> <ul style="list-style-type: none"> A NOTES ADDED B NOTES ADDED C CORRECTIONS ADDED D CORRECTIONS ADDED 	<p>DATE:</p>	<p>BY:</p>	<p>SCALE:</p>

5. Habitat Analysis

- 5.1 The site was located in the centre of the village of Thurlaston in Warwickshire, some 2.3km south-west of the outskirts of the town of Rugby. The immediately surrounding habitat was one of residential properties to all boundaries (albeit minor roads, Main Street and Biggin Hall Lane, actually abutted the eastern and northern boundaries respectively) most of which had mature landscaped gardens. Immediately adjacent to the western boundary was a medium-sized pond (outside of the applicant's ownership) which is described in detail in section 7. A large reservoir, Draycote Water was present only 400m south of the site with open farmland and pasture fields surrounding the small village of Thurlaston. A small number of woodlands were noted within a 2km radius, including 3 areas of Ancient Woodland (England) together with 5 areas of woodland included in The National Inventory of Woodland and Trees (England). Of most significance was Cawston Wood, albeit this was located north of the M45. Aside from the waterbody already mentioned, watercourses were largely absent although there were a small number of ponds located within this radius, particularly within 500m.

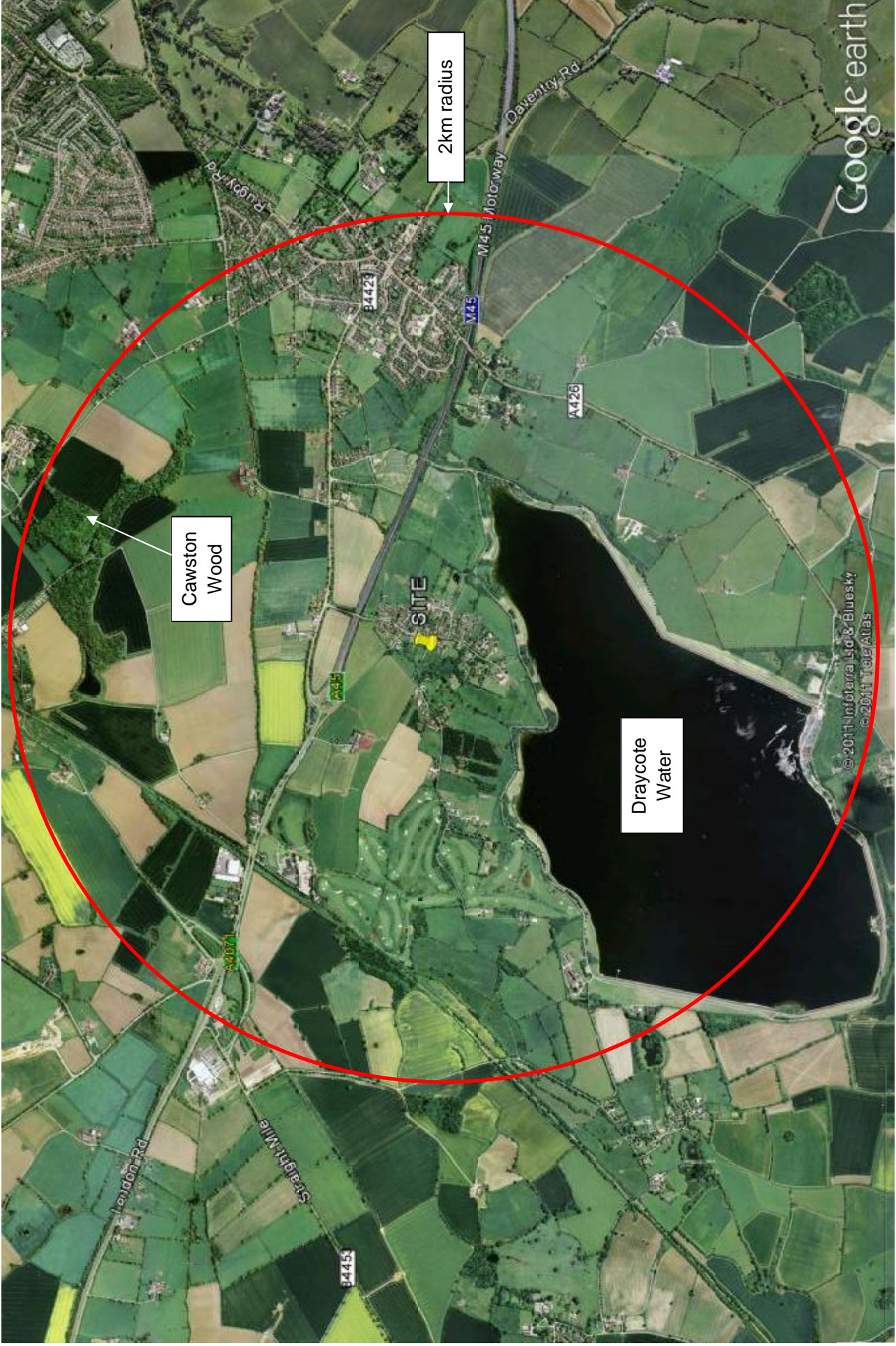
Ancient Woodland (England)

Grid Reference	Wood Name	Theme ID	Theme Name
sp473724		1410810	ANCIENT & SEMI-NATURAL WOODLAND
sp469726		1410811	ANCIENT & SEMI-NATURAL WOODLAND
sp472728		1410812	ANCIENT & SEMI-NATURAL WOODLAND

National Inventory of Woodland and Trees (England)

Feature type	Reference date	Update type
BROADLEAVED	310397	
BROADLEAVED	310397	
CONIFEROUS	310397	
YOUNG TREES	310300	WGS
YOUNG TREES	310300	WGS

- 5.2 A further search to 10km from the site was made as it is known that bats can forage to within this distance of their roosts overnight and this showed evidence of a greater number of sizeable woodlands with 42 areas of Ancient Woodland (England) together with 170 areas of woodland included in The National Inventory of Woodland and Trees (England) evident within this radius. The most significant area of woodland was the Princethorpe Woodland Complex comprising Ryton Wood, Wappenbury Wood, Waverley Wood etc. most of which was ancient woodland and comprised some of the most significant woodland in Warwickshire being of particular attraction to bats for foraging and roosting, albeit this was some 8km distant to the west of the site.
- 5.3 In addition to this, the River Leam was present some 3km south of the site, beyond Draycote Water, with the Oxford Canal within 5km east of the site. Although it was possible that the M45 may have provided an obstacle to foraging bats travelling north of the site, there remained a good amount of high quality bat foraging habitat accessible within a 10km radius in addition to the good foraging habitat of Draycote Water and mature gardens with a pond for bats in the immediate vicinity of the site.
- 5.4 The habitat, in respect of potential for amphibians such as great crested newts, was suitable for this species due to the presence of a pond on neighbouring land which was directly connected to areas of dense scrub and rough grassland within the site for foraging and shelter together with hedgerows connecting the site to the wider countryside (see Walkover Survey).
- 5.5 The habitat, in respect of potential for reptiles such as grass snake, common lizard and slow worm, was suitable for these species due to a large amount of the site benefiting from morning sunshine in areas of grassland that were both undisturbed and adjacent to edge habitat, such as scrub, that was suitable for sheltering. The presence of a pond on neighbouring land together with areas of grassland left to grow long and set seed provided both potential food and shelter (see Walkover Survey). In addition to this there were hedgerows connecting the site to the wider countryside and compost heaps within the site suitable for egg-laying.
- 5.6 In many respects the habitat suitability for nesting birds can be deduced from the above in reference to bat foraging opportunities. However there were also field boundaries lined with hedges on and adjacent to the site which may have offered additional nesting opportunities together with opportunities for ground-nesting species, such as yellowhammer, within the rough grassland or warblers within the scrub/tall ruderal areas.



© N

6. Data Search Results

- 6.1 A search of pre-existing protected species records via the National Biodiversity Network produced evidence of Common Frog (*Rana temporaria*), Great Crested Newt (*Triturus cristatus*), Common Toad (*Bufo bufo*), Smooth Newt (*Lissotriton vulgaris*), Palmate Newt (*Lissotriton helveticus*), Grass Snake (*Natrix natrix*), Common Lizard (*Zootoca vivipara*), Freshwater White-clawed Crayfish (*Austropotamobius pallipes*), Eurasian Badger (*Meles meles*), Barn Owl (*Tyto Alba*), Brown Long-eared bat (*Plecotus auritus*), Long-eared bat species (*Plecotus sp.*), Noctule bat (*Nyctalus noctula*), Pipistrelle bat sp. (*Pipistrellus sp.*), Indet bat, Myotis bat sp. (*Myotis sp.*), Soprano Pipistrelle (*Pipistrellus pygmaeus*), Leisler's bat (*Nyctalus leisleri*), Daubenton's Bat (*Myotis daubentonii*) and Common Pipistrelle (*Pipistrellus pipistrellus*) within the 10km SP47 grid square. Within 1km of this grid reference evidence of Freshwater White-clawed Crayfish, Indet bat, Pipistrelle species and Common Pipistrelle had been recorded.
- 6.2 Warwickshire Biological Record Centre were also contacted for protected species records within a 1km radius of the site. This revealed evidence of:

Bats

1. Indet species, SP 4670, 24/05/2007, Roost (droppings), source Warwickshire Biological Records Centre
2. Common or Soprano Pipistrelle, SP 4670, 27/10/1982, source Warwickshire Bat Group

Amphibians/Reptiles

1. Smooth Newt, SP 4670, 26/08/2001, 10 adults, source Warwickshire Biological Records Centre
2. Grass Snake, SP 4670, 01/04/2009, 1 animal seen, source Warwickshire Biological Records Centre

7. Walkover survey

7.1 Great Crested Newts (GCN)

With regards to GCN, the site provided a number of suitable foraging and possible over-wintering opportunities, particularly within the areas of rough grassland and scrub or under tree roots within hedgerows. In terms of the GCN aquatic phase, there was a medium-sized pond located adjacent to the western site boundary and outside of the applicant's ownership. The pond had shallow slopes to its bank and supported some marginal vegetation including *Typha sp.*, Pond Sedge and *Phragmites*. It was surrounded by suitable terrestrial habitat and had areas of open water available for displaying male GCN. The water quality was considered to be average and it is understood that a number of tench (*Tinca tinca*) were introduced to the pond 10 years ago. No evidence of waterfowl was recorded. The presence of GCN within the site was considered to be medium-high given the presence of suitable terrestrial and aquatic habitat for this species within and adjacent to the site together with a record of GCN within a 1km radius.



Neighbouring pond

7.2 Reptiles

With regards to the potential presence of grass snake, common lizard or slow worm, the site provided suitable foraging, basking, breeding and sheltering opportunities for such species. The area of informally managed vegetation in the west of the site was largely undisturbed and there were many areas within this that received morning sunshine and would be suitable for basking reptiles. The areas of dense scrub could potentially provide cover and shelter and the rough grassland and neighbouring pond could provide a food source. Further suitable habitat for reptiles was present by way of a number of compost heaps which comprised grass cuttings from the site and would be suitable as an egg-laying site. In addition to this the site was connected to the wider countryside via hedgerows potentially allowing species movements through the site and beyond.



Compost heaps along hedgerow boundary
with Main Street

7.3 Bats

7.3.1 Voids A-E were all assessed for their potential to support bats. Externally, a large number of potential access points were available to bats on the building as illustrated by the photos below:

7.3.2 Internal access was gained to all roof voids potentially impacted by the proposed works, i.e. voids A-E. As previously described, all five roof voids had trussed roofs resulting in a cluttered environment and all benefited from a bituminous lining to the roof. The lining was largely well sealed with occasional tears and sagging present in Voids A and C in particular, which could have afforded bats direct access into these roof voids. Should bats have gained access to any of the roof voids, potential roosting opportunities were largely limited to gaps between the rafter and the blockwork, at hip junctions in Voids A, B, C and E or at the ridge board in Void D.



Roosting opportunity at hip junction and between last rafter and blockwork



Tear in bituminous lining

7.3.3 Long-eared species are often recorded in large open roof spaces generally with gable ends providing sufficient unobstructed space for social flight and light sampling activity at dusk and dawn. The roof spaces to be impacted by the works in this instance were of low potential for use by this species as all voids were cluttered, 4 of the 5 voids were hipped and without gable ends and only Void D had a length of ridgeboard available for perching, although no associated tears or sagging in the bituminous lining were noted in this void which could have gained bats access into the void itself. Consequently the likelihood of use of the building by void-seeking bats is considered to be low.

7.3.4 Pipistrelle species and small Myotis species are often encountered roosting within cavity walls of modern properties, within soffits and between the underfelt and tiles on roofs. In this instance the first and latter of these features were present although it is not known whether the cavity wall had been retrospectively filled. There were, however, a number of potential access points for bats into the area between the tiles and the lining and this coupled with the proximity of Draycote Water and nearby bat records resulted in a medium likelihood of use of the building by crevice-dwelling bats.

7.4 Nesting Birds

The site offered suitable nesting opportunities for a number of common garden and farmland birds including pigeons (*Columbidae*), thrushes (*Turdidae*), finches (*Fringillidae*), Tits (*Paridae*), warblers (*Sylviidae* etc.) and buntings (*Emberizodae*) etc. within the building, trees, scrub, hedgerows and ruderal growth.

8. Survey results

8.1 Bats

- 8.1.1 An intrusive investigation of the parts of the building to be affected by the proposals, together with the corresponding roof voids (voids A-E) was undertaken by Anna Swift, Natural England Bat Licence No. 20110070 using Petzl Tikka Plus 2 headtorch, Clulite 'CB2' 0.5 and 1 million candle power lamp and 'SeeSnake' Micro Endoscope.
- 8.1.2 A search for individual bats, carcasses, droppings, urine staining, polished surfaces, build-up of insect remains etc was made internally and externally of the building.
- 8.1.3 No evidence of use by bats was recorded in voids A-E.
- 8.1.4 In Void B there was a wasps nest present close to the eaves on the northern elevation. In Voids B-E scattered mouse droppings were present throughout.



Wasps nest in void B

8.2 Amphibians and Reptiles

The pond that was adjacent to the western site boundary was subject to a habitat analysis using the Great Crested Newt Habitat Suitability Index (HSI) developed by Oldham et al. (2000). [See Appendix].

HSI can be useful in

- Evaluating the general suitability of a sample of ponds for Great Crested Newt
- Comparing general suitability of ponds across different areas
- Evaluating the suitability of receptor ponds in a proposed mitigation scheme

HSI is limited by being insufficiently precise to allow one to draw conclusions that a pond with a high score will support Great Crested Newts nor that a pond with a low score will not do so. Also, the results do not allow conclusions on newt populations to be reached.

HSI POND 1		
Factor	Result	Suitability Index
SI ₁ Location	A	1.0
SI ₂ Pond Area	630 m ²	1.0
SI ₃ Pond Drying	Never	0.9
SI ₄ Water Quality	Moderate	0.67
SI ₅ Shade	40%	1.0
SI ₆ Fowl	Absent	1.0
SI ₇ Fish	Minor	0.33
SI ₈ Ponds	4	0.7
SI ₉ Terrestrial	Moderate	0.67
SI ₁₀ Macrophytes	20 %	0.5

$$SI_1 \times SI_2 \times SI_3 \times SI_4 \times SI_5 \times SI_6 \times SI_7 \times SI_8 \times SI_9 \times SI_{10}$$

$$(1 \times 1 \times 0.9 \times 0.67 \times 1 \times 1 \times 0.33 \times 0.7 \times 0.67 \times 0.5)^{1/10} = 0.73$$

0.73 equates to "good" habitat suitability for Great Crested Newts

Within the site itself were a number of artificial refugia including a lined stack of large paving flags although these were too heavy to lift and inspect. Other refugia such as discarded timber or occasional bricks were carefully inspected during the site visit but no evidence of amphibians or reptiles was found. In addition to this, the site was revisited on Monday 31st October at 09.30hrs:

Parameter	Recorded Figure
Temperature	13°C
Cloud cover	20%
Precipitation	None
Wind speed (Beaufort Scale)	1-light air

A careful destructive search of the compost piles within the site was carried out in order to assess whether these were used by sheltering amphibians or reptiles and indeed whether they had been used by breeding reptiles (evident by discarded egg shells which are soft). It was an appropriate time of year to conduct such a search as it was unlikely given the timing and the air temperature that amphibians or reptiles would be hibernating and it is also beyond the period where the compost piles would still have been in use by young grass snakes.

No evidence of use by amphibians or reptiles was recorded.

8.3 Nesting Birds

No evidence of nesting birds was recorded during the assessment of the building. Whilst there was good potential for nesting birds within the dense scrub or hedgerows around the remainder of the site, as these would not be impacted by the development, these were not assessed in further detail.

8.4 Other protected species

A thorough search for evidence of badgers was also undertaken within the site boundary. This included looking for setts, hairs, tracks, snuffle holes, latrines etc. No specific evidence of badgers was recorded on site although a mammal track was noted crossing through the northern hedgerow and into the site from Biggin Hall Lane, although this could be due to either badger or fox activity.

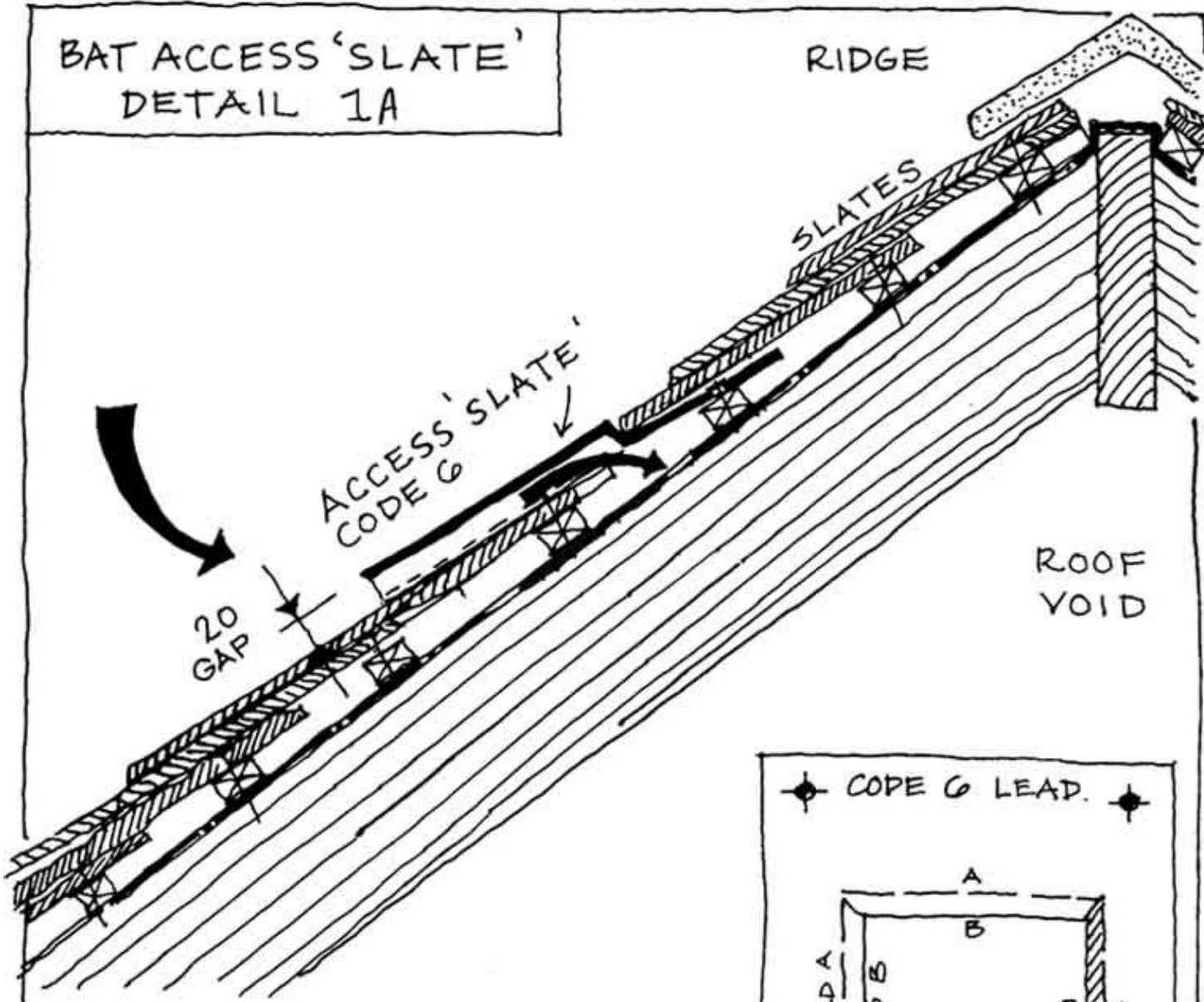
9. Survey Conclusions

Bats

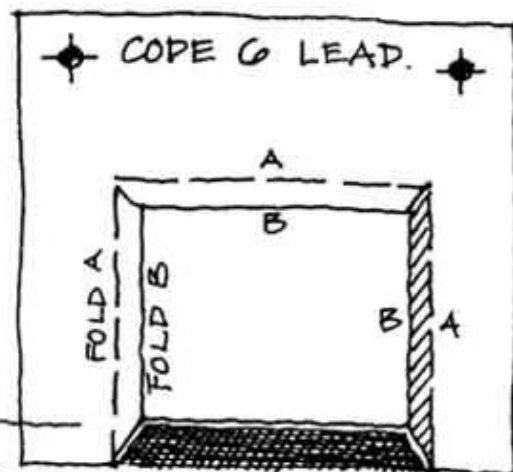
9.1 No evidence of bats was recorded in the roof voids of the building to be impacted by the proposals. However, given the type of construction of the building (as this building could offer sustained bat roosting opportunities) and access possibilities, together with the presence of nearby bat records (including Pipistrelle, which are crevice-dwelling species), it was considered that there was medium potential for crevice dwelling bats to roost between the clay tiles and the roof lining below. The construction of the building was such that roosting was most likely to take place during the active period from April to October and there was also the potential for the presence of a maternity roost within the building. As such, bat activity surveys will be required to determine bat usage of the building together with subsequent roost type, species and population as appropriate.

9.2 Whilst it is understood that the proposed works will impact the projecting western hipped extension and the projecting northern gable of the building, it should be noted that no roof space will be 'lost' as a result of the development. Therefore, whilst no evidence of void-seeking species such as brown long-eared bats was identified during the survey, even if this bat species was discovered using the building during the next survey season, it should be noted that a roof void would still be available to them following the works and as such they could be accommodated within the scheme via appropriate timing of works. Furthermore, if crevice-dwelling bats were recorded using the building during the bat activity surveys, there would also be sufficient scope for appropriate mitigation and enhancement of the site for crevice-dwelling bats (such as Pipistrelle sp. or small Myotis sp.) within the proposed scheme. Such mitigation would include access into a cavity wall, or access into the area between the tiles and the lining, and could easily achieve like-for-like replacement without any significant changes/requirement or amendments to the proposed scheme (see diagrams below).

BAT ACCESS 'SLATE'
DETAIL 1A



~ SECTION THROUGH ~
ROOF

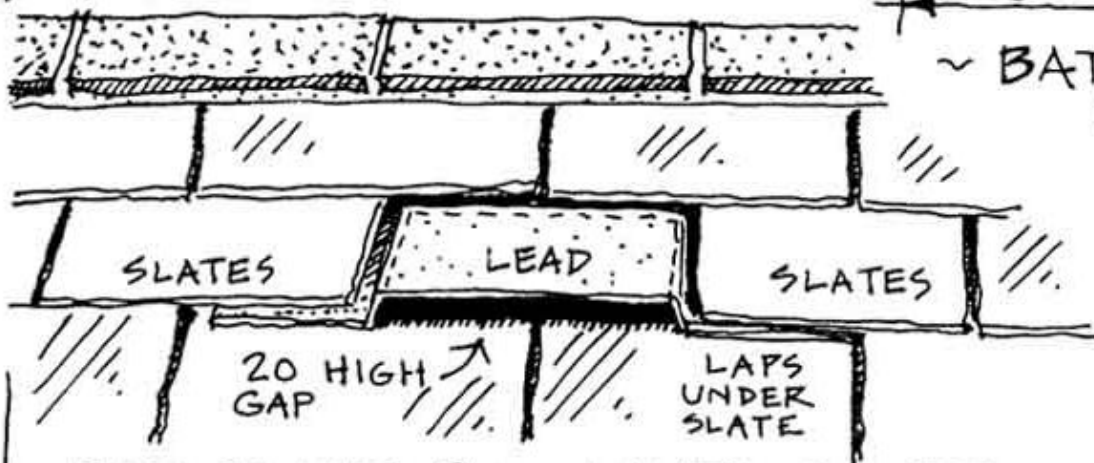


RIDGE LINE

20

TO SUIT SLATE

~ BAT ACCESS ~
SLATE

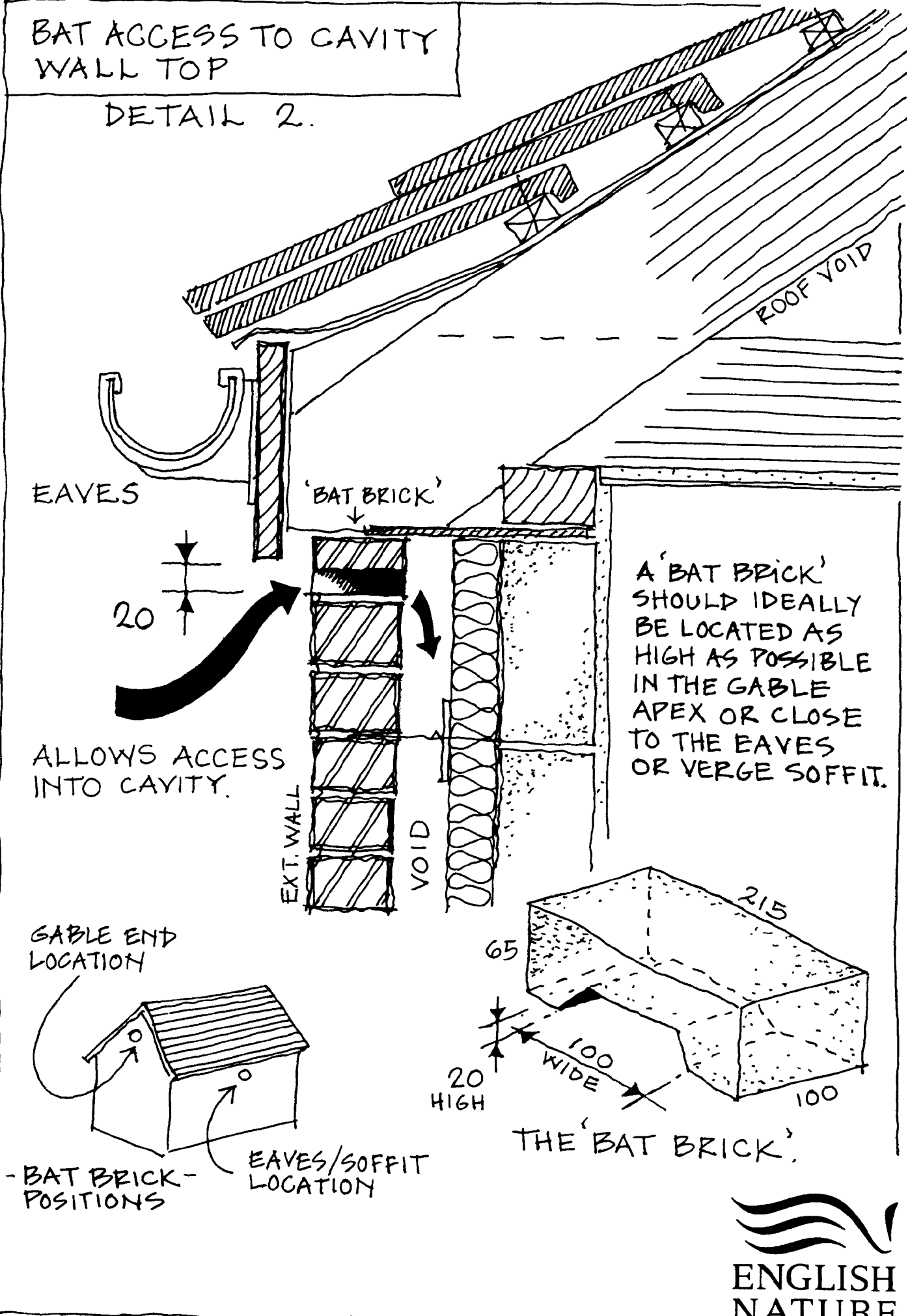


~ BAT SLATE BUILT INTO SLOPE ~



BAT ACCESS TO CAVITY WALL TOP

DETAIL 2.

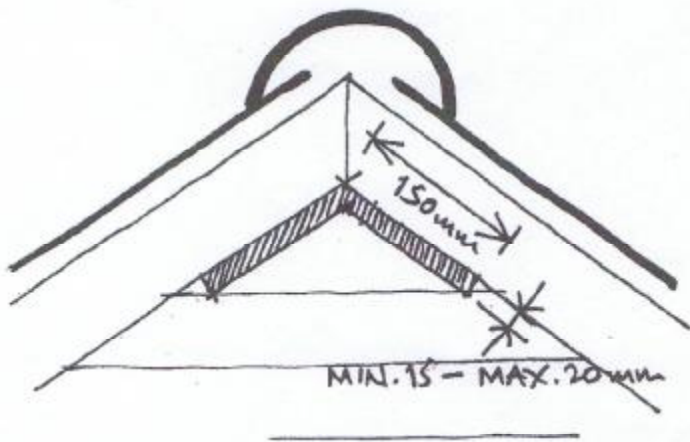


A 'BAT BRICK' SHOULD IDEALLY BE LOCATED AS HIGH AS POSSIBLE IN THE GABLE APEX OR CLOSE TO THE EAVES OR VERGE SOFFIT.

THE 'BAT BRICK'



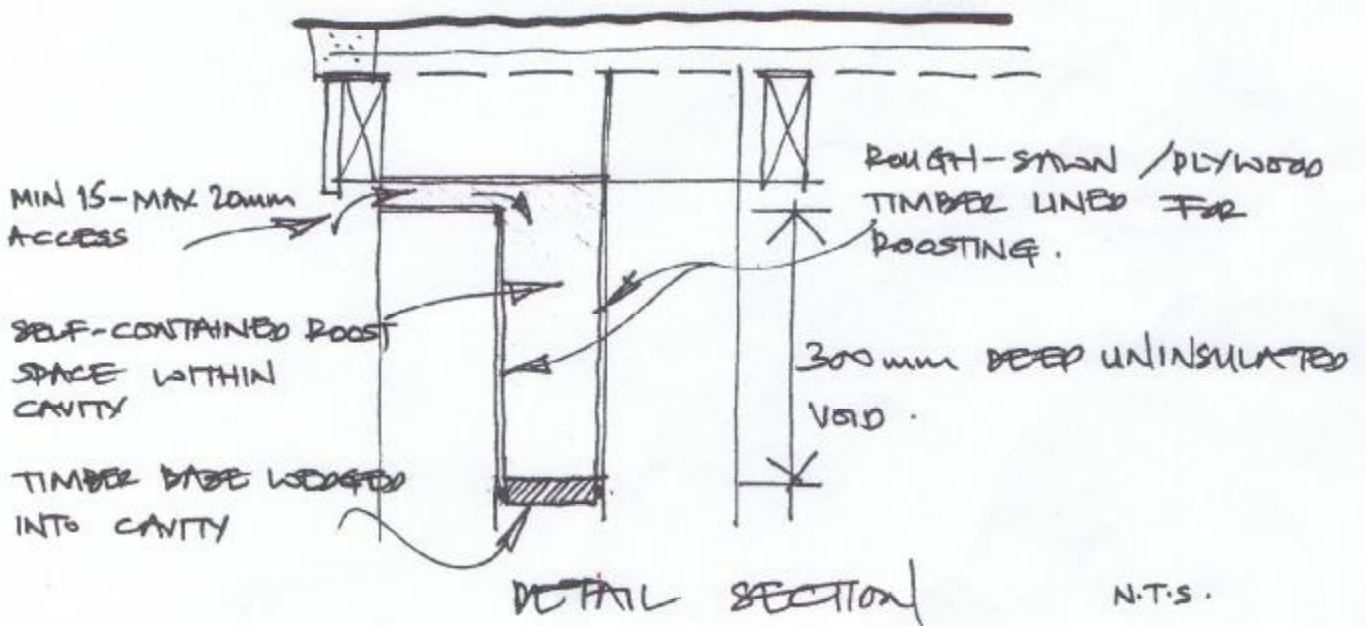
SP



N.T.S.

DETAIL ELEVATION

PIPISTRELLE ACCESS



N.T.S.

Amphibians and Reptiles

- 9.3 The site supports suitable basking areas for reptiles together with suitable foraging habitat including the pond on the adjacent land and the rough grassland. There is also sufficient cover for reptiles to move through the site, i.e. through tall ruderal vegetation or along hedgerows into the wider countryside. The neighbouring pond scored 'good' suitability for supporting great crested newts and the site itself could provide shelter or overwintering opportunities beneath artificial or natural refugia together with foraging opportunities in the scrub and rough grassland.
- 9.4 It is understood that the footprint of the proposed extensions would impact areas of amenity grassland and a small number of paving slabs in a paved area of the formal garden to the south of the building. It is possible that great crested newts, if present in the neighbouring pond, could make use of the paved areas for hibernation. As such a risk assessment tool for the likely impact on great crested newts and subsequent need for a licence provided by Natural England was completed. The results are provided below with an offence likely. In order to reduce this risk and proceed under Method Statement, further avoidance and mitigation is required. This would be achieved by only removing the paving flags in the presence of a Licensed Ecologist during March when the great crested newts have returned to ponds as this avoids the hibernation period, a sensitive time of year for this species. Furthermore, it should be noted that the paving flags to be impacted are 95m from the pond, <6 flags will be removed and they are separated from more suitable newt habitat by 5m of amenity grassland. As such it is considered that the proposed working methods and timing for the removal of paving flags together with the tight mowing of the grassland for the duration of works will represent proportionate mitigation.

WARWICKSHIRE NURSING HOME

Instructions for completion of Method Statement template

Application tools: (1) "Do I need a licence?" - rapid risk assessment

Caveats and limitations

This risk assessment tool has been developed as a **general guide only**, and it is inevitably rather simplistic. It has been generated by examining where impacts occurred in past mitigation projects, alongside recent research on newt ecology. It is not a substitute for a site-specific risk assessment informed by survey. In particular, the following factors are not included for sake of simplicity, though they will often have an important role in determining whether an offence would occur: population size, terrestrial habitat quality, presence of dispersal barriers, timing and duration of works, detailed layout of development in relation to newt resting and dispersal. The following factors could increase the risk of committing an offence: large population size, high pond density, good terrestrial habitat, low pre-existing habitat fragmentation, large development footprint, long construction period. The following factors could decrease the risk: small population size, low pond density, poor terrestrial habitat, substantial pre-existing dispersal barriers, small development footprint, short construction period. You should bear these mitigating and aggravating factors in mind when considering risk.

It is critical that, even if you decide not to apply for a licence, you ensure that any development takes account of potential newt dispersal. Where great crested newts are present, landuse in that area must ensure there is adequate connectivity. Retaining and improving connectivity will often involve no licensable activities.

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)	0.001 - 0.01 ha lost or damaged	0.05
Land 100-250m from any breeding pond(s)	0.1 - 0.5 ha lost or damaged	0.1
Land >250m from any breeding pond(s)	No effect	0
Individual great crested newts	Minor disturbance of newts	0.5
	Maximum:	0.5
Rapid risk assessment result:	AMBER: OFFENCE LIKELY	

Guidance on risk assessment result categories

"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.

"Amber: offence likely" indicates that the development activities are of such a type, scale and location that an offence is likely. In this case, the best option is to redesign the development (location, layout, methods, duration or timing; see **Non-licensed avoidance measures tool**) so that the effects are minimised. You can do this and then re-run the risk assessment to test whether the result changes, or preferably run your own detailed site-specific assessment. Bear in mind that this generic risk assessment will over- or under-estimate some risks because it cannot take into account site-specific details, as mentioned in caveats above. In particular, the exact location of the development in relation to resting places, dispersal areas and barriers should be critically examined. Once you have amended the scheme you will need to decide if a licence is required; this should be done if on balance you believe an offence is reasonably likely.

"Red: offence highly likely" indicates that the development activities are of such a type, scale and location that an offence is highly likely. In this case, you should attempt to re-design the development location, layout, timing, methods or duration in order to avoid impacts (see **Non-licensed avoidance measures** tool), and re-run the risk assessment. You may also wish to run a site-specific risk assessment to check that this is a valid conclusion. If you cannot avoid the offences, then a licence should be applied for.

9.5 Discussions with the contractor, Bob Law of Sylvester Estates, sought to clarify the likely extent of the working area to determine whether there would be any impact to the area of rough grassland, tall ruderal and compost heaps close to the existing western projecting extension. The footprint of the extension together with a further 1.8m depth to allow for scaffolding would not directly impact areas other than amenity grassland and paving slabs as a large crane would be employed to lift construction materials over the roof of the existing western projecting extension without encroaching on habitat which may be used by great crested newts and/or reptiles. However in order to ensure a greater buffer exists between habitat that is suitable for use by amphibians and reptiles and the working area of the development, a 5m buffer of unsuitable habitat would need to be maintained. This would result in the strimming of a small area of tall ruderal vegetation (see plan below) and the dismantling of a compost heap but is an area so small in proportion to available habitat that the temporary loss of this during construction would not obstruct commuting or foraging routes for protected species that may use the site and would represent a negligible loss of habitat as a much larger area of suitable habitat will remain undisturbed in the western part of the site. Further details and species protection measures in respect of great crested newts and reptiles are described in section 11 and recommended enhancements are provided in section 12.

Other protected species

9.6 No specific evidence of any other protected species was recorded during the site visit. A mammal track was noted running through the northern hedgerow and into the site at the corner of Main Street and Biggin Hall Lane although this could be due to fox or badger activity as no further evidence of either species was noted. However, even if badger do pass through the site, the areas of habitat to be affected are very unlikely to be used by this species.

10. Obligations and recommendations

- 10.1 Great Crested Newts are a European Protected Species. They are fully protected in the UK under the 1981 Wildlife and Countryside Act (WCA) (as amended), the Conservation (Natural Habitats &c.) Regulations 1994, (as amended 2007) and the Countryside and Rights of Way (CROW) Act 2000. Great crested newts are also a priority UK and local Biodiversity Action Plan (BAP) species.
- 10.2 Native UK reptiles are afforded varying levels of protection under the 1981 Wildlife and Countryside Act (WCA) (as amended). Sand lizard and smooth snake are afforded full protection whereas the most common and widespread reptiles including grass snake, adder, slow worm and common lizard are protected from killing, injury and sale.
- 10.3 All species of British bat and their roosts (places of shelter or rest) are protected by law from intentional and reckless disturbance under The Wildlife and Countryside Act 1981 (amended by the Countryside and Rights of Way Acts 2000, and the Conservation of Habitats and Species Regulations 2010 to incorporate the European Habitats directive..
- 10.4 Bats are highly mobile and when not in hibernation can occupy a building overnight. It is essential therefore that due vigilance be maintained before and during any works to ensure their protection. The lack of evidence of roosting at this stage does not *guarantee* that this is not taking place intermittently or may not take place in the future.
- 10.5 It is recommended that at least **two activity surveys** are completed **May to August** to determine bat usage of the building (in terms of species, population, roost location and access points) lead by a Licensed Bat Worker. In the interim, the areas where roosts are possible should remain undisturbed and accessible to bats with any proposed development at this stage avoiding these areas, potential flight paths in and out and any possible access routes.
- 10.6 The majority of species of nesting bird are protected under the Wildlife & Countryside Act 1981 and as amended by the Countryside & Rights of Way Act 2000. Works must be planned to avoid disturbance of nesting birds if present before commencement or if nesting commences during the works.
- 10.7 Badgers are protected by the *Protection of Badgers Act 1992, Schedule 7 of the Wildlife & Countryside Act 1981 and the Wildlife & Countryside (Amendment) Act 1985*, which protects Badgers and their setts. It prohibits certain activities such as killing/injuring badger(s) or damaging, destroying or blocking sett entrance(s) as well as disturbing while a sett is occupied and makes such actions illegal without an appropriate licence.
- 10.8 Should any protected species be discovered before or during the works **ECOLOLOCATION** or the local office of Natural England should be contacted for advice.

11. Mitigation

Bats

11.1 Future mitigation and compensation for bats may be necessary following the completion of further surveying at the appropriate time as stated above. It is clear that whatever mitigation (for species within their known geographical distribution) may be necessary could be achieved on site through the detailed design of the proposed extensions and careful timing of works, NB: there is sufficient scope within the proposed scheme to accommodate a worst-case scenario for bats, if required, and provide a like-for-like replacement for crevice-dwelling bats with roosting opportunities in cavity walls or in the area between the tiles and the roof lining or to retain or recreate access points for void-seeking bats back into the existing and retained roof void – see diagrams above).

11.2 It is therefore anticipated that an appropriately worded condition would allow for bat activity surveys to be conducted *prior* to any potentially disturbing works beyond the wall plate at the first floor level to ensure no harm/disturbance to bats (ECOLOLOCATION could provide further, detailed advice in this respect if required) but would allow, in the interim, the developer to begin groundworks.

Suggested condition: No works to commence beyond the wall plate at first floor level that may be potentially disturbing to bats until bat activity surveys of the site have been conducted by an experienced ecologist at an appropriate time of year. The results of the survey should be submitted to the Local Planning Authority and, if applicable, should inform a detailed bat mitigation plan that should be subsequently agreed in writing by the Local Planning Authority. Works must then proceed in accordance with this document.

NB: Further advice regarding the specifics of which works may potentially disturb bats should be provided by a Licensed Bat Worker.

Amphibians and Reptiles

Avoidance and mitigation

11.3 In accordance with best practice, discussions were held with Bob Law of Sylvester Estates (building contractor acting on behalf of Perry Care) in order to determine how best the construction activities could take place by *avoiding* impacts to habitats that may support protected species. The result of these discussions was that the working area will only impact areas of amenity grassland and a small section of paved area entailing the removal of <6 paving slabs. The paving slabs must only be removed under the supervision of an appropriately licensed ecologist at an appropriate time during March. This will avoid the hibernation season and minimise any potential impacts to newts. In order to discourage amphibians and reptiles from entering the working area, a 5m strip of buffer habitat that is unsuitable for use by amphibians or reptiles must be kept strimmed and mown where possible (to a height of no more than 10cm) for the duration of works (as per the plan above). This would impact a small area of existing tall ruderal vegetation and a compost heap, which has been determined as not having been used as a breeding site for grass snakes. These works must be undertaken during March when the amphibians and reptiles are out of hibernation and newts are back in the ponds. In addition to this, a security fence (Heras-type fencing on block bases) to be erected to delineate the working area from the remainder of the site such that building contractors and their vehicles cannot enter this area. Furthermore, all building materials to be stored on pallets and located on an area of unsuitable habitat such as close mown grassland or hardstanding, some minimum 5m from suitable habitat such as rough grassland or hedgerows.

11.4 To summarise, avoidance and mitigation measures to include:

- strimming/mowing of a 5m buffer as per the attached plan during a suitable time in March (to be advised by an appropriately Licensed Ecologist)
- erection of security fencing adjacent to the scaffolding to delineate the working area
- all building materials to be stored on pallets 5m from habitat suitable for amphibians or reptiles
- paving flags to be removed under the supervision of an appropriately Licensed Ecologist during a suitable time in March when newts are out of hibernation and back in ponds. Such works not to be undertaken in rain or in air temperatures less than 6°C. Should evidence of great crested newts be found, works must stop whilst Natural England are contacted for advice on the best way to proceed.

12. Enhancements

12.1 In order to compensate for the temporary loss of a small area of suitable habitat for amphibians and reptiles and in order to achieve a net biodiversity gain in accordance with PPS9, it is recommended that an artificial hibernaculum is created, as per the diagram below, at the western boundary of the site adjacent to dense scrub and close to the neighbouring pond.

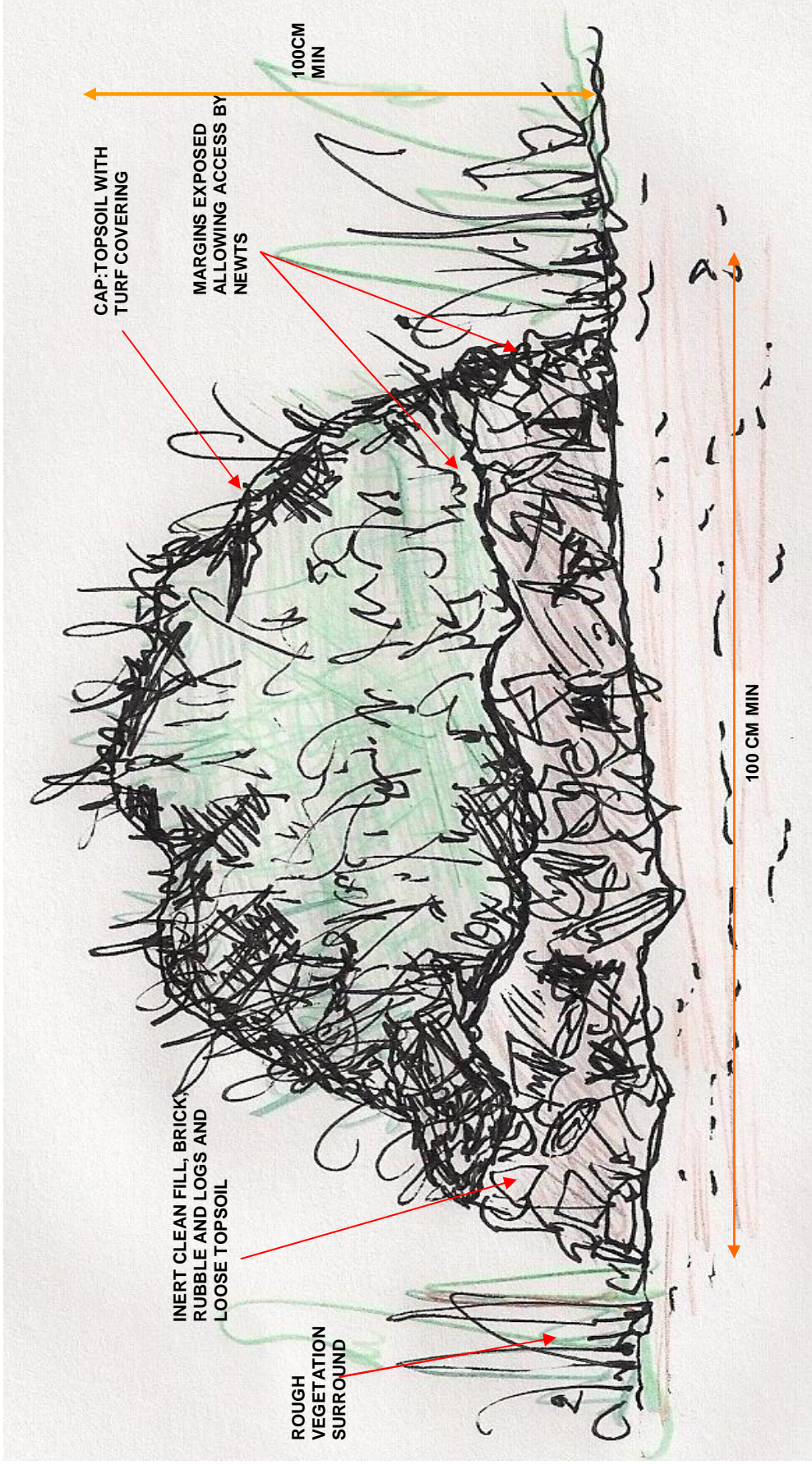
12.2 It is noted that the proposed plans include areas of wildflower meadows. In order to achieve the maximum biodiversity interest it is recommended that a wildflower seed mix (of native plants of local provenance, appropriate to the location) is used on these areas as the current diversity of wildflowers in this area is poor and the seedbank likely limited. This would encourage a greater diversity of botanical species to flourish within the site provided the maintenance regime is relaxed to allow herbaceous species to flower and set seed before any cutting takes place. Mowing may only be needed twice per year, once in early spring and again end July-August and by removing the arisings this will ensure that nutrient enrichment does not take place and instead grass cutting piles can be created around the site and be beneficial to amphibians and reptiles. ECOLOCATION can advise on sources of native and appropriate seed mixes.

13. References

Bat Workers Manual, JNCC
Bat Survey Guidelines, Bat Conservation Trust 2007
Herpetofauna Workers Manual, JNCC, 2003
Great Crested Newt Mitigation Guidelines, English Nature, 2001
www.rspb.org
www.ukbap.org.uk
www.naturalengland.org.uk
Google Earth Pro
www.magic.gov.uk
OS Street Atlas, Warwickshire, Phillips

14. Appendix

Habitat Suitability Index



CROSS SECTION OF HIBERNACULA DESIGN

This design is suitable for locating on a permeable substrate and needs excavation.

Great Crested Newt Habitat Suitability Index

Background

The Habitat Suitability Index (HSI) for the great crested newt was developed by Oldham *et al.* (2000). HSI scoring systems were originally developed by the US Fish and Wildlife Service as a means of evaluating habitat quality and quantity. An HSI is a numerical index, between 0 and 1. 0 indicates unsuitable habitat, 1 represents optimal habitat. The HSI for the great crested newt incorporates ten suitability indices, all of which are factors thought to affect great crested newts. These ten suitability indices are retained in this current Guidance Note.

The HSI system proposed by Oldham *et al.* (2000) is fairly easy to use. However, one suitability index (SI₉, terrestrial) involves a more lengthy measurement and calculation than the other factors. In using the HSI system with volunteer surveyors in Kent, Lee Brady substituted a simpler evaluation of terrestrial habitat quality, a four-point scale. Volunteers have found this modified HSI relatively easy to use.

Several other, local, surveys have utilised the HSI, but utilised their own variations on the original system. In 2007, a workshop was held at the Herpetofauna Workers' Meeting to evaluate the use of the HSI for the great crested newt, with the aims of:

- identifying components of the system that may need clarification or refinement
- agreeing on a standard that can be easily used by volunteers and professionals alike.

A conservative approach has been adopted in modifying the use of the original HSI suitability indices.

Use and limitations of HSI

The HSI for great crested newts is a measure of habitat suitability. It 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. However, the system is not sufficiently precise to allow the conclusion that any particular pond with a high score will support newts, or that any pond with a low score will not do so.

There is also a positive correlation between HSI scores and the numbers of great crested newts observed in ponds. So, in general, high HSI scores are likely to be associated with greater numbers of great crested newts. However, the relationship is not sufficiently strong to allow predictions to be made about the numbers of newts in any particular pond.

HSI scoring can be useful in:

- Evaluating the general suitability of a sample of ponds for great crested newts
- Comparing general suitability of ponds across different areas
- Evaluating the suitability of receptor ponds in a proposed mitigation scheme.

How to collect data and calculate HSI

The HSI is a geometric mean of ten suitability indices:

$$\text{HSI} = (\text{SI}_1 \times \text{SI}_2 \times \text{SI}_3 \times \text{SI}_4 \times \text{SI}_5 \times \text{SI}_6 \times \text{SI}_7 \times \text{SI}_8 \times \text{SI}_9 \times \text{SI}_{10})^{1/10}$$

- The ten Suitability Indices are scored for a pond, in the field and from map work.
- The ten field scores are then converted to SI scores, on a scale from 0.01 to 1 (0.01 is used as the bottom end of the range in stead of 0, because multiplying by 0 reduces all other SI scores to 0).
- The ten SI scores are then multiplied together.
- The tenth root of this number is then calculated $(X)^{1/10}$

The calculated HSI for a pond should score between 0 and 1.

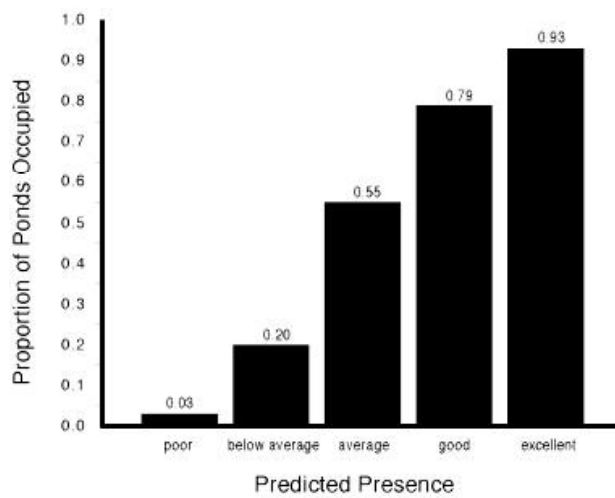
Some of the field scores are categorical, some are numerical. The numerical field scores are converted to SI scores by reading off the values from graphs produced by Oldham *et al.* (2000) reproduced in this Guidance Note.

The field scores are the data that should be collected by a surveyor. A summary of data to collect is given in *Summary of scoring system* below. More full details of the scoring system, including descriptions of the criteria used in the categorical scores are given in *Details of Suitability Indices and Definitions of Categories*. Two of the SI scores (SI₁ and SI₈) can be carried out as desktop/map exercises and so do not have to be completed in the field. The remaining SI scores should be recorded as field scores, and later converted to suitability indices, in some cases reading SI scores from the graphs provided in *Details of Suitability Indices and Definitions of Categories*.

Categorisation of HSI scores

Lee Brady has developed a system for using HSI scores to define pond suitability for great crested newts on a categorical scale:

HSI		Pond suitability
<0.5	=	poor
0.5 – 0.59	=	below average
0.6 – 0.69	=	average
0.7 – 0.79	=	good
> 0.8	=	excellent



Summary of scoring system

SI₁ Location

Field score	SI
A (optimal)	1
B (marginal)	0.5
C (unsuitable)	0.01

SI₂ Pond area

Field score	SI
Measure pond surface area (m ²) and round to nearest 50 m ²	Read off graph.

SI₃ Pond drying

Field score	SI	Criteria
Never	0.9	Never dries
Rarely	1.0	Dries no more than two years in ten or only in drought.
Sometimes	0.5	Dries between three years in ten to most years
Annually	0.1	Dries annually

SI₄ Water quality

Field score	SI	Criteria
Good	1.0	Abundant and diverse invertebrate community.
Moderate	0.67	Moderate invertebrate diversity
Poor	0.33	Low invertebrate diversity, few submerged plants
Bad	0.01	Clearly polluted, only pollution-tolerant invertebrates, no submerged plants.

SI₅ Shade

Field score	SI
Estimate percentage perimeter shaded to a least 1 m from shore.	Read off graph.

SI₆ Fowl

Field score	SI	Criteria
Absent	1	No evidence of water fowl (although moorhen may be present)
Minor	0.67	Waterfowl present, but little sign of impacts
Major	0.01	Severe impact of waterfowl

SI₇ Fish

Category	SI	Criteria
Absent	1	No records of fish stocking and no fish revealed during survey.
Possible	0.67	No evidence of fish, but local conditions suggest that they may be present.
Minor	0.33	Small numbers of crucian carp, goldfish or stickleback known to be present.
Major	0.01	Dense populations of fish known to be present.

SI₈ Ponds

Field score	SI
Count the number of ponds within 1 km of survey pond, not separated by major barriers, and divide by 3.14. This can be done from maps rather than in the field.	Read off graph.

SI₉ Terrestrial habitat

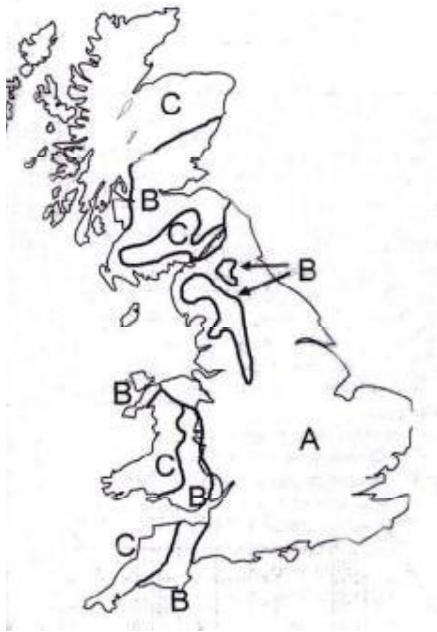
Field score	SI
Good	1
Moderate	0.67
Poor	0.33
None	0.01

SI₁₀ Macrophytes

Field score	SI
Estimate the percentage of the pond surface area occupied by macrophyte cover (between May and the end of September)	Read off graph.

Details of Suitability Indices and Definitions of Categories

Factor 1. Geographic location (SI₁)



Sites should be scored according to the zone in which they occur. This scoring can be carried out either in the field, or as part of a desktop exercise.

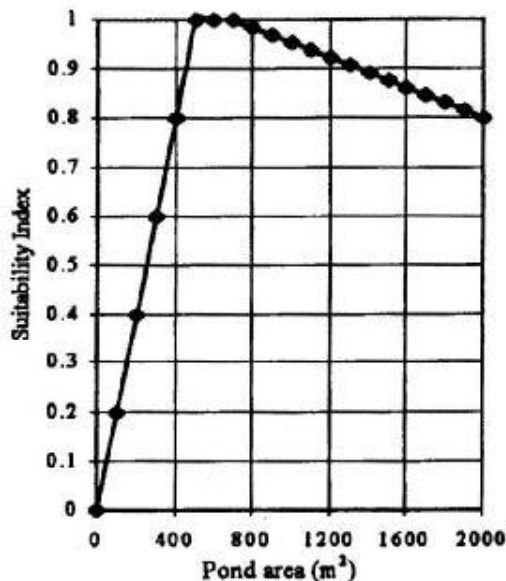
Zone A, location is optimal, SI = 1

Zone B, location is marginal, SI = 0.5

Zone C, location is unsuitable, SI = 0.01.

Some sites will fall on boundary lines between zones. In such cases, select medium-value scores i.e. Zone B.

Factor 2. Pond area



Pond area is the surface area of the pond when water is at its highest level (excluding flooding events). This is usually in the spring. If the pond is being measured at another time of year, the springtime area should still be evident from vegetation types and evidence of a draw down zone around the pond.

Pond area should be measured as accurately as possible. There are several ways of doing this, for example by measuring axes of regularly shaped ponds, either by pacing out in the field, or using a map. Irregularly shaped ponds may have to be treated as a series of geometrical shapes, calculating the area for each and adding together.

Since it can be difficult reading off SI scores from graph, pond area should be rounded to nearest 50 m.

It can be particularly difficult to read off SI scores for very small ponds. For ponds smaller than 50 m² a score of 0.05 should be used.

Factor 3. Permanence

Pond permanence should be deduced from local knowledge and on personal judgement. A landowner may know how often a pond dries. However, if not, the surveyor should make a judgement based on water level at the time of the survey, and taking seasonality into consideration. For example, a pond that is already dry by late spring is likely to dry out every year, etc.

Category	SI	Criteria
Never dries	0.9	Never dries.
Rarely dries	1.0	Dries no more than two years in ten or only in drought.
Sometimes dries	0.5	Dries between three years in ten to most years.
Dries annually	0.1	Dries annually.

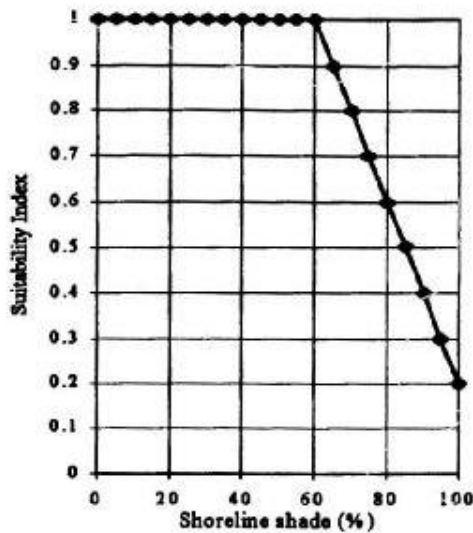
Factor 4. Water quality.

The assessment of water quality is subjective and should be based primarily on invertebrate diversity. Hence, water quality should not be confused with water clarity. Sometimes clear water can be devoid of invertebrates, and turbid ponds can support a wealth of invertebrates. There is no quick and simple invertebrate index of water quality. However, some species are indicators of water quality.

Category	SI	Criteria
Good	1.0	Water supports an abundant and diverse invertebrate community. Netting reveals handfuls of diverse invertebrates, including groups such as mayfly larvae and water shrimps.
Moderate	0.67	Moderate invertebrate diversity
Poor	0.33	Low invertebrate diversity (e.g. species such as midge and mosquito larvae. Few submerged plants.
Bad	0.01	Clearly polluted, only pollution-tolerant invertebrates (such as rat-tailed maggots), no submerged plants.

Other cues may also provide information about water quality. For example, ponds subject to agricultural inputs are likely to have poor water quality.

Factor 5. Shade



Estimate percentage pond perimeter shaded, to at least 1m from the shore. Shading is usually from trees, but can include buildings but should not include emergent pond vegetation. Estimate should be made during the period from May to the end of September.

Factor 6. Fowl

This factor is concerned with the impact of waterfowl upon a pond. At high densities, as created when waterfowl are encouraged to use a pond, by provision of food, the birds can remove all aquatic vegetation, pollute water and persistently stir sediments. Score as one of three categories.

Category	SI	Criteria
Absent	1	No evidence of waterfowl impact (moorhens may be present).
Minor	0.67	Waterfowl present, but little indication of impact on pond vegetation. Pond still supports submerged plants and banks are not denuded of vegetation.
Major	0.01	Severe impact of waterfowl. Little or no evidence of submerged plants, water turbid, pond banks showing patches where vegetation removed, evidence of provisioning waterfowl.

'Waterfowl' includes most water birds, such as ducks, geese and swans. Moorhens should be ignored because almost every pond has at least one or two.

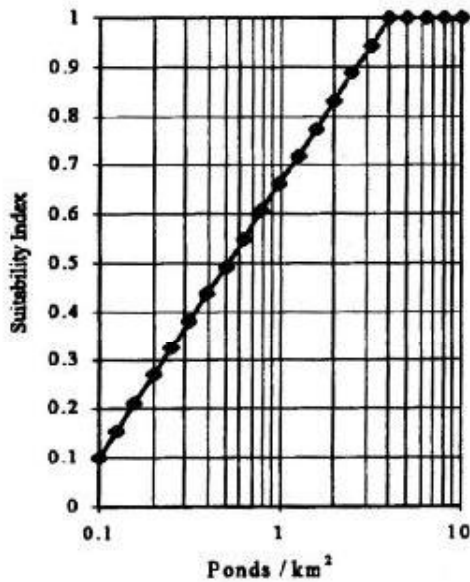
Factor 7. Fish

Information on fish should be gleaned from local knowledge and the surveyor's own observations. Pond owners will usually be aware of stocking with fish for commercial or aesthetic reasons. However, stickleback (which can be significant predators of great crested newt larvae, when present in large numbers) are unlikely to be

deliberately introduced to a pond, but may arrive through other means. Netting is useful in detecting smaller fish, such as sticklebacks, or the fry of larger species.

Category	SI	Criteria
Absent	1	No records of fish stocking and no fish revealed by netting or observed with torchlight.
Possible	0.67	No evidence of fish, but local conditions suggest that they may be present.
Minor	0.33	Small numbers of crucian carp, goldfish or stickleback known to be present.
Major	0.01	Dense populations of fish known to be present.

Factor 8. Pond count



This is the number of ponds occurring within 1 km of survey pond. Do not count the survey pond itself. Ponds on the far side of major barriers, such as main roads, should not be counted. Use 1:25,000 scale O.S. data, such as Explorer maps, GIS or web-based mapping sources. Pond counts can be carried out by a survey coordinator and so do not necessarily have to be performed by surveyors.

Getamap	www.ordnancesurvey.co.uk/oswebsite/getamap/
Magic	www.magic.gov.uk/site_map.html
Digimap	edina.ac.uk/digimap/

Divide the number of ponds by Pi (3.14) to calculate the density of ponds per km², and read off graph.

Factor 9. Terrestrial

Scoring terrestrial habitat depends on the surveyor's understanding of newt habitat quality. Good terrestrial habitat offers cover and foraging opportunities and includes meadow, rough grassland, hedges, scrub and woodland. Terrestrial habitat should be considered only on the near side of any major barriers to dispersal (e.g. main roads or large expanses of bare habitat).

Category	SI	Criteria
Good	1	Extensive area of habitat that offers good opportunities for foraging and shelter completely surrounds pond (e.g. rough grassland, scrub or woodland).
Moderate	0.67	Habitat that offers opportunities for foraging and shelter, but may not be extensive in area and does not completely surround pond.
Poor	0.33	Habitat with poor structure that offers limited opportunities for foraging and shelter (e.g. amenity grassland).
None	0.01	Clearly no suitable habitat around pond (e.g. centre of large expanse of bare habitat).

Great crested newts do not have specific habitat requirements. However, good quality terrestrial habitat has structure. The presence of rabbit borrows, small mammal holes, proximity to old farm buildings, stone walls, piles of loose stone/rock all contribute towards 'good' terrestrial habitat. Note that it is rare to encounter a pond with a terrestrial habitat category of 'none'.

Factor 10. Macrophytes

Estimate the percentage of the pond surface area occupied by macrophyte cover. This includes emergents, floating plants (excluding duckweed) and submerged plants reaching the surface. Make estimate during the newt breeding season (March to May). Read off SI value from graph.

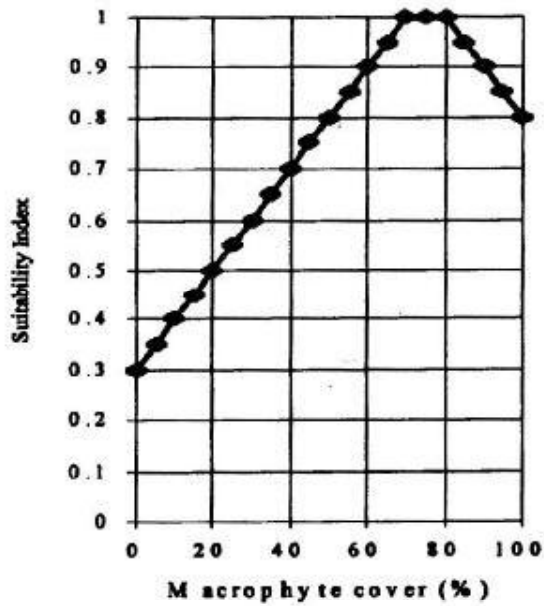
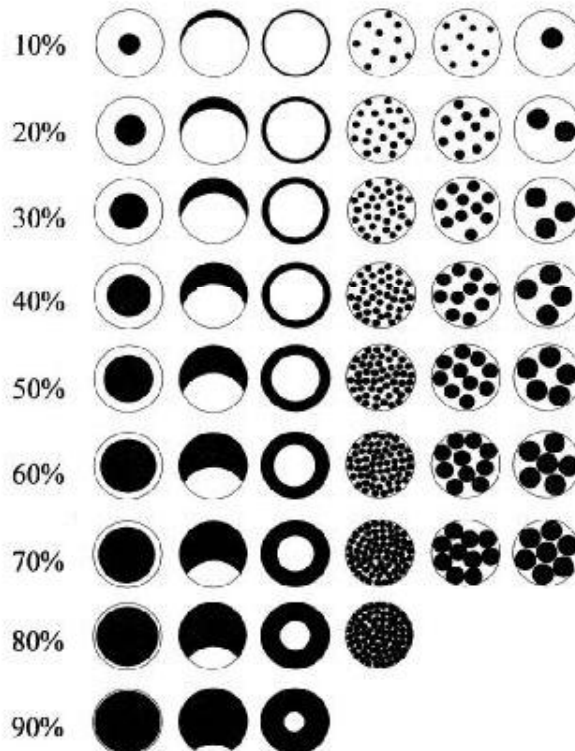


Fig. Guide for use in assessment of the proportions of vegetation cover in a pond. The areas of dark shading simulate a variety of vegetation dispersion patterns.



Reference

Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). Herpetological Journal 10 (4), 143-155.