



Great Crested Newt Assessment

Presence/Absence & Population Surveys

of

The Leys,
Adderbury,
Banbury,
Oxfordshire

for

Mr Nick Biggam

(31st January 2019)

2017-10(04)

PROTECTED SPECIES

This report contains sensitive information relating to protected species. The information contained herein should not be disseminated without the prior advice of Ecolocation.

Survey dates: 11th/ 12th April 2018, 26th/ 27th April 2018, 8th/ 9th May 2018, 5th/ 6th June 2018, 14th/ 15th June 2018 and 18th/ 19th June 2018.

Report Version	Date	Author:	Quality check by:	Approved by:
Original	31/01/19	Alex Robinson MSc (Hons), Assistant Ecologist.	Anna Swift BSc (Hons) MSc MCIEEM Technical Director	Anna Swift BSc (Hons) MSc MCIEEM Technical Director

This report has been prepared in accordance with the CIEEM Guidelines for Ecological Report Writing Second Edition (2017) and is compliant with the CIEEM Code of Professional Conduct.

Summary

- Ecolocation were commissioned by Mr Nick Biggam to carry out a great crested newt survey of ponds within a 250m radius of The Leys in Adderbury, Banbury. These surveys were carried out between April and June 2018 by Ecolocation in order to inform a proposed small residential development.
- A preliminary ecological appraisal was carried out in June 2017 by FEC and identified suitable habitat on Site for great crested newt and common amphibian foraging and sheltering. Additionally, three ponds were identified within 50m of the southern boundary of the Site and a habitat suitability index (HSI) assessment suggested these had good and average suitability to support great crested newts. Therefore, further surveys were recommended to confirm presence/ absence of great crested newts and assess the impact of the proposed development on protected species.
- A total of five waterbodies were identified within a 250m radius of the Site, with a sixth located just outside of this radius. Ponds 5 and 6 (as shown in Figure 3) were ruled out of further surveys as the River Cherwell was considered to pose a significant dispersal barrier between these ponds and the Site. An updated HSI assessment ruled out pond 4 as this had "poor" potential to support great crested newts and supported a significant ornamental fish population. The remaining three ponds returned scores of "below average", "average" and "good" suitability and further surveys were conducted.
- Four surveys were carried out on ponds 1, 2 and 3 to establish presence/ absence of great crested newts between April and June 2018; in accordance with the methodologies recommended within the great crested newt mitigation guidelines. Presence of great crested newts was confirmed in ponds 1 and 3 prompting a further two surveys to estimate population size, revealing a small population. No signs of great crested newt breeding were confirmed. Due to the location of pond 2 between 1 and 3 it was considered likely that great crested newts would also use this waterbody and that all the ponds supported a small metapopulation. Breeding common frog, smooth newt and dragonfly were also identified within the ponds.
- The proposed development was considered to directly impact low quality terrestrial habitat for great crested newts within a 100m radius of a small population. Using this information and The Drawing No. 5392.SKID Alternative Site Layout produced by Nick Biggam dated 16th July 2018. a Natural England great crested newt risk assessment was carried out and indicated "Red: Offence Highly Likely" without appropriate mitigation. The risk assessment was repeated following the assumption appropriate mitigation was put in place, without a derogation licence from Natural England, and the risk was suitably reduced. Reasonable Avoidance Measures have been outlined in Section 5 of this report. Through following these measures and carrying out post-development enhancements the combined effect would be the maintenance of the favourable conservation status of this species within the locality.

Contents

Summary.....	3
1 Introduction.....	5
2 Methodology.....	7
3 Results & Evaluation	9
4 Discussion & Conclusions	18
5 Reasonable Avoidance Measures	20
6 References.....	23
Appendix 1- Proposed plans	24

1 Introduction

1.1 Instruction

Ecolocation were appointed by Mr Nick Biggam to conduct a detailed great crested newt (*Triturus cristatus*) population assessment survey of ponds within a 250m radius of The Leys in Adderbury, Oxfordshire (hereafter referred to as the 'Site'), in order to support a future planning application for a small residential development.

1.1.1 Preliminary Survey

An initial preliminary ecological appraisal was carried out in May 2017 by FEC, including a Habitat Suitability Index (HSI) assessment of two known waterbodies within a 500m radius of the Site boundary. This survey identified habitats including scrub, hedgerows, mixed plantation woodland, tall ruderal and species-poor semi-improved grassland associated with two detached dwellings.

The plantation woodland was described as comprising conifer and ornamental trees including silver birch (*Betula pendula*) and oak (*Quercus sp*) ranging from sapling age to mature. The understory was described as sparse, comprising ivy (*Hedera helix*), herb robert (*Geranium robertianum*) and cleavers (*Galium aparine*). This was described as having low to moderate ecological value. The hedgerows were described as species poor with low connectivity value, mainly used to divide portions of the garden; species present included privet (*Ligustrum ovalifolium*), leylandii (*Cuprocyparis leylandii*), holly (*Ilex aquifolium*) and elder (*Sambucus nigra*). The scrub was found to be scattered and dominated by bramble (*Rubus fruticosus*) with rose (*Rosa sp*), box (*Buxus sp*) and buddleja (*Buddleja sp*).

Suitable foraging habitat for amphibians was identified within the Site, particularly within the scrub, tall ruderal, hedgerows and species-poor semi-improved grassland, although it was noted that these habitats were not extensive. Some potential refugia were noted located throughout the Site in the form of log piles; compost heaps; underneath a garden shed; old, piled garden furniture; an old stone wall and a decaying tree stump/ felled tree. Furthermore, suitable habitat within the local landscape was identified to the north in the form of the dismantled railway line and to the south in the form of rough grassland bordered by trees and pockets of woodland.

Although four ponds were identified within a 500m radius of the Site, at the time of survey access was only granted to two ponds for assessment. The two ponds were located approximately 50m to the south of the Site within a grazed pasture associated with the neighbouring property. Both were assessed for their suitability to support great crested newts and as part of the initial survey. "Pond A" (hereafter referred to as pond 2 as per Figure 3) was found to have "good" suitability and "Pond B" (hereafter referred to as pond 3 as per Figure 3) was found to have average suitability.

Due to the close proximity of ponds considered likely to support great crested newts and the likelihood of impact to suitable terrestrial habitat within 250m radius of these ponds, further surveys were recommended to determine the presence/absence of great crested newts.

1.1.2 Site location

The Site (Grid Ref SP 46783 35232) was located in the village of Adderbury, approximately 5km south of Banbury. The Site was bordered by other large, detached residential dwellings off The Leys to the west and south, a small public track bound the Site to the north and east. The Site boundary is shown in Figure 1.

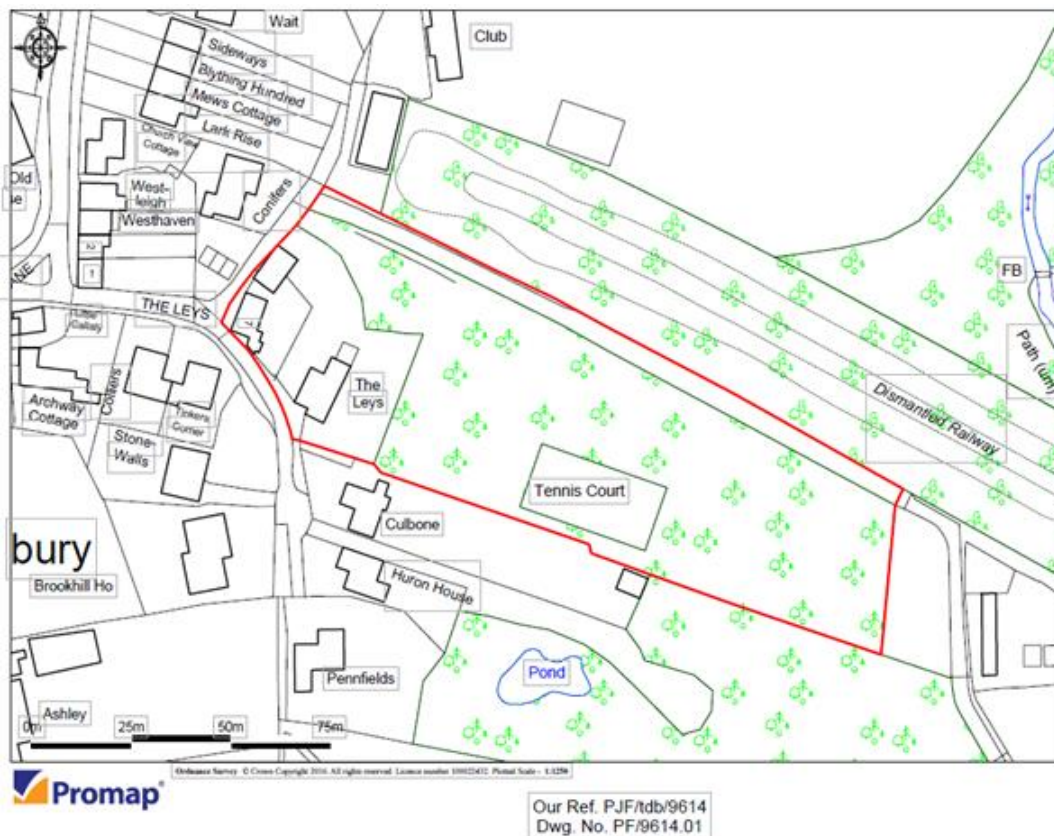


Figure 1: Red line survey boundary.

1.1.3 Proposed Plans

The drawing Site Layout Plan, drawing number 5392.02 revision A, produced in October 2018 by Nicholas D Price was used in the production of this report and can be viewed in Appendix 1.

1.2 Survey Purpose

The aims of the survey were to:

- evaluate the habitats present on Site and their potential to support great crested newts.
- conduct detailed great crested newt surveys to determine presence/absence,
- if great crested newts are recorded on Site, employ sufficient survey effort to establish population size,
- assess the ecological impact of the proposals in relation to great crested newts,
- identify any constraints/opportunities on Site in relation to great crested newts,
- provide a detailed mitigation plan, where appropriate.

1.3 Legislation & Planning Policies

Great crested newts, natterjack toad (*Epidalea calamita*) and pool frog (*Pelophylax lessonae*) and their habitats are protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010 (as amended), the latter of which deems them European Protected Species. Under this legislation it is an offence to capture, kill, disturb or trade individuals of these species, or to damage or destroy any

breeding sites or resting places, which includes both aquatic and terrestrial habitats. Activities which would impact these species or their habitat require a licence from Natural England.

More common amphibian species (smooth (*Lissotriton vulgaris*) and palmate newts (*Lissotriton helvesticus*), common frog (*Rana temporaria*) and common toad (*Bufo bufo*)) are all protected from sale under the Wildlife and Countryside Act 1981 (as amended).

The ODPM Circular 06/05 makes the presence of a protected species a material consideration within the planning process. It states that it is essential for the presence of protected species and the extent they may be affected by proposed development be established through appropriate surveys before the planning permission is granted and encourages the use of planning conditions to secure the long-term protection of the species.

The NERC Act 2006 places a duty on public authorities to conserve biodiversity. Additionally, this Act states that a list of priority species and actions must be drawn up and published, to contain species and habitats of principal importance for the purpose of conserving biodiversity. The list of Priority Species, which encompass the previous UK Biodiversity Action Plan (BAP) species, are those identified as being the most threatened and requiring conservation action. Priority species were chosen based on international importance, rapid decline and high risk. The list includes common toad and great crested newt.

The National Planning Policy Framework (NPPF) section 15 outlines how applications need to conserve and enhance the natural environment. Paragraphs 174 to 177 state that sites with biodiversity value should be protected and enhanced, minimising impacts on biodiversity and establishing ecological connectivity. Furthermore, the protection of priority sites and species through developments is outlined and states where significant harm is unavoidable through alternatives or mitigation, planning permission should be refused. Finally, this section concludes that developments with aims to conserve or enhance biodiversity should be supported and any improvement around developments should be encouraged to achieve net gains for biodiversity.

2 Methodology

2.1 Desk Study

Prior to the site visits a desk-top data gathering exercise was undertaken. The MAGIC website was accessed to search for statutory designated sites within a 1km radius of the Site. The Thames Valley Environment Records Centre (TVERC) was contacted for information on amphibian records within a 1km radius of the Site.

2.2 Habitat Suitability Index Assessment

The Habitat Suitability Index (HSI) for great crested newts was developed by Oldham *et al.* in 2000 as a measure of habitat suitability in order to estimate presence/absence. A waterbody is assessed based on a geometric mean of ten features, each given a score relating to the current condition of the ponds characteristics and surroundings. Where the overall result is closer to 0 this indicates a more unsuitable habitat and a score closer to 1 represents more optimal habitats.

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. The results do not allow conclusions

on newt populations to be reached. Therefore a HSI assessment is not a substitute for further great crested newt surveys.

2.3 Great Crested Newt Population Assessment

2.3.1 Survey personnel

The waterbodies and terrestrial habitats were surveyed by suitably qualified ecologists over six visits between 4th May 2017 and 6th June 2017. Please see the names and details of the surveyors in Table 1.

Table 1: Survey personnel and qualifications

Personnel	Relevant licences held	Relevant survey experience (years)
Anna Swift MCIEEM Technical Director	GCN: 2015-17871-CLS-CLS	12
Casey Griffin ACIEEM Senior Ecologist	GCN: 2014-5434-CLS-CLS	4
Tom Randell Junior Surveyor	GCN: 2016-24519-CLS-CLS	2
Agni Arampoglou Senior Surveyor	GCN: 2015-7244-CLS-CLS	3
Alex Robinson Assistant Ecologist	Accredited agent under Casey Griffin licence	2
Masha Tarnavska Junior Surveyor	Assistant under supervision of licensed surveyor	2

2.3.2 Pond surveys

A total of five waterbodies were identified within a 250m radius, with a sixth located just outside of the search radius as shown in Figure 3. Pond 5 and pond 6 were scoped out of this survey as the River Cherwell was considered to pose a significant barrier to amphibian dispersal. All other accessible waterbodies within 250m of the Site and suitable terrestrial habitats were surveyed in accordance with the Herpetofauna Worker's Manual, (JNCC, 2003). The surveys aimed to establish presence or likely absence of great crested newts and, if evidence of this species was found, to produce a set of results for a population size class assessment.

Four survey methods were employed and included egg searches, bottle trapping, torchlight counts and netting. If any natural or artificial refugia were located, these were carefully lifted and checked. Weather conditions at the time of each survey were recorded and can be found in the results section in Table 5.

- **Egg Searching** This involved searching marginal and aquatic vegetation for great crested newt eggs, which are laid individually on plant leaves, and the leaf folded characteristically around the egg. The large size and yellowish/white coloration readily distinguishes the eggs of great crested newts from those of smaller species such as smooth newt (which are protected from sale only).
- **Bottle Trapping** Bottle traps can be used where water visibility is poor, or the vegetation is too dense to allow good results from torch surveys. 'Funnel traps' were constructed from plastic bottles by cutting off the top third and inserting this back into the rest of the bottle, creating a funnel similar to those used to catch lobsters. A bamboo cane was pierced through both sides to hold the pieces of bottle together and stake the trap underwater with an adequate air pocket. The traps were installed just before dusk then removed early the following morning.

In this instance water shrew "friendly" bottle traps were used where there was risk of causing injury or mortality through trapping. These traps had a 2-inch hole cut in the top which was left just above the water level when placing the traps. This allowed water shrews to escape, but prevented newts and amphibians climbing out. In order to compensate for the possibility of newts escaping 50% extra traps were placed.

- **Torching** The torch survey method involved walking slowly around the edge of the pond and scanning the water with a torch (Clulite, 1,000,000 candle power). Torch surveys were carried out after dark and in suitable weather conditions (overnight temperatures above 5°C). The species, sex and number of newts seen by torchlight were recorded. Torch surveys are most effective in ponds with relatively clear water, easy access to the banks, and where the water is not choked by vegetation.
- **Netting** A long-handled dip-net was used to sample the areas around the pond edge with a sweeping motion. The perimeter of the water bodies was walked, with 15 minutes of netting effort per 50m of shoreline. Netting can be conducted by day or night, but better results may be obtained at night when adult newts are more likely to be in open water, as was done during these surveys.

2.4 Limitations

There were no significant limitations at the time of survey; however, Pond 1 was found to be concrete lined restricting methods to torching, egg searching and netting. Furthermore, duckweed was found to establish throughout the surveys in pond 2, limiting the surveyor's availability to carry out torch surveys and netting was used to supplement the survey methods.

3 Results & Evaluation

3.1 Desk Study

3.1.1 Habitat Connectivity

The habitat connectivity of the Site was considered to be good, located on the western edge of the small village of Adderbury. Although the village was not large or particularly dense it was considered likely to partially limit dispersal of amphibians due to the extent of fences, walls and tarmacked roads.

The River Cherwell and associated Sor Brook ran from north to south approximately 60m to the east of the Site. Although the banks were wooded and likely offered some linear commuting routes for other species, the river itself represented a significant barrier to amphibian dispersal. Therefore, it was considered proportionate to exclude pond 5 and pond 6 from the pond surveys.

A partially dismantled railway line ran from east to west within 20m north of the Site. The highly wooded nature of this feature was considered to offer good terrestrial habitat and a commuting route for amphibians within the local landscape. However, where the railway crossed the river it was noted the bridge had been dismantled, obstructing dispersal via this feature.

To the south of the Site the habitats were comprised of small rough grassland pastures, boarded by hedgerows and pockets of woodland. This was considered to offer good terrestrial habitat for newts, providing various sheltering and hibernation opportunities as well as foraging habitat. Further south and past the village edge to the west, the habitats began to transition to larger arable fields that were considered to be less suitable for newts. Further afield the main Oxford Road was considered to represent a significant dispersal barrier.

In addition to the ponds mapped in Figure 2, a Local Nature Reserve called Adderbury lakes was located c550m north-east of the Site containing two further large waterbodies. The large number of ponds within a fairly small area, supported by a range of terrestrial opportunities was considered to offer favourable conditions to common amphibians and great crested newts

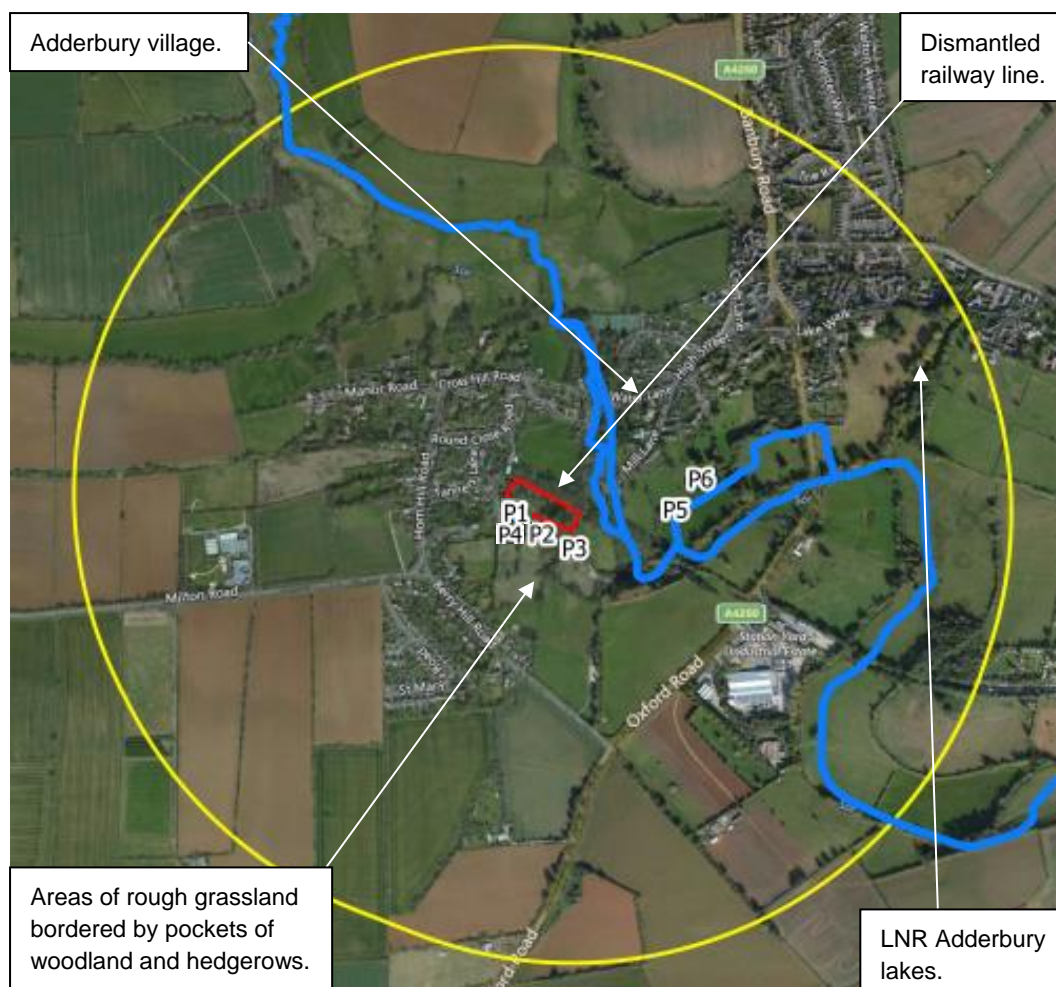


Figure 2: Habitat connectivity features within a 1km radius of the Site.

3.1.2 Amphibian records

A single great crested newt was recorded c.520m to the north-east of the Site in 2012 on the opposite side of Adderbury village.

3.2 Great Crested Newt Population Assessment

3.2.1 Site Description

The Site was a large enclosed garden associated with two detached dwellings and a number of outbuildings. The garden was found to support rough species-poor semi-improved grassland with areas of woodland and scrub. The habitats on Site were considered to offer a number of sheltering and foraging opportunities for amphibians.

A total of four ponds were identified to lie within 250m of the Site with undisturbed access for amphibians and access was requested for survey. As previously mentioned access was denied for pond 4, however a HSI assessment was undertaken from permissible land. The Site boundary and location of ponds are shown in Figure 3.

The ponds surveyed were largely associated with a pasture directly south of the Site that was used for grazing horses. This field was found to contain a number of mature trees interspersed with sympathetically grazed grassland, with some areas left to grow long. A large log pile (as shown in Photo 1) was established along the southern boundary of this field, closely adjacent to pond 2. The gardens containing pond 1 and pond 4 shared a

boundary with this field and were bordered by a small hedgerow and fences, both of which were not considered likely to prevent amphibian dispersal.



Figure 3: Ponds located within a 250m radius of the Site boundary. The 250 radius is shown in orange.



Photo 1: Large log pile located adjacent to pond 2.

3.2.2 Habitat Suitability Index Assessment

Pond 1, located as shown in Figure 3 and photographed in Photo 2, was located within the garden of a nearby property within 20m of the Site boundary. It was sited within a paved patio area adjacent to an amenity lawn. The pond itself was concrete lined and overgrown with Canadian pondweed (*Elodea canadensis*). The banks were lined by a rockery with a number of overhanging large stones concreted in place. Although small, pond 1 was found to be surprisingly deep at approximately 1.5m at its centre with a much shallower “beach” at the western bank. The

only shading was from the adjacent fence to the north. The HSI assessment for this pond identified it as having “**below average**” potential to support great crested newts. More detail of this can be found in Table 2.

Table 2: Habitat Suitability index Assessment for Pond 1

Pond 3		
Factor	Result	Suitability Index
SI 1	A (optimal)	1
SI 2	~3.95m ²	0.01
SI 3	Never	0.9
SI 4	Moderate	0.67
SI 5	20%	1
SI 6	Absent	1
SI 7	Absent	1
SI 8	3	0.65
SI 9	Poor	0.33
SI 10	70%	1
SI1 x SI2 x SI3 x SI4 x SI5 x SI6 x SI7 x SI8 x SI9 x SI10 $(1 \times 0.01 \times 0.9 \times 0.67 \times 1 \times 1 \times 1 \times 0.65 \times 0.33 \times 1)^{1/10} = 0.52$ equates to “ below average ” habitat suitability for great crested newts		
Key:		
SI 1 – Location		SI 6 –Fowl
SI 2 – Pond area		SI 7 – Fish
SI 3 – Pond drying		SI 8 – Ponds
SI 4 – Water quality		SI 9 – Terrestrial
SI 5 – Shade		SI 10 – Macrophytes



Photo 2: Pond 1 in April 2018, facing south.

Pond 2, as shown in Figure 3 and Photo 3 was located approximately 35m to the south of the Site boundary within a small horse pasture. The pond itself was fenced off to limit horse access and was found to have a steep bank to the south-west, housing a drainage pipe that emptied into the pond, with much shallower natural banks along all other edges. Along the southern bank large mature willows (*Salix sp*) and oaks (*Quercus sp*) shaded much of the

water and to the north and west the edge was dominated by Flag iris (*Iris sp.*) and bulrush (*Typha sp.*). The depth was estimated at 50cm deep on average with shallower and deeper portions in relation to the influx of water from the pipe. Duckweed (*Lemna sp.*) was present from the beginning of the surveys developing to cover most of the surface. The HSI assessment for this pond identified it as having “**average**” potential to support great crested newts. The breakdown of this assessment can be found in Table 3.

Table 3: Habitat Suitability index Assessment for Pond 2

Pond 3		
Factor	Result	Suitability Index
SI 1	A (optimal)	1
SI 2	~375 ²	0.7
SI 3	Sometimes	0.5
SI 4	Moderate	0.67
SI 5	90%	0.4
SI 6	Minor	0.67
SI 7	Absent	1
SI 8	3	0.65
SI 9	Good	1
SI 10	30%	0.6
$SI1 \times SI2 \times SI3 \times SI4 \times SI5 \times SI6 \times SI7 \times SI8 \times SI9 \times SI10$ $(1 \times 0.7 \times 0.5 \times 0.67 \times 0.4 \times 0.67 \times 1 \times 0.65 \times 1 \times 0.6)^{1/10}$ $= 0.69$ equates to “ average ” habitat suitability for great crested newts		
Key:		
SI 1 – Location		SI 6 –Fowl
SI 2 – Pond area		SI 7 – Fish
SI 3 – Pond drying		SI 8 – Ponds
SI 4 – Water quality		SI 9 – Terrestrial
SI 5 – Shade		SI 10 – Macrophytes



Photo 3: Pond 2 in April 2018, facing east.

Pond 3, as shown in Figure 3 and Photo 4, was located approximately 45m to the south of the Site boundary and was located within the same equine pasture as pond 2. The pond was located across the boundary with half in the field and half in the neighbouring property. On the north bank the pond was again fenced off to restrict horse access and lay directly adjacent to a muck heap. The banks themselves were fairly steep and uneven, dominated by tall ruderal vegetation. The land owner reported that the pond had been dredged in the winter prior to the surveys and subsequently very little aquatic vegetation was noted. To the east the water level became shallower and supported more aquatic vegetation and similarly, where the pond lay outside of the field boundary, the banks were found to be indistinct and dominated by grasses. To the west and north-east the waterbody appeared to connect with a ditch and land drain system, however no significant flow was noted. Finally, the waterbody was heavily shaded by mature willows to the south and east. The HSI assessment for this pond identified it as having “good” potential to support great crested newts. Please see Table 4 for more details.

Table 4: Habitat Suitability index Assessment for Pond 3

Pond 3		
Factor	Result	Suitability Index
SI 1	A (optimal)	1
SI 2	~690m ²	1
SI 3	Rarely	1
SI 4	Moderate	0.67
SI 5	90%	0.4
SI 6	Minor	0.67
SI 7	Absent	1
SI 8	3	0.65
SI 9	Good	1
SI 10	40%	0.7
$SI1 \times SI2 \times SI3 \times SI4 \times SI5 \times SI6 \times SI7 \times SI8 \times SI9 \times SI10$ $(1 \times 1 \times 1 \times 0.67 \times 0.4 \times 0.67 \times 1 \times 0.65 \times 1 \times 0.7)^{1/10} = 0.78$ equates to “good” habitat suitability for great crested newts		
Key: SI 1 – Location SI 2 – Pond area SI 3 – Pond drying SI 4 – Water quality SI 5 – Shade SI 6 – Fowl SI 7 – Fish SI 8 – Ponds SI 9 – Terrestrial SI 10 – Macrophytes		



Photo 4: Pond 3 in April 2018, facing west.

Pond 4, as shown in Figure 3 and Photo 4, was located approximately 45m to the south of the Site boundary and was found to be a small ornamental pond within a garden. The pond was concrete lined and surrounded by artificial rockery and gravel within an amenity grassland lawn. Little to no aquatic vegetation was observed and the pond was not shaded by any trees or shrubbery. A single small ornamental fountain was located within the approximate middle. Finally, a small gauge net covered the whole pond, weighed down at the edges by large stone, likely in place to protect a stock of fish. The net was not considered to pose a significant barrier to amphibian dispersal. The HSI assessment for this pond identified it as having “poor” potential to support great crested newts. Due to the low HSI score and high fish pressure it was considered unlikely great crested newts would be using this pond and it was scoped out of the survey Please see Table 5 for more details.

Table 5: Habitat Suitability index Assessment for Pond 4

Pond 3		
Factor	Result	Suitability Index
SI 1	A (optimal)	1
SI 2	~33m ²	0.05
SI 3	Rarely	1
SI 4	Poor	0.33
SI 5	5%	1
SI 6	Absent	1
SI 7	Major	0.01
SI 8	3	0.65
SI 9	Poor	0.33
SI 10	10%	0.33
SI1 x SI2 x SI3 x SI4 x SI5 x SI6 x SI7 x SI8 x SI9 x SI10 $(1 \times 0.05 \times 1 \times 0.33 \times 1 \times 1 \times 0.01 \times 0.65 \times 0.33 \times 0.33)^{1/10} = 0.32$ equates to “poor” habitat suitability for great crested newts		
Key:		
SI 1 – Location	SI 6 –Fowl	
SI 2 – Pond area	SI 7 – Fish	
SI 3 – Pond drying	SI 8 – Ponds	
SI 4 – Water quality	SI 9 – Terrestrial	
SI 5 – Shade	SI 10 – Macrophytes	



Photo 5: Pond 4 in April 2018, facing west.

3.2.3 Weather conditions

The weather conditions during each survey visit were within the parameters set by the great crested newt survey guidelines and are shown in Table 6 below.

Table 6: Weather conditions during great crested newt survey visits

Visit	Date	AM/PM	Weather			
			Air Temperature (°C)	Wind Speed (Beaufort Scale)	Precipitation	Cloud Cover (%)
1	11/04/18	PM	8	1 – light breeze	Intermittent	76-100
	12/04/18	AM	8	0-calm	None	76-100
2	26/04/18	PM	9.7	1 – light breeze	None	51-75
	27/04/18	AM	6	1 – light breeze	Heavy rain	76-100
3	08/05/18	PM	16	2 – light breeze	None	51-75
	09/05/18	AM	7	1 – light breeze	None	51-75
4	05/06/18	PM	13	0-calm	None	0-10
	06/06/18	AM	10.6	0-calm	none	76-100
5	14/06/18	PM	18	1 – light breeze	None	0-10
	15/06/18	AM	13	0-calm	None	0-10
6	18/06/18	PM	18	3-breeze	None	51-75
	19/06/18	AM	16	2-light breeze	None	51-75

3.2.4 Pond surveys

The surveys identified a small, non-breeding population of great crested newts using ponds 1 and 3. Due to the close proximity of these ponds it was considered likely that this represented a single population that would also likely use pond 2 on occasion. In addition to this, smooth newts were found in all ponds with signs of breeding in pond 3 and breeding common frogs were found in ponds 2 and 3.

Tables 7, 8, 9 and 10 below summarise the results of the Surveys.

Table 7: Survey results for Pond 1.

Visit	Date	Numbers of GCN			Smooth newt	Common Frog	Common Toad	Other
		Egg search	Torching	Netting				
1	11 th /12 th April 2018	0	1M	0	1	0	0	-
2	26 th /27 th April 2018	0	0	0	11	0	0	Dragonfly larva
3	8 th / 9 th May 2018	0	1M	0	1	0	0	-
4	5 th / 6 th June 2018	0	0	0	4	0	0	Dragonfly larva
5	14 th / 16 st June 2018	0	2F	0	3	0	0	Dragonfly larva
6	18 th / 19 th June 2018	0	2F	0	2	0	0	-

Table 8: Survey results for Pond 2

Visit	Date	Numbers of GCN				Smooth newt	Common Frog	Common Toad	Other
		Egg search	Torching	Bottle Trapping	Netting				
1	11 th /12 th April 2018	0	0	0	-	1	1	0	
2	26 th /27 th April 2018	0	0	0	0	4	Frogspawn	0	
3	8 th /9 th May 2018	0	0	0	0	1	Frogspawn	0	-
4	5 th /6 th June 2018	0	0	0	0	2	0	0	Dragonfly larva
5	14 th /16 st June 2018	0	0	0	0	1	0	0	-
6	18 th /19 th June 2018	0	0	0	0	0	0	0	Dragonfly larva, greater diving beetle

Table 9: Survey results for Pond 3

Visit	Date	Numbers of GCN			Smooth newt	Common Frog	Common toad	Other
		Egg search	Torching	Bottle Trapping				
1	11 th /12 th April 2018	0	0	0	6	Frogspawn	0	
2	26 th /27 th April 2018	0	1F	0	5	Frogspawn	0	
3	8 th /9 th May 2018	0	0	0	1	0	0	-
4	5 th /6 th June 2018	0	0	0	3	Tadpoles	0	-
5	14 th /16 st June 2018	0	0	0	0	Tadpoles	0	Dragonfly larva
6	18 th /19 th June 2018	0	1F	0	4 (+1 eft)	Tadpoles	0	Dragonfly larva

Table 10: Combined Peak Counts per method.

Visit	Date	Numbers of GCN Torching	Bottle Trapping	Netting
1	11 th /12 th April 2018	1	0	0
2	26 th /27 th April 2018	1	0	0
3	8 th /9 th May 2018	1	0	0
4	5 th /6 th June 2018	0	0	0
5	14 th /16 st June 2018	2	0	0
6	18 th /19 th June 2018	3	0	0

4 Discussion & Conclusions

4.1 Summary of results

Following a preliminary ecological appraisal in 2017 by FEC, the Site was found to comprise a large garden associated with two dwellings comprising species-poor semi-improved grassland, scrub and an area of mixed plantation woodland with a sparse understory. Foraging habitat for amphibians was identified within the scrub, tall ruderal and grassland, although it was noted these habitats were not extensive. Sheltering opportunities were identified within four log piles on Site, as well as an old stone wall and decaying tree stump. Habitat connectivity was considered to be good with areas of suitable terrestrial habitat within 200m of the Site, including rough grassland, pockets of woodland and a dismantled railway line. A total of five waterbodies were identified within a 250m radius of the Site and a sixth lay just outside of this radius. Two of these located within 50m of the Site boundary were assessed using HSI as part of the initial survey, returning scores of “good” and “average”. A single great crested newt record was found approximately 520m to the north-east of the Site in 2012. Further great crested newt presence/absence surveys were recommended due to the predicted impact on potential terrestrial habitat within 250m from a pond considered to have potential to support great crested newts.

Pond 5 and pond 6 (as shown in Figure 3) were scoped out of the survey due to the presence of the River Cherwell between the waterbodies and the Site, representing a significant dispersal barrier to amphibians. The remaining four waterbodies, all within 50m of the southern Site boundary, were evaluated for their suitability to support great crested newts using a HSI assessment. Pond 4 returned a score of “poor” housing large numbers of ornamental fish and was therefore scoped out of the further surveys. Pond 1, pond 2 and pond 3 all returned scores of below average, average and good respectively, prompting the need for further surveys. The land to the south of the Site, including the pasture containing pond 2 and pond 3, was found to provide various foraging potential for great crested newts comprising grazed to rough grassland with mature trees, scrub and tall ruderal; with a small area of wet woodland also noted on the southern bank of pond 3. Furthermore, sheltering opportunities were identified adjacent to pond 2 in the form of an extensive log pile.

Presence/absence surveys over four visits were carried out using three to four sampling methods per survey (egg searching, torching, netting and bottle trapping) between 11th April and 6th June in appropriate weather conditions. Great crested newts were found in both Ponds 1 and 3 through torching and a further two visits were carried out in June in order to estimate population size. No great crested newts were found in Pond 2, however due to its close proximity to pond 1 and pond 3 it was considered likely to be used by any population present and was included in the additional visits.

Across all the surveys a peak count of 3 great crested newts was found through torching, indicating a very small population was present some 50m from the Phase 1 Site boundary. No great crested newt eggs were found in any of the ponds, so breeding was not confirmed through these surveys. It was considered that due to their close proximity there was likely to be regular migration of individuals between all the ponds forming a small metapopulation. It is therefore proportionate to consider the ponds as supporting a single population, rather than individual exclusive populations. Due to only a single historical record and extent of suitable habitat it was considered that the small population was indicative that the existing habitats were not of a suitable size or connectivity value to support a larger population.

Additional observations indicated a breeding population of smooth newts in pond 3, with smooth newts also present in ponds 1 and 2; dragonfly larva presence in all ponds and breeding common frogs in ponds 2 and 3.

4.2 Impact Assessment

The proposed development would involve the construction of some three residential dwellings, plus associated gardens, within the existing garden area of the Site resulting in impacts to terrestrial habitat considered to be of low to medium quality within 50m of ponds supporting a small population of great crested newts.

Due to the nature of the works and proximity to the ponds, it was considered that in the absence of mitigation and post-development habitat enhancement anticipated impacts to great crested newts would result in the following impacts: partial destruction of terrestrial habitat, temporary disturbance during the construction phase, increased post development interference and partial fragmentation of habitat. The scales of these impact range from low to medium and have been summarised further using Natural England's Risk Assessment tool as seen in Table 11.

Table 11: Natural England Risk Assessment for Great Crested Newts prior to reasonable avoidance measures.

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)	0.5 - 1 ha lost or damaged	0.7
Land 100-250m from any breeding pond(s)	No effect	0
Land >250m from any breeding pond(s)	No effect	0
Individual great crested newts	Minor disturbance of newts	0.5
	Maximum:	0.7
Rapid risk assessment result:	RED: OFFENCE HIGHLY LIKELY	

Considering the unconfirmed breeding status of the small population and low value of the habitat due to be affected it was likely that the Natural England risk assessment was over-estimating the impact of the development. Furthermore, the overall land use change following the proposed development was not considered to be excessively detrimental in the longer term. The proposed plans outline the construction of three dwellings and associated driveways and gardens, within an existing garden; resulting in an overall change of habitat within the footprint of the houses and driveways.

It was considered likely that any newts migrating from the ponds would likely take advantage of terrestrial habitat outside of the Site boundary. For example, the large log pile and rough grassland observed in the horse pasture immediately south of the Site (as shown in Photo 1) offered better opportunities for shelter and foraging directly adjacent to the ponds. Additionally, the wet woodland adjacent to pond 3 again offered higher quality habitat compared to that found on Site, as well as better connectivity with pockets of woodland and rough grassland to the south of the ponds. The most suitable habitat to the north of the ponds was within the dismantled railway route directly accessible from the horse pasture north of pond 3. Additionally, there were no waterbodies noted to the north, further reducing the likelihood of dispersal via the Site. Considering the layout of the ponds in conjunction with prime terrestrial habitat, the overall dispersal direction was likely to be mostly to the south from the ponds, particularly given the very small population size (three individuals). Therefore, the proposed plans were not likely to significantly disrupt dispersal or terrestrial behaviours of great crested newts nor remove significant habitat on which the metapopulation would rely.

Therefore, it was considered that impacts on great crested newts within the local area could be appropriately mitigated against through a reasonable avoidance method statement, rather than carrying out a derogation Natural England Licence application with translocation. Furthermore, due to the small size of the Site, it was considered that constructing an appropriate exclusion fence would cause disproportionate damage to habitat that would otherwise not be impacted and cause avoidable damage and disturbance. The Natural England risk assessment calculator was re-run to include the avoidance measures and can be seen in Table 12 (again as there was no confirmed breeding in the ponds surveyed and the terrestrial habitat to be impacted is suboptimal the likelihood of offence is considered to be less than calculated). Details of the reasonable avoidance measure can be found in Section 5 and through adhering to these procedures there will be no adverse impacts to great crested newts through the proposed development. Enhancements have been suggested in Section 5 that could be integrated in to the development in order to increase the favourable conservation status of great crested newts within the locality.

Table 12: Natural England Risk Assessment for Great Crested Newts taking into account total area to be developed and reasonable avoidance measures.

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)	0.01 - 0.1 ha lost or damaged	0.3
Land 100-250m from any breeding pond(s)	No effect	0
Land >250m from any breeding pond(s)	No effect	0
Individual great crested newts	No effect	0
	Maximum:	0.3
Rapid risk assessment result:	AMBER: OFFENCE LIKELY	

5 Reasonable Avoidance Measures

The National Planning Policy Framework paragraph 174 states that "To protect and enhance biodiversity and geodiversity, planning policies should: ...promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species populations". In order to ensure no net loss of biodiversity in accordance with NPPF & Circular 06/2005 recommendations are made below.

Great crested newts are 'fully protected' European protected species and, consequently, not only are the animals themselves protected but also their habitat. All elements of section 9 of the Wildlife & Countryside Act 1981 apply together with Regulation 39 of the Habitats Regulations 1994.

As detailed within section 4 above the Natural England Great Crested Newt Risk Assessment revealed there to be a "Amber" risk to this species as a result of proposed works and therefore reasonable avoidance measures have been recommended in order to reduce this to 'Green' risk:

Great crested newt Reasonable Avoidance Measures (RAMs)

The objectives of the Reasonable Avoidance Measures are to:

- Avoid committing an offence under the existing legislation; and,
- To ensure that favourable conservation status of GCN in the locality is maintained.

Any development-related activities on the Site, such as excavations and tree stump removal, have the potential to impact GCN. As a result, safeguards must be implemented to protect GCN and the Reasonable Avoidance Measures must be implemented to ensure these objectives are achieved. If these measures are followed, then both objectives will be achieved without the need for a derogation licence from Natural England.

The methods below are considered to be proportionate and addresses potential tangible impacts on GCN through the proposed works. The following measures must be followed for all construction works required during the scheme in the following order.

- In order to ensure that the Reasonable Avoidance Measures are adhered to, a copy of this document MUST be kept on Site at all times during the works.

- A licensed ecologist will be appointed prior to the commencement of works as the point of contact for ecology matters and advice, hereafter referred to as the 'Appointed Ecologist'.
- Works will be preceded by a toolbox talk by the Appointed Ecologist to ensure that all contractors are aware of ecologically sensitive areas and the steps to take in the event that a protected species, such as great crested newt, is found. This will also entail showing contractors how to identify a great crested newt.
- Prior to the start of works, the species-poor semi-improved grassland, tall ruderal vegetation and scrub will be removed and strimmed to a short sward length (3cm high) in the winter months (November to February, inclusive) when newts will be hibernating in other habitats. This will be maintained at this length up to the point that this habitat is destroyed to ensure it remains unsuitable for foraging or sheltering amphibians and in order to deter animals from entering this area.
- Prior to the start of works and outside of the winter months October-March inclusive (to avoid the possibility of disturbing hibernating newts) all features identified to have potential for sheltering and hibernating will be carefully dismantled by hand "under the watching brief of the appointed ecologist" and any common amphibians found (specifically common frog, common toad and smooth newt) relocated to suitable habitat outside of the Site, namely the following features: log piles; the garden shed; old, piled garden furniture and a decaying tree stump/ felled tree. Additionally, the compost heaps noted should also be dismantled under supervision outside spring- summer months (September-October optimal) when they are most likely to be used by great crested newts, common amphibians or reptiles. These features are mapped by the following target notes on the Phase 1 map in Appendix A of FEC preliminary Ecological Appraisal report (ref: 5648 FE PEA 01 June 2017): 1, 2, 4, 5, 7, 10, 14, 15, 17 and 18. The old stone wall was considered to lie outside of the proposed development impact zone, however in the event this is to be affected by the works it will also be dismantled as per the above. If evidence of great crested newts is found during the course of the works, the Appointed Ecologist must be contacted immediately, and work ceased until further advice to ensure legal compliance can be given.
- The removal of any trees or shrubs to facilitate the development will be conducted outside of the winter months October-March inclusive (to avoid the possibility of disturbing hibernating newts) and in the presence of a watching brief by the Appointed Ecologist. Namely trees should be felled and removed immediately from Site and the removal of any root balls will be carefully monitored by the appointed ecologist to ensure no individuals that may be sheltering below ground are injured or killed. Such works must also be preceded by a nesting bird check to ensure no birds are in the process of nesting. If this is the case, such works cannot commence until the chicks have fledged.
- Any materials stored on Site during works will be kept on raised pallets to avoid amphibians using these as shelter. Stored materials will be kept on hard standing to reduce their attractiveness to amphibians and maintained at least 10m from any boundary vegetation to avoid encountering amphibians.
- Any site compound MUST be sited on an area of short grassland, bare ground or hard standing at least 10m away from any vegetation or features suitable for amphibians including: Any log piles, compost heaps, the piles of garden furniture, the fallen and decaying tree, the old she, the boundary hedgerows, stone wall and trees. The existing hard standing tennis court on Site would be a suitable location.
- Should any trenches and excavations be required, an escape ramp must be provided, especially if left open overnight. Ramps should be no greater than of 45 degrees in angle. This will ensure GCN are not trapped, which would otherwise constitute an offence.
- All excavations left open overnight or longer should be checked for animals prior to the continuation of works or infilling. Back-filling should be completed immediately after any excavations.
- All work must take place during daylight hours as newts are more likely to commute at night and this will ensure the risk to any newts commuting through the Site will be minimised.
- If evidence of great crested newts is found during the course of the works, the Appointed Ecologist must be contacted immediately, and work ceased until further advice to ensure legal compliance can be given.

All other recommendations made within the FEC preliminary Ecological Appraisal (ref: 5648 FE PEA 01 June 2017) for the Site remain relevant and should be adhered to.

5.1 Suggested Enhancements Post-Development

The National Planning Policy Framework paragraph 175 states that "Opportunities to incorporate biodiversity in and around developments should be encouraged". Therefore, additional recommendations for biodiversity enhancements across the Site are provided below:

- Native trees and shrubs should be used within any newly created landscape planting which may form part of communal areas, residential gardens or perhaps the creation of hedgerows or infilling of existing hedgerows. The planting of native species which are appropriate to the landscape character may improve local species diversity as well as increase the potential for use of the developed site by wildlife.
- A number of log piles/hibernacula could be constructed adjacent to the southern hedgerow and retained tree groups such as the example illustrated below in Figure 4. This will provide additional sheltering opportunities for great crested newts.
- All fences or walls constructed as part of the proposed development should be installed with a small gap at the base to allow for continued amphibian commuting between the ponds and good terrestrial habitat along the dismantled railway line. This should be maintained between 10 and 15cm. Additionally boundaries can be formed or supplemented using planted native hedgerows.

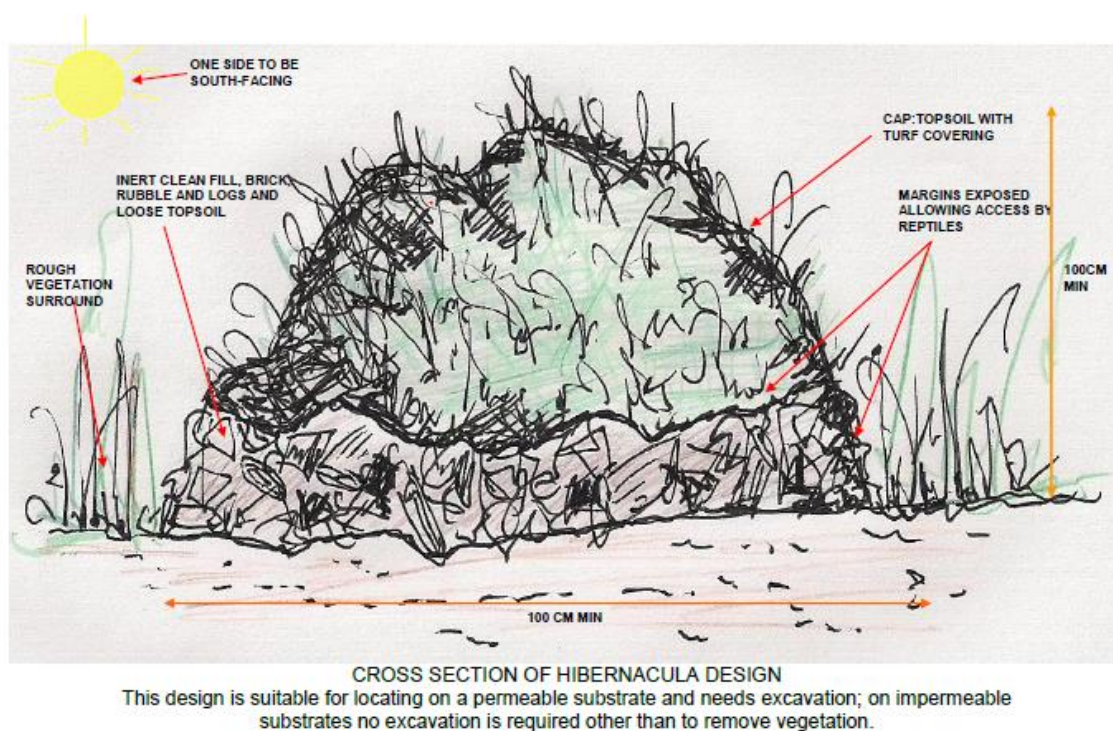


Figure 4: recommended construction of log pile hibernacula.

6 References

CIEEM, 2015. Guidelines on Ecological Report Writing. Chartered Institute of Ecology and Environmental Management, Winchester.

Circular 06/2005 Biodiversity and Geological Conservation – Statutory Obligations and Their Impact Within the Planning System

FEC Group (2017) *Preliminary Ecological Appraisal: The Leys, Adderbury for Nick Biggam*; ref:5648 FE PEA 01.

Froglife, (2003) *Guide to the Reptiles and Amphibians of Britain and Ireland*. FSC.

Gent, T., Gibson, S., (2003) *Herpetofauna Workers Manual*. JNCC

Institute of Environmental Assessment, 1995. Guidelines for Baseline Ecological Assessment. London: E & FN Spon.

MAGIC, 2013. Available from: <http://www.magic.gov.uk/>.

Oldham, R. S., Keeble, J., Swan, M. J. S. and Jeffcote, M. (2000) Evaluating the suitability of habitat for the great crested newt (*Triturus cristatus*). *Herpetological Journal*, **10**, 143 - 155.

National Planning Policy Framework, July 2018

Natural England, 2001. Great Crested Newt Mitigation Guidelines.

Thames Valley Environment Records Centre (TVERC)

The Conservation of Habitats and Species Regulations, 2012.

UK BAP Priority Species and Habitats, available at:

<http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/prioritylist.aspx>.

Wildlife & Countryside Act, 1981. HMSO (as amended).

Appendix 1- Proposed plans



NORTH



Scale bar - 1 : 500 @ A3



SITE LAYOUT PLAN

A 18.01.19 PLOT 3 DRIVE AMENDED
ROOF PLANS AMENDED

Client	Mrs Biggam	Project	PROPOSED DEVELOPMENT OF LAND AT THE LEYS ADDERBURY	Drawing	SITE LAYOUT PLAN
Architect	Nicholas D Price 45 North Bar Street Banbury OX16 0TH Tel 01295 262932	Scale	1:500	Date	October 2018
		Drawing No	5392.02		A