

**Emm Brook
Woosehill
Wokingham
Berkshire
RG41 3DA**

Phase 2 Ecological Surveys (Bats and Great Crested Newts)

Ref: R2220/b

May 2019

**JOHNWENMAN**
ecological consultancy

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1 INTRODUCTION

1.1 Background

- 1.1.1** John Wenman Ecological Consultancy LLP was commissioned by Toby Hull of the South East Rivers Trust (SERT) to undertake Phase 2 ecological surveys regarding bats and great crested newts (GCNs) on land next to the Emm Brook, in Wokingham, Berkshire.
- 1.1.2** These surveys were commissioned in relation to the Woosehill Fish Passage Improvements project led by SERT with the support of the Environment Agency (EA). The main aim of the project is to reconnect the Emm Brook paleo channel in order to by-pass the weir and restore fish passage. The modified channel would act as a flood relief channel.
- 1.1.3** The Greenways Project is in progress with the aim of creating a traffic-free multiuser route connecting the new Arborfield Garrison development to the Finchampstead Baptiste Centre via California Country Park (now completed) and to North Wokingham via Woosehill (consultation has closed and the route is in planning stages). This will involve the construction of a multi-use path through Woosehill Meadows and therefore all proposals relating to the fish passage improvement scheme will need to consider this proposed route.
- 1.1.4** This report follows the preliminary ecological appraisal completed by John Wenman Ecological Consultancy LLP in April 2019 (reported separately: R2207c), which identified the potential for the site to support roosting bats and great crested newts. Further survey was recommended in order to determine bat roost potential of trees likely to be impacted by the proposals and aid in guiding the approach to tree works. In addition, further survey was recommended to confirm if great crested newts were present in the pond and paleo channel on site.

1.2 Site Location and Context

- 1.2.1** The site is part of the amenity parkland known as 'Woosehill Meadows' to the east of Morrisons supermarket in Woosehill, Wokingham (OS grid reference: SU 79824 69269).
- 1.2.2** The Emm Brook river runs through Woosehill Meadows in the centre of the Wokingham suburb of Woosehill. The wider extent of Woosehill Meadows includes open fields and woodland to the south of the site. The Woosehill Spine Road borders the northwest of the site and the Reading Road (A329) is to the

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north. A railway line bordered by established woodland lies approximately 210 metres to the northeast and connects to Holt Copse and Joel Park Local Nature Reserve (LNR) approximately 400 metres to the east of the site. Approximately 235 metres to the west, lies a small lake with wooded banks called Windmill Pond.

- 1.2.3** Overall, the surrounding area offers pockets of habitat suitable for use by a range of fauna adapted to suburban environments.

2 LEGISLATIVE BACKGROUND

2.1 Bats

2.1.1 All British bat species are fully protected by the Wildlife & Countryside Act 1981 (as amended) and by the Conservation of Habitats and Species Regulations 2017 ('Habitat Regulations'). In summary, the legislation combined makes it an offence to:

- Damage or destroy a breeding site or resting place or intentionally or recklessly obstruct access to a structure or place used for shelter by a bat;
- Deliberately, intentionally or recklessly disturb bats; in particular any disturbance which is likely to impair the ability of bats to survive, breed or reproduce or nurture their young; or in the case of hibernating or migrating bats, to hibernate or migrate; or to affect significantly the local distribution or abundance of the species;
- Deliberately kill, injure or take any bat.

2.1.2 The government's statutory conservation advisory organisation, Natural England, is responsible for issuing European Protected Species licences that would permit activities that would otherwise lead to an infringement of the Habitat Regulations. A licence can be issued if the following three tests have been met:

- **Regulation 55(9)(a)** - there is "no satisfactory alternative" to the derogation, and;
- **Regulation 55(9)(b)** - the derogation "will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range" and;
- **Regulation 55(2)(e)** - the derogation is for the purposes of "preserving public health or public safety or other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment".

2.1.3 Local authorities have a statutory duty under Regulation 7(3e) of the Habitat Regulations to have regard to requirements of the Habitats Directive in the exercise of their functions. The Council must therefore consider and determine whether these three tests are likely to be satisfied by applications where survey findings show that European Protected Species licensing is necessary before granting planning permission.

- 2.1.4** European Protected Species mitigation licence applications can be submitted once all necessary planning consents have been granted and Natural England aim to issue a licence decision within 30 working days.
- 2.1.5** Licensable projects affecting small numbers of seven commonly occurring species occupying roosts of low conservation importance may fall under the remit of the Bat Mitigation Class Licence (WML-CL21). The Class Licence permits 'Registered Consultants' or accredited agents appointed by them to carry out licensable operations on site on behalf of clients following the registration of sites with Natural England at least 15 working days before the work is due to start.
- 2.1.6** Survey data supporting EPS licence applications or the registration of the site under the Bat Mitigation Class Licence (WML-CL21) must be up to date i.e. have been conducted within the current or most recent optimal survey season i.e. May to August. Therefore, if surveys show bats are present and licensable work is delayed until during or after the next survey season, updated surveys will be required to support an application or site registration.

2.2 Great Crested Newts

2.2.1 Great crested newts receive full protection under the Wildlife & Countryside Act 1981 (as amended) and under the Conservation (Natural Habitats &c.) Regulations 2017 ('Habitat Regulations') (as amended). These make it illegal to:

- Intentionally or recklessly kill, injure or take a great crested newt;
- Possess or control any live or dead specimen or anything derived from a great crested newt;
- Damage or destroy a breeding site or resting place or intentionally or recklessly obstruct access to a structure or place used for shelter by a great crested newt; and
- Intentionally or recklessly disturb great crested newts; in particular any disturbance which is likely to impair their ability to survive, breed, reproduce or nurture their young; or in the case of hibernating or migrating animals, to hibernate or migrate.

2.2.2 The government's statutory conservation advisory organisation, Natural England, is responsible for issuing European Protected Species licences that would permit activities that would otherwise lead to an infringement of the

Habitat Regulations. A licence can be issued if the following three tests have been met:

- **Regulation 55(9)(a)** - there is “no satisfactory alternative” to the derogation;
- **Regulation 55(9)(b)** - the derogation “will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range” and;
- **Regulation 55(9)(b)** – the derogation is for the purposes of “preserving public health or public safety or other imperative reasons for overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment”.

2.2.3 Local authorities have a statutory duty under Regulation 7(3e) of the Habitat Regulations to have regard to requirements of the Habitats Directive in the exercise of their functions. The Council must therefore consider and determine whether these three tests have been satisfied by an application affecting European Protected Species before granting planning permission.

2.3 Report Format

2.3.1 There follows: details of survey methods in Section 3; details of survey findings in Section 4; and a discussion of the findings and recommendations in Section 5.

2.3.2 The appendices present: tree inspection photograph in Appendix 1, tree inspection survey plan in Appendix 2, great crested newt habitat suitability index (HSI) assessment findings in Appendix 3 and great crested newt eDNA technical report in Appendix 4.

3 SURVEY METHOD

3.1 Daylight Bat Survey

3.1.1 A ground-level inspection of all trees to be removed or affected by the proposals was undertaken on the 18th April 2019 by an ecological registered under Natural England Bat Survey Class Licence CL18 and an assistant ecologist. The bat survey findings are detailed with photographs of the trees shown in **Appendix 1**.

3.1.2 The trees were surveyed from ground-level with the aid of binoculars. Features suitable for roosting bats or evidence of the presence of bats were looked for during the survey

3.1.3 Trees may provide roosting opportunities for bats if they have features such as:

- Cavities caused by woodpeckers, or decay extending upwards from the entrance;
- Rot holes;
- Knot holes arising from shed limbs;
- Hazard beams;
- Vertical or horizontal splits within the trunk or in limbs;
- Dense ivy cover where stems are partially detached and exceed 50mm diameter;
- Areas of loose bark.

3.1.4 Detecting bats within trees during daylight surveys can be extremely difficult, but occasionally the presence of bats can be indicated by the signs such as:

- Staining around cavities;
- Areas of worn or smooth bark;
- Bat droppings.

3.1.5 The trees were assessed for their potential to support bats. The trees were graded according to the following criteria based on criteria created for assessing trees subject to arboricultural work:

Tree category/designation	Details and features
Known or confirmed roost	Bats have been found roosting or seen to emerge/re-enter the tree.
High	Mature tree with one or several features providing highly suitable roosting conditions for bats which are likely to be suitable for use by multiple bats at different periods of the year; has potential to act as a hibernation site.

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Moderate	Mature tree with one or several features providing limited roosting opportunities. Likely to be suitable only as transient roosts for individual or a small number of bats. Use likely to be limited to short periods during the summer; unlikely to be suitable as a hibernation site.
Low	Mature or semi-mature tree with very few opportunities for bats, but occasional minor features such as dead branches that may provide for short term use by individual bats or a large tree with potential for high level features to be present but not visible from ground level.
Negligible	Tree with no visible opportunities for bats.

3.2 Bat Survey Constraints

3.2.1 The bat survey was an assessment of the trees from ground-level only. Full access was not always available to the base of the trees from all sides because of the paleo channel and dense scrub, and although the survey was carried out when trees were in leaf, clear views of the canopies were available and therefore the survey had no significant constraints.

3.3 Great Crested Newt Habitat Suitability Index (HSI) Assessment

3.3.1 A desktop-based assessment of all ponds within 250 metres of the site was undertaken. The desktop-based assessment included an inspection of Ordnance Survey (OS) mapping available on the Multi-Agency Geographic Information for the Countryside (MAGIC) website to determine the number of ponds, and to establish potential, terrestrial habitat links and identify any major barriers between the ponds and the site. In addition to the pond and paleo channel on site, a large pond, Windmill Pond, was identified within the search area to the west.

3.3.2 A site visit was made on the 18th April and a great crested newt Habitat Suitability Index score was calculated for the pond that forms part of the paleo channel on site (**Photographs 1 & 2**). The Index evaluates the general suitability of a pond to support great crested newts (**Appendix 3**). Windmill Pond was discounted due to the Woosehill Spine Road posing a major barrier for traversing newts and because it has undergone great crested newt surveys in the past, which have confirmed a likely absence of newts in the pond (personal communication with Duncan Fisher 2019).

	
<p>1. Pond (connect to paleo channel)</p>	<p>2. Paleo channel</p>

3.4 Great Crested Newt eDNA Sampling Survey

3.4.1 Water samples were collected from the pond and paleo channel on site on the 18th April 2019 and sent off for laboratory eDNA testing using the service provided by SureScreen Scientifics Limited to determine the presence or likely absence of great crested newts.

3.5 Great Crested Newt Survey Constraints

3.5.1 Full access was available to the pond and paleo channel during the Habitat Suitability Index assessment and the collection of water samples for the eDNA sampling and as such the survey had no significant constraints.

4 SURVEY FINDINGS

4.1 Bat Survey Findings

4.1.1 The findings of the ground-level inspection of the trees to be removed or affected by proposals are detailed in the table below and the trees are mapped on a plan in **Appendix 2**:

Tree reference number	Species	Survey notes	Bat roost potential (Category)
T1	Alder (<i>Alnus glutinosa</i>)	Multi-stemmed tree with two woodpecker holes and light ivy cover (Photographs 1 & 2).	Moderate
T2	Alder (<i>Alnus glutinosa</i>)	Multi-stemmed tree with several small knot holes and light ivy cover (Photographs 3 & 4).	Low
T3	Alder (<i>Alnus glutinosa</i>)	Multi-stemmed tree with a few small knot holes, a rot hole and a nuthatch nest box (Photographs 5 & 6).	Low
T4	Alder (<i>Alnus glutinosa</i>)	Multi-stemmed tree with a couple of small knot holes and light ivy cover (Photographs 7 & 8).	Low
T5	Alder (<i>Alnus glutinosa</i>)	Multi-stemmed tree with thick ivy cover (Photographs 9 & 10).	Low
T6	Alder (<i>Alnus glutinosa</i>)	Multi-stemmed tree with thick ivy cover and standing deadwood with woodpeckers holes at treetop (Photographs 11 & 12).	Moderate
T7	Alder (<i>Alnus glutinosa</i>)	Multi-stemmed tree with standing deadwood and woodpecker holes at treetop (Photographs	Low

		13 & 14).	
T8	Alder (<i>Alnus glutinosa</i>)	Tall tree with thick ivy cover (Photograph 15).	Low
T9	Alder (<i>Alnus glutinosa</i>)	Tall tree with thick ivy cover and a split in its trunk (Photographs 16 & 17).	Moderate
T10	Alder (<i>Alnus glutinosa</i>)	Group of four tall alder trees with thick ivy cover. One tree with damage/deadwood at treetop (Photographs 18 & 19).	Low
T11	Alder (<i>Alnus glutinosa</i>)	Large multi-stemmed alder tree with thick ivy cover and a wound in the trunk (Photographs 20 & 21).	Moderate
T12	Alder (<i>Alnus glutinosa</i>)	Multi-stemmed tree with thick (cut) ivy cover (Photograph 22).	Low
T13	Alder (<i>Alnus glutinosa</i>)	Tree with thick (cut) ivy cover (Photograph 22).	Low
T14	Alder (<i>Alnus glutinosa</i>)	Tree with thick (cut) ivy cover (Photograph 23).	Low
T15	Alder (<i>Alnus glutinosa</i>)	Multi-stemmed tree with thick ivy cover, two small knot holes and a broken branch (Photographs 24 & 25).	Low
T16	Alder (<i>Alnus glutinosa</i>)	Multi-stemmed tree with a vertical split and standing deadwood (Photograph 26 & 27).	Low
T17	Willow (<i>Salix</i> sp.)	Tree with light ivy cover and a deep rot hole low down in the	Low

		trunk. A torn/shed limb possessed a deep crack (Photographs 28, 29 & 30).	
T18	Pedunculate oak (<i>Quercus robur</i>)	Veteran tree with light ivy cover and a large knot hole in a branch (Photographs 31 & 32).	Moderate
T19	Alder (<i>Alnus glutinosa</i>)	Group of three alder trees with light ivy cover (Photograph 33).	Negligible
T20	Alder (<i>Alnus glutinosa</i>)	Group of three small alder trees with light ivy cover (Photograph 34).	Negligible
T21	Willow (<i>Salix</i> sp.)	Large fallen tree with cracked bark and ivy cover (Photograph 35).	Low
T22	Alder (<i>Alnus glutinosa</i>)	Mature tree with dense ivy cover (Photograph 36).	Low
T23	Willow (<i>Salix</i> sp.)	Large fallen tree with a deep crack into the trunk (Photograph 37).	Low
T24	Alder (<i>Alnus glutinosa</i>)	Over-stood stool with thick ivy cover (Photograph 38).	Low
T25	Willow (<i>Salix</i> sp.)	Mature willow with dense ivy cover and a torn branch (Photograph 39).	Low
T26	Alder (<i>Alnus glutinosa</i>)	Multi-stemmed (c.10) tree with thick ivy cover. Small trunks overhanging the paleo channel lack bat roost features (Photographs 40 & 41).	Low
T27	Alder (<i>Alnus</i>)	Mature tree with thick ivy cover,	Low

	<i>glutinosa</i>)	a tear-out from a shed limb and a small compression fork (Photographs 42 & 43).	
T28	Alder (<i>Alnus glutinosa</i>)	Small tree with light ivy cover (Photograph 44).	Negligible
T29	Poplar (<i>Populus sp.</i>)	Tall tree with thick ivy cover (Photograph 45).	Low
T30	Alder (<i>Alnus glutinosa</i>)	Thin and tall tree with thick ivy cover (Photograph 46).	Low
T31	Unknown	Standing deadwood with thick ivy cover and butt-rot holes (Photograph 47).	Low
T32	Pedunculate oak (<i>Quercus robur</i>)	Mature tree with thick ivy cover and a snapped branch (Photographs 48 & 49).	Moderate
T33	Pedunculate oak (<i>Quercus robur</i>)	Mature tree with light ivy cover (Photograph 50).	Low
T34	Willow (<i>Salix sp.</i>)	Mature tree with crown snapped off (Photographs 51 & 52).	Low

4.2 Great Crested Newt Habitat Suitability Index (HSI) Assessment

4.2.1 An assessment of the suitability of the pond on site for great crested newt (Habitat Suitability Index (HSI)) shows that the pond is of 'average' suitability (refer to table in **Appendix 3**). The pond falls within the optimal geographic location for great crested newt and it forms part of the paleo channel, which is consistently fed by ground water. The pond is managed by Friends of the Emm Brook (FOTEB) and consequently has good water quality and a range of marginal and submerged vegetation. The terrestrial habitat following the paleo channel has good structure for individual newts to traverse and take shelter in, and the pond shows no evidence of wildfowl or fish. The pond is 50m² which is at the lower end of the size range of which great crested newts typically prefer; however, it is connected to the paleo channel which has additional sections of

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standing water considered suitable for use by newts. The pond was shaded by alder trees and dense vegetation on its northern bank and to the south the pond is bordered by open amenity grassland.

4.3 Great Crested Newt eDNA Sampling Findings

- 4.3.1** An analysis of the environmental DNA within the pond and paleo channel water samples confirmed that great crested newts have not been present within the pond (refer to technical report in **Appendix 4**).

5 DISCUSSION AND RECOMMENDATIONS

5.1 Bats

- 5.1.1** Most of the trees inspected were mature alder trees (*Alnus glutinosa*) with multiple stems, ivy (*Hedera helix*) cover and at least a single bat roost feature (i.e. knot hole, woodpecker hole, rot hole). These trees were considered to be of low bat roost potential and included: **T2-5, T7, T8, T10, T12-16, T22, T24, T26, T27** and **T30**.
- 5.1.2** Other trees considered to be of low bat roost potential included: three mature willow trees (*Salix* sp.; **T17, T25 & T34**), two large fallen willow trees (*Salix* sp.; **T21 & T23**), a mature poplar tree (*Populus* sp.; **T29**), standing deadwood (**T31**) and a mature pedunculate oak (*Quercus robur*; **T33**).
- 5.1.3** Several trees had bat roost features that could undergo close inspection by endoscope, which would be sufficient in determining the presence or unlikely absence of roosting bats within the tree. A willow tree (**T17**) had a deep rot hole in its trunk, and two fallen willow trees (**T21 & T23**) had deep cracks, which were accessible from the ground-level for close inspection. It is likely that other trees could potentially be ruled out by endoscopic inspection of their bat roost features and therefore wherever possible this method should take place.
- 5.1.4** Any tree work planned on the aforementioned trees (unless ruled out by endoscopic inspection) should be preceded by further survey in order to determine if bats are present or likely to be absent and should comprise at least one emergence and/or re-entry survey; two further surveys will be required if bats are shown to be present in order to characterise the roost. The survey should be completed within the period between May and September inclusive with additional surveys (if necessary) carried out in the peak season for recording maternity roosts i.e. mid-May to August, and at least two weeks should separate the surveys (Collins 2016).
- 5.1.5** A few trees were considered to be of moderate bat roost potential on account of the suitability of their potential bat roost features and the likelihood of harbouring bat roost features not visible from the ground-level inspection. Four of these trees were mature, multi-stemmed alders (**T1, T6, T9 & T11**) with thick ivy and bat roost features such as woodpecker holes and a split in the trunk. There were two large, mature oak trees (**T18 & T32**) with at least one bat roost feature visible from the ground-level but due to their size it was considered likely that they could have more features in their crowns.

5.1.6 Planned tree works should aim to avoid having an impact on the trees classed with moderate bat roost potential and should only take place as a last resort. If work is to take place, further detailed survey should be carried out beforehand. This should comprise a detailed, high-level inspection for evidence of roosting bats, e.g. from a mobile work platform or by a climbing survey, and/or two emergence and/or re-entry surveys; a further survey will be required if bats are shown to be present in order to characterise the roost. If emergence/re-entry surveys are carried out these should be undertaken in the period between May and September.

5.1.7 A European Protected Species Licence (EPSL) would be required from Natural England in order to permit the felling of the tree(s) if surveys reveal that roosting bats are present.

5.2 Great Crested Newts

5.2.1 The survey findings confirm that great crested newts are highly unlikely to be present in the pond and the paleo channel on site. Therefore, the proposed work to the pond and paleo channel is highly unlikely to have any impact on great crested newts or their habitats and as such it is considered that a European Protected Species Licence would not be required to allow the planned work to go ahead lawfully.

6 REFERENCES

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Langton, T.E.S., Beckett, C.L., and Foster, J.P. (2001), *Great Crested Newt Conservation Handbook*, Froglife, Halesworth.

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APPENDIX 1 – TREE INSPECTION PHOTOGRAPHS



1. T1 – multi-stemmed alder tree.



2. Woodpecker hole in T1.



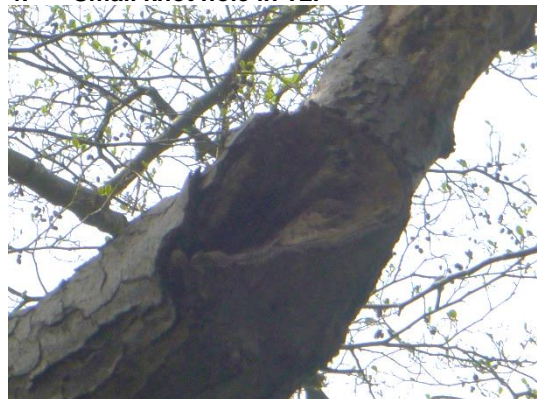
3. T2 – multi-stemmed alder tree.



4. Small knot hole in T2.



5. T3 – multi-stemmed alder tree.



6. A rot hole in dead branch of T3.



7. T4 – multi-stemmed alder tree.



8. Two small knot holes in T4.



9. T5 – multi-stemmed alder tree.



10. Potential crevice behind thick ivy stems on T5.



11. T6. – multi-stemmed alder with deadwood and woodpecker holes at treetop.



12. Thick ivy stems on T6.



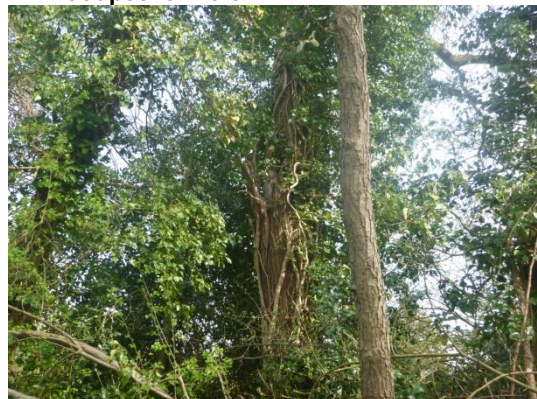
13. T7 – multi-stemmed alder tree.



14. Deadwood at treetop of T7 with visible woodpecker hole.



15. T8 – tall alder tree with thick ivy cover.



16. T9 – tall alder tree with thick ivy cover.



17. Split in the trunk of T9.



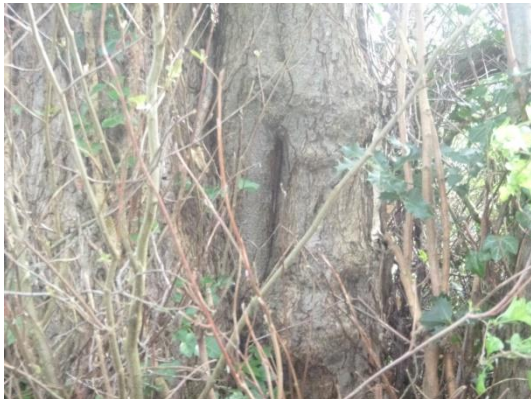
18. T10 – group of four alder trees.



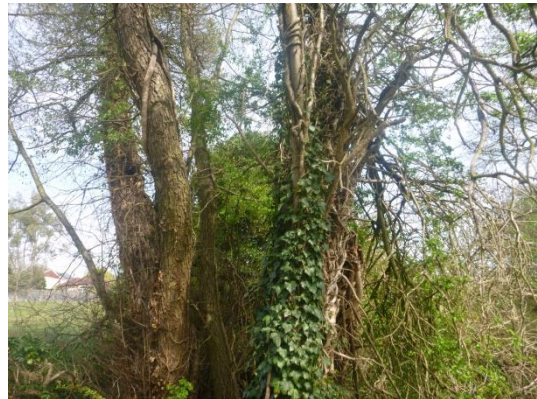
19. Damage/deadwood at treetop of one of the T10 trees.



20. T11 – large multi-stemmed alder tree.



21. Wound in trunk of T11.



22. T12 & T13 alder trees with thick ivy cover.



23. T14 – alder tree with cut ivy with thick stems.



24. T15 – multi-stemmed alder tree next to pond.



25. A couple of small knot holes in T15.



26. T16 – multi-stemmed alder tree next to pond.



27. Vertical wound in trunk of T16.



28. T17 – willow tree next to paleo channel to west of pond.



29. Deep rot hole low down on trunk of T17.



30. Deep crack in shed limb of T17.



31. T18 – veteran oak tree in parkland.



32. Large knot on branch of T18.



33. T19 – group of three alder trees.



34. T20 – group of three small alder trees.



35. T21 – large fallen willow tree with deep cracks.



36. T22 – mature alder tree with thick ivy cover.



37. T23 – large fallen willow tree with deep cracks.



38. T24 – over-stood alder stool with thick ivy cover.



39. T25 – large willow with thick ivy and torn branch.



40. T26 – large multi-stemmed alder tree.



41. Thick ivy on trunk of T26 leaning away from paleo channel.



42. T27 – alder tree with thick ivy cover.



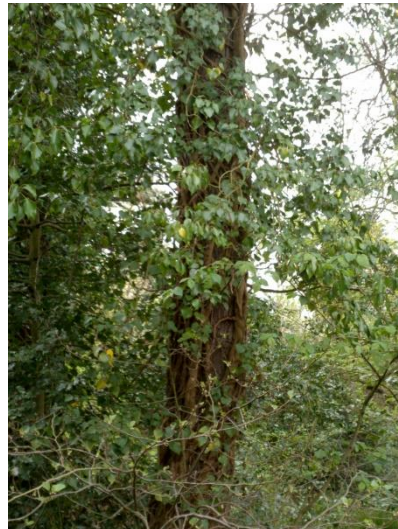
43. A tear-out and small compression fork in T27.



44. T28- a small alder tree with light ivy cover.



45. T29- a tall poplar tree with thick ivy cover.



46. T30 – a thin and tall alder tree with thick ivy cover.



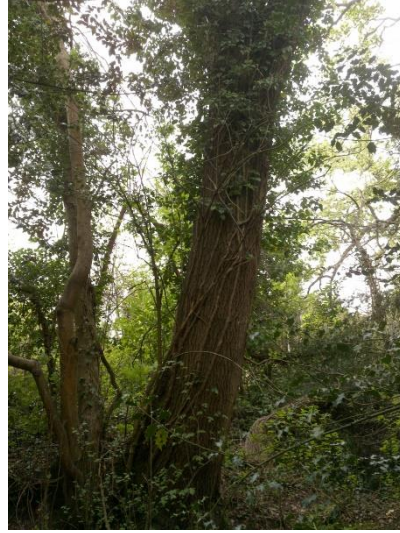
47. T31 – standing deadwood with ivy cover and butt-rot holes.



48. T32 – a mature oak tree with thick ivy cover.



49. Snapped branch on T32.



50. T33 – mature oak tree with light ivy cover.



51. T34 – Mature willow tree with missing crown.



52. Fallen crown of T34.

APPENDIX 2 – TREE INSPECTION SURVEY PLAN



Key:

Bat Roost Potential:

- Negligible
- Low
- Moderate

Emm Brook, Woosehill
Map of Trees with Bat Roost Potential

May 2019



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APPENDIX 3 – GREAT CRESTED NEWT HABITAT SUITABILITY INDEX (HSI) SCORES

Pond		
Suitability Index	Score	Consideration of suitability index
SI₁ (Location)	1.0	The pond falls within Zone A, the optimal zone for great crested newts.
SI₂ (Pond area)	0.1	The pond is estimated to have an area of approximately 50m ² .
SI₃ (Pond drying)	1.0	The pond never dries as it forms part of the paleo channel, which is consistently fed by groundwater.
SI₄ (Water quality)	1.0	The pond water quality was good with marginal/ submerged plants and abundant invertebrates. The pond maintained by FOTEB.
SI₅ (Shade)	1.0	The pond was shaded on its northern bank by alder trees and dense vegetation (approx. 50%).
SI₆ (Fowl)	1.0	The pond is unlikely to suffer from impact from waterfowl due to its small size and there was no evidence during the survey.
SI₇ (Fish)	1.0	No evidence of fish in the pond.
SI₈ (Ponds)	0.4	OS mapping reveals at least 3 ponds within 1km of the pond but these were discounted due to major barriers i.e. roads and railway lines. The pond itself forms part of the paleo channel and the surrounding residential gardens might include ponds not mapped by OS.
SI₉ (Terrestrial habitat)	0.67	South of the pond lies amenity grassland lacking structure; however, the banks of the paleo channel offer marginal vegetation and scrub which connects to larger areas of woodland on site.
SI₁₀ (Macrophytes)	0.5	The southern side of the pond had marginal and submerged vegetation (approx. 20 %).
HSI score & pond suitability	0.65	Average suitability

APPENDIX 4 – GREAT CRESTED NEWT eDNA TECHNICAL REPORT



Folio No: E4696
Report No: 1
Order No: 51583
Client: JOHN WENMAN ECOLOGY
Contact: Conor Watson
Contact Details: conor@wenman-ecology.co.uk
Date: 07/05/2019

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS

Date sample received at Laboratory: 25/04/2019
Date Reported: 07/05/2019
Matters Affecting Results: None

RESULTS

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
0526	5158 Emm Brook, Woose Hill	SU79824 69269	Pass	Pass	Pass	Negative	0

SUMMARY

When Great Crested Newts (GCN); *Triturus cristatus* inhabit a pond, they deposit traces of their DNA in the water as evidence of their presence. By sampling the water, we can analyse these small environmental DNA (eDNA) traces to confirm GCN habitation, or establish GCN absence.

The water samples detailed below were submitted for eDNA analysis to the protocol stated in DEFRA WC1067 (Latest Amendments). Details on the sample submission form were used as the unique sample identity.

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