Green Planning Studio on behalf of Patrick Casey

Land at Mays Lane, Barnet

Great Crested Newt eDNA Report

2487173 – Arkley Barnet HSI and eDNA Report - Rev01

June 2024

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Date	Rev00 issued 03 June 2024 (Rev01 updated and issued 20 June 2024)	20 June 2024

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Client:	**Green Planning Studio Ltd on behalf of Patrick Casey**	**Survey Date:**	**02 May 2024**
Site Location:	**Mays Lane, Barnet, EN5 2AH** **W3W ///ideas.settle.appear**	**Surveyors:**	**Bethany Turner** **Lance Rudge**

Background Information

This report presents the findings of great crested newt (*Triturus cristatus* GCN) habitat suitability index (HSI) and environmental DNA (eDNA) surveys undertaken by RSK Biocensus on behalf of Green Planning Studio Ltd and their client, Patrick Casey. The proposed development includes material change of use for stationing caravans for residential use with hardstanding and dayrooms ancillary to that use.

A preliminary ecological appraisal (PEA) was conducted by Arbtech on November 2023 which identified seven waterbodies within 500m, including one adjacent to the site, that is connected to the site by suitable terrestrial habitats for GCN (Arbtech, 2023). Considering the proposed development would result in potential loss of 0.09ha of habitat within 100m of a pond, there was a risk that the proposed development would result in the disturbance of GCN and their foraging or sheltering habitats.

A planning application (23/3816/FUL) was refused by Barnet London Borough Council due to the absence of environmental DNA (eDNA) testing to confirm the presence or absence of GCN in the ponds.

The site and locations of the seven ponds (referred to as P1 to P7) are shown in *Figure 1*.

Methods

The field survey was conducted on 02 May 2024 by Bethany Turner and Lance Rudge of RSK Biocensus. Bethany is experienced with GCN surveys and holds a Natural England Class 1 (CL08) licence (2022-10732-CL08-GCN).

Ponds were assessed using standard Habitat Suitability Index (HSI) methodology (ARG UK, 2010) which uses ten suitability indices to determine the likely presence of GCN in a waterbody (where accessible). Each factor was scored according to set criteria on a scale from 0.01 to 1, and used to calculate a single HSI score. This was be used to assign each pond a suitability category ranging from 'Poor' to 'Excellent'. It is important to note that HSI is an evaluation of habitat suitability and does not show presence or absence of GCN or any other species.

Twenty (20) water samples were collected from each pond to confirm the presence or absence of GCN genetic material (or DNA). This is shed by newts through skin secretions, excrement, etc. and can be detected in waterbodies used by them as environmental DNA (eDNA). Water samples were collected according to strict protocols approved by Natural England and described in Biggs et al. (2014). The samples were sent to RSK ADAS e-DNA Services for laboratory analysis where they were analysed for traces of GCN DNA.

Limitations

Written access and survey permission was not provided for P2 and P4 due to the landowners' objections to the planning appeal (see *Appendix A*). No HSI or eDNA surveys were carried out at these ponds.

It should be noted that ecology changes over time. Therefore, in line with CIEEM guidance, the ecological survey data presented in this report are considered valid for at least two years, after which it may be necessary for further field surveys to be undertaken (CIEEM, 2019). It should also be noted that for the purposes of protected species licencing, Natural England usually require data from most recent survey season.

Results

A summary of the results is shown in the table below. Full details of the HSI and eDNA results are provided in *Appendix B* and *Appendix C* respectively. Photos are provided in *Appendix D*.

Pond number	Description	HSI score	Suitability	eDNA result
P1	*c.*251-300 m^2 pond located on border of the site to the east (Photo 1 and 2). No aquatic vegetation. Grassy base and dries annually.	0.38	Poor	Positive
P2	No access or survey permission (see *Appendix A)*	-	unknown	-
P3	*c.*<50 m^2 pond located to the south of the site (Photo 3)	0.61	Average	Negative
P4	No access or survey permission (see *Appendix A*)	-	unknown	-
P5	*c.*<50m^2 pond located west of the site (Photo 4). Appears to be fed by stream but not flowing.	0.56	Below average	Negative
P6	*c.*<50 m^2 pond located west of the site (Photo 5). Pond likely dries annually. No aquatic vegetation in or around pond.	0.47	Poor	Positive
P7	A fairly fast flowing stream. May have previously been a pond. Looks like it may be occasionally wet 1 out of 10 years. The waterbody was unsuitable as it is fast flowing, so samples were not collected.	-	unsuitable	-
P7.1	*c.*<50 m^2 pond located north of the site (Photo 6). Currently connected into stream by inlet (P7). Cross contamination of sample possible as eDNA could be washed in via the inlet.	0.50	Below average	Negative

Conclusions and recommendations

Areas of horse grazed grassland will be cleared as part of the proposed development. This is sub-optimal habitat for GCN because it is short and horse-grazed so there is little cover for newts. However, if newts are in the area then they will cross these areas and may use them on occasion. The hedgerows and scattered scrub are suitable habitat for sheltering newts and they are likely to be found in these areas. According to the HSI assessment, P1 had 'Poor' suitability (HSI score 0.38) for GCN, owing to the lack of aquatic vegetation, grassy base, and because it is likely to dry annually during summer. Despite this, the eDNA result for this pond was positive (see *Appendix C*) showing that GCN are using the pond.

Some areas of grassland will be cleared within 100m of P1, and these are likely to be used by newts as they cross from terrestrial to aquatic habitat. The hedgerows and scrub habitat at the edges of the grassland are likely used for foraging and sheltering by GCN. Any GCN habitat is legally protected and so any clearance of vegetation could cause an offence under current legislation (e.g. killing, injuring, disturbance or habitat destruction) if carried out without mitigation and under a licence.

P6 is *c.*280m from the site and the eDNA result was positive for GCN despite the HSI assessment of 'Poor' suitability for GCN. The pond is ecologically well-connected to the site by woodland and lines of trees, all of which are suitable for newts. It is possible that breeding GCN from P6 would disperse into terrestrial habitat on the site as newts are known to travel up to 500 m from their breeding ponds.

The results of eDNA surveys at P3, P5, and P7.1 were all GCN negative. Although access was not made for P2 and P4, it is reasonable to assume that GCN are likely to be present in the wider area. A review of Ordnance Survey (OS) maps indicate that there are no significant barriers to newt movement (i.e. large roads, built-up areas, fast-flowing streams) between the site and ponds within 500m.

As GCN are present in P1 and P6, any work to terrestrial habitat on the site will require a licence from Natural England, and mitigation measures to be put in place. There are currently two licensing routes as follows:

European Protected Species Mitigation Licence (EPSML) **-** The licence application would need to be submitted to Natural England informed by further surveys to estimate GCN population size within P1, in line with methods specified within the *Great Crested Newt Conservation Handbook* (Langton *et al.,* 2001). This would consist of six survey visits using methods such as egg search, netting, bottle trapping, and/or torching, to be carried out between mid-March to mid-June. Mitigation and avoidance measures are likely to include clearing vegetation in a way that avoids harming newts, enhancing remaining areas of habitat, and possibly fencing and trapping any newts to remove them to safety.

District Level Licensing (DLL) – A DLL can be applied for even in the absence of any survey data, though negative survey results can reduce the cost. DLL is a strategic mitigation licence for GCN, that allows developers to make a financial contribution to the DLL which then enables them carry out actions to GCN habitat that would otherwise be illegal. Contribution towards the scheme sees more off-site habitat suitable for GCN created than is lost to development. Mitigation measures are largely delivered off-site and so the requirement for on-site measures is reduced.

References

Arbtech (2023). Preliminary Ecological Appraisal: Land North West of Mays Lane, Arkley, Barnet, London, EN5 2AH.

ARG UK (2010). Great crested newt habitat suitability index. ARG UK Advice Note 5. Amphibian and Reptile Groups of the United Kingdom. Accessed online at https://www.arguk.org/info-advice/advice-notes/9-great-crested-newt-habitat-suitability-index-arg-advice-note-5/file.

Biggs J., Ewald N., Valentini A., Gaboriaud C., Griffiths R.A., Foster J., Wilkinson J., Arnett A., Williams P. & Dunn F. (2014). Analytical and methodological development for improved surveillance of the Great Crested Newt. Defra Project WC1067. Freshwater Habitats Trust: Oxford.

Chartered Institute of Ecology and Environmental Management (2019). Advice Note on the Lifespan of Ecological Reports & Surveys. CIEEM, Winchester, Hampshire.

Chartered Institute of Ecology and Environmental management (2020), Access to Land. Professional Guidance Series PGS4. (CIEEM, Winchester, Hampshire.

Langton, T., Beckett, C. & Foster, J. (2001) Great Crested Newt Conservation Handbook. Froglife, Mansion House, Halesworth, Suffolk.

522700 522800 522900 523000 523100 523200 523300 523400 523500

195500 195400 195300 195200 195100 195000 194900

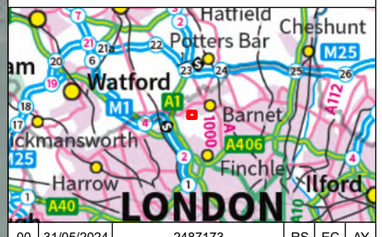
7.1 7 6 1 5 2 3 4

May's Lane Nupton Drive May's Lane May's Lane Doltis Brook

Legend:

Site boundary

Pond



Rev	Date	Project Code	Drn	Chk	App
00	31/05/2024	2487173	RS	EC	AY

GCN Survey Arkley Barnet

RSK biocensus EXPERTS IN ECOLOGY

TITLE: Figure 1:

Site Location Plan and Pond Locations

0 30 60 90

Metres

SCALE: 1:2,500 @ A3

N W E S

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Document Path: C:\Users\ebekah.smyth\OneDrive - RSK Group\08 GIS - 2487173 - GCN Survey Arkley Barnet\02 - APRX\2487173 - GCN Survey Arkley Barnet - Figure 1 - Site location plan and ponds.aprx

Appendix A – Recorded attempts to gain access

Date	Pond numbers	Client's attempts for access
End of April	3, 5, 6, and 7	Land is public access. Council consent given over phone verbally at the end of April to client and health and safety considerations discussed. Details of conversation not recorded.
19 June	3, 5, 6, and 7	Retrospective permission for ponds on London Borough of Barnet owned land was granted for GCN surveys by Harriet Duffield, Biodiversity and Conservation Officer at London Borough of Barnet (email dated 19 June 2024). Permission given for survey, sampling and publishing results.
01 May	2	Verbal request with neighbour to access pond on land. Access denied. Reason given that the land owner did not agree with the planning appeal and did not want to support the endeavour in any way.
03 May	2	Verbal request with neighbour again to access pond on land. Land owner denied access again stating that they do not agree with the application community and do not want to support the appeal process.
01 May	4	Verbal request with neighbour to access pond on the land. The land owner refused access. Reason being that they did not wish to assist with the appeal process as they are against it.
03 May	4	Same as above

Appendix B – Habitat Suitability Index table

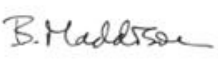
HSI criteria	Scores for each pond				
	P1	P3	P5	P6	P7.1
SI_1 – Location	1	1	1	1	1
SI_2 – Pond area (m^2)	0.45	0.05	0.05	0.05	0.05
SI_3 – Permanence	0.1	0.5	1	0.1	0.5
SI_4 – Water quality	0.01	1	0.33	0.33	0.33
SI_5 – Shade	1	0.5	0.8	0.8	0.4
SI_6 – Waterfowl	0.67	1	1	0.67	0.67
SI_7 – Fish	1	1	0.67	1	0.67
SI_8 – Pond count	1	1	1	1	1
SI_9 – Terrestrial habitat	0.67	1	1	1	1
SI_{10} - Macrophytes	0.3	0.6	0.35	0.55	0.65
HSI score	**0.38**	**0.61**	**0.56**	**0.47**	**0.50**

Appendix C – eDNA analysis results

P1

Sample ID: ADAS-4110	Condition on Receipt: Low Sediment	Volume: Passed
Client Identifier: 71 2487123	Description: pond water samples in preservative	
Date of Receipt: 08/05/2024	Material Tested: eDNA from pond water samples	

Determinant	Result	Method	Date of Analysis
Inhibition Control†	2 of 2	Real Time PCR	17/05/2024
Degradation Control§	Within Limits	Real Time PCR	17/05/2024
Great Crested Newt*	1 of 12 (GCN positive)	Real Time PCR	17/05/2024
Negative PCR Control (Nuclease Free Water)	0 of 4	Real Time PCR	As above for GCN
Positive PCR Control (GCN DNA 10^{-4} ng/µL)#	4 of 4	Real Time PCR	As above for GCN

Report Prepared by:	Dr Helen Rees	Report Issued by:	Dr Ben Maddison
Signed:		Signed:	
Position:	Director: Biotechnology	Position:	MD: Biotechnology
Date of preparation:	20/05/2024	Date of issue:	20/05/2024

P3

Sample ID: ADAS-4111	Condition on Receipt: Low Sediment	Volume: Passed
Client Identifier: 3, 2487123	Description: pond water samples in preservative	
Date of Receipt: 08/05/2024	Material Tested: eDNA from pond water samples	

Determinant	Result	Method	Date of Analysis
Inhibition Control†	2 of 2	Real Time PCR	20/05/2024
Degradation Control§	Within Limits	Real Time PCR	20/05/2024
Great Crested Newt*	0 of 12 (GCN negative)	Real Time PCR	20/05/2024
Negative PCR Control (Nuclease Free Water)	0 of 4	Real Time PCR	As above for GCN
Positive PCR Control (GCN DNA 10^{-4} ng/µL)#	4 of 4	Real Time PCR	As above for GCN

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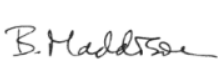
Signed:		Signed:	
Position:	Director: Biotechnology	Position:	MD: Biotechnology
Date of preparation:	20/05/2024	Date of issue:	20/05/2024

P5

Sample ID: ADAS-4124	Condition on Receipt: Low Sediment	Volume: Passed
Client Identifier: 5, 2487123	Description: pond water samples in preservative	
Date of Receipt: 08/05/2024	Material Tested: eDNA from pond water samples	

Determinant	Result	Method	Date of Analysis
Inhibition Control†	2 of 2	Real Time PCR	20/05/2024
Degradation Control§	Within Limits	Real Time PCR	20/05/2024
Great Crested Newt*	0 of 12 (GCN negative)	Real Time PCR	20/05/2024
Negative PCR Control (Nuclease Free Water)	0 of 4	Real Time PCR	As above for GCN
Positive PCR Control (GCN DNA 10^{-4} ng/µL)#	4 of 4	Real Time PCR	As above for GCN
Report Prepared by:	Dr Helen Rees	Report Issued by:	Dr Ben Maddison
Signed:		Signed:	
Position:	Director: Biotechnology	Position:	MD: Biotechnology
Date of preparation:	20/05/2024	Date of issue:	20/05/2024

P6

Sample ID: ADAS-4115	Condition on Receipt: Low Sediment	Volume: Passed
Client Identifier: 6, 2487123	Description: pond water samples in preservative	
Date of Receipt: 08/05/2024	Material Tested: eDNA from pond water samples	

Determinant	Result	Method	Date of Analysis
Inhibition Control†	2 of 2	Real Time PCR	20/05/2024
Degradation Control§	Within Limits	Real Time PCR	20/05/2024
Great Crested Newt*	1 of 12 (GCN positive)	Real Time PCR	20/05/2024
Negative PCR Control (Nuclease Free Water)	0 of 4	Real Time PCR	As above for GCN
Positive PCR Control (GCN DNA 10^{-4} ng/µL)#	4 of 4	Real Time PCR	As above for GCN
Report Prepared by:	Dr Helen Rees	Report Issued by:	Dr Ben Maddison
Signed:		Signed:	
Position:	Director: Biotechnology	Position:	MD: Biotechnology
Date of preparation:	20/05/2024	Date of issue:	20/05/2024

P7.1

Sample ID: ADAS-4107	Condition on Receipt: Low Sediment	Volume: Passed
Client Identifier: 7, 2487123	Description: pond water samples in preservative	
Date of Receipt: 08/05/2024	Material Tested: eDNA from pond water samples	

Determinant	Result	Method	Date of Analysis
Inhibition Control†	2 of 2	Real Time PCR	20/05/2024
Degradation Control§	Within Limits	Real Time PCR	20/05/2024
Great Crested Newt*	0 of 12 (GCN negative)	Real Time PCR	20/05/2024
Negative PCR Control (Nuclease Free Water)	0 of 4	Real Time PCR	As above for GCN
Positive PCR Control (GCN DNA 10^{-4} ng/µL)#	4 of 4	Real Time PCR	As above for GCN
Report Prepared by:	Dr Helen Rees	Report Issued by:	Dr Ben Maddison
Signed:		Signed:	
Position:	Director: Biotechnology	Position:	MD: Biotechnology
Date of preparation:	20/05/2024	Date of issue:	20/05/2024

Appendix D – Pond photos

Photo 1. Pond 1 located adjacent to the site

Photo 2. Pond 1 located adjacent to the site

Photo 3. Pond 3 located south of the site

Photo 4. Pond 5 located west of the site

Photo 5. Pond 6 located west of the site

Photo 6. Pond 7.1 located north of the site