



Cambourne to Cambridge Better Public Transport:

Great Crested Newt eDNA Survey

2019 UPDATE

FINAL REPORT

For:

Greater Cambridge Partnership

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To achieve the study objectives stated in this report, we were required to base our conclusions on the best information available during the period of the investigation and within the limits prescribed by our client in the agreement.

No investigative method can completely eliminate the possibility of obtaining partially imprecise or incomplete information. Thus, we cannot guarantee that the investigations completely defined the degree or extent of e.g. species abundances or habitat management efficacy described in the report.

This report is only valid for external use in its final issued version.

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0 NON- EXECUTIVE SUMMARY

- 0.1 On behalf of Greater Cambridge Partnership, Cambridge Ecology Ltd was commissioned to carry out water sampling and eDNA analysis of waterbodies on land associated with the Cambourne to Cambridge Better Public Transport Scheme between Grange Road, Cambridge and the western entrance to Bourn Airfield.
- 0.2 In June 2019 Cambridge Ecology Ltd successfully completed eDNA water sampling of the eleven waterbodies, five other waterbodies were dry at the time of sampling and a further three were inaccessible.
- 0.3 It was considered that the eDNA water sampling and analysis provided a valid indication of the potential presence of Great Crested Newt. Five other waterbodies were found to be dry and three waterbodies were inaccessible (located in private residential and commercial properties).
- 0.4 The eDNA analysis found ten of the 11 waterbodies sampled were negative for Great Crested Newt DNA. Only one waterbody produced a positive result for Great Crested Newt DNA. This was the Broadway Pond (P15) located at the western entrance to Bourn Airfield that had produced a positive result for breeding Great Crested Newt eDNA in 2014/15 (Thomson Ecology 2015).
- 0.5 Based on the findings of this survey it is considered that Great Crested Newt currently cause a potential constraint to the proposed development in the vicinity of the western entrance to Bourn Airfield.
- 0.6 Bearing in mind the proximity of Great Crested Newt to the site and the ability for wildlife to periodically move to new locations, that five waterbodies were dry at the time of sampling and three were inaccessible; it is recommended that to keep this information up to date, to inform the planning application and impact assessment process; further Great Crested Newt eDNA be undertaken periodically (e.g. 12-24 months depending on the project programme); especially if the planning application and/or development proposals were to be delayed.

1 INTRODUCTION

Background to the study

- 1.1 Wildlife such as Great Crested Newt are protected by National and International law. Protected and Biodiversity Action Plan (BAP) species such as native reptiles are also a material consideration for individual planning consents under the National Planning Policy Framework (NPPF), which promotes the enhancement of natural and local environments through planning, and encourages a move towards achieving net gains for biodiversity where possible (DCLG, 2012).
- 1.2 A desk-based literature search and ecological constraints survey carried out in January 2017 found:
- records of Great Crested Newt, showing that this species had been present at seven sites within 2km of the development site during the previous 10 years.
 - The survey area contained waterbodies that could be used by amphibian species (including Great Crested Newt) as potential breeding sites.
- 1.3 In June 2017 and in April, May and June 2018 Cambridge Ecology Ltd successfully completed eDNA water sampling of waterbodies on land (where access was possible) associated with the Cambourne to Cambridge Better Public Transport Scheme. One of the ponds (No 8. Sports Ground 1), sampled in 2017 had produced a positive result for Great Crested Newt eDNA and therefore a traditional set of Great Crested Newt surveys were carried out in 2018 as well as further eDNA analysis (Cambridge Ecology 2017b and 2018a and 2018b). The results of these further surveys were negative for Great Crested Newt.
- 1.4 This latest survey was carried out to record the current status of Great Crested Newt in the waterbodies. It also included an extension to the survey area to cover the potential route of the transport scheme from the eastern entrance of Bourn Airfield, across the northern boundary of the airfield to the western entrance of the airfield at Broadway.
- 1.5 For clarity in this report the development site (or 'site') refers to accessible land associated with the Cambourne to Cambridge Better Public Transport Scheme (see Figure 1.1).

Aim

- 1.6 The aim of this latest survey was to identify the likely presence of Great Crested Newt in the ponds on land associated with the Cambourne to Cambridge Better Public Transport Scheme. Their presence could potentially cause a constraint to the proposed development; and would need to be considered further in relation to maintaining compliance with wildlife legislation and planning policy.

- 1.7 The results of the eDNA sampling would then identify which ponds required specific Great Crested Newt surveys.
- 1.8 The data would be used as the basis to:
- update the eDNA sampling results from 2017 and 2018.
 - identify the need to carry out traditional Great Crested Newt surveys
 - enable any possible future development to address and maintain any existing populations of Great Crested Newt, through the identification and implementation of suitable and appropriate mitigation and compensation measures.
 - determine the likely need for a European Protected Species Development Licence.
 - enable any possible future development to incorporate potential opportunities to enhance the ecological value of the site.

Survey Area

- 1.9 The site was located between Grange Road, Cambridge at the eastern end and the western entrance to Bourn Airfield off the Broadway, at the western end (Figure 1.1). To the north the site was bordered by the A428 dual carriageway and to the south mainly by arable land. The site also included potential travel hub sites; adjacent to Scotland Farm and near the water tower adjacent to Madingley Mulch. The total area within the red-line boundary of the development site covers an area of approximately 380 hectares (ha).
- 1.10 The survey area comprised the red line boundary of the Cambourne to Cambridge Better Public Transport Scheme; plus, where possible, a buffer zone up to 250m beyond the red line boundary.
- 1.11 This survey area was chosen because the scheme would be confined to an area within the red line boundary, therefore already providing a buffer zone around the potential route. It was also recognised that the scheme was not a major road and therefore the effects on biodiversity would not be comparable to a road scheme as traffic flows, noise, light and visual disturbance and habitat loss would likely be less therefore less detrimental to biodiversity.
- 1.12 The survey excluded areas where access was not possible and/or areas beyond significant features such as major roads (e.g. A428, A1303), commercial, academic and residential developments. These features were considered to likely present barriers to movement by wildlife and beyond which the proposed scheme would be unlikely to exert an adverse effect on biodiversity. These features were already likely to influence the movement and behaviour of wildlife and beyond which the scheme would be unlikely to exert an adverse effect. Where access was possible to ponds north of the A1303 to the west of the M11 junction, we have sampled these i.e. the pond in Madingley Wood SSSI and the two balancing ponds near Hardwick. However, on the north of the A1303 to the east side of the M11 where the

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road is much wider with multiple lanes and obstacles, the A1303 is considered a barrier and we have not sampled ponds on the north side of the A1303.

1.13 Within the survey area:

- the dominant habitat was arable land,
- other habitats included amenity and improved grassland, tall ruderal, dense and scattered scrub, ephemeral/short perennial,
- habitats of conservation value included, semi-improved grassland, broad-leaved lowland deciduous woodland (including plantation woodland), traditional orchards, hedgerows, wet and dry ditches other waterbodies (such as ponds and a lake) and Bin Brook.

Relevant Legislation and Policy

1.14 Relevant legislation and policies relating to the remit of this survey are listed below and outlined in more detail in the proceeding tables, divided into protected habitats and species.

- The Conservation (Natural Habitats & Conservation.) (Amendments) Regulations 2017;
- Natural Environment and Rural Communities (NERC) Act 2006 (as amended);
- The Wildlife and Countryside Act 1981 (as amended);
- National Planning Policy Framework 2012 (as amended);
- Government Circular (ODPM 06/2005) Biodiversity and Geological Conservation - Statutory Obligations & Their Impact Within the Planning System.
- The UK and Cambridgeshire Biodiversity Action Plan.

2 METHODS

Water Sampling and eDNA Analysis 2019

- 2.1 eDNA sampling kits were obtained from ADAS Ltd to enable water samples to be collected from the pond water. The water samples could then be analysed to determine the presence of Great Crested Newt DNA.
- 2.2 The methods used for water sample collection and eDNA analysis were those described by Biggs et. al. 2014.
- 2.3 Figure 2.1 shows the indicative location of nineteen waterbodies. Table 2.1 provides details of the waterbodies and photographs illustrate the characteristics of the waterbodies.
- 2.4 The water samples were collected by Darren Frost (Licence reference: **2015-16850-CLS-CLS**) and Philip Ames (Hons) MCIEEM (Licence reference: **2018-34074-CLS-CLS**).
- 2.5 Samples were collected on the 4th and 7th June. The samples were refrigerated then sent by courier to ADAS for eDNA analysis. The results were returned on the 27th June.

Table 2.1: Details of the ponds under investigation for the presence of Great Crested Newt eDNA in 2019

Pond Number	Pond location	Pond Name	Grid Reference	Comments
1	St Neots Rd	Highfields	TL 36134 59769	Waterfowl present
2	St Neots Rd	Hardwick	TL 37105 59763	Waterfowl present
3	Coton Village	Coton	TL 41686 58695	Dry
4	Dept of Materials and Metallurgy	Dept of Materials and Metallurgy	TL 42484 58828	Waterfowl present
5	West Cafe	West Cafe	TL 42878 58755	Fish
6	Institute of Manufacturing	Institute of Manufacturing	TL 42694 58783	Waterfowl present
7	Cavendish Laboratory	Cavendish Laboratory	TL 43131 58740	Waterfowl present
8	Sports Ground	Sports Ground 1	TL 43209 58670	Very overgrown
9	Sports Ground	Sports Ground 2	TL 43355 58656	Fish
10	Clare College	Clare College 1	TL 43600 58334	Dry
11	Clare College	Clare College 2	TL 43437 58303	Dry
12	A1303 adjacent to Accident and Repair Centre East	Accident and Repair Centre Pond East	TL 37228 59624	Started to dry out and only a ditch remained
13	A1303 adjacent to Accident and Repair Centre West	Accident and Repair Centre Pond West	TL 37170 59634	Started to dry out and only a ditch remained
14	Madingley Wood SSSI	Madingley Wood SSSI	TL 40197 59577	Dry only mud remained

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Pond Number	Pond location	Pond Name	Grid Reference	Comments
15	Western Entrance to Bourn Airfield	Broadway Pond	TL 33534 59440	Identified as a GCN breeding pond by Thomson ecology in 2014/15
16	North west of Highfield Road Roundabout	Highfield Road Roundabout Pond	TL 35413 59742	Dry only mud remained
17	In residential area off access track between St Neots Road and Highfield Road	St Neots Road Access Track Pond	TL 35861 59573	No Access
18	In residential area off access track between St Neots Road and Highfield Road	Highfield Farm Pond	TL 35763 59359	No Access
19	On commercial land at the eastern side of Bourn Airfield	Wellington Way Pond	TL 34770 59484	No Access

Limitations and Assumptions

- 2.6 The survey provided a representative indication of the potential for the ponds identified within the survey area site to support Great Crested Newt. The survey was considered to have been carried out methodically and all accessible ponds containing water were sampled thoroughly.
- 2.7 It was recognised that access to commercial and residential areas such as Coton Orchard was not possible. Three waterbodies were identified in commercial and residential areas, that were inaccessible. Therefore, water sampling could not take place and the presence of Great Crested Newt eDNA could not be determined.
- 2.8 Five waterbodies were dry at the time of sampling so samples could not be taken and therefore the status of Great Crested Newt could not be determined.
- 2.9 The results reported in this document represent those identified at the time that the water sampling took place.
- 2.10 Habitat Suitability Index (HSI) assessments were not carried out on any of the ponds, as we took that approach that all accessible ponds that we knew about would be sampled for eDNA, which would be expected to give a more definitive result for each pond compared to HSI. However, it was recognised that should a licence application be needed, then HSI values would be required to inform the licensing process.
- 2.11 It should be noted that the absence of Great Crested Newt eDNA, would not preclude their presence in a pond on a site. There would always be a risk

that Great Crested Newt were undetected, either owing to the scarcity of the species at the site or the ability of Great Crested Newt to move to new sites periodically and therefore move into an area after the survey had been carried out.

3 RESULTS

Great Crested Newt eDNA Analysis

- 3.1 The results of the eDNA analysis of the water samples collected from the waterbodies under investigation showed that ten were negative for Great Crested Newt DNA.
- 3.2 One waterbody the Broadway Pond (P15) gave a positive eDNA result, indicating the presence of Great Crested Newt.
- 3.3 Table 3.1. provides details of the latest and past results of the eDNA of the ponds surveyed.

Table 3.1: Results of eDNA analysis of the ponds under investigation for the presence of Great Crested Newt 2017, 2018 and 2019

Pond Number	Pond location	Pond Name	Grid Reference	eDNA Analysis Result in 2017	eDNA Analysis Result in 2018	eDNA Analysis Result in 2019
1	St Neots Rd	Highfields	TL 36134 59769	Negative	N/A	Negative
2	St Neots Rd	Hardwick	TL 37105 59763	Negative	N/A	Negative
3	Coton Village	Coton	TL 41686 58695	N/A	Negative	N/A
4	Dept of Materials and Metallurgy	Dept of Materials and Metallurgy	TL 42484 58828	Negative	N/A	Negative
5	West Cafe	West Cafe	TL 42878 58755	Negative	N/A	Negative
6	Institute of Manufacturing	Institute of Manufacturing	TL 42694 58783	Negative	N/A	Negative
7	Cavendish Laboratory	Cavendish Laboratory	TL 43131 58740	Negative	N/A	Negative
8	Sports Ground	Sports Ground 1	TL 43209 58670	Positive	Negative	Negative
9	Sports Ground	Sports Ground 2	TL 43355 58656	Negative	N/A	Negative
10	Clare College	Clare College 1	TL 43600 58334	N/A	Negative	N/A
11	Clare College	Clare College 2	TL 43437 58303	N/A	Negative	N/A
12	A1303 adjacent to Accident and Repair Centre	Accident and Repair Centre Pond East	TL 37228 59624	N/A	Negative	Negative
13	A1303 adjacent to Accident and Repair Centre	Accident and Repair Centre Pond West	TL 37170 59634	N/A	Negative	Negative
14	Madingley Wood SSSI	Madingley Wood SSSI	TL 40197 59577	N/A	Negative	N/A
15	Western	Broadway	TL 33534	N/A	N/A	Positive

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Pond Number	Pond location	Pond Name	Grid Reference	eDNA Analysis Result in 2017	eDNA Analysis Result in 2018	eDNA Analysis Result in 2019
	Entrance to Bourn Airfield	Pond	59440			
16	North west of Highfield Road Roundabout	Highfield Road Roundabout Pond	TL 35413 59742	N/A	N/A	Dry
17	In residential area off access track between St Neots Road and Highfield Road	St Neots Road Access Track Pond	TL 35861 59573	No Access	No Access	No Access
18	In residential area off access track between St Neots Road and Highfield Road	Highfield Farm Pond	TL 35763 59359	No Access	No Access	No Access
19	On commercial land at the eastern side of Bourn Airfield	Wellington Way Pond	TL 34770 59484	No Access	No Access	No Access

4 KEY POINTS AND FINDINGS

- 4.1 In June 2019 Cambridge Ecology Ltd successfully completed eDNA water sampling of eleven of the 19 waterbodies/ponds identified. These ponds were located on land associated with the Cambourne to Cambridge Better Public Transport Scheme, between Grange Road, Cambridge and the western entrance to Bourn Airfield, including an extension to the survey area covered in previous surveys in 2017 and 2018.
- 4.2 It was considered that the eDNA water sampling and analysis provided a valid indication of the potential presence of Great Crested Newt in the ponds sampled in 2019.
- 4.3 The eDNA analysis found one of the waterbodies contained Great Crested Newt DNA., indicating the presence of Great Crested Newt. This was the Broadway Pond (P15) located near the western entrance of Bourn Airfield. This was the first survey of this waterbody as part of the Cambourne to Cambridge Better Public Transport Scheme, as it was in the extended survey area and not included in 2017 and 2018. However, this pond had previously been identified as supporting a breeding population of Great Crested Newt in 2015 (Thomson Ecology 2015) as part of surveys associated with development proposals for Bourn Airfield.
- 4.4 The eDNA analysis of the samples from the other ten accessible and water filled waterbodies produced negative results for Great Crested Newt eDNA, indicating the absence of Great Crested Newt.
- 4.5 During the survey five waterbodies did not contain sufficient water to take samples for analysis, this included a previously unidentified waterbody P16. In addition, three new waterbodies (P17, P18 and P19) were identified but were inaccessible as they were located in private residential and commercial areas. Therefore, the presence of Great Crested Newt eDNA in these waterbodies could not be determined.
- 4.6 Based on the findings of this survey it is considered that Great Crested Newt currently cause a potential constraint to the proposed development in the vicinity of the western entrance to Bourn Airfield.
- 4.7 However, bearing in mind the proximity of Great Crested Newt to the site and the ability for wildlife to periodically move to new locations, that five waterbodies were dry at the time of sampling and three were inaccessible; it is recommended that to keep this information up to date, to inform the planning application and impact assessment process; further Great Crested Newt eDNA be undertaken periodically (e.g. 12-24 months); especially if the planning application and/or development proposals were to be delayed.
- 4.8 As part of any development scheme biodiversity is a key consideration, and the opportunity to provide biodiversity enhancement is recognised, therefore, a number of recommendations can be made. These include; pond creation, restoration and management works. To ensure these are carried out they

should become an integral part of the development scheme. They would then be more likely to provide benefit to any local Great Crested Newt populations as well as other amphibians and biodiversity in general.

5 BIBLIOGRAPHY

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6 FIGURES

Figure 1.1: Plan of the survey area (Site Red Line Boundary), plus 250m buffer.

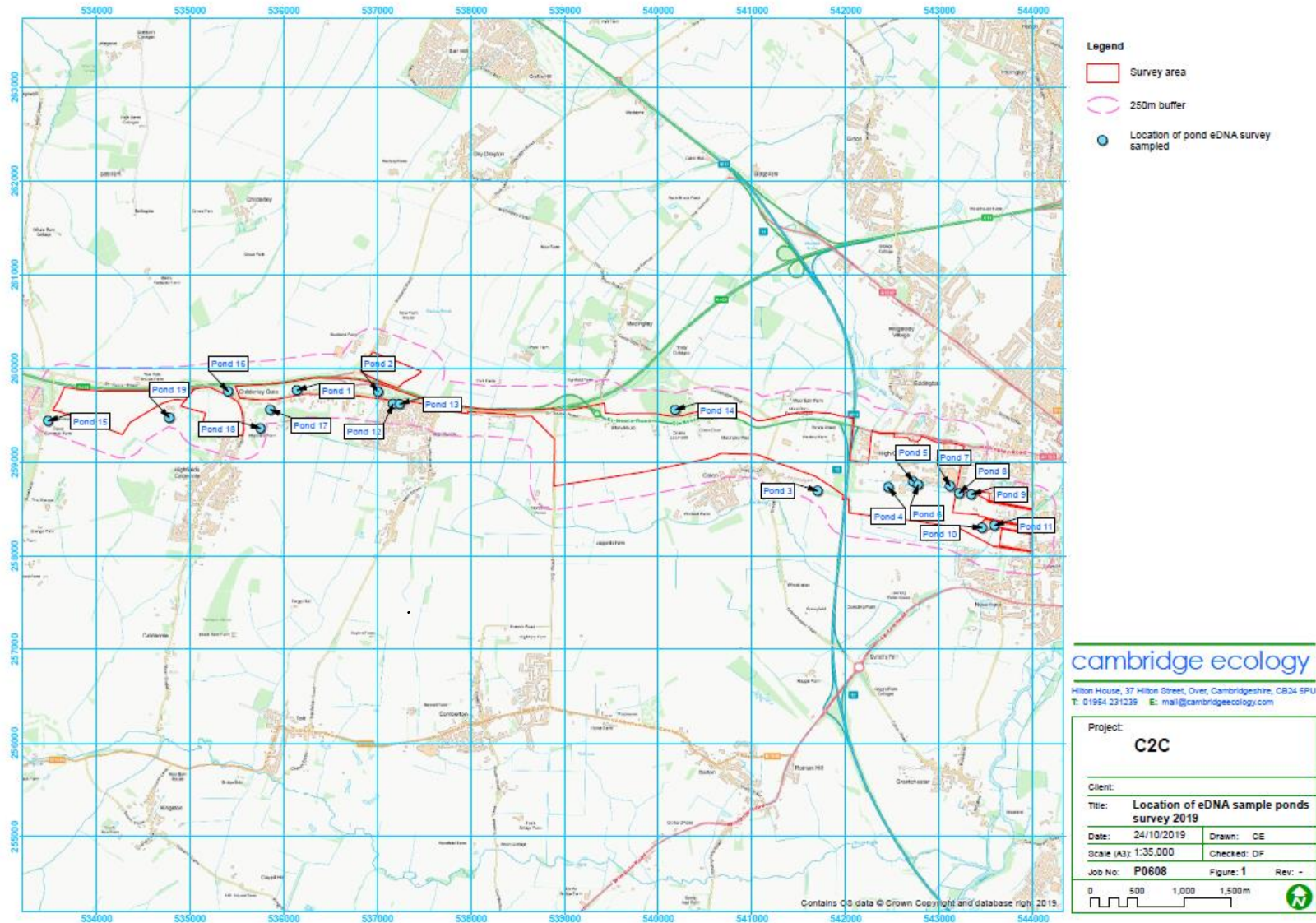


Figure 3.1a: Plan showing the results of the eDNA sampling (sheet 1 of 7)

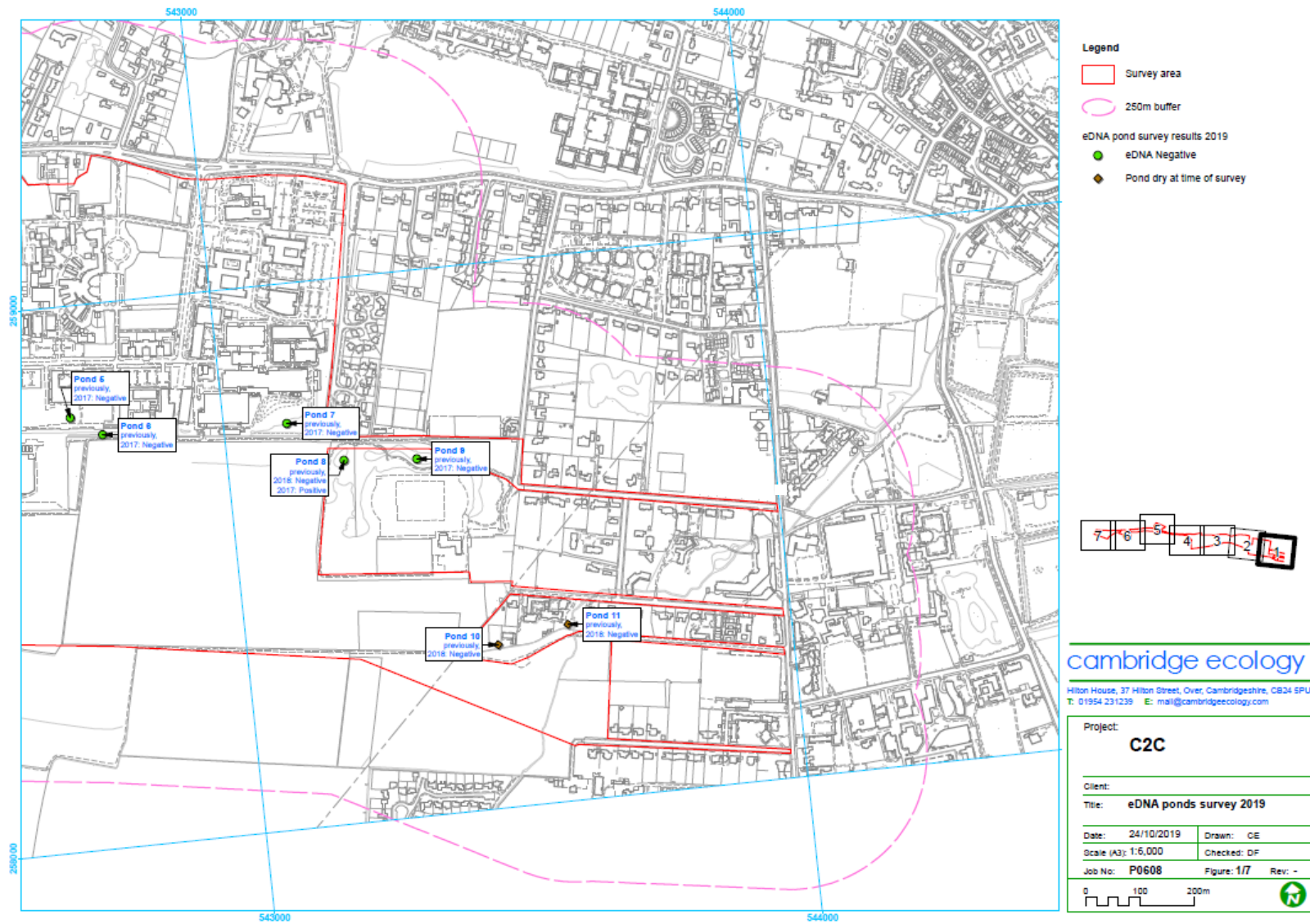


Figure 3.1b: Plan showing the results of the eDNA sampling (sheet 2 of 7)

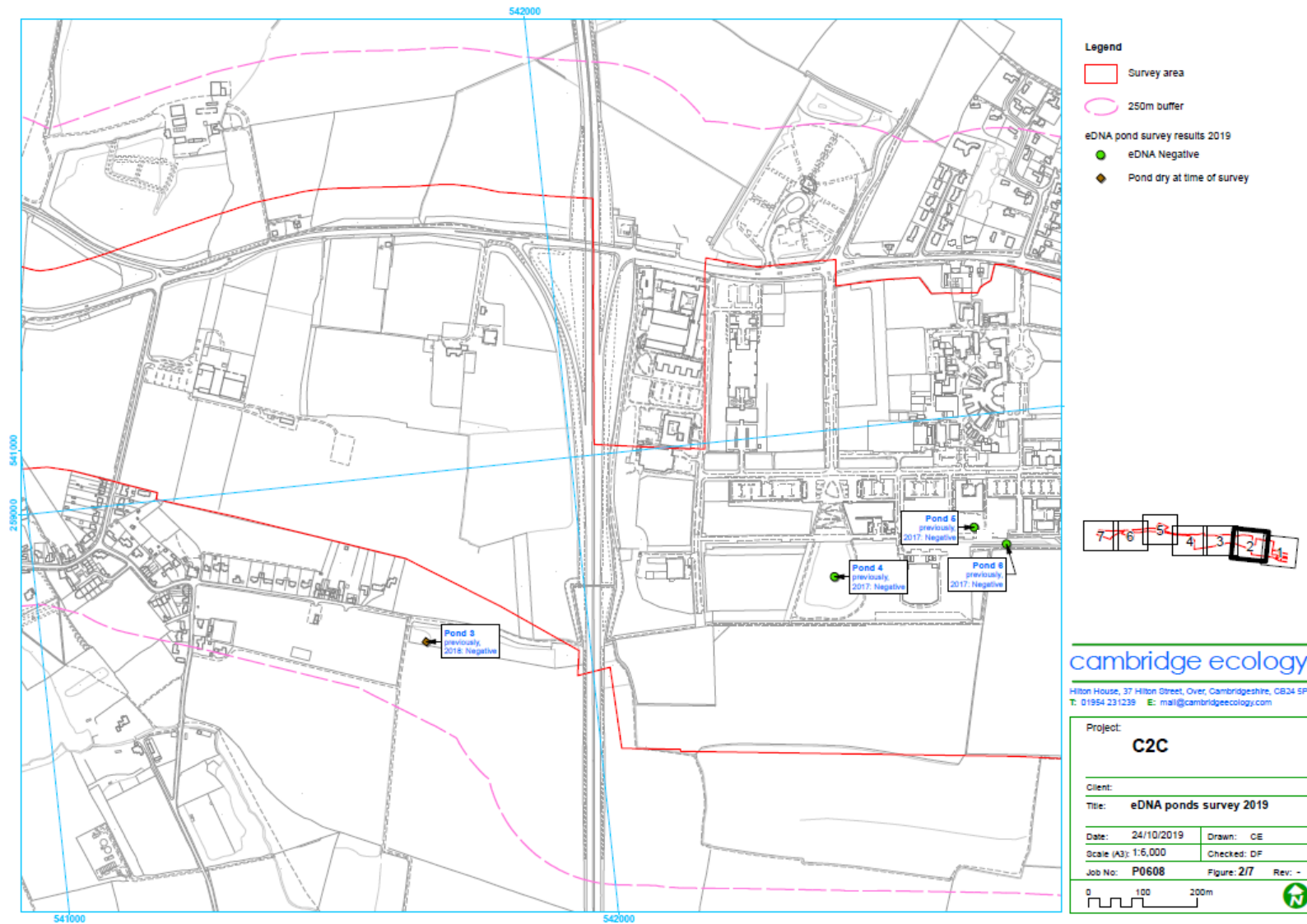


Figure 3.1c: Plan showing the results of the eDNA sampling (sheet 3 of 7)

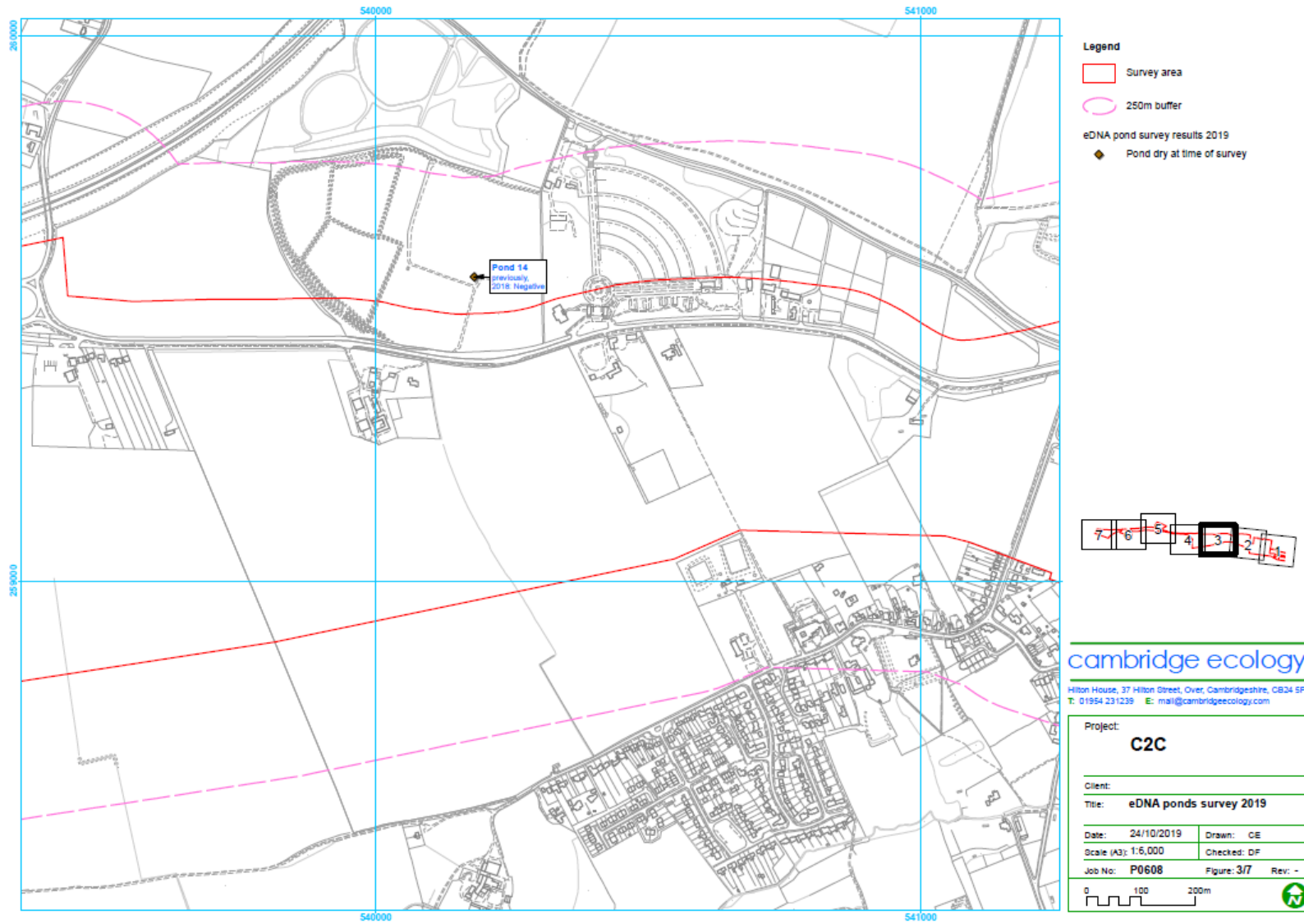


Figure 3.1d: Plan showing the results of the eDNA sampling (sheet 4 of 7)

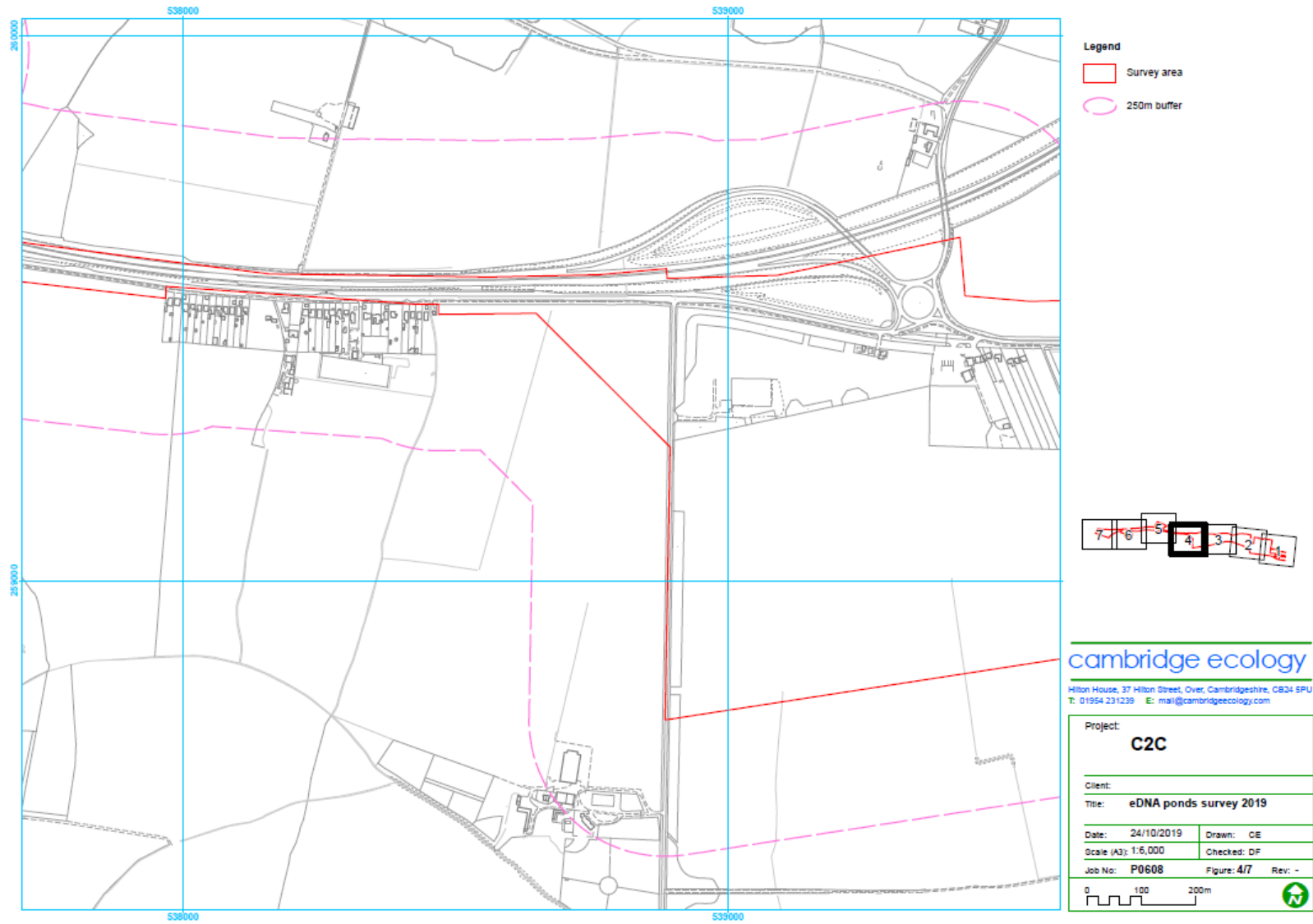


Figure 3.1e: Plan showing the results of the eDNA sampling (sheet 5 of 7)

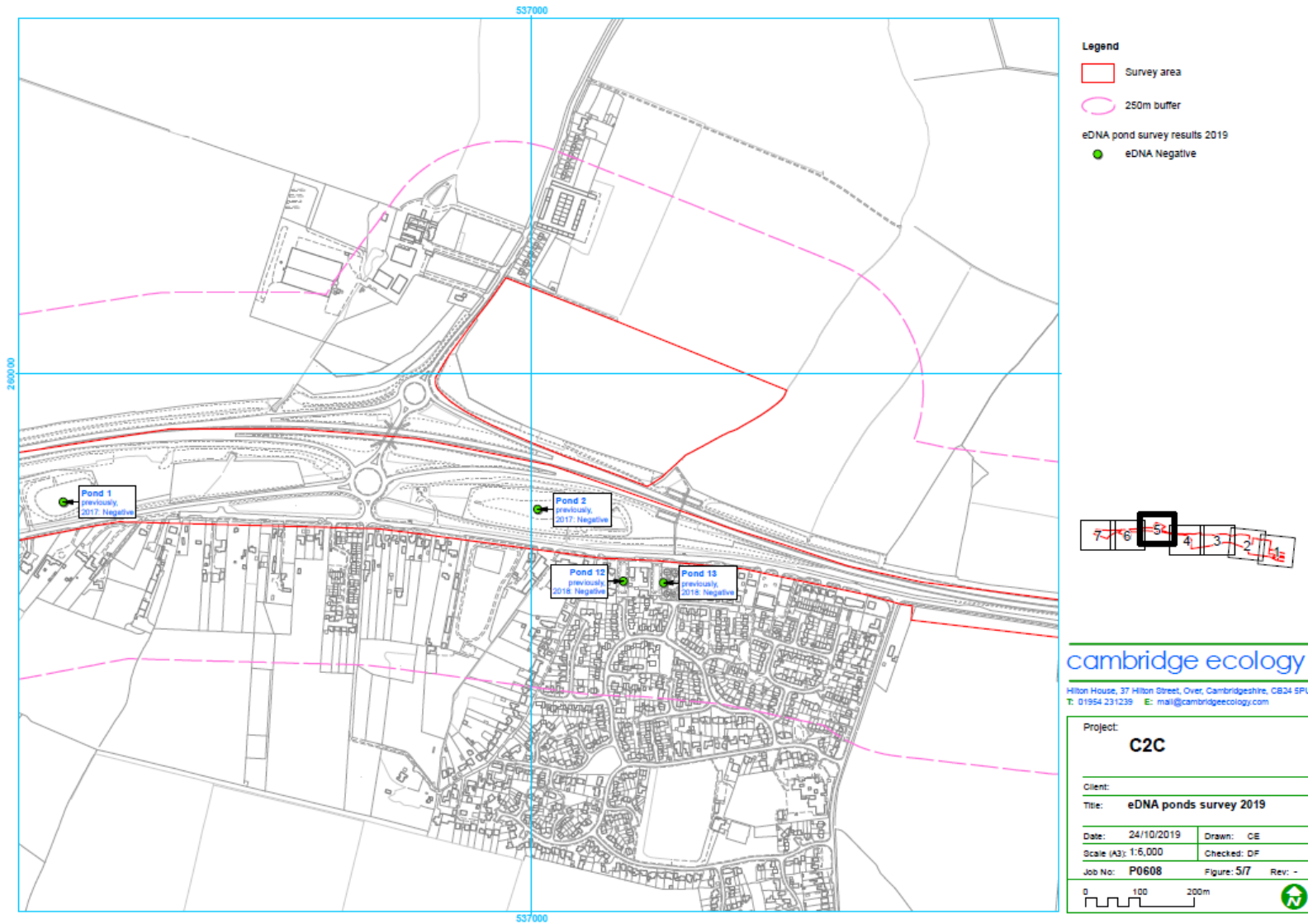


Figure 3.1f: Plan showing the results of the eDNA sampling (sheet 6 of 7)

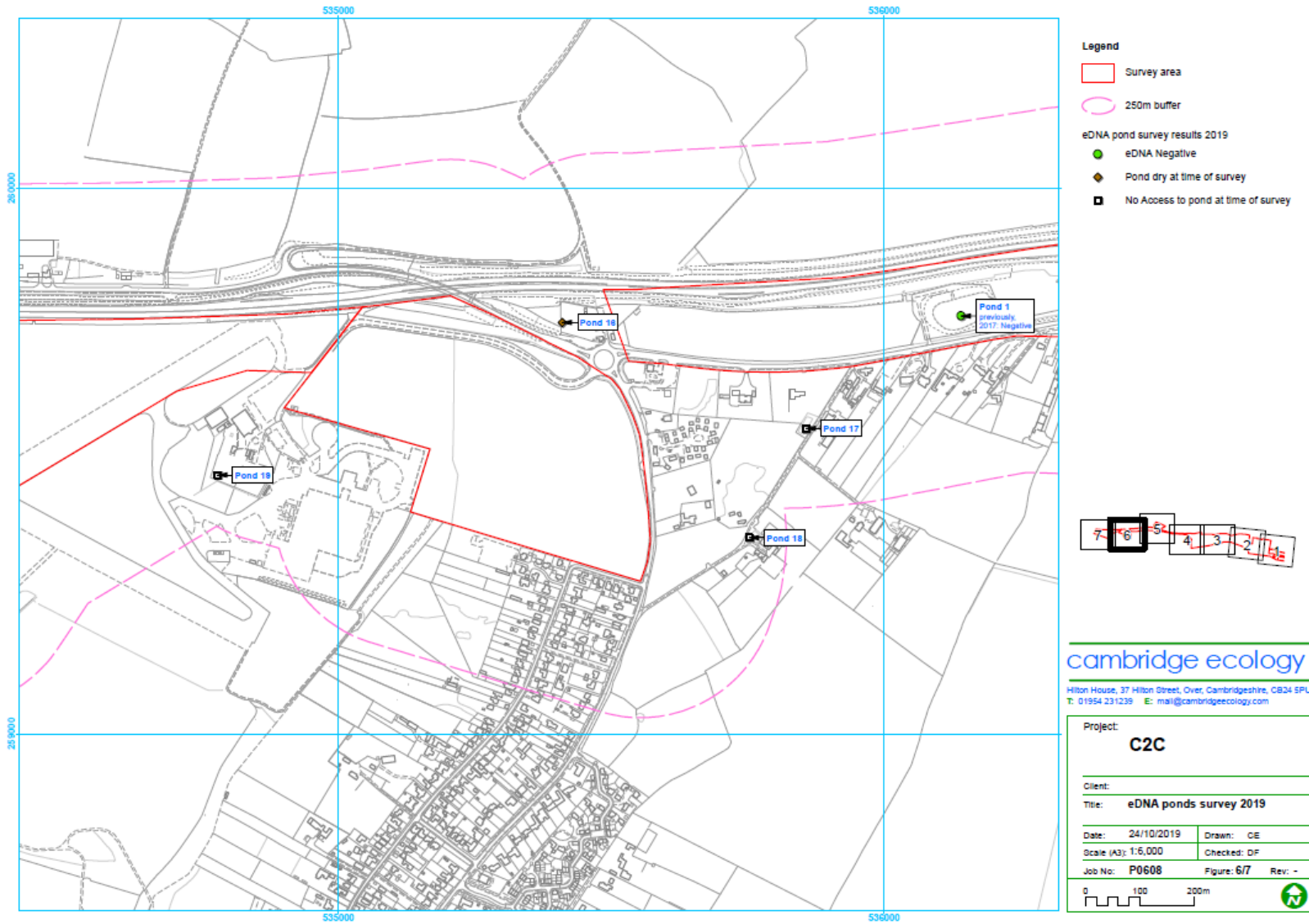
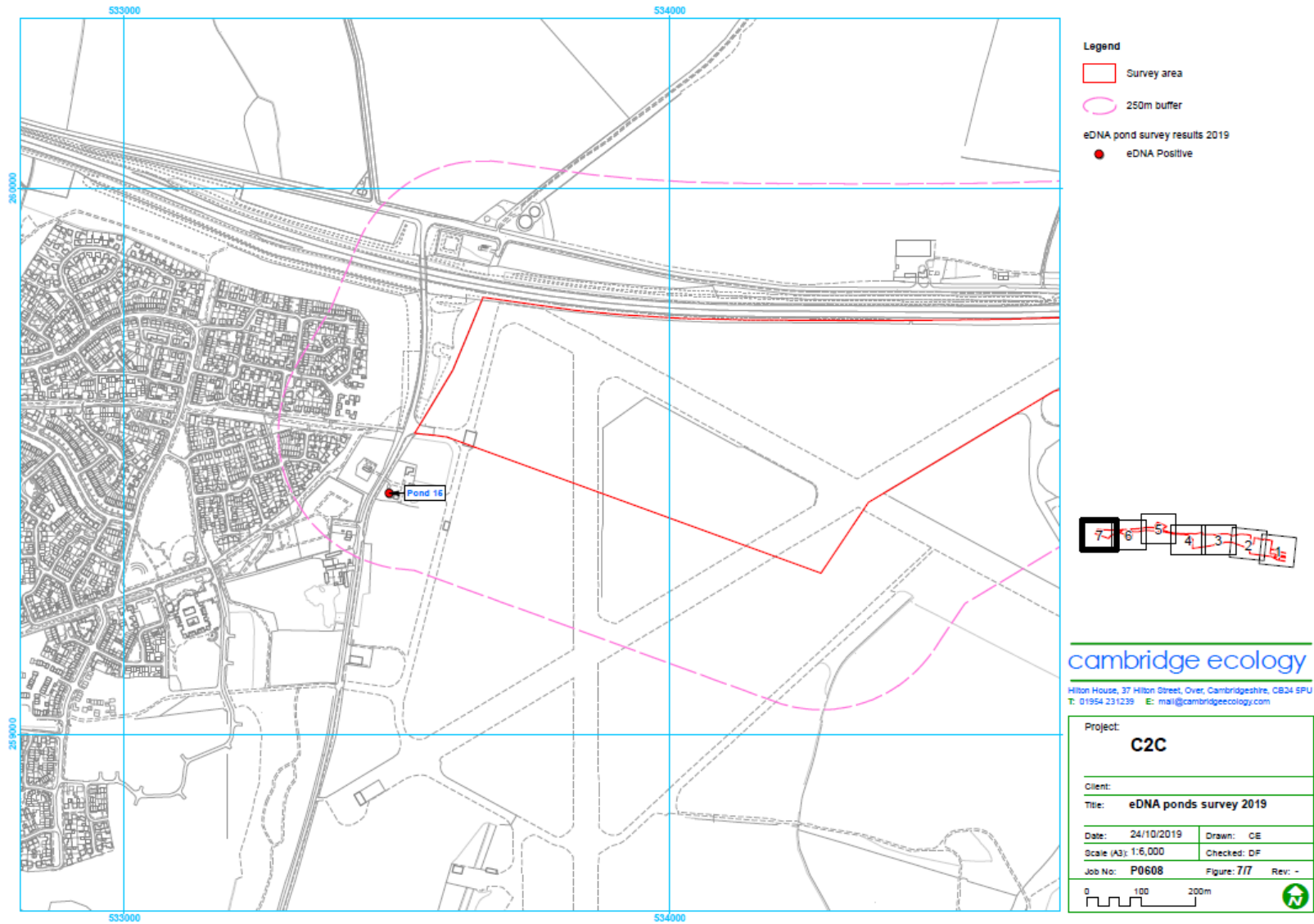


Figure 3.1g: Plan showing the results of the eDNA sampling (sheet 7 of 7)



7 PHOTOGRAPHS




Photo No.	Photograph	Description
1		<p>Pond 1: Highfields</p>
2		<p>Pond 2: Hardwick</p>
3		<p>Pond 3: Coton Dry at time of sampling</p>




Photo No.	Photograph	Description
4		<p>Pond 4: Dept of Materials and Metallurgy</p>
5		<p>Pond 5: West Cafe</p>
6		<p>Pond 6: Institute of Manufacturing</p>




Photo No.	Photograph	Description
7		<p>Pond 7: Cavendish Laboratory</p>
8		<p>Pond 8: Sports Ground 1</p>
9		<p>Pond 9: Sports Ground 2</p>




Photo No.	Photograph	Description
10		<p>Pond 10: Clare College 1 Dry at time of sampling</p>
11		<p>Pond 11: Clare College 2 Dry at time of sampling</p>
12		<p>Pond 12 Accident and Repair Centre Pond West</p>




Photo No.	Photograph	Description
13		<p>Pond 13 Accident and Repair Centre Pond East</p>
14		<p>Pond 14 Madingley Wood SSSI</p>
15		<p>Pond 15 Broadway Pond</p>

Photo No.	Photograph	Description
16		Pond 16 Highfield Road Roundabout Pond Dry at time of sampling