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SCOTTISHPOWER RENEWABLES

East Anglia THREE

Appendix 23.6

East Anglia ONE Great crested newt surveys

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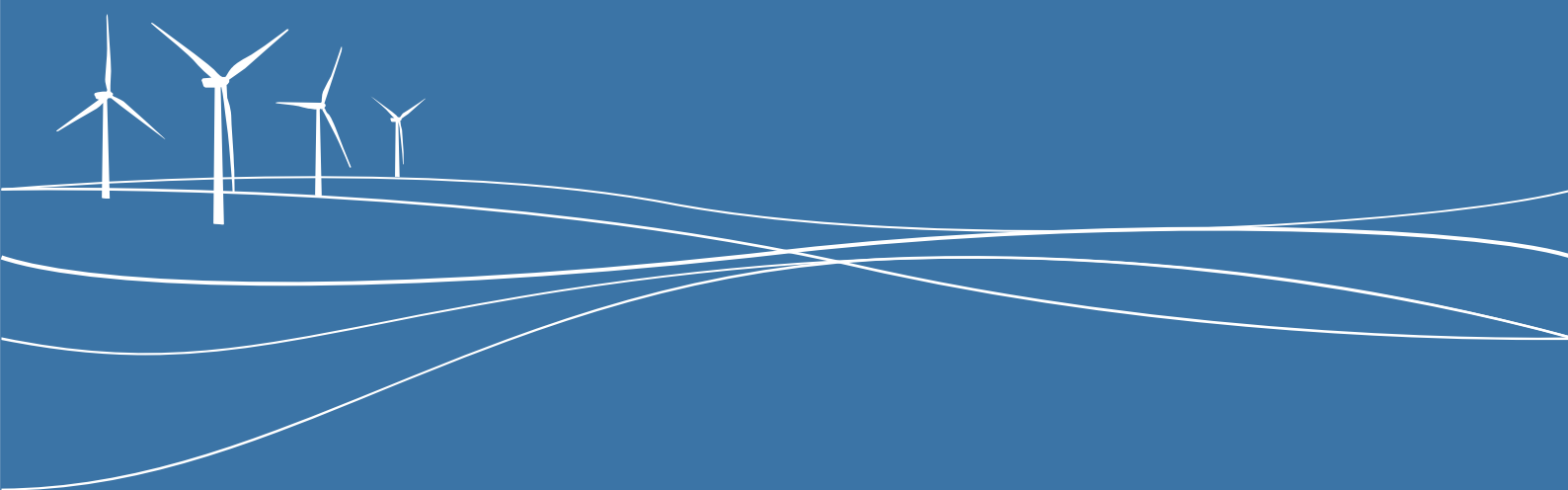

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East Anglia ONE
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East Anglia ONE

Great crested newt surveys

Report for East Anglia ONE Ltd

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SCOTTISHPOWER RENEWABLES

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Great Crested Newt Surveys

Summary

Background to commission

1. The Ecology Consultancy was commissioned by East Anglia ONE Ltd (EAOL) to carry out surveys for great crested newts, *Triturus cristatus*. The surveys were carried out to inform proposals for development of an offshore wind farm east of Ipswich, Suffolk.

2. Previous surveys in 2012 identified the presence of 112 waterbodies within the survey area, of which 62 were deemed suitable for great crested newts. Of the 112 waterbodies identified 39 were ruled out due to lack of suitability for example because they were dry, had flowing water or very low Habitat Suitability Index (HSI) Scores, and a further 11 could not be surveyed due to lack of access permission. Within the 62 ponds surveyed, six were found to support great crested newts; three ponds with a low population and three with a medium population.

3. Under conditions of the Development Consent Order (DCO), which was awarded in June 2014, EAOL committed to repeating the great crested newt surveys within 250m of the cable route and update the survey results. In 2012 the survey area included 112 waterbodies. Due to refinement of the cable route and discovery of several new waterbodies the number of waterbodies present within 2012 survey area was 83. Of these no access permission could be obtained for 14 of the ponds thereby leaving a total of 69 ponds to be scoped during the 2015 survey season. Of the 69 ponds included in the scoping survey 33 were ruled out for further survey due to lack of access (landowner refusal and physical barriers preventing surveyor access to pond) or lack of suitability (e.g. pond dry, flowing water). A total of 36 waterbodies were therefore surveyed for presence/likely absence of great crested newts.

4. Of the 36 waterbodies surveyed in 2015 one had to be excluded from the surveys due to restricted access caused by the presence of barbed wire and dense vegetation in the pond. Great crested newts were recorded in seven waterbodies; two with medium populations and five with low populations. Three of these had been previously found to support great crested newts and four were new records for ponds where great crested newts were not previously recorded. Of these four new great crested newt sites all were found to support only low numbers and two of them were close to ponds previously identified as supporting great crested newts. Great crested newts were not found at two ponds where low numbers of great crested newts had previously been identified.

5. Great crested newts were found in four main areas across the length of the cable route; Bawdsey (Area 1), Westerfield (Area 2), Claydon (Area 3) and Bramford (Area 4). As such a European Protected Species Mitigation (EPSM) licence may be required before works in some of these areas can proceed.

6. The exact details of the work to be carried out along each section of the cable route is not yet known and as such it is not possible to provide detailed mitigation recommendations at this stage. A European Protected Species Mitigation (EPSM) licence may be required to allow works in certain sections of the route and if so detailed requirements would be included as part of the application. Where the likely impact of the works on great crested newts is considered to be sufficiently low it may be possible to carry out the works under a precautionary method of working. Due to the low numbers of great crested newt found in Areas 1 and 4 and the fact that in each instance only a single occupied pond was identified, it is likely that works in these areas could be covered by a method statement detailing precautionary methods of working. This may include avoidance measures such as directional drilling and erection of exclusion fencing. Areas 2 and 3 may need more extensive mitigation. Area 2 supports low and medium populations of great crested newt across four ponds. Area 3 supports low numbers of great crested newts within a single pond but the surrounding habitat included within the works area is of high

quality for great crested newts. Maintenance of connectivity will need to be considered and if suitable habitats in these areas are to be impacted by the works an EPSM licence may be required.

1 Introduction

1.1 Background

1. The Ecology Consultancy was commissioned by East Anglia ONE Ltd (EAOL) to carry out surveys for great crested newts, *Triturus cristatus*. The surveys were carried out to inform proposals for development of an offshore wind farm east of Ipswich, Suffolk.

2. The East Anglia ONE project received consent to develop 1.2GW of wind capacity off the coast of East Anglia, approximately 79km from Lowestoft, in June 2014. The onshore cable route for the project extends from a landfall point at Bawdsey, Suffolk to the Converter Station at Bramford. The overall length of the cable route is approximately 37km and the width of the route varies between approximately 160m to 55m. A Development consent Order (DCO) for the project was awarded in June 2014 and there are a number of certified documents that provide further detail relating to requirement for discharging the conditions of the DCO. The document of relevance to the great crested newt surveys is the Outline Landscape and Ecological Monitoring Strategy (OLEM) which states that:

> *'Any ponds within 250m of the proposed works not previously surveyed for Great Crested Newts due to landowner access issues would be surveyed prior to construction (eleven ponds require survey due to previously denied access). These surveys have to be carried out between March and Mid-June. All other ponds that have been surveyed for Great Crested Newts previously would also require pre-construction surveys as licence applications to Natural England can typically only use data that is between 2 – 4 years old. The methodology would be the same as that for the baseline surveys'*

1.2 Scope of works

3. Part of the pre-construction requirements are to undertake surveys in relation to great crested newts, with the following works being carried out:

- Carry out scoping survey of all ponds within the cable route and within a 250m buffer area to re-confirm the suitability of these ponds.
- Reassess the suitability of the ponds and where appropriate, undertake a Habitat Suitability Index (HSI) assessment to determine whether or not further surveys are required.
- Carry out presence/likely absence surveys on all ponds with the potential to support great crested newt to confirm which ponds support great crested newts.
- Carry out population size class assessment of any pond found to support great crested newts.
- Provide a report detailing the findings of the surveys and the status of great crested newts in the survey area. This report will include sufficient information to inform a European Protected Species mitigation (EPSM) licence and will provide initial proposals for mitigation.

1.3 Previous surveys

4. Great crested newt surveys were carried out in 2012 by RSK Environmental Ltd (RSK, 2012) as part of a wider suite of ecology surveys undertaken to inform the Environmental Impact Assessment for the on-shore components. At that time 112 waterbodies were identified within the survey area (for the proposed cable route plus a 250m buffer area) and scoping surveys of these ponds were carried out in April 2012. Of the 112 waterbodies there were 11 for which landowner permission for survey access could not be obtained and 39 were deemed to be wholly unsuitable and did not justify further survey because the water body was either dry, contained flowing water, was not safe to access or because of very low HSI scores. Presence/likely absence surveys were carried out on the remaining 62 waterbodies, finding: (i) low populations of great crested newts in three waterbodies and (ii) medium populations in a further three waterbodies. (See East Anglia ONE, 2012 for further detail).

1.4 Site Context

5. The cable route crosses a range of habitats starting at the coast and running inland past or through riverine habitats, arable land, villages and continuing north of Ipswich before reaching the Converter Station set within arable habitats to the west of Ipswich. The waterbodies within the survey area are also varied and include farmland ponds, garden ponds, fishing lakes reservoirs and drainage systems. For the purposes of this report the 'survey area' refers to all of the ponds surveyed during both the 2012 and 2015 surveys. Locations for ponds surveyed in 2012 can be found in RSK, 2012 and plans showing Ponds surveyed during 2015 are shown in Appendix 3.

2 Methods

2.1 Personnel

6. Surveys were carried out by experienced ecologists, and two surveyors were used on each survey visit for health and safety reasons. The majority of the surveyors hold personal great crested newt survey licences from Natural England with the others acting as accredited agents; at least one licence holder was present to lead each survey. All surveys were led by members of the Chartered Institute of Ecology and Environmental Management (CIEEM) who are therefore subject to its rules of Professional Conduct. The surveyors, position, CIEEM grade and licence numbers, if applicable, are provided in Table 1 below.

Table 1: Surveyors

Name	Position	Licence number	CIEEM Membership Grade
Ben Jervis	Associate Ecologist	2014-5035-CLS-CLS	Associate
Christine Hipperson	Assistant Ecologist	2014-5852-CLS-CLS	N/A
Dr Graham Hopkins	Principal Ecologist	n/a	Full and Chartered Environmentalist
Lee Rudd	Associate Ecologist	CLS 0173	Full
Michelle Fielden	Ecologist	2015-6764-CLS-CLS	Associate
Natalie Hughes	Ecologist	2014-6873-CLS-CLS	Associate
Natalie Kay	Field Assistant	n/a	N/A
Phoebe Cross	Field Assistant	n/a	N/A
Dr Rachel Saunders	Principal Ecologist	2015-8752-CLS-CLS	Lapsed due to maternity leave
Sasha Dodsworth	Senior Ecologist	2015-8196-CLS-CLS	Full
Tracy Simpson	Senior Ecologist	2014-6631-CLS-CLS	Full

2.2 Access

7. Landowners were identified by the client prior to surveys commencing and general permission to access the land was obtained. Each week the surveyors informed the client what surveys were planned for the following week, including details of the time they expected to require access and whether or not any traps would be set and therefore requiring a second visit the following morning. The client then passed on this information to the landowners. The surveyors had very little contact with landowners, although in a minority of instances the surveyors were required to phone the landowner or contact them in person to inform them of the survey immediately before commencement. For general reference GIS layers showing landowner boundaries were provided to The Ecology Consultancy.

2.2.1 2015 Ponds with No Survey Access

1. There were 14 waterbodies for which access could not be obtained to allow determination of their status or suitability for great crested newts in 2015. Of these 12 had been included within the 2012 surveys and at that time six were found to be dry or unsuitable and the remaining six had been surveyed with no great crested newts found. Table 2 below details the ponds and summarises the previous results together with an assessment of the relevance of these ponds to the overall survey conclusions.

Table 2: Access limitations summary

Pond number	Previous (2012) assessment	Distance from works area	Lack of access in 2015 - Likely relevance to interpretation and comment
31	No Access	225	**Minor** - It is close to the edge of the 250m buffer and only has one other pond nearby making it quite isolated
34	Unsuitable	N/A	**Negligible** - Assuming that it remains unsuitable as described in 2012.
34a	Unsuitable	N/A	**Negligible** - Assuming that it remains unsuitable not surveying this pond would not be a constraint
36	No great crested newts	119	**Minor** - Only one other pond nearby (Pond 35) and it was surveyed in 2015 with no GCN found

Pond number	Previous (2012) assessment	Distance from works area	Lack of access in 2015 - Likely relevance to interpretation and comment
42a	No great crested newts	236	**Minor** - In a cluster with Ponds 42b, c and d. This pond is close to the edge of the 250m buffer and no GCN were found in this pond or within the other ponds during the previous surveys
42b	No great crested newts	238	**Minor** - In a cluster with Ponds 42a, c and d. This pond is close to the edge of the 250m buffer and no GCN were found in this pond or within the other ponds during the previous surveys
42c	No great crested newts	193	**Minor** - In a cluster with Ponds 42a, b and d. This pond is some distance from the order limits and no GCN were found in this pond or within the other ponds during the previous surveys
42d	No great crested newts	83	**Minor** - In a cluster with Ponds 42a, b, and c. This pond is close to the order limits but no GCN were found in this pond or within the other ponds in the cluster during the previous surveys
43	Dry	N/A	**Negligible** - Assuming that it remains unsuitable as described in 2012.
44	No great crested newts	180	**Minor** - This pond is some distance from the order limits and is isolated from other ponds. No great crested newt were recorded during the previous survey
50	Dry	N/A	**Negligible** - Assuming that it remains unsuitable as described in 2012.
56	Unsuitable	N/A	**Negligible** - Assuming that it remains unsuitable as described in 2012.
57	Dry	N/A	**Negligible** - Assuming that it remains unsuitable as described in 2012.
77	No Access	166	**Minor** - This pond is some distance from the order limits and is isolated from other ponds

2. A further five waterbodies (Ponds 48, 59, 70, 70a and 70b) were accessed for HSI survey only. Of these 48 and 70 scored as Poor using HSI methods and therefore are unlikely to support great crested newts. The remaining three scored as Good. Pond 59 is only 30m from Pond 58 which was surveyed and was found to support a low population of great crested newts. As such it is reasonable to assume, for the purposes of mitigation, that great crested newts are present in Pond 59 although likely only in relatively low numbers.

3. Ponds 70a and 70b are located within the fishing lake and fish nursery complex; however, they are not directly stocked with fish. The site manager reported that these ponds were to be drained in as part of the biosecurity measures for the site. It was not possible to obtain any details regarding the timing, duration of regularity of such events but if sustained drainage occurs during the breeding season it is very unlikely that great crested newts would be present at this site. These waterbodies are within 300-350m of Pond 69, where low numbers of great crested newts were recorded. Based on the available information it cannot be determined whether or not great crested newts are present within Ponds 70a and 70b, however, if present it would be reasonable to assume a level of connectivity between Pond 69 and Ponds 70a and 70b.

2.3 Scoping survey

4. During the initial planning phase of the project, data from the 2012 surveys were collated and checked to gain an understanding of the types and distribution of waterbodies across the site. Of the 112 ponds included in the 2012 scoping survey most were revisited during 2015.

5. Pond locations were cross referenced with the Order Limit boundaries and the landowner boundaries. Each water body identified within the survey area (see plans in RSK 2012) was visited between April and May 2015 to re-assess its status and determine whether or not great crested newt surveys were required. This did not include all 112 ponds visited in 2012 as refinement of the works area meant that 33 of the previously scoped ponds are no longer within 250m of the works area. A further 12 ponds surveyed in 2012 were not accessible during 2015 due to landowner permission not being forth coming. Attempts to obtain permission were not pursued as it was considered, based on previous survey data and location of the ponds, that the risk of great crested newts being affected was low. Two ponds (Ponds 31 and 77) could not be surveyed during either year again due to lack of permission from landowners. Seven ponds were surveyed in 2015 that had not been previously visited. These included an additional four ponds identified through the course of the survey as well as three for which no access permission had previously been available. A summary table showing ponds surveyed during each year is provided in Appendix 2.

6. Photographs of each water body were taken and a recording form was completed to record the current condition of the water body together with any health and safety or access information notes relating to the water body. Where ponds were deemed to be unsuitable for survey details of the reason for this were recorded on the form.

7. The HSI assessment found 28 of the 69 ponds to be unsuitable for further survey. There were a further five ponds that were subject to HSI assessments, either by directly accessing them or viewing them from adjacent land, but that could not be surveyed further due to lack of access permission. HSI scores for the five ponds that could not be surveyed further ranged from 0.41 (Poor) to 0.78 (Good).

8. The remaining 36 ponds were surveyed for presence/likely absence of great crested newts although one (Pond 24) was abandoned following the first survey due to restricted access and health and safety concerns.

9. Scoping of the 69 waterbodies identified for survey was carried out as follows:

- Tracy Simpson & Christine Hipperson – 2nd, 8th, 9th, 28th, and 29th April and 7th May
- Michelle Fielden & Christine Hipperson – 13th and 14th April
- Danny Thomas & Rachel Saunders – 9th April.

2.4 Habitat Suitability Index (HSI)

10. Ponds within the survey area that had not been scoped out and are deemed to have potentially suitable habitat were assessed against Habitat Suitability Index (HSI) criteria (*sensu* Oldham et al., 2000). The HSI of a pond is determined by calculating a geometric mean of ten variables that are known to have an influence on its suitability as a breeding location for great crested newts listed in Table 3 below:

Table 3: HSI parameters

Parameter	Name	Description
SI1	Geographic Location	Lowland England or upland England, Scotland and Wales
SI2	Pond area	To the nearest 50m²
SI3	Permanence	Number of years pond dry out of ten
SI4	Water quality	Measured by invertebrate diversity
SI5	Shade	Percentage shading of pond edge at least 1m from shore
SI6	Fowl	Level of waterfowl use
SI7	Fish	Level of fish population
SI8	Pond count	Number of ponds within 1km²
SI9	Terrestrial habitat	Quality of surrounding terrestrial habitat
SI10	Macrophytes	Percentage extent of macrophyte cover on pond surface

11. Scores for each of these criteria are determined using the tables and graphs provided within the guidance notes (ARG UK 2010) and from this an overall score is calculated using the following calculation HSI = (SI1 x SI2 x SI3 x SI4 x SI5 x SI6 x SI7 x SI8 x SI9 x SI10)$^{1/10}$. The index score for waterbodies larger than 2000m^2 cannot be calculated due to a lack of data for such large waterbodies. In these instances the score for SI2 is omitted from the overall calculation.

12. Once calculated, the HSI score for a waterbody can be categorised as follows (ARG UK, 2010):
- Excellent (>0.8)
- Good (0.7 – 0.79)
- Average (0.6 – 0.69)
- Below Average (0.5 – 0.59)
- Poor (<0.5)

13. During the HSI survey an estimate of the number of bottle traps likely to be required during the presence/likely absence surveys was also noted to aid the future stages of the work.

2.5 Presence / Likely Absence surveys

14. Methodology for the pond surveys followed guidelines provided by English Nature (2001) and as in the Scope of Works agreed with Natural England (2015). All survey visits were made under suitable weather conditions (>5˚C with little wind or rain) and at the recommended time of year (between mid-March and mid-June) with at least half of the visits in the peak period of mid-April to mid-May where possible. Three survey techniques were used on each survey visit. The guidelines state that torch survey, bottle trapping and egg searching are the preferred methods for determining presence/likely absence of great crested newts; however, there is no requirement to use each of these methods during every survey and sometime specific conditions within the pond preclude their use altogether. The scope of works for this project (as signed off by Natural England) states that best practice guidance will be followed and the Outline Landscape and Ecological Monitoring Strategy (OLEMS) quoted in the scope of works states that *"the methodology would be the same as that for the baseline surveys".* During the 2012 surveys the best practice guidelines were followed but with only minimal bottle trapping carried out. In order to ensure the methodology was similar to that of the 2012 surveys, the aim for the 2015 surveys was to conduct bottle trapping on at least half of the visits due to bottle trapping being an important survey method and to allow the additional risks to animal welfare and cost associated with this method to be taken into account. It was decided that torching would be used on every survey although where torching was severely limited use of additional bottle trapping visits was considered. The survey methods included:

- Torch survey – the pond is searched with a powerful (500,000 candlepower) torch after dark. The surveyors direct the beam into the pond and walk slowly around the banks recording any newts seen;
- Egg search - a search is made for newt eggs on all suitable vegetation present along the water margins;
- Bottle trapping - bottle traps are placed in the ponds in suitable locations around the edge to catch any newts. These bottle traps are then checked and collected early the following morning. A density of at least one trap every 2m is used where possible;
- Net survey - a dip net with a 4mm mesh is used to net sample the ponds. A sweeping motion is used and ponds are netted for a minimum of 15 minutes per 50m of shoreline.
- Refuge search – any suitable refuge sites close to the pond are inspected to see if they are being used by sheltering great crested newts.

2.6 Population Size Class assessment

15. Where great crested newts were found an additional two visits were carried out to allow an estimation of the population size class to be made. On each occasion bottle trapping and torch surveys were carried out and where appropriate one of the other methods listed above was also used. Table 4 below provides details of population size classes based upon numbers of animals observed (English Nature, 2001). The peak count is determined as the maximum number of great crested newt observed using any method during one survey night. For example, if three adult males and two adult females were recorded during the torching surveys and two males and four females were recorded from the bottle traps the following morning the peak count would be seven (three males during torching and four females in the bottle trap).

Table 4: Great crested newt population size class

Population Size Class	Description
Small	Peak counts of between 1 and 10 animals
Medium	Peak counts of between 11 and 100 animals
Large	Peak counts of over 100 animals

2.7 Constraints

16. It was not possible to access the entire perimeter of every waterbody due to access restrictions such as steep banks, dense vegetation or marshy ground. This is a standard constraint with all pond surveys and is mitigated to a certain degree by the methodology used which employs a variety of survey methods and multiple visits. It is considered that such limitations will not have impacted upon the survey findings for the majority of sites and in the rare case where access was particularly restricted this is highlighted in Appendix 2.

17. Several waterbodies within the 250m survey area could not be surveyed due to lack of access permission from the landowner. This included 14 for which no access was obtained and a further six which were able to be viewed from adjacent land or during daylight hours only to allow HSI assessments to be undertaken but which could not be accessed for night time surveys. Further detail on these ponds is provided in Table 2 above and in Appendix 2.

2.7.1 Scoping

18. None of the sites were ruled out at the scoping stage purely on the basis of health and safety although one, Pond 24, was considered to be unsafe following the initial survey visit. To access this waterbody surveyors had to climb through a barbed wire fence from the road to a field. There was a drop of approximately 30cm between the road and the field which further complicated the access. The pond itself was also surrounded by barbed wire and due to the proximity of this fencing to the water's edge it was not possible to gain access to the water. An initial survey was carried out from the fence line but due to the presence of dense vegetation the water could not be sufficiently viewed to carry out torching. All other methods were prohibited by the barbed wire and no further surveys were attempted. Other waterbodies present within 500m (Pond 24c and 24d) were surveyed and were not found to support great crested newts. As such it is not considered that Pond 24 is likely to support great crested newts and no further surveys of this pond are considered necessary.

2.7.2 HSI Surveys

19. Five of the waterbodies assessed could not be surveyed further, these were Ponds 48, 59, 70, 70a and 70b.

- Pond 48 and 59 were able to be viewed from adjacent land but the landowner refused direct access to survey the ponds; these ponds scored as Poor and Good respectively. Pond 48 was visited as part of the 2012 surveys and at that time was dry. Within 500m there are three other waterbodies: Pond 46, 46a and 47 that were surveyed and a further one, Pond 49 was dry. Pond 59 was not previously surveyed but is within 500m of Ponds 53, 54, 55, 56, 57 and 58 as well as an additional pond outside of the survey area. Pond 54, however, is not currently suitable and Ponds 56 and 57 were not accessible during this survey but had previously been assessed as unsuitable. Pond 53, 55 and 58 were surveyed this year and the findings from these surveys were used to inform conclusions relating to Pond 59.
- Ponds 70, 70a and 70b are all part of a fish nursery located within a wider fishing lake complex. Daytime access to these ponds was possible but due to site security it was not possible for surveyors to gain access after 8pm. Furthermore the nursery owners had concerns regarding biosecurity and planned to drain all of the ponds within the nursery site as part of their biosecurity measures. Pond 70 comprised approximately 10 shallow, vegetated pools that were netted and used for rearing fish. These ponds were assessed collectively and scored Poor on the HSI assessment. The other two ponds appeared less intensively managed and were not netted or directly used for fish rearing although they were used as part of the water management at the site. Both ponds scored as Good according to the HSI assessment although if further surveys had been undertaken the scores for some factors such as water quality or fish abundance may have been altered on the basis of the additional information and this may have reduced the scores to Average.

2.7.3 2015 Presence/likely absence surveys

20. Pond 24, was only surveyed once as barbed wire around the site, as well as around the pond itself, a dynamic risk assessment prevented further direct access as it was considered to be an unacceptable health and safety risk. The remaining 35 ponds were surveyed in full.

21. Further detail on specific constraints pertaining to individual ponds e.g. dense vegetation cover, high turbidity or late season surveys is given in Appendix 2.

3 Results

3.1 Scoping HSI surveys

22. An initial list of 112 ponds was available and a further four ponds were identified throughout the course of the survey. Of these 33 were discounted from further assessment as they were found to be over 250m from the cable route and 14 were unable to be surveyed as no landowner permission to access the site could be obtained and the ponds could not be viewed from adjacent land. This left a total of 69 ponds to be subject to HSI assessment.

23. The scoping surveys found 28 of the 69 ponds to be unsuitable for further survey. The reasons for ruling out these ponds included the following: waterbody no longer present; waterbody dry or with minimal water; waterbody unsuitable for use by great crested newts due to factors such as flowing water, lack of open water, connectivity with saline rivers or the waterbody being inaccessible to surveyor. For some of the waterbodies a combination of factors were involved and pond specific detail is provided in Appendix 2.

24. A total of 41 ponds were assessed against HSI criteria (See Appendix 2 for full results) and overall the scores were relatively high with over half being assessed as Average or Good and two scoring as Excellent. See Table 5 below:

Table 5: HSI results summary

Category	Number of waterbodies
Poor	9
Below Average	7
Average	7
Good	16
Excellent	2

25. No waterbodies were ruled out for further survey based purely on the basis of a low HSI score although five ponds (Ponds 48, 59, 70, 70a & 70b) could not be surveyed beyond HSI; due to lack of landowner permission to access the site. Two of these waterbodies were viewed from adjacent land and were scored as Poor (Pond 48) and Good (Pond 59). The other three were accessed directly but could not be visited at night due to restrictions imposed by the landowner. These ponds scored Poor (Pond 70), Good (Pond 70a) and Good (Pond 70b). Implications of these limitations are discussed further in Section 2.7 Constraints.

26. Waterbodies scoring as Poor were typically those with high fish densities and many also had an abundance of waterfowl. In some instances this had also lead to poor water quality. The Below Average waterbodies also tended to have fish and waterfowl but generally not as abundant as in those scoring Poor.

27. The Average scoring waterbodies tended to score moderately well across all categories with no parameters scoring very high or very low, whilst the Good ponds generally had absent or low numbers of fish and were not heavily shaded. The two ponds that scored Excellent did not have any particular features that made them stand out, rather they lacked any very low scores and had four or more parameters that achieved the highest score.

3.2 2015 Presence/likely absence surveys

28. Presence / likely absence surveys were undertaken on 36 waterbodies (refer to Appendix 3 for locations).

29. Seven ponds were found to support great crested newts. The majority of these ponds were isolated without any other ponds nearby, the exceptions being those near Westerfield which form a cluster of four ponds within approximately 700m of each other. The clusters are shown on Figure 1 as Areas 1-4. The ponds were:

- Pond 3 (HSI Good). Area 1. A medium sized pond set within an area of woodland in Bawdesy.
- Pond 52 (HSI Good). Area 2. A medium sized garden pond surrounded by wire mesh fencing. Located in Westerfield.
- Pond 52a (HSI Below Average). Area 2. An ornamental garden pond with brick sides. Located in Westerfield

- Pond 53 (HSI Excellent). Area 2. A farmland pond within a cow grazed meadow located in Westerfield.
- Pond 58 (HSI Good). Area 2. A medium sized steep sided pond associated with the nearby farm located in Westerfield.
- Pond 69 (HSI Poor) Area 3. A medium sized pond with numerous ducks and geese associated with the nearby farm. Located close to Claydon.
- Pond 85 (HSI Good). Area 4. A medium sized ponds surrounded by woodland and arable farmland located in Bramford.

30. Both male and females were recorded from ponds 52, 52a and 53 whilst only females were recorded in Ponds 3, 58 and 69. In pond 85 only great crested newt eggs were recorded.

31. The highest numbers of great crested newt were found in Ponds 52, 52a and 53 which are all located in a similar area to the north of Westerfield. Ponds 52 and 52a are both within the same garden and Pond 53 is located just over 600m to the north. Pond 58 is also in this area although only a single great crested newt was found within this pond. The remaining three ponds are isolated from other known great crested newt populations within the survey area with one, Pond 3 being in Bawdsey near the landfall point, one, Pond 69 located to the west of the A14 between Claydon and Little Blakenham and the other being close to the proposed converter station site west of Bramford. (See Appendix 3 for location plans).

3.3 2012 and 2015 presence/absence results comparison

The previous survey carried out in 2012 recorded great crested newt presence in three of the seven ponds where great crested newt were found during 2015 (Ponds 52, 52a and 53). Low numbers of great crested newts were also recorded in Pond 81 during 2012, where no evidence was noted in 2015. This is however, close to pond 85 where great crested newt presence was confirmed in 2015. See Table 6 below:

Table 6: Summary of great crested newt presence 2012 and 2015

Pond number	2012 results	2015 results
3	None	Female (Peak 1)
46a	Peak count 1	None
52	Peak count 17	Male and female (Peak 11)
52a	Peak count 40	Male and female (Peak 29)
53	Peak count 3	Male and female and eggs (Peak 7)
58	None	Female (Peak 1)
69	None	Female (Peak 1)
81	Peak count 4	None
85	None	Eggs

32. Smooth newts were found in 20 of the ponds surveyed although often in low numbers though Pond 13 had consistently higher numbers, with numbers recorded being in double figures on all visits and a peak count of 24 recorded during the final visit. Other amphibians recorded throughout the survey area included common toad and common frog.

3.4 Population size class assessment surveys

33. A further two visits were carried out to each of the seven ponds where great crested newts had been recorded during 2015 to allow an assessment of population size to be made. Four of the ponds supported low populations, two had medium populations and in one of the ponds only eggs were found. Peak counts ranged from 1 to 29 and were typically recorded during early to mid-May. See Table 7 for a summary of the results.

Table 7: Summary of population size class assessment results

Pond #	Visit #	Survey date	Males	Females	Eggs	Peak count
3	1	08/04/2015	0	1	0	1
	2	21/04/2015	0	0	0	
	3	28/04/2015	0	0	0	
	4	11/05/2015	0	0	0	
	5	10/06/2015	0	0	0	
	6	11/06/2015	0	0	0	
52	**1**	**30/04/2015**	**0**	**0**	**0**	**11**

Pond #	Visit #	Survey date	Males	Females	Eggs	Peak count
	2	**07/05/2015**	**8**	**3**	**0**	
	3	**14/05/2015**	**3**	**1**	**0**	
	4	**21/05/2015**	**0**	**0**	**0**	
	5	**26/05/2015**	**1**	**1**	**0**	
	6	**27/05/2015**	**1**	**0**	**0**	
52a	1	30/04/2015	7	2	0	
	2	07/05/2015	15*	14	0	
	3	14/05/2015	4	2	0	29
	4	21/05/2015	9	3	0	
	5	26/05/2015	0	1	0	
	6	27/05/2015	0	0	0	
53	**1**	**30/04/2015**	**0**	**0**	**0**	
	2	**06/05/2015**	**4**	**3**	**Present**	
	3	**21/05/2015**	**5**	**2**	**0**	**7**
	4	**26/05/2015**	**0**	**0**	**0**	
	5	**03/06/2015**	**0**	**0**	**0**	
	6	**11/06/2015**	**0**	**0**	**0**	
58	1	28/04/2015	0	0	0	
	2	06/05/2015	0	1	0	
	3	21/05/2015	0	0	0	1
	4	26/05/2015	0	0	0	
	5	03/06/2015	0	0	0	
	6	11/06/2015	0	0	0	
69	**1**	**30/04/2015**	**0**	**0**	**0**	
	2	**06/05/2015**	**0**	**1**	**0**	
	3	**21/05/2015**	**0**	**1**	**0**	
	4	**26/05/2015**	**0**	**0**	**0**	**1**
	5	**03/06/2015**	**0**	**0**	**0**	
	6	**11/06/2015**	**0**	**0**	**0**	
85	1	28/04/2015	0	0	0	
	2	05/05/2015	0	0	Present	
	3	12/05/2015	0	0	Present	
	4	19/05/2015	0	0	0	Eggs only
	5	26/05/2015	0	0	0	
	6	11/06/2015	0	0	0	

*an additional great crested newt was also observed but it was not possible to confirm the sex

4 Discussion

4.1 2015 Results Summary

34. Following the scoping and HSI assessment a total of 36 waterbodies were surveyed for the presence / likely absence of great crested newts. Seven of these waterbodies were found to support great crested newts; two supported a medium population, four supported low populations of great crested newts and in one only great crested newt eggs were found. Other amphibian species recorded were smooth newt, common toad and common frog.

4.2 Scoping

35. A high number (41%) of waterbodies initially identified were ruled out at the scoping stage due to their lack of suitability. Some no longer existed whilst others were extant but were deemed unsuitable for use by great crested newts. Several had a combination of factors that led to them being ruled out, for example, Ponds 26, 27 and 28 were large interconnected drains with an inflow from the adjacent estuary, making them unsuitable for great crested newt; in addition there were health and safety concerns relating to access, as the waterbodies were bordered by very high, steep and densely vegetated banks leading straight to the water.

4.3 HSI, presence/likely absence and population size class assessment

36. Many of the waterbodies assessed were found to be suitable for great crested newts with approximately 60% scoring as Average, Good or Excellent in the HSI assessment. Despite this there was limited correlation with the findings of the presence/likely absence surveys which found great crested newts in just 20% of the ponds surveyed. The pond with the highest population of great crested newts, Pond 52a, scored Below Average HSI and Pond 69, where low numbers of great crested newts were recorded, scored as Poor HSI, largely due to the presence of numerous duck and geese.

37. The waterbodies where great crested newt were found are spread across the survey area in 4 main locations: one in Bawdsey, three in Westerfield, one near Claydon and one near Bramford (see Figure 1). It is likely that the populations recorded in Westerfield interact to some extent but the other three locations were isolated and supported only Low populations as determined from the observation of single great crested newts in each during any given survey night.

38. When comparing the result from the 2012 and 2015 surveys (see Table 8 below) there are three ponds where great crested newts were found in both years: 52, 52a and 53. These were the three ponds with the highest numbers recorded during both 2012 and 2015. The peak numbers of great crested newt found in Ponds 52 and 52a have declined since the 2012 surveys, but in both years the population size class was Medium. For Pond 53 the peak count had increased from three to seven but, this does not affect the estimate of the population size class category which is Low.

39. One pond surveyed in 2012; Pond 72, was found to support a Low population of great crested newts but was not re-surveyed during 2015 as it is now outside the 250m buffer area and is therefore not considered further in this report. There were two other ponds surveyed in 2012 that were found to support great crested newt where none were recorded in 2015 these are Pond 46a and Pond 81. Only a single great crested newt was recorded in either pond throughout the surveys; these single records are likely to represent individual animals that are either remnants of populations previously present in the area but which are now in decline for example due to habitat changes, or they are individuals from populations outside of the survey area that have strayed onto the site whilst moving to or from their breeding ponds. It is highly unlikely that either pond 46a or 81 are breeding ponds and where such low numbers of great crested newts are present variation between years is to be expected.

40. During 2015 great crested newt were found in Ponds 3 and 69 where they had not previously been recorded. Again only single records of great crested newt were found at either of these ponds and the reasons for this difference in results between the two years is likely to be as a result of natural variation caused by very low numbers of great crested newt being present in the wider area.

Table 8: Summary of ponds with great crested newt present in 2012 and 2015

Pond	GCN confirmed present 2012	GCN confirmed present 2015
3	Surveyed - none present	Present (Max count 1)
46a	Present (Max count 1)	Surveyed - none present
52	Present (Max count 17)	Present (Max count 11)

Pond	GCN confirmed present 2012	GCN confirmed present 2015
52a	Present (Max count 40)	Present (Max count 30)
53	Present (Max count 3)	Present (Max count 7)
58	No Access	Present (Max count 1)
69	Surveyed - none present	Present (Max count 1)
72	Present (Max count 10)	Not surveyed - Outside 250m buffer
81	Present (Max count 4)	Surveyed - none present
85	Surveyed - none present	Present (Eggs only)

4.4 Site status assessment

In determining the importance of the site the qualitative and quantitative data for each area of the site found to support great crested newts can be used to assess the functional and contextual significance of the site. This is in accordance with the Natural England guidance section 5.8.5 (English Nature, 2001). Using the mitigation guidelines and wording from the Natural England Licence Method Statement each area of the site found to support great crested newts is assessed as follows:

- Area 1
  Quantitative: Minor importance - small population
  Qualitative: Minor - no breeding on site; habitats common in area
  Functional: Minor importance - population completely isolated
  Contextual: Minor importance - population size lower than in surrounding area
- Area 2
  Quantitative: Moderate importance - medium population
  Qualitative: Moderate - breeding on site; habitats common in area
  Functional: Moderate importance - probably some dispersal to/from nearby population(s)
  Contextual: Moderate importance - population size class typical of area
- Area 3
  Quantitative: Minor importance - small population
  Qualitative: Minor - no breeding on site; habitats common in area
  Functional: Moderate importance - probably some dispersal to/from nearby population(s)
  Contextual: Moderate importance - population size class typical of area
- Area 4
  Quantitative: Minor importance - small population
  Qualitative: Moderate - breeding on site; habitats common in area
  Functional: Moderate importance - probably some dispersal to/from nearby population(s)
  Contextual: Moderate importance - population size class typical of area.

4.5 Summary basis upon which recommendations are being made

41. The following chapter outlines recommendations for precautionary methods of working and where necessary, mitigation, to minimise potential impacts to great crested newts. As the 2012 data are now over 3 years old it would not be considered valid by Natural England (see EPSM Method Statement – Survey Data 2 Application tools (4): Survey data - what kind, how much, how old?). The 2015 results therefore supersede those from the previous survey and as such mitigation recommendations in this report will be based on the 2015 data.

5 Mitigation

Information redacted as Natural England have not yet agreed to mitigation proposed for East Anglia ONE

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Appendix 1: Photographs

Photograph 1:
Pond 3

Photograph 2:
Pond 52

Photograph 3:
Pond 52a

Photograph 4:
Pond 53

Photograph 5:
Pond 58

Photograph 6:
Pond 69

Photograph 7:
Pond 85

Appendix 2: Survey summary tables

Table 10: Comparison between 2012 and 2015 (GCN = great crested newt)

Pond #	2012 status	HSI	2015 status	HSI	Distance from order limits*
1	GCN not Present	0.63	Outside 250m buffer	N/A	N/A
2	GCN not Present	0.67	GCN not Present	0.72	135
3	GCN not Present	0.66	GCN present (Max count 1)	0.73	15
3a	Unsuitable	0.49	GCN not Present	0.44	70
Area 3b	Ditch/flowing water	N/A	Ditch/flowing water	N/A	Partially in
4	Unsuitable	N/A	Unsuitable	N/A	Partially in
4a	Ditch/flowing water	N/A	Ditch/flowing water	N/A	85
4b	Ditch/flowing water	N/A	Ditch/flowing water	N/A	Entirely in
4c	Ditch/flowing water	N/A	Ditch/flowing water	N/A	Partially in
4d	Ditch/flowing water	N/A	Ditch/flowing water	N/A	10
5	Unsuitable	N/A	Unsuitable	N/A	10
6	Ditch/flowing water	N/A	Ditch/flowing water	N/A	50
7	GCN not Present	0.73	GCN not Present	0.68	20
8	No Access	N/A	GCN not Present	0.67	5
9	No Access	N/A	GCN not Present	0.67	40
10	GCN not Present	0.62	GCN not Present	0.56	Entirely in
Area 10a	Ditch/flowing water	N/A	Ditch/flowing water	N/A	Partially in
11	GCN not Present	0.44	Outside 250m buffer	N/A	N/A
12	GCN not Present	0.64	Outside 250m buffer	N/A	N/A
13	GCN not Present	0.7	GCN not Present	0.64	200
14	GCN not Present	0.44	Outside 250m buffer	N/A	N/A
14a	Ditch/flowing water	N/A	Outside 250m buffer	N/A	N/A
15	GCN not Present	0.84	Outside 250m buffer	N/A	N/A
16	Dry	N/A	Outside 250m buffer	N/A	N/A
16a	GCN not Present	0.48	GCN not Present	0.57	245
17	Unsuitable	N/A	Outside 250m buffer	N/A	N/A
18	GCN not Present	0.64	Outside 250m buffer	N/A	N/A
19	GCN not Present	0.61	Outside 250m buffer	N/A	N/A
20	GCN not Present	0.58	Outside 250m buffer	N/A	N/A
21	Dry	N/A	Outside 250m buffer	N/A	N/A
22	GCN not Present	0.3	Outside 250m buffer	N/A	N/A
22a	Ditch/flowing water	N/A	Outside 250m buffer	N/A	N/A
23	Dry	N/A	Outside 250m buffer	N/A	N/A
24	GCN not Present	0.79	Limited Access	0.53	90
24a	Unsuitable	N/A	Outside 250m buffer	N/A	N/A
24b	GCN not Present	0.31	Outside 250m buffer	N/A	N/A
24c	GCN not Present	0.51	GCN not Present	0.5	230
24d	GCN not Present	0.52	GCN not Present	0.47	155
25	GCN not Present	0.59	GCN not Present	0.76	5
25a	New pond for 2015	N/A	GCN not Present	0.73	175
25b	New pond for 2015	N/A	GCN not Present	0.77	160
26	GCN not Present	N/A	Unsuitable	N/A	Partially in
27	GCN not Present	N/A	Unsuitable	N/A	Partially in
28	GCN not Present	N/A	Unsuitable	N/A	65

Pond #	2012 status	HSI	2015 status	HSI	Distance from order limits*
29	No Access	N/A	Outside 250m buffer	N/A	N/A
30	GCN not Present	0.45	Outside 250m buffer	N/A	N/A
31	No Access	N/A	No Access	N/A	225
32	No Access	N/A	Outside 250m buffer	N/A	N/A
33	GCN not Present	0.55	GCN not Present	0.4	245
34	Unsuitable	N/A	No Access	N/A	90
34a	Unsuitable	N/A	No Access	N/A	115
35	GCN not Present	0.61	GCN not Present	0.6	35
36	GCN not Present	0.67	No Access	N/A	115
37	GCN not Present	0.46	Dry	N/A	55
38	GCN not Present	0.5	GCN not Present	0.72	180
39	GCN not Present	0.45	Dry	N/A	170
40	Unsuitable	N/A	Dry	N/A	100
40a	Ditch/flowing water	N/A	Ditch/flowing water	N/A	120
41	Dry	N/A	Dry	N/A	Partially in
41a	Ditch/flowing water	N/A	Ditch/flowing water	N/A	110
42	GCN not Present	0.65	Outside 250m buffer	N/A	N/A
42a	GCN not Present	0.63	No Access	N/A	240
42b	GCN not Present	0.62	No Access	N/A	235
42c	GCN not Present	0.69	No Access	N/A	195
42d	GCN not Present	0.58	No Access	N/A	85
43	Dry	N/A	No Access	N/A	105
44	GCN not Present	0.53	No Access	N/A	175
45	GCN not Present	0.64	Outside 250m buffer	N/A	N/A
46	GCN not Present	0.69	GCN not Present	0.83	120
46a	GCN present (Max count 1)	0.65	GCN not Present	0.77	120
47	GCN not Present	0.74	GCN not Present	0.54	105
48	Dry	N/A	Limited Access	0.41	10
49	Dry	N/A	Dry	N/A	Partially in
50	Dry	N/A	No Access	N/A	230
51	GCN not Present	0.45	Outside 250m buffer	N/A	N/A
52	GCN present (Max count 17)	0.59	GCN present (Max count 11)	0.7	205
52a	GCN present (Max count 40)	0.67	GCN present (Max count 30)	0.54	240
53	GCN present (Max count 3)	0.71	GCN present (Max count 7)	0.8	20
54	Dry	N/A	Dry	N/A	100
55	GCN not Present	0.29	GCN not Present	0.43	115
56	Unsuitable	N/A	No Access	N/A	195
57	Dry	N/A	No Access	N/A	230
58	No Access	N/A	GCN present (Max count 1)	0.76	130
59	No Access	N/A	Limited Access	0.78	95
60	GCN not Present	0.41	Outside 250m buffer	N/A	N/A
61	GCN not Present	0.46	Outside 250m buffer	N/A	N/A
62	GCN not Present	0.5	GCN not Present	0.48	185
62a	Ditch/flowing water	N/A	Ditch/flowing water	N/A	Partially in

Pond #	2012 status	HSI	2015 status	HSI	Distance from order limits*
63	GCN not Present	0.47	GCN not Present	0.5	80
63a	GCN not Present	0.41	Dry	N/A	Entirely in
64	Dry	N/A	Dry	N/A	245
65	Dry	N/A	Dry	N/A	50
66	GCN not Present	0.33	Outside 250m buffer	N/A	N/A
67	GCN not Present	0.34	Outside 250m buffer	N/A	N/A
68	GCN not Present	0.4	GCN not Present	0.46	230
69	GCN not Present	0.26	GCN present (Max count 1)	0.43	65
70	No Access	N/A	Limited Access	0.41	65
70a	New pond for 2015	N/A	Limited Access	0.75	130
70b	New pond for 2015	N/A	Limited Access	0.72	170
71	GCN not Present	0.6	GCN not Present	0.65	195
72	GCN present (Max count 10)	0.79	Outside 250m buffer	N/A	N/A
Area 72a	Ditch/flowing water	N/A	Outside 250m buffer	N/A	N/A
73	Unsuitable	N/A	Outside 250m buffer	N/A	N/A
74	Dry	N/A	Dry	N/A	230
75	Dry	N/A	Dry	N/A	5
76	Dry	N/A	GCN not Present	0.62	Entirely in
77	No Access	N/A	No Access	N/A	165
78	GCN not Present	0.6	Dry	N/A	220
79	GCN not Present	0.7	GCN not Present	0.77	205
80	Dry	N/A	Dry	N/A	95
81	GCN present (Max count 4)	0.7	GCN not Present	0.74	20
82	GCN not Present	0.75	GCN not Present	0.76	115
83	No Access	N/A	Outside 250m buffer	N/A	N/A
84	No Access	N/A	Outside 250m buffer	N/A	N/A
85	GCN not Present	0.67	GCN present (Eggs only)	0.71	90
86	Dry	N/A	Outside 250m buffer	N/A	N/A

***Distance of waterbody to the order limits at its closest point approximate to nearest 5m.**

Table 11: Summary of constraints

Pond #	Total Number of Visits	Visits in peak period	Survey conditions*	Bottle trapping	Limitations	Limitations are likely to have affected the survey conclusions
3		3	Vegetation up to 5	BT x6	Water surface largely covered with duckweed but bottle trapping was carried out on all visits	Limitations were mitigated through use of other survey methods and are therefore **not likely to have affected the survey conclusions.**
3a		2	Vegetation 4	BT x2	Dense reed cover. Water only accessible in two places around pond but this was mainly reed and the water was increasingly shallow.	The pond was of limited suitability for great crested newt based on the dense vegetation, small size of the pond and shallow water. Limitations are **not likely to have affected the survey conclusions.**
7		2	Vegetation 4	BT x2	High reed cover but bottle trapping or netting used on all visits	Limitations were mitigated through use of other survey methods and are therefore **not likely to have affected the survey conclusions.**
10		2	Turbidity 4	BT x1	Very peaty soil causing shallow, murky water. Water apparently v. deoxygenated and warm - smooth newts caught were inactive and as such no further trapping was carried out here despite the limitations this caused. Netting was also carried out	The pond was of limited suitability for great crested newt based on the poor quality of the water. Limitations are **not likely to have affected the survey conclusions.**
16a		2	Vegetation 4	BT x2	Water surface largely covered with duckweed but bottle trapping or netting was carried out on all visits	Limitations were mitigated through use of other survey methods and are therefore **not likely to have affected the survey conclusions.**
24		1	No access	0	Access was restricted by barbed wire. One survey attempt was made but no data could be gathered	Status of great crested newts in this pond could not be determined but the only two other ponds within 500m (24a and 24b) were surveyed and no great crested newts were present. As such it is unlikely that a significant population of great crested newt would be centred on this pond and overall the limitations are **not likely to have affected the survey conclusions.**
25		3	Vegetation up to 5	BT x2	Duckweed covered much of the water but netting or bottle trapping was carried out on each visit to compensate	Limitations were mitigated through use of other survey methods and are therefore **not likely to have affected the survey conclusions.**
25a		1	1 peak visit	0	New pond discovered late in season. Clay lined so no bottle trapping possible.	Surveys were conducted close to the peak period and within the overall recommended survey period. Therefore the risk that great crested newts were overlooked at this pond are minimal and limitations are **not likely to have affected the survey conclusions.**

Pond #	Total Number of Visits	Visits in peak period	Survey conditions*	Bottle trapping	Limitations	Limitations are likely to have affected the survey conclusions
25b		1	1 peak visit	BT x2	New pond discovered late in season	Surveys were conducted close to the peak period and within the overall recommended survey period. Therefore the risk that great crested newts were overlooked at this pond are minimal and limitations are **not likely to have affected the survey conclusions.**
46		3	Vegetation 4	0	The vegetation was all submerged and it is considered that newts would have been visible on top of the vegetation. Also netting was carried out on each visit. No bottle trapping was possible as the pond is lined	It is possible that individual great crested newts were overlooked at this pond due to the high levels of vegetation and the absence of bottle trapping; however, any significant population would have been detected and overall it is thought **that the risk of this limitation affecting the overall conclusions of the survey is low.**
46a		3	Vegetation 4	0	The vegetation was all submerged and it is considered that newts would have been visible on top of the vegetation. Also netting was carried out on each visit. No bottle trapping was possible as the pond is lined	It is possible that individual great crested newts were overlooked at this pond due to the high levels of vegetation and the absence of bottle trapping; however, any significant population would have been detected and overall it is thought **that the risk of this limitation affecting the overall conclusions of the survey is low.**
47		3	Vegetation 4	0	The vegetation was mainly bulrush and the pond contained very little water. No bottle trapping was possible as the pond is lined and the water too shallow	It is possible that individual great crested newts were overlooked at this pond due to the high levels of vegetation and the absence of bottle trapping; however, the pond was of limited suitability for great crested newts and overall it is thought that limitations are **not likely to have affected the survey conclusions.**
53		2	2 peak visits	BT x2	Cows present in the field constrained the final three surveys by crowding and nudging surveyors whilst they were trying the survey. Due to scheduling constraints two rather than three visits were carried out during the peak period with the third visits carried out on 21st May.	Three visits were carried out to this pond prior to the cows being moved to the field and based on the numbers of great crested newts recorded during these surveys it is highly unlikely that the population size class for this pond would have altered if surveys weren't constrained. As such this limitation is **not likely to have affected the survey conclusions.** No great crested newt were found during the first visit but seven were recorded during the third visit. As such this limitation is **not likely to have affected the survey conclusions.**

Pond #	Total Number of Visits	Visits in peak period	Survey conditions*	Bottle trapping	Limitations	Limitations are likely to have affected the survey conclusions
55		3	Turbidity 4	BT x2	The high turbidity is likely due to the presence of high numbers of very large carp. Bottle trapping or netting were carried out on all visits	Limitations were mitigated through use of other survey methods and are therefore **not likely to have affected the survey conclusions.**
63		3	Turbidity 4	BT x2	The high turbidity is considered to be due to the presence of fish. Bottle trapping or netting were carried out on all visits	Limitations were mitigated through use of other survey methods and are therefore **not likely to have affected the survey conclusions.**
69		2	2 peak visits	BT x5	Due to scheduling constraints two rather than three visits were carried out during the peak period with the third visits carried out on 21st May.	Only individual great crested newts were recorded here so further peak period visits are unlikely to have significantly altered the results. As such this limitation is **not likely to have affected the survey conclusions.**
82		3	Turbidity 4	0	The high turbidity is considered to be due to the presence of geese and ducks. Bottle trapping wasn't possible due to solid substrate/lining. Netting was carried out on all visits	The pond was of limited suitability for great crested newt based on the poor quality of the water and presence of waterfowl. Limitations are **not likely to have affected the survey conclusions.**
58		2	2 peak visits	BT x4	Due to scheduling constraints two rather than three visits carried out during the peak period with the third visits on 21st May.	Only one great crested newt was recorded at this pond (during the second visit) and it is not thought that a further visit during the peak period would have significantly affected the overall results. As such this limitation is **not likely to have affected the survey conclusions.**

Table 12: Summary of waterbodies deemed unsuitable following scoping

Pond #	Survey type	Comment
Area 3b	Scoping only	Network of ditches - variously inaccessible and unsuitable
4	Scoping only	4-4d are all part of the same wide drain. Inaccessible due to being deep and steep sided. Unsuitable for GCN
4a	Scoping only	4-4d are all part of the same wide drain. Inaccessible due to being deep and steep sided. Unsuitable for GCN
4b	Scoping only	4-4d are all part of the same wide drain. Inaccessible due to being deep and steep sided. Unsuitable for GCN
4c	Scoping only	4-4d are all part of the same wide drain. Inaccessible due to being deep and steep sided. Unsuitable for GCN
4d	Scoping only	4-4d are all part of the same wide drain. Inaccessible due to being deep and steep sided. Unsuitable for GCN
5	Scoping only	No safe access due to steep rocky sides and poor suitability due to its use a sluice for the nearby river. Part of the network of wide drains (4, 4a-d, 5 and 6)
6	Scoping only	Part of the network of wide drains (4, 4a-d, 5 and 6). 6 is a sluice connected to River Deben
Area 10a	Scoping only	Network of ditches - variously inaccessible and unsuitable
26	Scoping only	26, 27 and 28 are part of a large ditch network with a pipe from the river running into the end at 26. Inaccessible and unsafe to access due to very steep sides, dense bramble and barbed wire
27	Scoping only	26, 27 and 28 are part of a large ditch network with a pipe from the river running into the end at 26. Inaccessible and unsafe to access due to very steep sides, dense bramble and barbed wire
28	Scoping only	26, 27 and 28 are part of a large ditch network with a pipe from the river running into the end at 26. Inaccessible and unsafe to access due to very steep sides, dense bramble and barbed wire
37	Scoping only	Unsuitable - pond at the side of the road, nearly dry
39	Scoping only	Unsuitable - dry part of a ditch
40	Scoping only	Unsuitable - dry and overgrown with tall ruderals
40a	Scoping only	Unsuitable - Shallow drying ditch with little water, covered with vegetation in sections
41	Scoping only	Unsuitable - dry ditch in field
41a	Scoping only	Unsuitable - very small dry ditch through gardens
48	Scoping & HSI	No landowner permission but pond viewed from adjacent land. This pond was previously dry but now contains water
49	Scoping only	Unsuitable - pond dry
54	Scoping only	Unsuitable - part of a dry ditch with very little water present
59	Scoping & HSI	No landowner permission to survey but pond viewed from adjacent land. Large garden pond
62a	Scoping only	Unsuitable - shallow ditch next to arable field and fishing lake
63a	Scoping only	Unsuitable - corner of a dry ditch
64	Scoping only	Unsuitable - dry ditch
65	Scoping only	Pond has been filled-in
70	Scoping & HSI	Approximately 12 ponds 2 of which were suitable for survey but night time access could not be arranged and site manager had concerns (also planned to drain the ponds)

Pond #	Survey type	Comment
70a	Scoping & HSI	Un-netted pond within the fish farm (Pond 70). This pond does not appear to be used for fish. Night time access could not be arranged.
70b	Scoping & HSI	Un-netted pond within the fish farm (Pond 70). Pond quite shallow. This pond does not appear to be used for fish. Night time access could not be arranged.
74	Scoping only	Pond has been filled in with earth and rubbish
75	Scoping only	No pond found (presumably filled in).
78	Scoping only	Unsuitable - Wet mud with buttercups. Some shallow pools with a slight trickle of water down the hillside draining to the north.
80	Scoping only	Unsuitable - wet mud only

*Vegetation and turbidity scored on a scale of 1-5 with 5 being the highest. Where turbidity and/or vegetation levels are high this can limit the visibility within the water.

Appendix 3: Figures

Figure 1: Pond location plans – Section 1

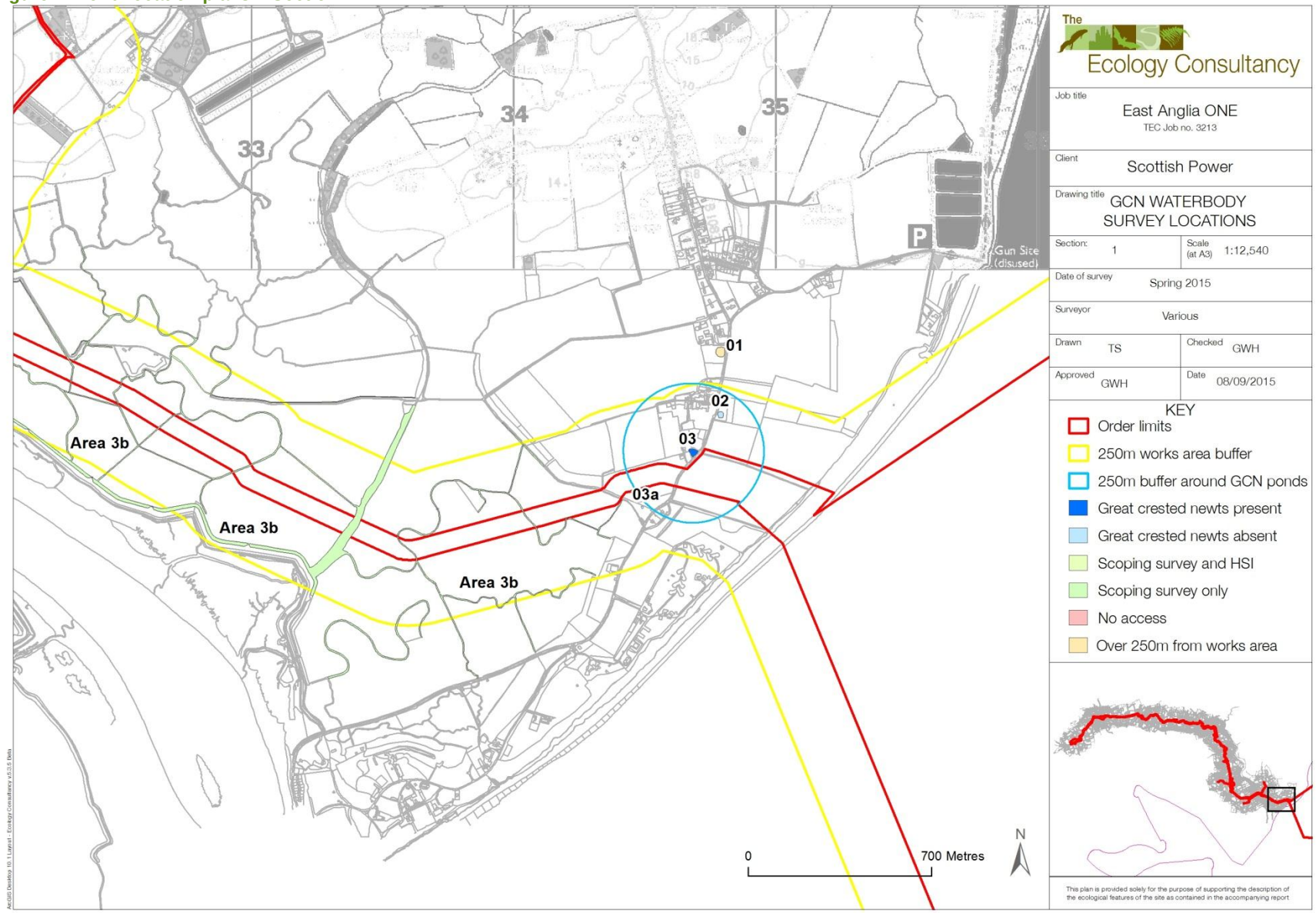


Figure 1: Pond location plans – Section 2

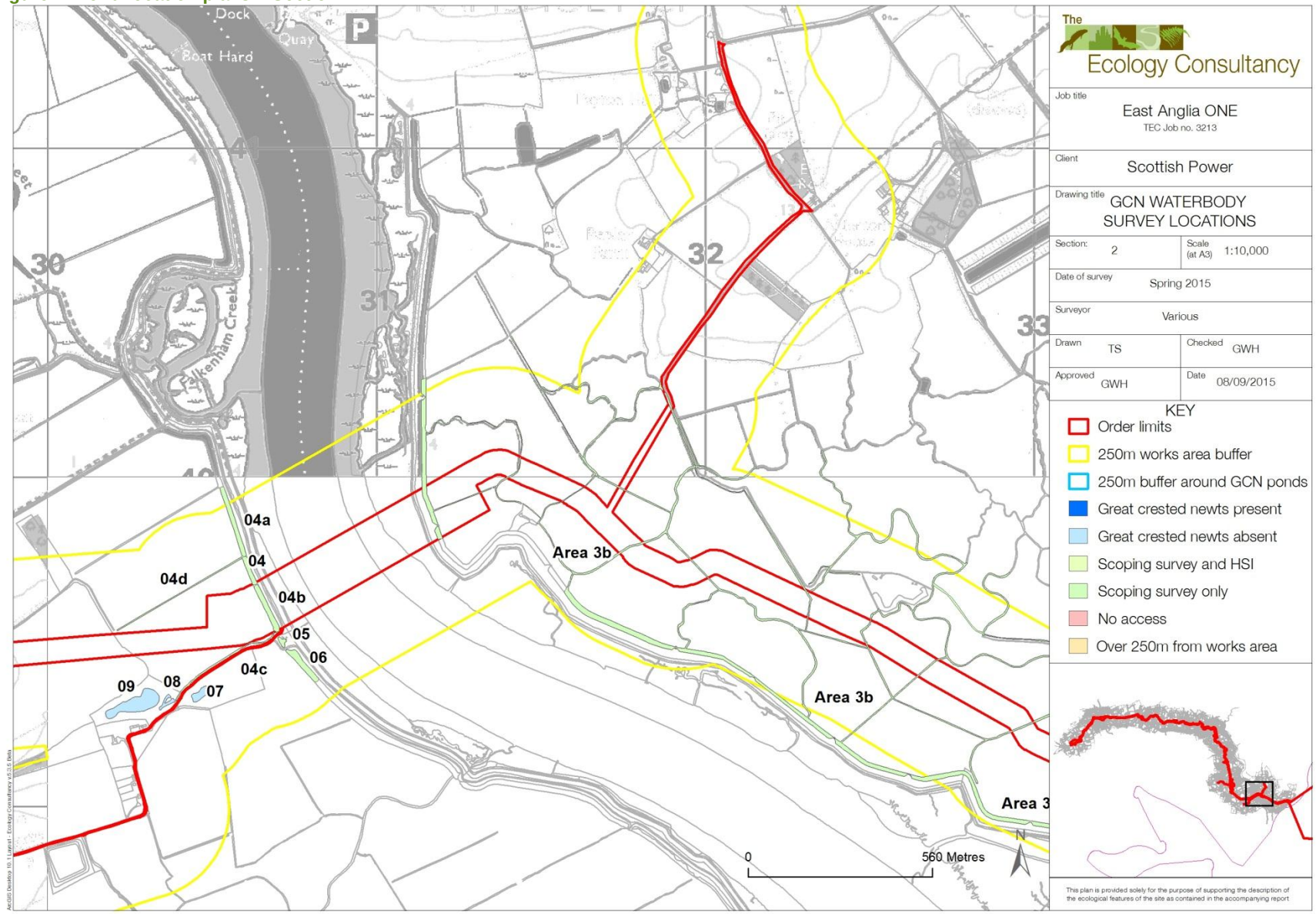


Figure 1: Pond location plans – Section 3

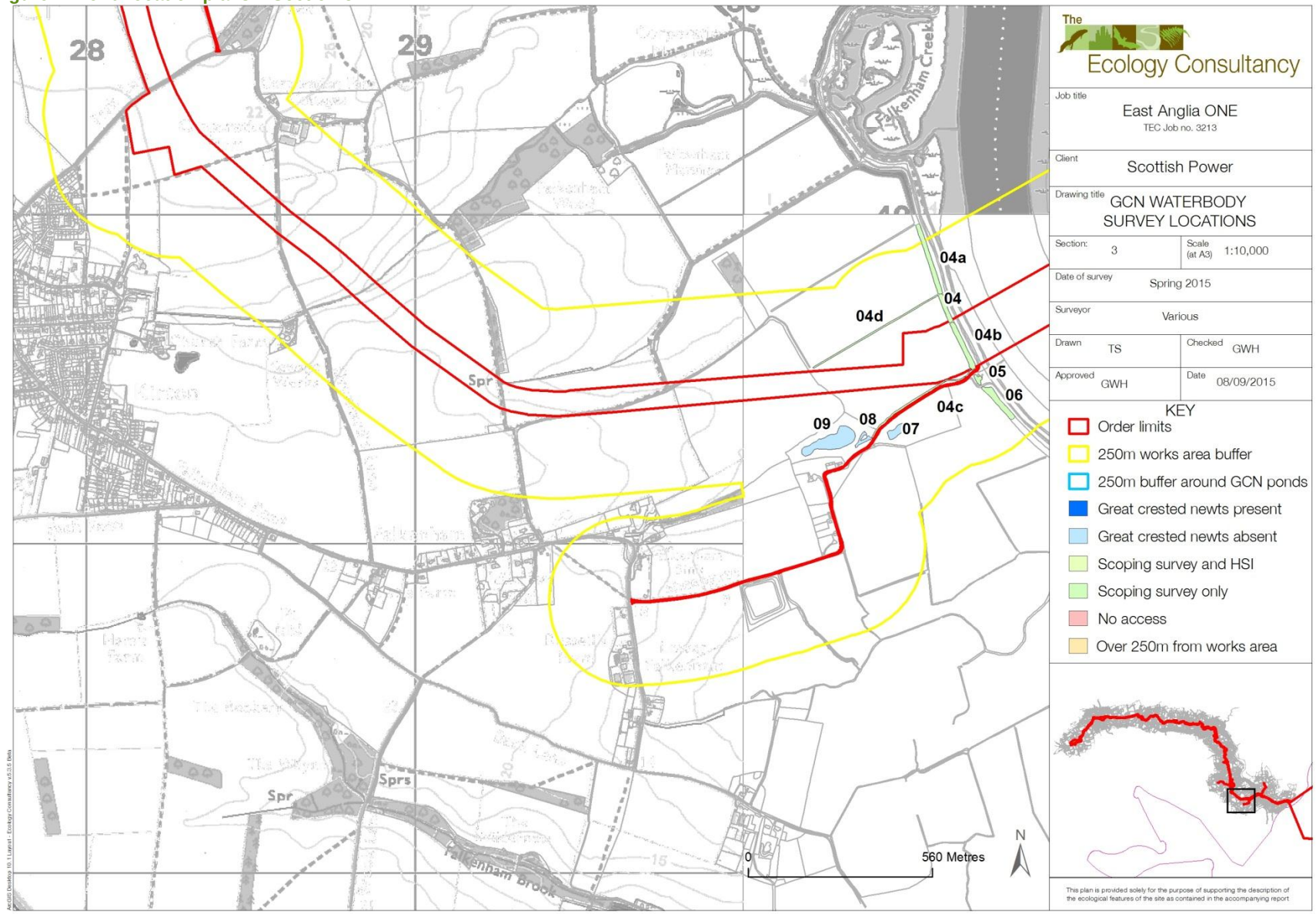


Figure 1: Pond location plans – Section 4

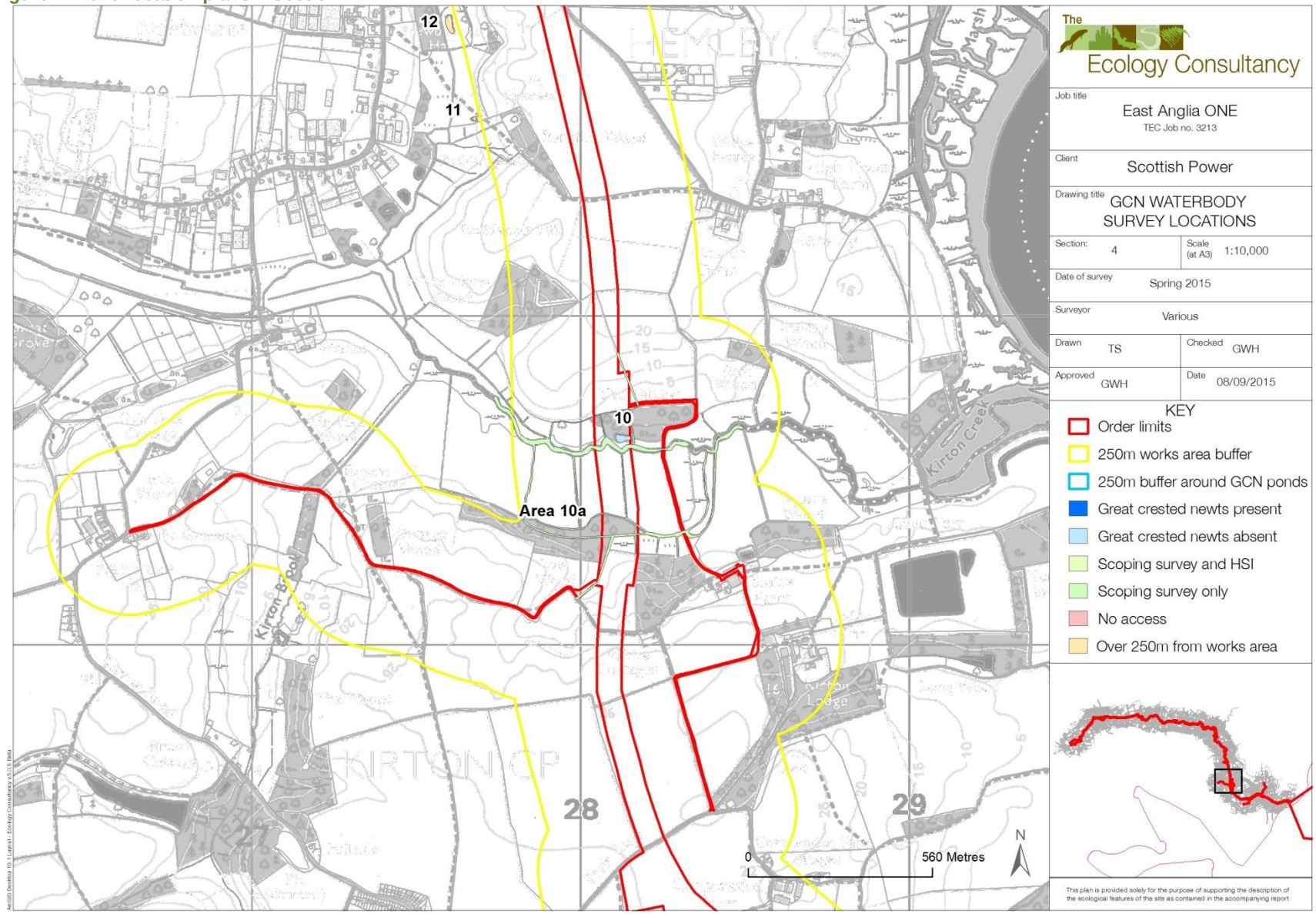


Figure 1: Pond location plans – Section 5

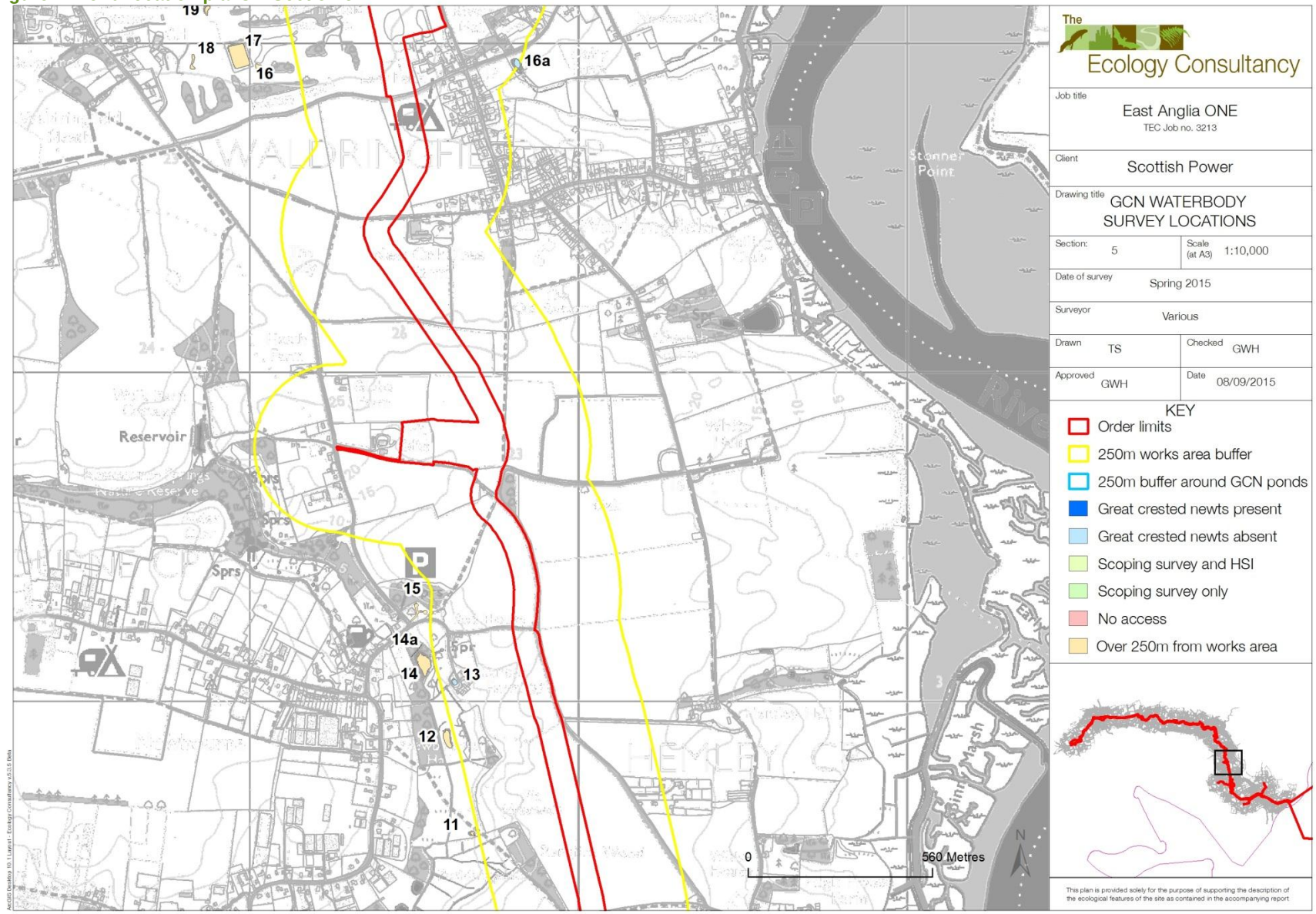


Figure 1: Pond location plans – Section 6

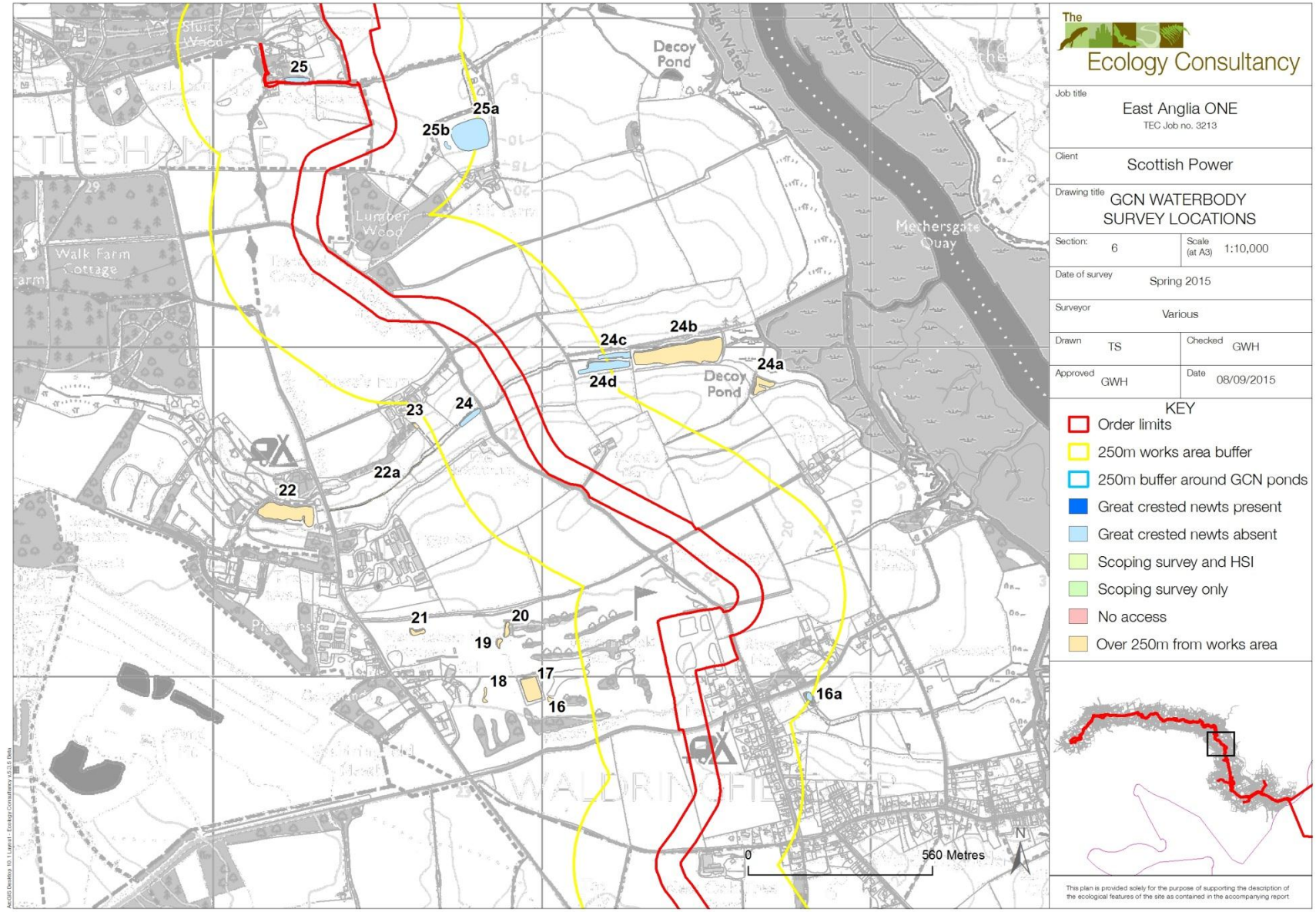


Figure 1: Pond location plans – Section 7

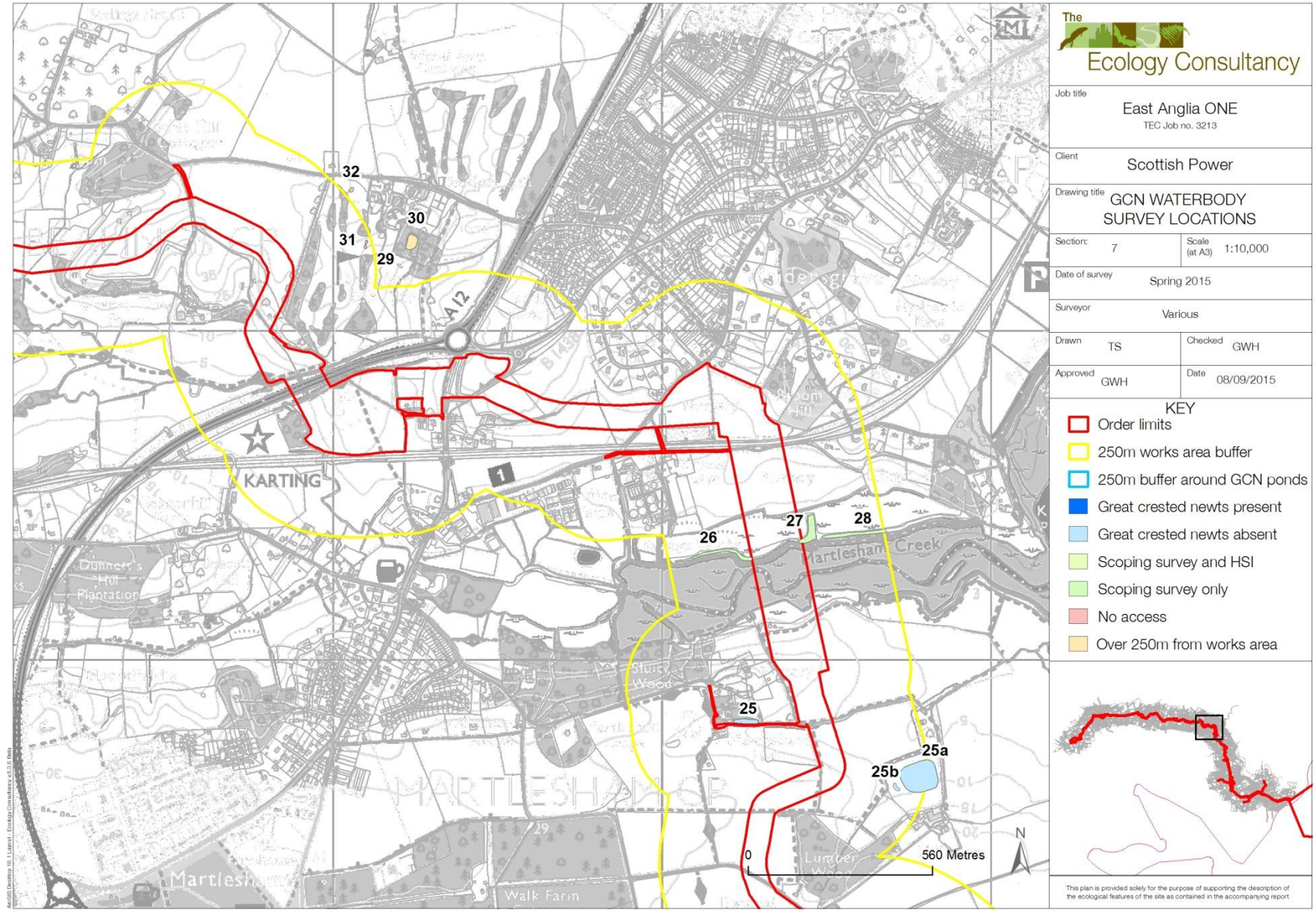


Figure 1: Pond location plans – Section 8

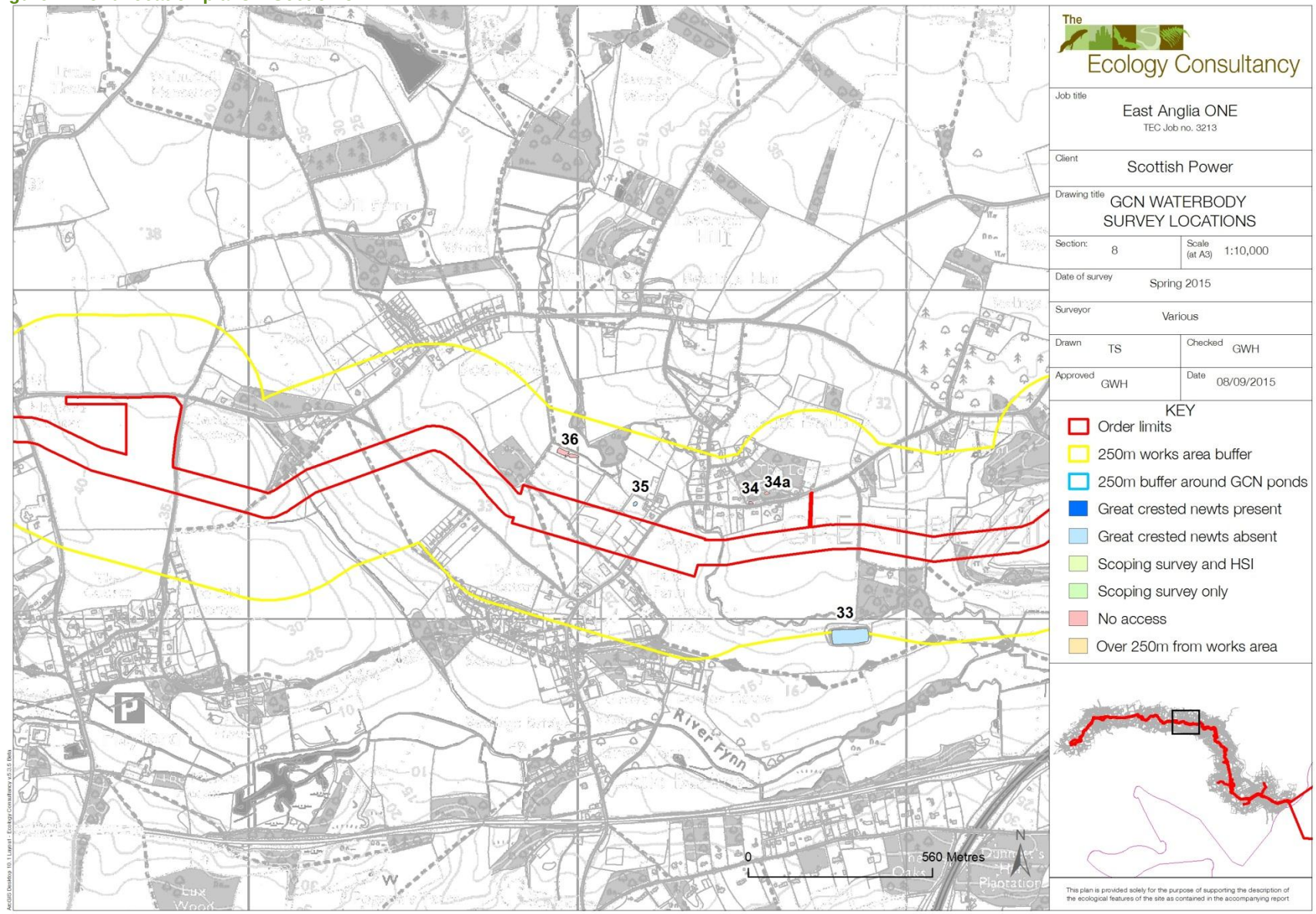


Figure 1: Pond location plans – Section 9

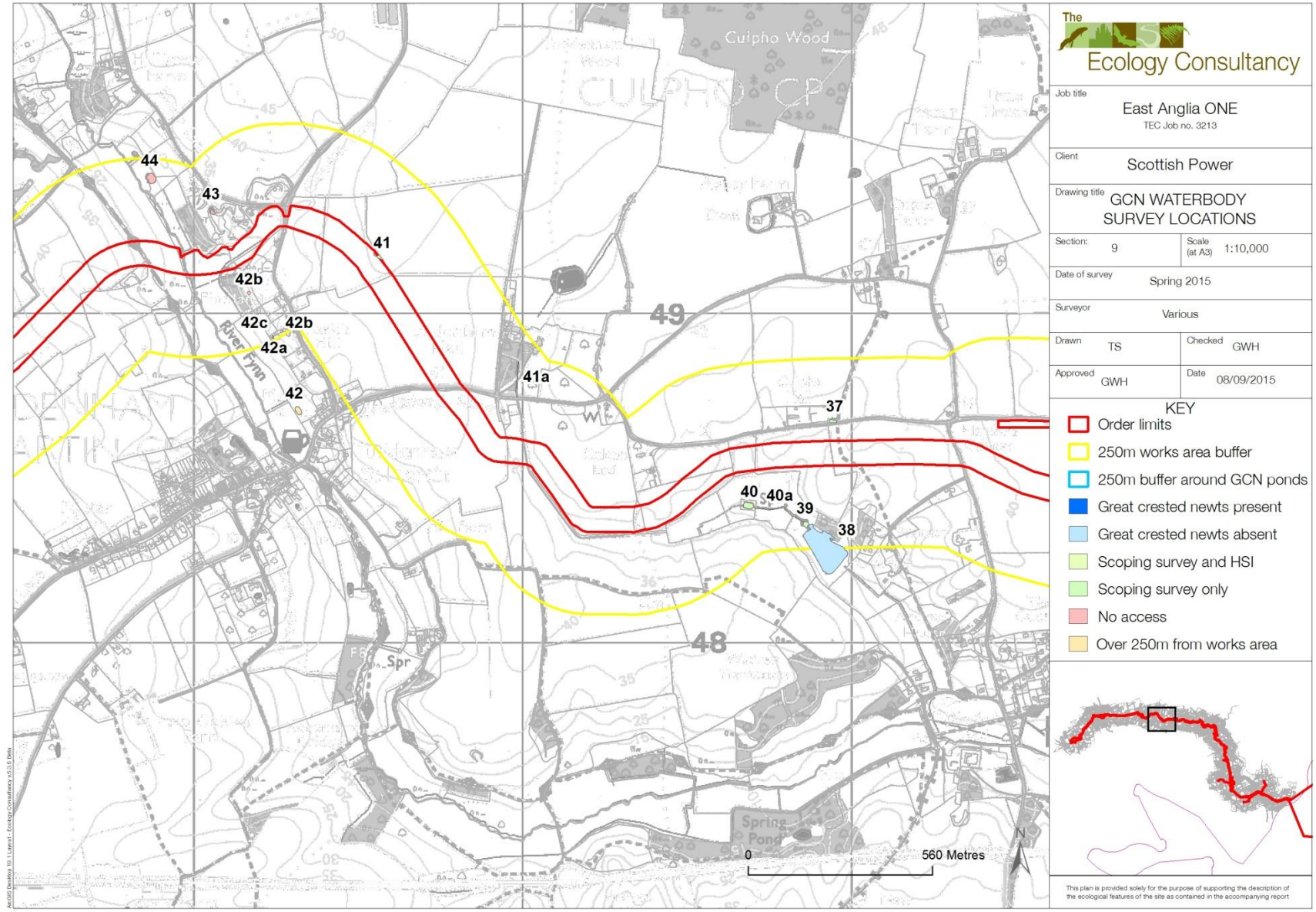


Figure 1: Pond location plans – Section 10

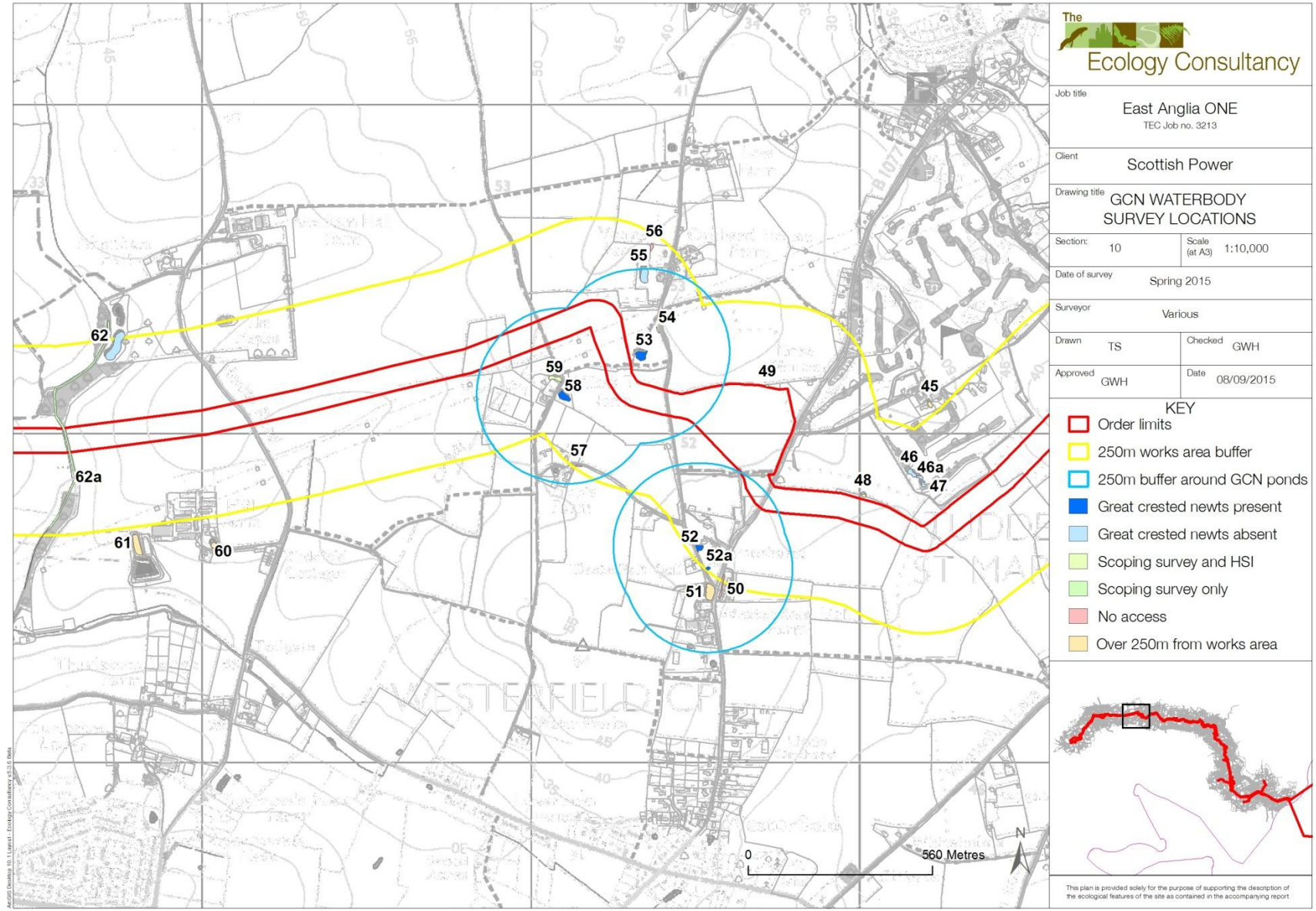


Figure 1: Pond location plans – Section 11

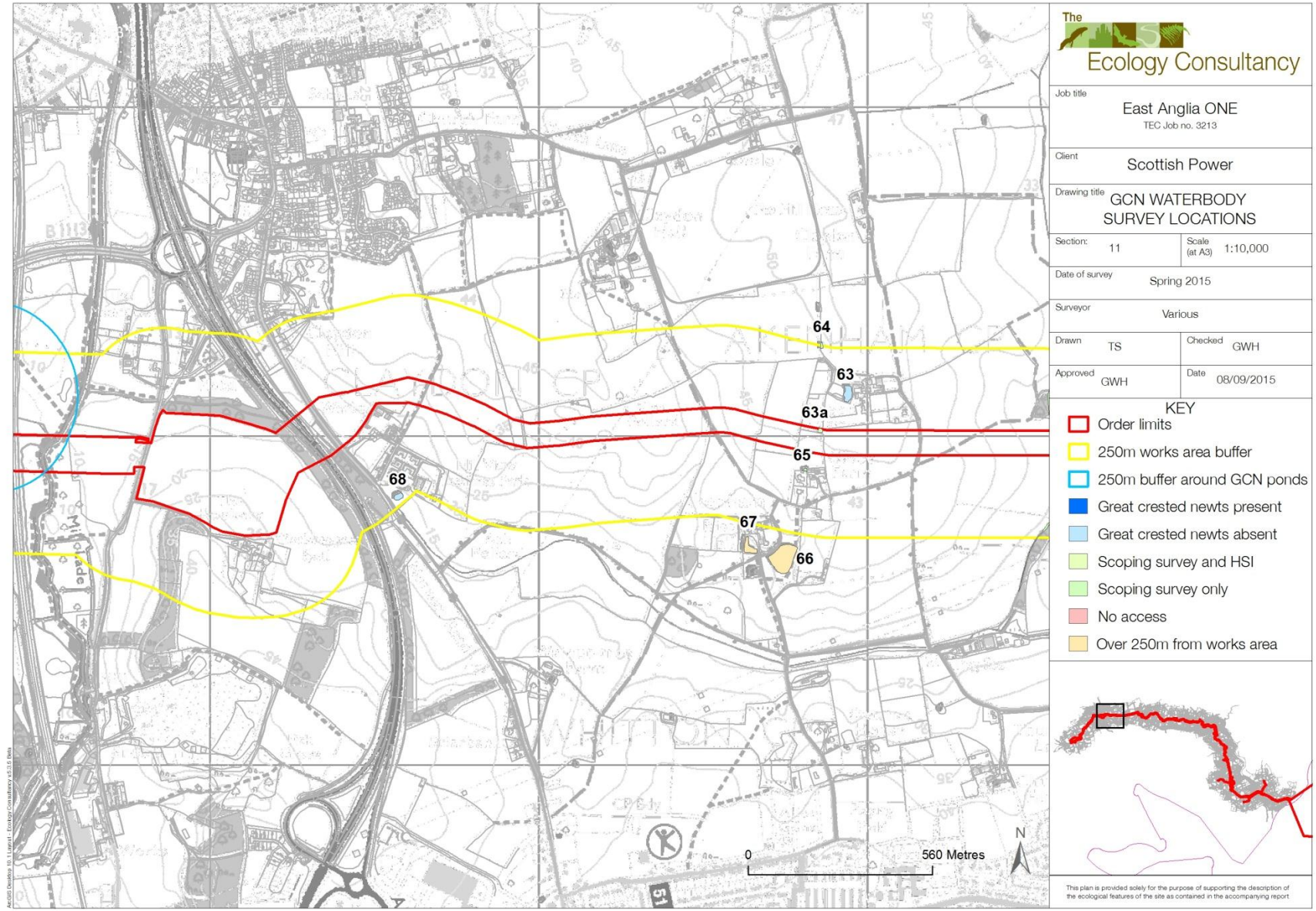


Figure 1: Pond location plans – Section 12

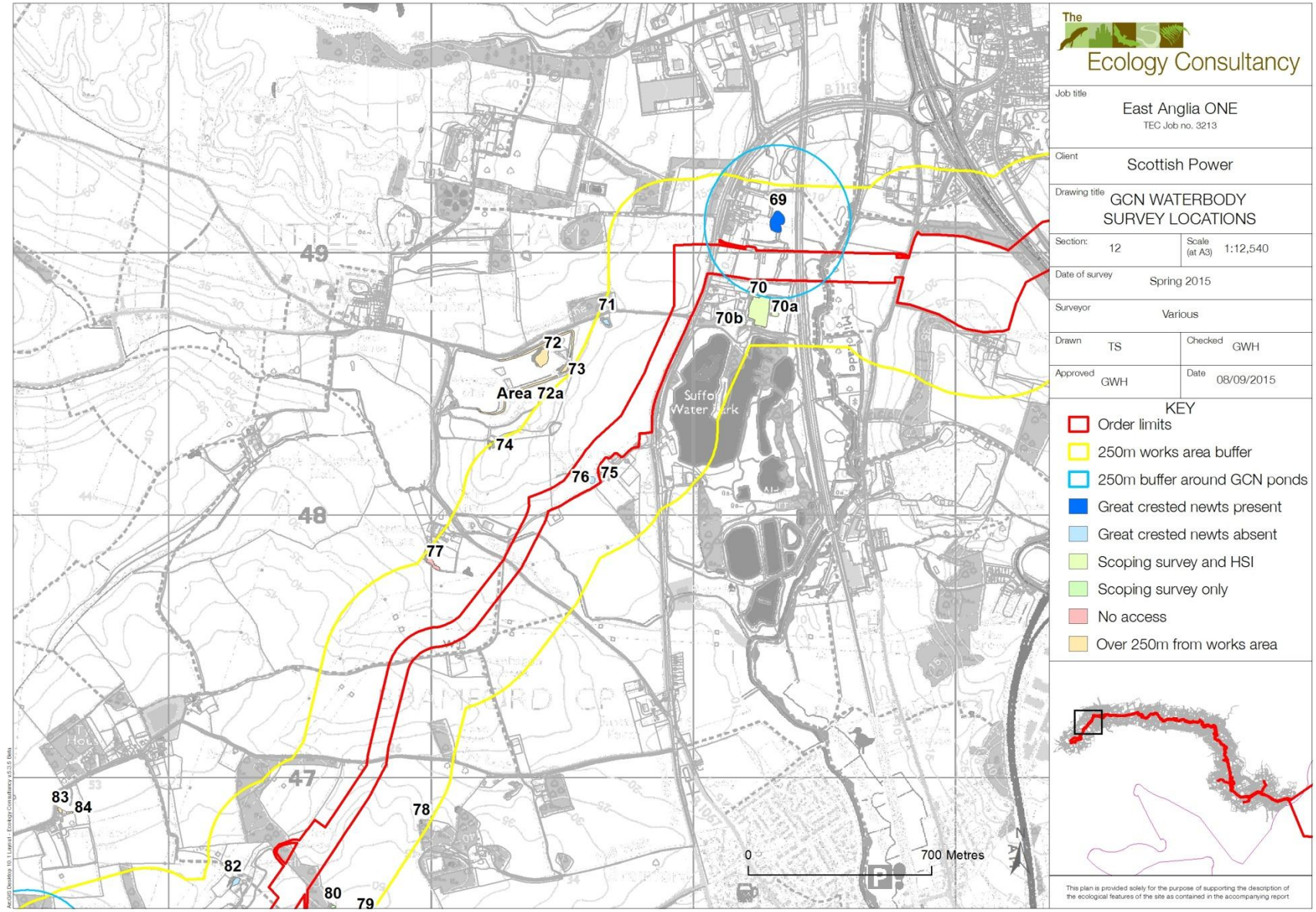


Figure 1: Pond location plans – Section 13

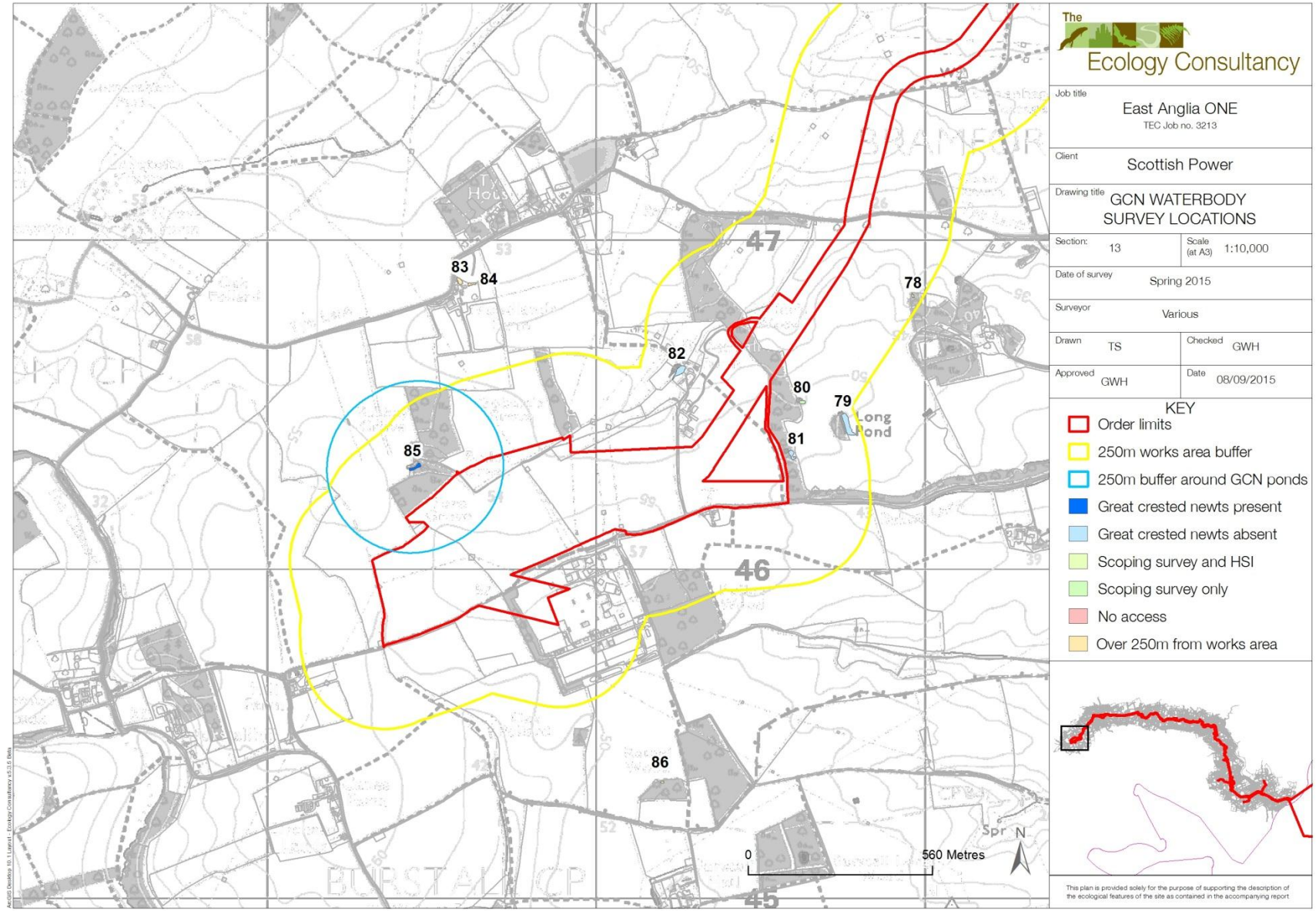


Figure 2: Area overview map

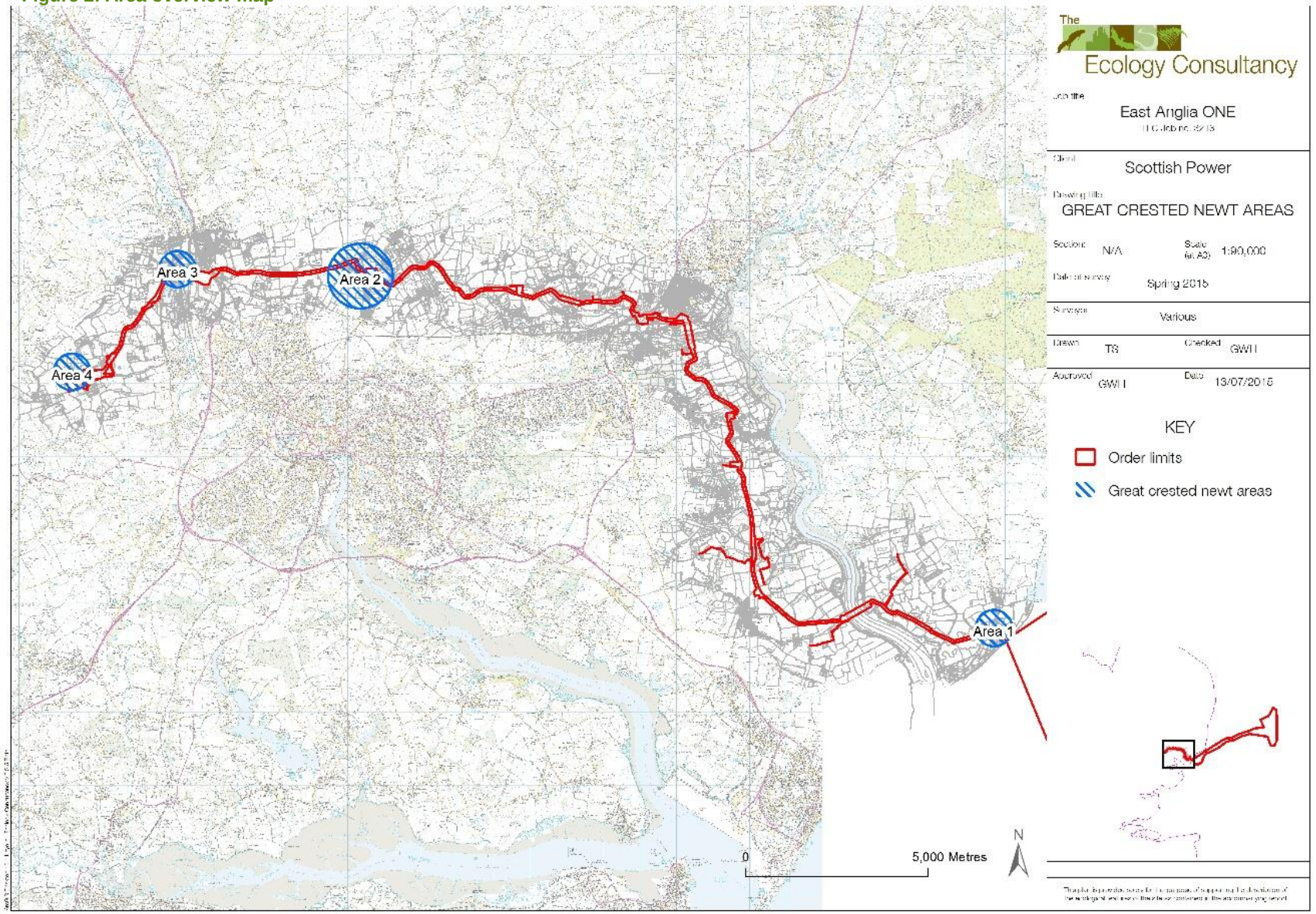


Figure 2: Area overview map

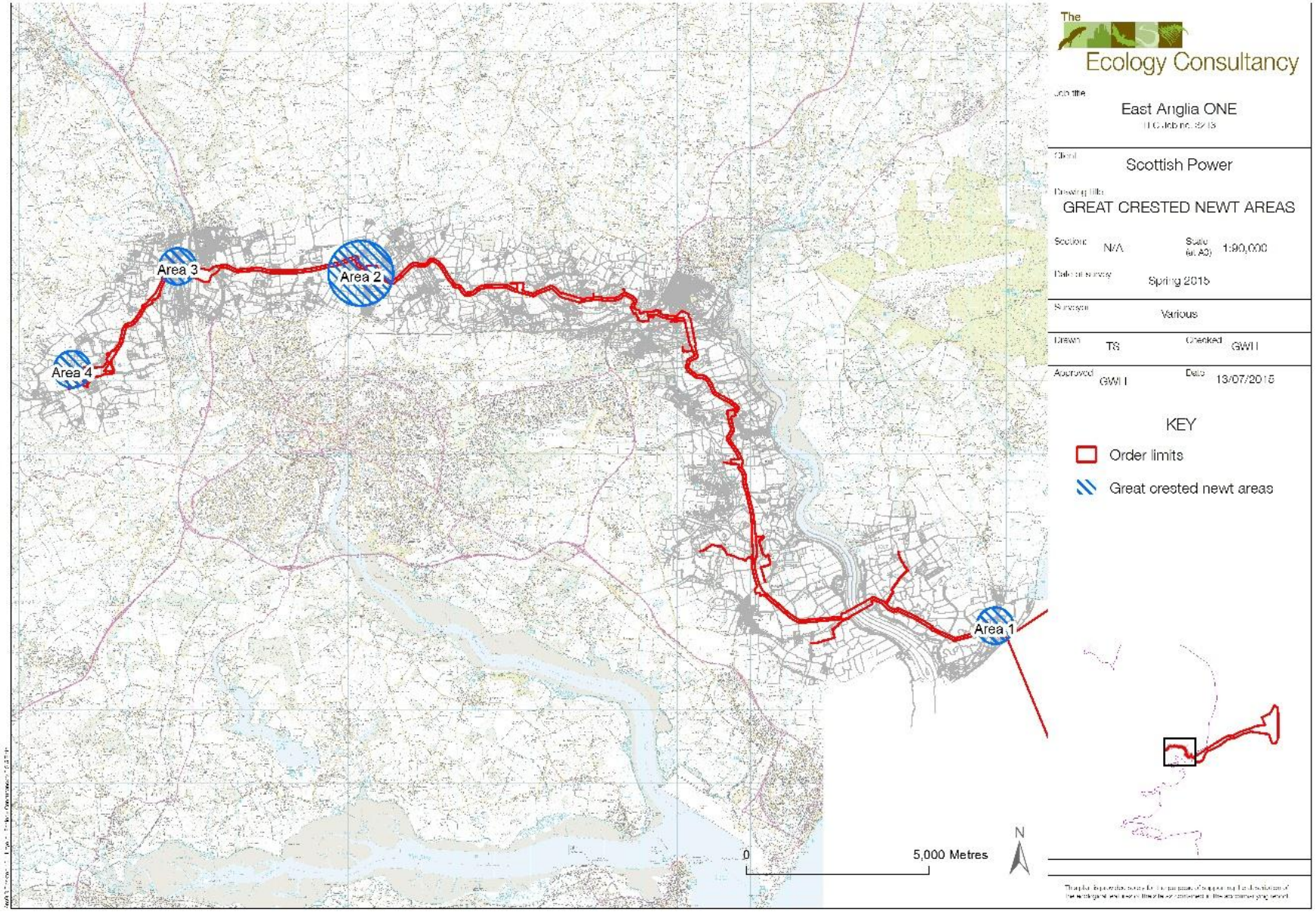


Figure 3: Area 1 - Pond 3 location map

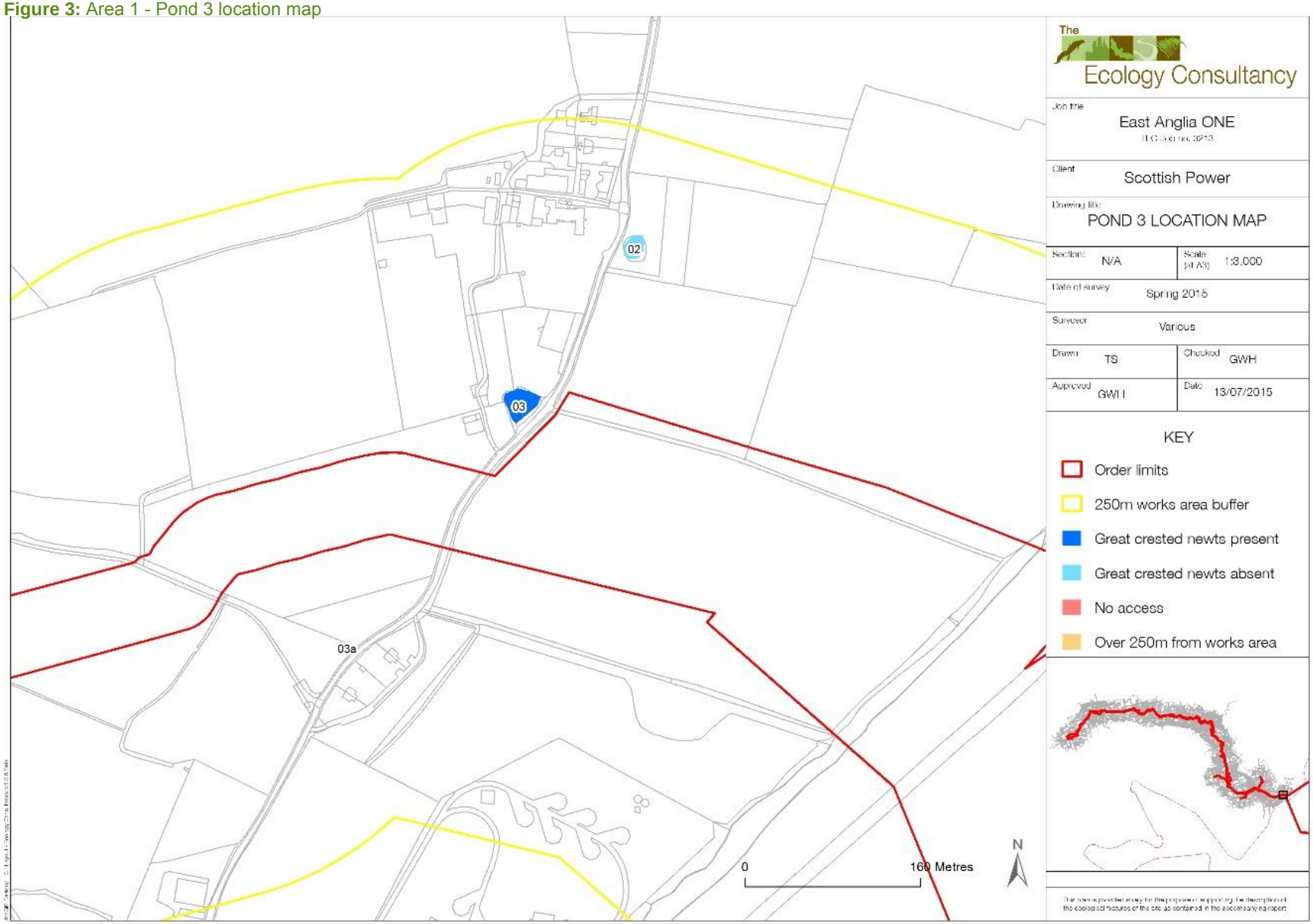


Figure 4: Area 2 - Pond 52, 52a, location maps

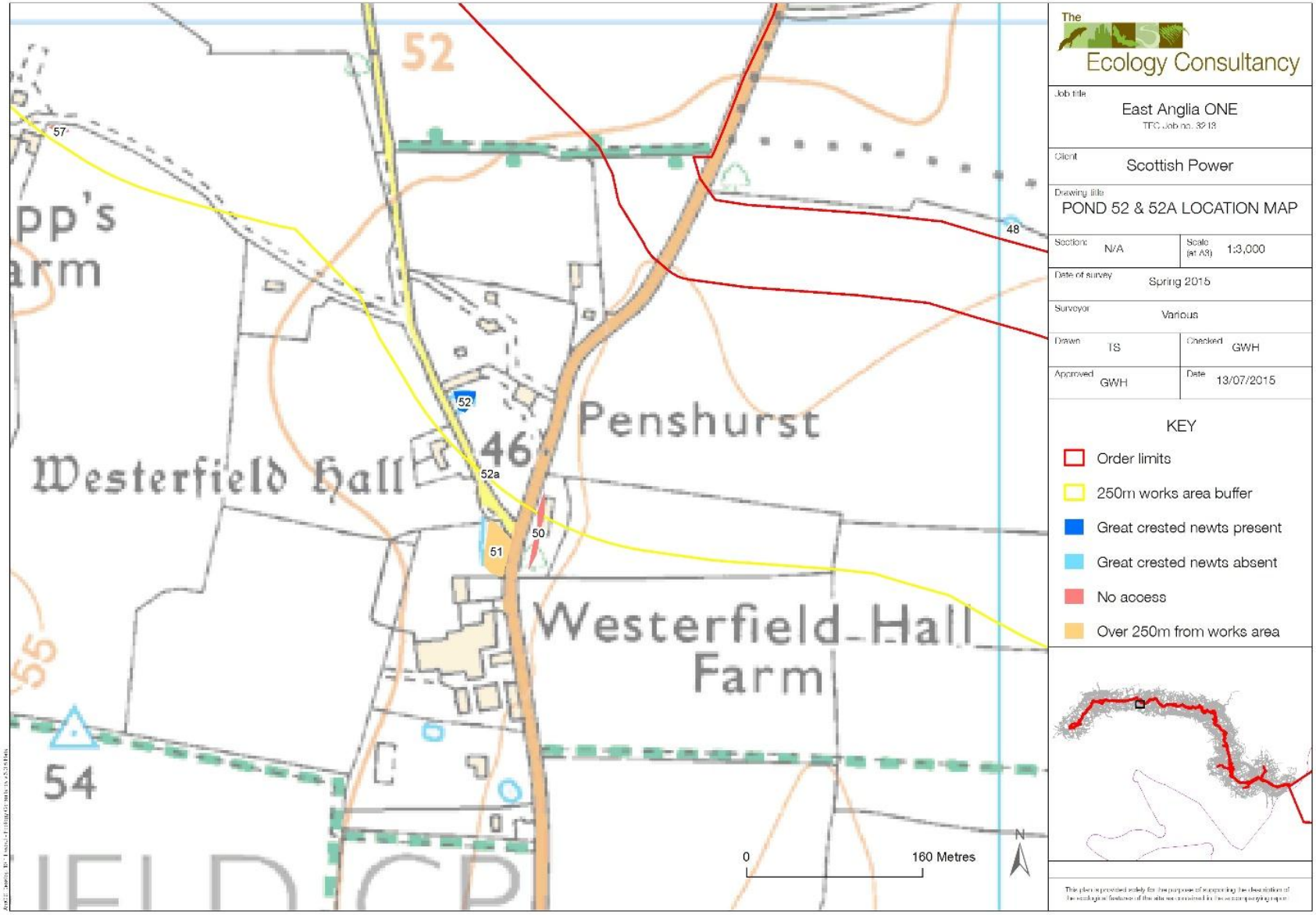


Figure 5: Area 2 - Pond 53 and 58 location maps

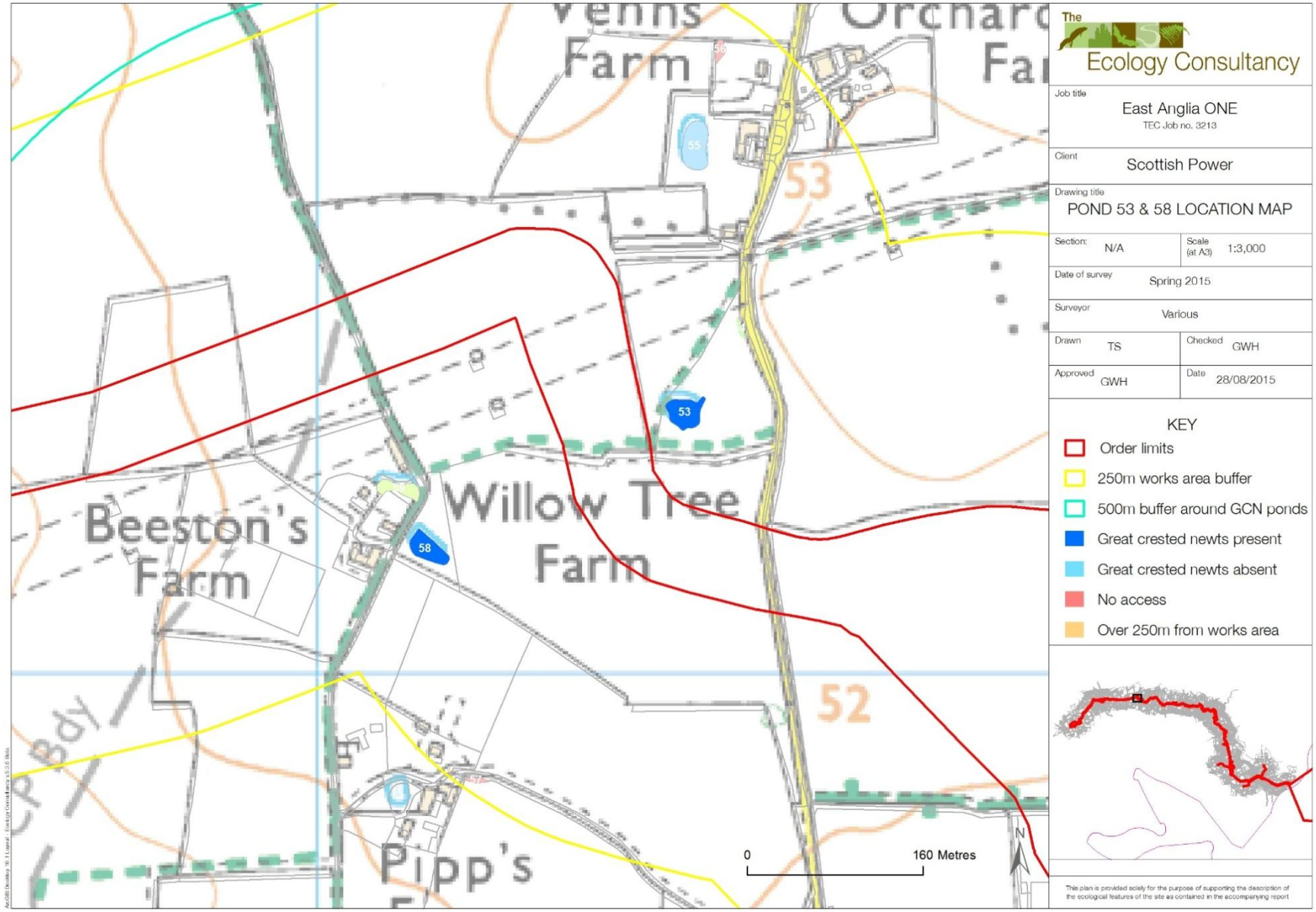


Figure 6: Area 3 - Pond 69 location map

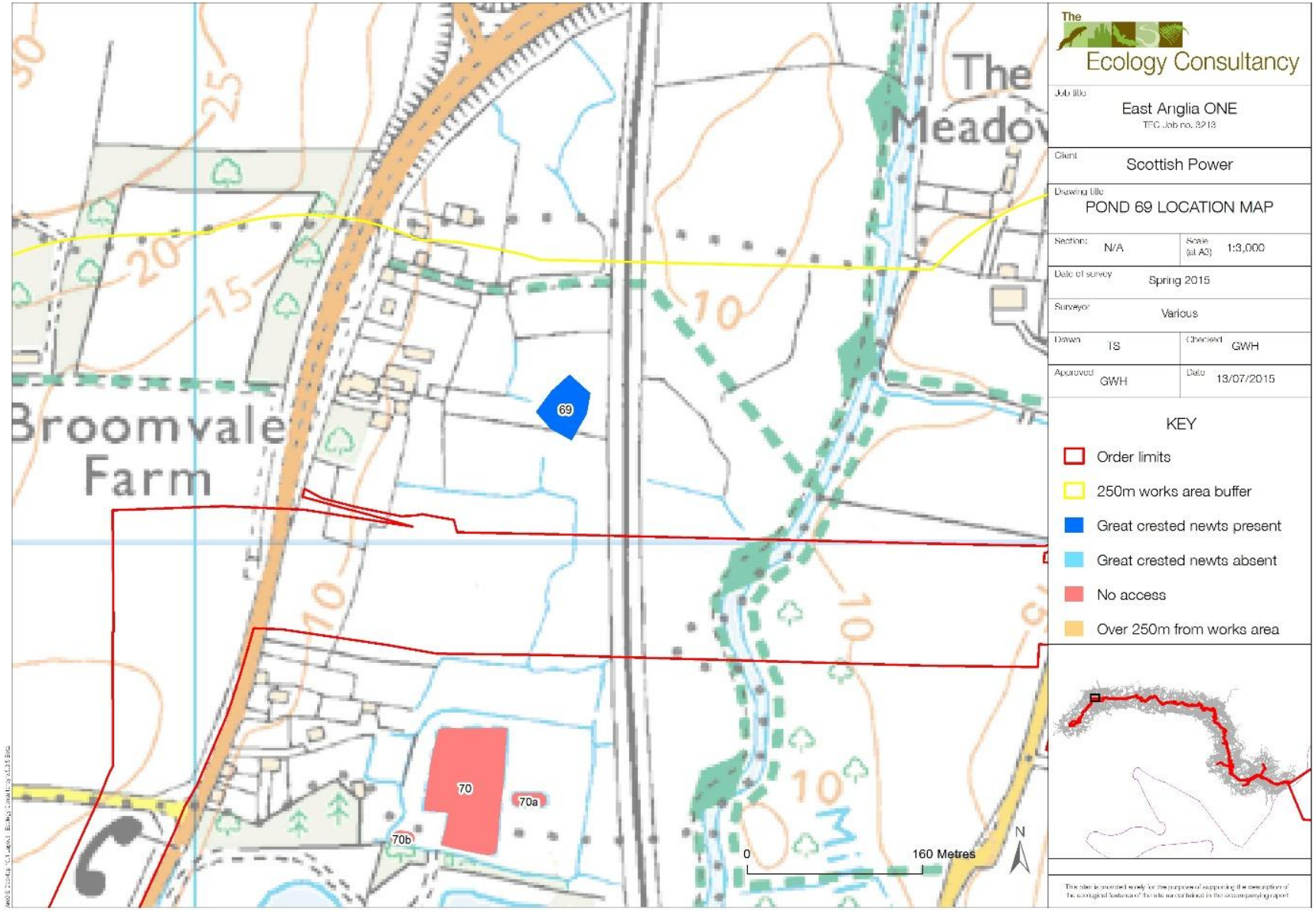
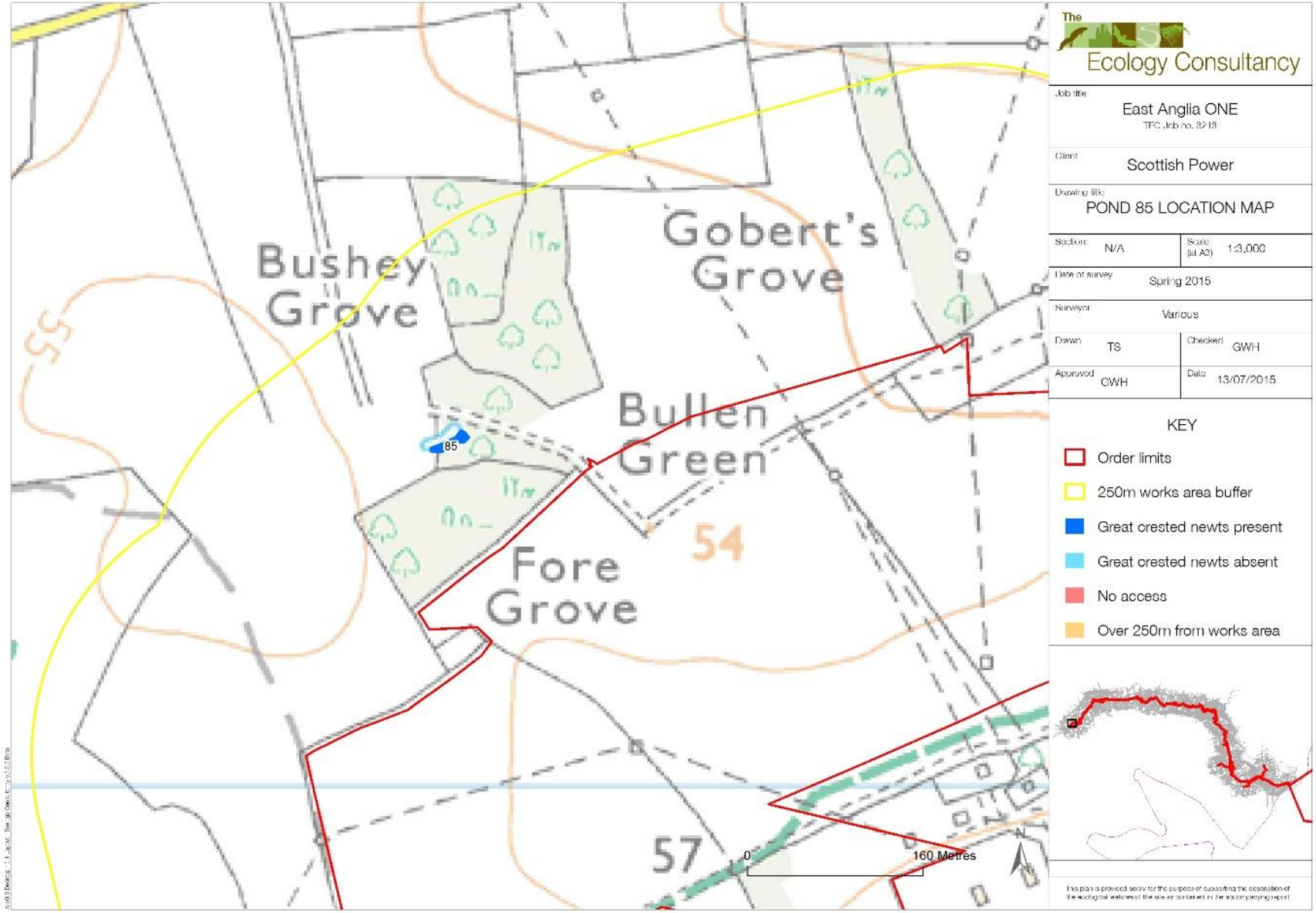


Figure 7: Area 4 - Pond 85 location map



Appendix 23.6 Ends Here

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