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PARKER DANN

LAND AT CHURCH LANE, CLIMPING, WEST SUSSEX

GREAT CRESTED NEWT SURVEY REPORT

JUNE 2016

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NON-TECHNICAL SUMMARY

Phlorum was commissioned by Parker Dann to carry out great crested newt (*Triturus cristatus*) surveys in relation to the proposed development at Church Lane in Climping, West Sussex. It is understood that current proposals are for a residential development for up to 300 dwellings with the provision of green space. It is understood the woodland within the southern and western site extents will be retained and ponds will be created as part of the proposed landscaping design. Surveys were required in order to ascertain whether great crested newts could pose a constraint to the works. The pond surveys were carried out in April, May and June 2016 by surveyors licensed by Natural England.

The main findings of the survey are as follows:

- The site covers an approximate area of 21 hectares (ha) although the proposed development is concentrated within the southern extent of the site.
- No ponds were present on site and a total of seven ponds and a ditch were included in the survey within a 500m radius.
- The pond locations and reference numbers are represented in the Survey Map in Appendix A.
- A Habitat Suitability Index Assessment was carried out for each of the surveyed ponds. Ponds 3, 4, 5, and 6 received a score of Poor, Pond 7 received a score of Below Average, Pond 1 received a score of Average and Pond 2 received a score of Good.
- No great crested newts of any life stage were found in Ponds 3, 4, 5, 6, or 7 and Ditch 1.
- A small population of great crested newts were in found in Ponds 1 and 2 based on current Natural England guidelines (English Nature 2001). No evidence to show that the newts were breeding within these ponds were found during the survey.
- Smooth newt was also present in Ponds 1, 3 and 7 and common frog was recorded off-site in Pond 3.
- Great crested newts receive protection under the Wildlife and Countryside Act 1981 (as amended) and The Conservation of Habitats and Species Regulations 2010. Under current legislation both the individual and habitats they use for shelter and breeding are protected.

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- Due to the absence of great crested newts to the north, east and west of the site, together with the general unsuitability of the habitats within the development footprint (i.e. arable field) and the presence of a busy road (A259) between the site and Ponds 1 and 2 the potential for great crested newts to be utilising on-site terrestrial habitat for commuting and hibernating is considered to be **low.** Instead it is considered more likely that individuals in the landscape will be using terrestrial habitats connecting ponds to the south.
- Based on these factors, a European Protected Species Mitigation Licence in respect to great crested newts is not required, on the basis that a precautionary approach to the works will be implemented in order to minimise any potential impacts. Further detail is provided in the Mitigation Strategy Section below.
- Further details are provided in the Recommendations Section of the report.

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1. INTRODUCTION

Background

1.1 Phlorum Limited was commissioned by Parker Dann to carry out a great crested newt (*Triturus cristatus*) survey prior to development within land at Church Lane in Climping, West Sussex (hereafter referred to as "the site").

1.2 The surveys were undertaken following a Preliminary Ecological Appraisal that identified potentially suitable breeding habitat within the proposed development site (Phlorum 2015).

1.3 The report provides an assessment of the status of great crested newt both within and in the vicinity of the site, providing information on their presence / likely absence and distribution. Potential impacts of the proposed development are identified and measures to mitigate the effects of the proposed development on great crested newts are discussed in outline.

1.4 It is understood that current proposals are for a residential development to include the provision of green space. It is understood the woodland within the southern and western site extents will be retained and ponds will be created as part of the proposed landscaping design.

Site Description

1.5 The site at Church Lane is within a relatively rural location within the centre of Climping in West Sussex. The site is bounded to the north by residential housing and Horsemere Green Lane and to the east by Church Lane. Yapton Road bounds the site to the west and Crookthorn Lane is directly south.

1.6 In the wider surrounds, agricultural land dominates the landscape to the south, east and west with residential properties and commercial buildings to the north. Littlehampton is located approximately 1.5km to the east and the coastline is approximately 1.3km to the south.

1.7 The National Grid Reference for the centre of the site is TQ000 020 and the site measured approximately 21 hectares (ha).

1.8 There were no on-site water bodies. Aerial mapping and OS maps indicate that there are eight ponds and two ditches located within 500m of the site boundary, the closest of which is a pond located approximately 110m to the north of the site.

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2. METHODOLOGY

Data search

2.1 Records for great crested newt from within a 2km radius of the site were requested from the Sussex Biodiversity Record Centre as part of the initial habitat survey (SxBRC, 2015).

Great Crested Newt Survey

Habitat Suitability Index (HSI) Assessment

2.2 Phlorum undertook a HSI Assessment of all ponds within 500m of the site, where access permitted. A total of seven ponds were included in the HSI Assessment.

2.3 There were also two ditches within 500m of the site. The HSI is not designed for the assessment of ditches and therefore it was not undertaken for these waterbodies.

2.4 The assessment was carried out by a suitably qualified ecologist using the methodology provided by the National Amphibian and Reptile Recording Scheme (Oldham et al. 2000). The HSI assessment uses ten key habitat criteria and is based on the assumption that habitat quality determines great crested newt population size (Oldham *et al,* 2000). The criteria are as follows:

- SI1 = geographic location;
- SI2 = pond area;
- SI3 = pond permanence;
- SI4 = water quality;
- SI5 = pond shading;
- SI6 = number of waterfowl;
- SI7 = occurrence of fish;
- SI8 = pond density;
- SI9 = proportion of 'newt friendly' terrestrial habitat; and
- SI10 = macrophyte (aquatic plant) content.

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2.5 The results of the HSI assessment calculation have been compared to categorised HSI scores used by the National Amphibian and Reptile Recording Scheme (Oldham *et al*, 2000) to identify the probability of a pond supporting great crested newts. The five categories are summarised in the table below.

Table 2.1: HSI Assessment Categories

Probability of Ponds Supporting Great Crested Newts	**HSI Score**
Poor	Below 0.5
Below Average	0.5 - 0.59
Good	0.6 - 0.69
Excellent	0.7 - 0.79

(Extracted from Oldham *et al*, 2000)

2.6 The HSI assessment was carried out for all ponds within 500m of the site.

Pond Surveys

2.7 A total of eight ponds and two ditches were identified within 500m radius of the site. A total of seven off-site ponds and one off-site ditch within the 500m radius were included in the survey. A single ditch and one pond were excluded from the survey due to restricted access (with access being refused by the landowner or contact with the landowner not being possible). Off-site surveyed ponds and ditches were located (approximately) 110m south; 160m south; 160m east; 220m north, 230m north, 235m north and 160m north of the site.

2.8 The pond locations and reference numbers are represented in the Survey Map in Appendix A.

2.9 The survey protocol followed that set out in the Great Crested Newt Mitigation Guidelines (English Nature, 2001). The four surveys required to demonstrate presence or absence were conducted between early-May and early-June with two of those visits taking place within the peak survey time between mid-April and mid-May. An additional two survey visits were made to all of the ponds to allow a population estimate to be made.

2.10 The pond surveys were led by Jack Kellett and Andrea Cordon, both holders of a great crested newt class survey license: WML-CL08. Health and safety support throughout the surveys was provided by Environmental Consultant Joe Slade.

2.11 All surveys were undertaken in periods of suitable weather conditions; avoiding strong winds and heavy rain. For each survey visit at least three of the following four survey techniques were employed:

- Torch survey: conducted at dusk using a 500,000 candlepower Clulite lamp to search the accessible margins of the water bodies;
- Egg search: a thorough search was made for newt eggs of any suitable vegetation present along the water margins. This comprised a search for any obviously folded leaves of emergent or marginal vegetation;
- Bottle trapping: following the torch survey, bottle-traps (made from two litre plastic bottles) were placed along the accessible margins of areas of open water. Traps were left overnight for a maximum of twelve hours and checked and removed the following morning; and/or
- Sweep netting: a standard professional long handled net was used to sample the water column throughout the pond around the margins and in the centre. The net was swept backwards and forwards through the water and the emptied out into a white plastic container and the contents examined and recorded.

<u>Population Assessment</u>

2.12 Where great crested newts were found to be present, a population assessment was made in accordance with the population size class assessment in the Great Crested Newt Mitigation Guidelines (English Nature 2001). These guidelines categorise the population as small, medium or high. The three categories are summarised in the Table below.

Table 2.2: Great Crested Newt Population Assessment

Population Size Class	Great Crested Newt Count
Small	Maximum count up to 10
Medium	Maximum counts 11 to 100
High	Maximum counts over 100

2.13 Due to moderate habitat connectivity between the ponds and the limited number of ponds that could be surveyed, all of the water bodies were surveyed six times, even those where great crested newts were not positively identified during the first four presence / absence surveys. This is due to the potential for great crested newts to move between ponds throughout the breeding season and to increase chances of finding newts within the landscape. This also helps to provide more robust survey data.

Constraints

2.14 Access was not permitted to a ditch located approximately 20m west of the site and a single pond approximately 5m north of the north eastern site boundary. Seven of the eight ponds present within 500m of the site were surveyed which provided coverage of the surrounding habitats to all aspects. Therefore, the surveys are considered to be sufficiently robust to prove presence or absence of great crested newts within the site and surrounding landscape and to enable a population size class to be made.

2.15 A HSI Assessment has been designed to evaluate the suitability of ponds for great crested newts and there is some difficulty when applying the scoring system to linear water features therefore the ditches (D1 and D2) have not been included in the HSI Assessment.

2.16 Ponds 4, 5, 6 and 7 were lined and therefore could not be trapped. These ponds were surveyed using other methods, including torching, netting and egg-searching. Due to the steep banks of Ditch 1 direct access to the waterbody was not possible. Therefore, the ditch could not be trapped or netted so was only assessed with torching.

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2.17 The surveys are however considered to be sufficiently robust to prove presence or absence of great crested newts throughout the site and to determine a population size class.

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3. RESULTS

Data Search

3.1 The data search returned a number of records for great crested newt (*Triturus cristatus*) within 2km of the site. The closest record was from 2010, located approximately 260m to the south of the survey site.

Great Crested Newt Survey

Overview

3.2 Great crested newts were in found in Ponds 1 and 2 during the course of the six survey visits. Both ponds were found to support a small great crested newt population based on current Natural England guidelines (English Nature 2001).

3.3 A peak count of two adult great crested newts was recorded in Pond 2 on the 10th May 2016. No great crested newts were found during the course of the survey visits in Ponds 3, 4, 5, 6 and 7 or Ditch 1. Great crested newts were not found to be breeding within any of the surveyed ponds.

3.4 Smooth newts (*Lissotriton vulgaris*) were present in Ponds 1, 3 and 7, with a peak count of three smooth newts recorded in Pond 3 on the 27th April 2016.

3.5 The table below presents peak counts of each species for all of the ponds that were surveyed. Photos of each pond surveyed are present in Appendix C. Full survey and HSI data is presented in Appendix D.

Table 3.1: Summary of Great Crested Newt Survey Results (adults) (peak counts in red).

Pond Number	Great Crested Newt	Smooth Newt	Palmate Newt	Common Frog	Common Toad
1	1	2	-	-	-
2	2	-	-	-	-
3	-	3	-	1	-
4	-	-	-	-	-

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Pond Number	Great Crested Newt	Smooth Newt	Palmate Newt	Common Frog	Common Toad
5	-	-	-	-	-
6	-	-	-	-	-
7	-	2	-	-	-

Pond 1

3.6 A small pond located to on the eastern side of Climping Street, approximately 150m south of the survey site boundary. The waterbody measured 45m^2 and was surrounded on all sides by dense bramble (*Rubus fruticosus agg*) and hawthorn (*Crataegus monogyna*) vegetation with only a few accessible areas and marginal features. The level of water gradually decreased during the course of the survey visits with the amount of algae increasing. Emergent and submerged vegetation was absent and with a large layer of leaf litter from overhanging trees. The pond supported shallow bare earth banks across the majority.

3.7 The HSI score for the pond was **Average**. This suggests there are limiting factors which may reduce the potential for great crested newt presence such as its small size and low macrophyte cover.

3.8 Single male great crested newts were found during two survey visits on the 10th May and 6th June 2016. No eggs of this species were found during the six survey visits.

Table 3.2: Survey Results for Pond 1.

Date	Great Crested Newt	Smooth Newt	Palmate Newt	Common Frog	Common Toad
07/04/2016	-	1	-	-	-
27/04/2016	-	-	-	-	-
10/05/2016	1	2	-	-	-

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Date	Great Crested Newt	Smooth Newt	Palmate Newt	Common Frog	Common Toad
17/05/2016	-	-	-	-	-
06/06/2016	1	-	-	-	-
14/06/2016	-	-	-	-	-

Pond 2

3.9 A small pond situated approximately 20m north of Pond 1 on the western side of Climping Street. The waterbody had dense bramble scrub bordering the western bank, with sparse willow (*Salix* sp.) dominating the eastern areas. Yellow-flag (*Iris pseudacorus*) and bur-reed (*Sparganium* sp.) were noted as emergent. Dense areas of starwort (*Callitriche* sp.) were also recorded, increasing throughout the surveys, up to 80% coverage of starwort during the last visit.

3.10 The HSI score for the pond was **Good**. This suggests that the pond provides suitable conditions for great crested newts and that there is a high likelihood that newts will use this feature if they are present within the area.

Table 3.3: Survey Results for Pond 2.

Date	Great Crested Newt	Smooth Newt	Palmate Newt	Common Frog	Common Toad
07/04/2016	-	-	-	-	-
27/04/2016	-	-	-	-	-
10/05/2016	2	-	-	-	-
17/05/2016	-	-	-	-	-
06/06/2016	1	-	-	-	-
14/06/2016	-	-	-	-	-

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Pond 3

3.11 A medium sized village pond located on the southern side of Horsemere Green Lane, north of the survey site. The pond measured approximately 640m^2, with margins dominated by yellow-flag and reedmace (*Typha latifolia*). Surrounding habitat comprised residential properties with associated gardens to the south east and west and agricultural fields to the north. During the surveys, a moderately sized population of carp and other ornamental fish were noted, as well as a constant presence of wildfowl.

3.12 No great crested newts or eggs of this species were found during any of the six survey visits. This pond was not surveyed on 7th April due to access restrictions.

3.13 The HSI score for the pond was **Poor**. This suggests there are limiting factors which may reduce the potential for great crested newt presence such as the presence of fish and wildfowl.

Table 3.4: Survey Results for Pond 3.

Date	Great Crested Newt	Smooth Newt	Palmate Newt	Common Frog	Common Toad
07/04/2016	N/A	N/A	N/A	N/A	N/A
27/04/2016	-	3	-	-	-
10/05/2016	-	2	-	-	-
17/05/2016	-	2	-	1	-
06/06/2016	-	1	-	-	-
14/06/2016	-	1	-	-	-

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Pond 4

3.14 One of two ornamental ponds situated within a small private residential complex south of Horsemere Green lane, north of the proposed development site boundary. The pond measured approximately 50m^2 and was connected to Pond 5 via a small stream. The pond was surrounded by ornamental shrub beds and amenity grassland, with little potential hibernation habitat or sheltering opportunities. The pond was noted to have a large fish population. The pond was also lined and was heavily turbid through the course of the surveys.

3.15 No great crested newts or eggs of this species were found during any of the six survey visits.

3.16 The HSI score for the pond was **Poor**.

Table 3.5: Survey Results for Pond 4.

Date	Great Crested Newt	Smooth Newt	Palmate Newt	Common Frog	Common Toad
07/04/2016	-	-	-	-	-
27/04/2016	-	-	-	-	-
10/05/2016	-	-	-	-	-
17/05/2016	-	-	-	-	-
06/06/2016	-	-	-	-	-
14/06/2016	-	-	-	-	-

Pond 5

3.17 Slightly larger than Pond 4 but of similar construction with a large population of fish present. The waterbody was noted to have a stand of reeds (*Phragmites australis*) within the southern sections and several water lilies (Nymphaceae) noted.

3.18 The HSI score for the pond was **Poor**.

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3.19 No great crested newts or eggs of this species were found during any of the six survey visits.

Table 3.6: Survey Results for Pond 5.

Date	Great Crested Newt	Smooth Newt	Palmate Newt	Common Frog	Common Toad
07/04/2016	-	-	-	-	-
27/04/2016	-	-	-	-	-
10/05/2016	-	-	-	-	-
17/05/2016	-	-	-	-	-
06/06/2016	-	-	-	-	-
14/06/2016	-	-	-	-	-

Pond 6

3.20 A very small (i.e. 2m^2) ornamental water feature located immediately south off Horsemere Green Lane. The feature was connected to Pond 7 via a culvert under Waterford Gardens road. No vegetation was noted within the waterbody, which had an average depth of 0.2m. Some surrounding planted shrubbery was present, with gravel and rock piles forming the immediate surrounding habitat.

3.21 The HSI score for the pond was **Poor**.

3.22 No great crested newts or eggs of this species were found during any of the six survey visits.

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Table 3.7: Survey Results for Pond 6.

Date	Great Crested Newt	Smooth Newt	Palmate Newt	Common Frog	Common Toad
07/04/2016	-	-	-	-	-
27/04/2016	-	-	-	-	-
10/05/2016	-	-	-	-	-
17/05/2016	-	-	-	-	-
06/06/2016	-	-	-	-	-
14/06/2016	-	-	-	-	-

Pond 7

3.23 A small pond linked to Pond 6 via a culverted pipe. The waterbody measured approximately 13m^2 and was lined. A waterfall was present on the northern bank. A single waterlily was noted within the pond, with no substrate present. Surrounding habitat was dominated by amenity grassland and rockery features with some planted shrubbery.

3.24 The HSI score for the pond was **Below average**.

3.25 No great crested newts or eggs of this species were found during any of the six survey visits.

Table 3.8: Survey Results for Pond 7.

Date	Great Crested Newt	Smooth Newt	Palmate Newt	Common Frog	Common Toad
07/04/2016	-	-	-	-	-
27/04/2016	-	-	-	-	-

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Date	Great Crested Newt	Smooth Newt	Palmate Newt	Common Frog	Common Toad
10/05/2016	-	-	-	-	-
17/05/2016	-	1	-	-	-
06/06/2016	-	1	-	-	-
14/06/2016	-	2	-	-	-

Ditch 1

3.26 Ditch located east of the survey site within an area of arable fields. The ditch measured approximately 230m in length, with an average width of 2m and an overall depth of 0.1 – 0.3m. The depth varied during the course of the survey with very little water present during the survey on 10th May.

3.27 No great crested newts or eggs of this species were found during any of the six survey visits.

Table 3.9: Survey Results for Ditch 1.

Date	Great Crested Newt	Smooth Newt	Palmate Newt	Common Frog	Common Toad
07/04/2016	-	-	-	-	-
27/04/2016	-	-	-	-	-
10/05/2016	-	-	-	-	-
17/05/2016	-	-	-	-	-
06/06/2016	-	-	-	-	-
14/06/2016	-	-	-	-	-

Population Assessment

3.28 Pond surveys confirmed the presence of a **small** population of great crested newts within Ponds 1 and 2; located approximately 150m and 130m south of the site.

3.29 No great crested newt eggs were found in any of the ponds for the duration of the surveys, indicating that individuals are not breeding within any of these water bodies.

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4. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

4.1 The proposed development site is located within a predominantly rural setting within Climping in West Sussex. The surrounding landscape offers suitable terrestrial and breeding habitat for great crested newts; including farmland, woodland and hedgerow together with a network of water bodies.

4.2 Design proposals include the re-development of the site for residential and amenity use. There were no on-site water bodies; however, potentially suitable terrestrial habitat in the form of arable land, woodland blocks, scattered trees, scrub, ruderal vegetation and a hedgerow offered potential sheltering opportunities for newts.

4.3 Surveys confirmed the presence of small populations of great crested newt in Ponds 1 and 2, which were located approximately 150m and 130m to the south of the site. This supports findings from the data search which returned previous records of great crested newt to the south of the site.

4.4 No great crested newts were found during the course of the survey visits in Ponds 3, 4, 5, 6 or 7 or in Ditch 1.

4.5 Research suggests great crested newts may travel up to 500m to commute between a network of breeding ponds and individuals also move ponds between and within years (English Nature 2001).

4.6 Based on the results of the survey and data search results, it is considered likely that great crested newts utilise the network of ponds to the south of the site and Ponds 1 and 2 will support individuals from the same metapopulation, crossing between suitable terrestrial habitat to access the ponds. Due to the absence of eggs within any of the ponds, it is also considered likely that great crested newts were passing through Ponds 1 and 2 to find more suitable breeding habitat in the wider surrounds.

4.7 Great crested newts receive protection under the Wildlife and Countryside Act 1981 (as amended) and The Conservation of Habitats and Species Regulations 2010. Under current legislation the individuals and the habitats they use for shelter and breeding are fully protected.

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4.8 Due to the absence of great crested newts to the north, east and west of the site, together with the general unsuitability of the habitats within the development footprint (i.e. arable field) and the presence of a busy road (A259) between the site and Ponds 1 and 2 the potential for great crested newts to be utilising on-site terrestrial habitat for commuting and hibernating is considered to be **low.** Instead it is considered more likely that individuals in the landscape will be using terrestrial habitats connecting ponds to the south.

4.9 Based on these factors, a European Protected Species Mitigation Licence in respect to great crested newts is not required, on the basis that a precautionary approach to the works will be implemented in order to minimise any potential impacts. Further detail is provided in the Mitigation Strategy Section below.

Recommendations

4.10 Based on the results of the survey, a precautionary approach to the works must be implemented in order to minimise any potential impacts to this species.

Mitigation Strategy

4.11 A low population of great crested newts was identified in two ponds located 150m and 130m from the site. Given the low number, general unsuitability of the habitats within the development footprint (i.e. arable field) and the presence of a busy road (A259) between the site and Ponds 1 and 2, the risk of this species being present within the development area is considered to be low and it is anticipated that carrying out the mitigation measures detailed in this section will serve to further minimise the risk of harming newts through discouraging individuals from using on-site habitats through management.

Habitat Management

4.12 Suitable habitat within the site will be removed in two phases in order to reduce the amount of available cover for newts which will serve to deter individuals from using the area.

4.13 In the first phase of habitat management areas of grassland, scrub and ruderal vegetation will be cut to 200mm above level to reduce the amount of available cover for newts.

4.14 In the second phase, carried out on a subsequent day, all vegetation within the working area should be cut to ground level. This should be done using hand tools and under an ecological watching brief.

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4.15 In order to avoid any potential impact on breeding birds, the clearance of any trees should be undertaken outside the main bird nesting season which runs from March to August inclusive[1]. Where this is not possible, an ecologist would need to check the vegetation for active nests and signs of bird breeding activity.

4.16 In the event that a nest is found, an exclusion zone around the nest would be established. Works would have to cease within this buffer area until the young birds have fledged.

4.17 Although the survey findings indicate that numbers of great crested newts within the vicinity of the site are low, there nevertheless remains some risk that these species may be encountered on site. In the unlikely event that great crested newts are found during works, activities must cease immediately and an ecologist must be consulted for advice. An acceptable method of work is to be agreed, which, depending upon the circumstances, may include the need to apply for an EPSM Licence.

Post Site Enhancement

4.18 New development offers the opportunity for habitat enhancement in accordance with local and national planning policy and some recommendations are included below.

Woodland Enhancement

4.19 Current design proposals include the retention of the wooded areas within the southern and western site extent post development.

4.20 These areas could be enhanced as part of the development, planting additional trees within the less diverse woodland in the west and planting shrub species within the woodland to create a more diverse understorey.

[1] It should be noted that this is the main breeding period. Breeding activity may occur outside this period (depending on the particular species and geographical location of the site) and thus due care and attention should be given when undertaking potentially disturbing works at any time of year.

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Compensatory Planting

4.21 A combination of grassland, tree and shrub planting could be incorporated into the landscape proposals for boundary habitats and any newly created amenity areas in order to increase species diversity post works.

4.22 Planting should include a high proportion of native species. These should be carefully selected to ensure they contain species suitable for the area. Some species of known wildlife value are listed in Appendix E of the Preliminary Ecological Appraisal report (Phlorum, 2015).

4.23 Areas of newly created grassland should be seeded with an appropriate seed mix suitable to the area. Specific advice should be sought from a landscape architect but there are a range of seed mixes available. A seed mix containing wildflowers that benefits from regular mowing could be used in amenity grassland areas while a wildflower seed mix that thrives from a relaxed mowing regime could be used in edge habitats where annual meadow management to include cutting once or twice annually, before or after the growing season (in early spring and/or Autumn to enable species to flower. This would also provide a more varied sward favoured by reptiles. Woodland edge habitat could also be created within the southern and western extent of the site adjacent to the retained woodland. A grassland mix comprising species more tolerant to shaded environments could thrive here and increase species diversity post works

New Pond Creation

4.24 It is understood that a series of at least three ponds will be created as part of the landscaping for the site. These should be created as wildlife ponds.

4.25 Construction of a new pond would provide an opportunity to increase value to wildlife and it should be designed to, amongst other things, provide conditions suitable for it to be a viable breeding pond for newts and other amphibians.

4.26 The main considerations are timing of works, water quality, pond profile and planting scheme.

4.27 The new ponds should be deeper at one end, asymmetrical in shape and lined to prevent leakage e.g. using butyl sheeting.

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4.28 The water within the new ponds will need to be 'clean' and not degraded by pollutants such as nutrients, heavy metals or other man-made chemicals. It is advised not to place topsoil around the edges of the pond as the run-off will cloud the water, silt up the base of the pond and add high levels of nutrients to the pond. Run-off from hard standing should also be considered as these could dramatically affect water levels and pollutants. It should be borne in mind that water levels can fluctuate dramatically throughout the year and so pollutants can become intensified during the summer months. The pond should be allowed to fill naturally with rain water and not filled from the mains supply (Pond Conservation, 2009).

4.29 The ponds should be designed to enable wildlife to easily enter and leave the ponds, and careful profiling is also vital for invertebrate and plant diversity. A gently sloping profile around the circumference of the pond will create habitat for invertebrates and larvae development, which require warmer water conditions created by the shallow water. A deep shelf should be avoided; this may create an island of water during the summer drying season and leave animals stranded out of water. A slope of less than 1:5 (12°) and preferably less than 1:20 (3°) is most suitable (Pond Conservation, 2011). The slope angle available will depend on the overall size and depth of the new pond to be created. A depth of more than 30cm is required in order to prevent drying out and to prevent deeper water from freezing during the winter months.

4.30 The plants within a pond play an important role in water quality, egg-laying opportunities and also provide shelter and food for wildlife. The ponds should be planted with native marginal vegetation. A wildlife pond will naturally be colonised by both flora and fauna within a short period of time, however initial basic planting should be carried out when the pond is created.

4.31 Tall emergent vegetation should be avoided as this will shade out other vegetation and reduce plant diversity (Pond Conservation, 2011a). When planting new plants, care should be taken to avoid plants listed as invasive on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). A list of appropriate native aquatic plants is provided in Appendix E of the Preliminary Ecological Appraisal report (Phlorum, 2016). The pond should not be stocked with fish as these will prey on amphibian eggs.

4.32 Aquatic planting could include a selection of the following;

Submerged Aquatics (acting as oxygenators)

- Water crowfoot (Ranunculus aquatilis)

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- Water starwort (*Callitriche stagnalis)*
- Curly pondweed (*Potamogeton crispus)*

Floating Aquatics

- Yellow water lily (*Nuphar lutea)* (can require control)
- White water lily (*Nymphaea alba)* (can require control)
- Amphibious bistort (*Polygonum amphibia)*

Marginal

- Yellow iris (*Iris pseudacorus)*
- Water mint (*Mentha aquatica)*
- Water forget-me-not (*Myosotis scorpioides)*
- Purple loosestrife (*Lythrum salicaria)*

Dead Wood Habitat

4.33 Log piles could be created around the site boundaries to create suitable hibernaculum sites for reptiles and amphibians and these will also provide suitable habitat for invertebrates. These could be created from locally sourced cord wood and neatly stacked against a tree or attached to a fence with wire. The longest side should be orientated south to maximise daily exposure to the sun.

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5. REFERENCES

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- Sussex Biodiversity Records Centre (SxBRC) (2015). *Land at Church Lane, Climping: Desktop Biodiversity Report*. Unpublished report for Phlorum ltd. Henfield: SxBRC.

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Appendix A
Great Crested Newt Survey Map

ARUN DISTRICT COUNCIL CM/117/OUT



Legend

Site Boundary
Lines
Text
Surveyed Pond
Low Great Crested Newt Population
No Great Crested Newt Found
Ponds Excluded From Survey- No Access
Areas
Surveyed Ditch - No Great Crested Newt Found
Lines
Ditch Exluded from Survey- Access Restrictions
Lines

Figure 1: Climping Great Crested Newt Survey Map

Drawn by: JWK
On the: 29/06/2016
Not to Scale
Ref: 5989

Phlorum Limited, 12 Hunns Mere Way,
Woodingdean, Brighton, East Sussex,
BN2 6AH

Appendix B
Legislation

LEGISLATIVE FRAMEWORK

This section contains information pertaining to the legislation and planning policy applicable in Britain. This information is not applicable to Northern Ireland, the Republic of Ireland the Isle of Man or the Channel Islands. Information contained in the following appendix is provided for guidance only.

Species

The objective of the EC Habitats Directive[2] is to conserve plants and animals which are considered to be rare across Europe. The Directive is transposed into UK law by The Conservation of Habitats and Species Regulations 2010 (as amended) (formerly The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) and The Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007 (as amended).

The Wildlife and Countryside Act 1981 (as amended) implements the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and also implements the obligations set out for species protection from the Council Directive 2009/147/EC (formerly 79/409/EEC) on the Conservation of Wild Birds (EC Birds Directive) in Great Britain.

Various amendments have been made since the Wildlife & Countryside Act came into force in 1981. Further details pertaining to alterations of the Act can be found on the following website: www.opsi.gov.uk. Key amendments have been made through the Countryside and Rights of Way (CRoW) Act (2000) and Nature Conservation (Scotland) Act 2004.

There are a number of other legislative Acts affording protection to species and habitats. These include

- Countryside and Rights of Way (CRoW) Act 2000
- Deer Act 1991
- Natural Environment & Rural Communities (NERC) Act 2006
- Protection of Badgers Act 1992
- Wild Mammals (Protection) Act 1996

[2] Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora

Breeding Birds

Under the Wildlife & Countryside Act, 1981 (as amended), a wild bird is defined as any bird of a species that is resident in or is a visitor to the European Territory of any member state in a wild state. Game birds, however, are not included in this definition (except for limited parts of the Act). They are covered by the Games Acts, which fully protect them during the closed season.

Under the Wildlife & Countryside Act, 1981 (as amended), all birds, their nests and eggs are protected under Sections 1-8 of the Act and it is an offence, with certain exceptions, to:

- intentionally (or recklessly in Scotland) kill, injure or take any wild bird;
- intentionally (or recklessly in Scotland) take, damage or destroy (or, in Scotland, otherwise interfere with) the nest of any wild bird while it is in use or being built
- intentionally take or destroy the egg of any wild bird;
- have in one's possession or control any wild bird, dead or alive, or any part of a wild bird, which has been taken in contravention of the Act;
- have in one's possession or control any egg or part of an egg which has been taken in contravention of the Act;
- use traps or similar items to kill, injure or take wild birds;
- have in one's possession or control any bird (dead or alive) unless registered, and in most cases ringed, in accordance with the Secretary of State's regulations; and
- in Scotland only, intentionally or recklessly obstruct or prevent any wild bird from using its nest.

Certain rare species receive additional special protection under Schedule 1 of the Act and Annex 1 of the European Community Directive on the Conservation of Wild Birds (2009/147/EC). This affords them protection against:

- intentional or reckless disturbance while it is building a nest or is in, on or near a nest containing eggs or young;
- intentional or reckless disturbance of dependent young of such a bird;
- in Scotland only, intentional or reckless disturbance whilst lekking; and
- in Scotland only, intentional or reckless harassment.

The British Trust for Ornithology (BTO) has a list of birds that are Species of Conservation Concern. These birds are not legally protected but where they are found on site they should be given planning consideration. The criteria for birds listed as amber (medium conservation concern) include:

- historical population decline during 1800-1995, but recovering: population has more than doubled over last 25 years;
- moderate (25-49%) decline in UK breeding population over last 25 years;
- moderate (25-49%) contraction of UK breeding range over last 25 years;
- moderate (25-49%) decline in UK non-breeding population over last 25 years;
- species with unfavourable conservation status in Europe (Species of conservation Concern);
- five year mean of breeding pairs in the UK;
- ≥50% of UK breeding population in 10 or fewer sites.
- ≥50% of UK non-breeding population in 10 or fewer sites;
- ≥20% of European breeding population in UK; and
- ≥20% of NW European (wildfowl), East Atlantic Flyway (waders) or European (others) non breeding populations in UK.

Herpetofauna (Reptiles and Amphibians)

The following species receive full protection under the The Conservation of Habitats and Species Regulations 2010 (as amended) through their inclusion on Schedule 2.

- Sand lizard (*Lacerta agilis*);
- Smooth snake (*Coronella austriaca);*
- Natterjack toad (*Epidalea calamita);*
- Great crested newt (*Triturus cristatus);* and
- Pool frog (*Pelophylax lessonae).*

Under this legislation, Regulation 41 prohibits:

- deliberate killing, injuring or capturing of species listed on Schedule 2;
- deliberate disturbance of any Schedule 2 species as to impair their ability:
  (i) to survive, breed, or reproduce, or to rear or nurture young; and
  (ii) to hibernate or migrate.
- deliberate disturbance of any Schedule 2 species as to affect significantly the local distribution or abundance of the species;
- deliberate taking or destroying of the eggs of a Schedule 2 species;
- damage or destruction of a breeding site or resting place; and
- keeping, transporting, selling, exchanging or offering for sale whether live or dead or of any part of a species.

With the exception of the pool frog, these species are also currently listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Under this Act, they are additionally protected from:

- intentional or reckless disturbance (at any level);
- intentional or reckless obstruction of access to any place of shelter or protection; and
- selling, offering or exposing for sale, possession or transporting for purpose of sale.

Other native species of herpetofauna are protected solely under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). These species include:

- Adder (*Vipera berus*);
- Grass snake (*Natrix natrix*);
- Common lizard (*Zootoca vivipara*); and
- Slow-worm (*Anguis fragilis*).

Under this legislation, for these species it is prohibited under Section 9(1) & (5) to:

- intentionally (or recklessly in Scotland) kill or injure these species
- sell, offer or expose for sale, possess or transport for purpose of sale these species, or any part thereof.

The following species are listed in respect to Section 9(5) of Schedule 5 of the Wildlife & Countryside Act 1981 (as amended) which only affords them protection against sale, offering or exposing for sale, possession or transport for the purpose of sale:

- Common frog (*Rana temporaria);*
- Common toad (*Bufo bufo);*
- Smooth newt (*Lissotriton vulgaris);* and
- Palmate newt (*L. helveticus*).

Appendix C

Photographs

Photograph 1:
Pond 1



Photograph 2:
Pond 2



Photograph 3:
Pond 3



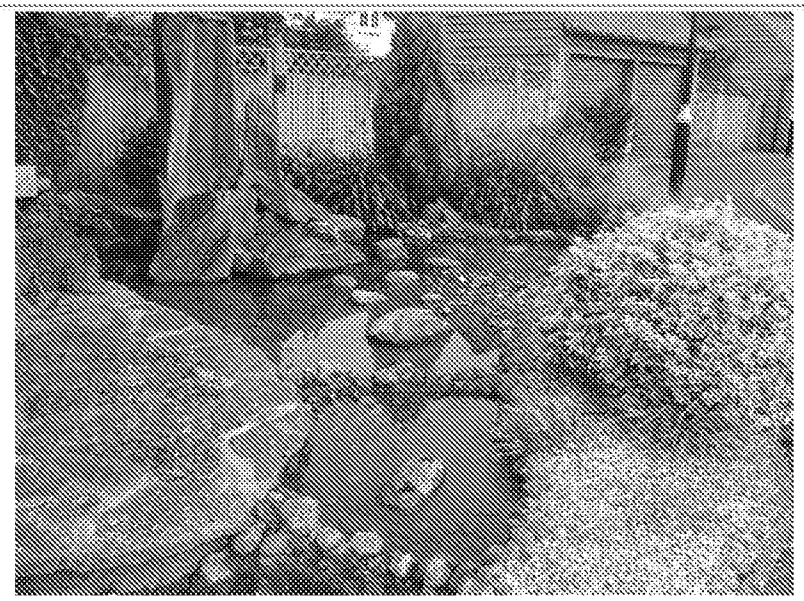
Photograph 4:
Pond 4



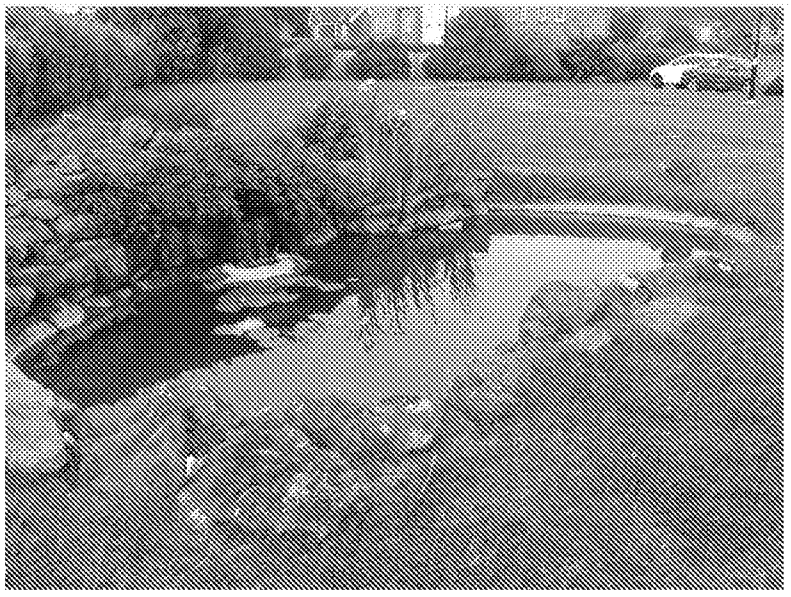
Photograph 5:
Pond 5



Photograph 6:
Pond 6



Photograph 7:
Pond 7



Appendix D
Survey Data

Pond 1

1. Pond Details

Job Number	**5989**
Site	Climping

Pond number/reference	**Pond 1**
OS Grid reference	SU999 016
Location details	East of Climping Street, south of site
Access instructions	Accessed from Climping Street

Landowner name	Highways Agency
Address/email	
Telephone	

Habitat Suitability Index

			SI value
SI1.	Map location	**A/B/C**	A
SI2.	Surface area	**rectangle/ellipse/irregular**	irregular
		length (m)	
		width (m)	
		OR estimate (m^2) if irregular	
		area (m^2) =	*45*
SI3.	Dessication rate	**never/rarely/sometimes/frequently**	rarely
SI4.	Water quality	**good/moderate/poor/bad**	moderate
SI5.	Shade	% of margin shaded 1m from bank	40
SI6.	Waterfowl	**absent/minor/major**	absent
SI7.	Fish population	**absent/possible/minor/major**	absent
SI8.	Pond density	number of ponds within 1km	0.5
SI9.	Terrestrial habitat	**good/moderate/poor/isolated**	moderate
SI10.	Macrophyte cover	%	0

***Note**: Guidance in undertaking the HSI is available at www.narrs.org.uk.*
HSI calculation formulae adapted from Rob Oldham

HSI score = **0.61**

Pond suitability = **Average**

General description/notes/comments

A small pond located to on the eastern side of Climping Street approximately 150m south of the survey site boundary. The waterbody measured 45m2 and was surrounded on all sides by dense bramble and hawthorn vegetation with only a few accessible areas to and marginal features. The level of water gradually decreased during the course of the survey visits with the amount of algae increasing.

Pond 1

2. Survey Details

	Visit 1				**Visit 2**				**Visit 3**			
Date	07/04/2016				27/04/2016				10/05/2016			
Personnel	JK JS				JK JS				AC JS			
Temperature (ºC)	7				8				12			
Weather	Breezy and overcast				Dry, mild				Clear and windy			
Turbidity	2				2				2			
Vegetation cover	0				0				0			
Methods												
indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
	✓		✓	egg	✓	5		egg	✓	5		egg
T. cristatus												
male									1			
female												
unknown												
total adults									1			
immature												
larvae												
eggs present?												
L. vulgaris	1M								2M			
L. helveticus												
R. temporaria												
B. bufo												
Other												

	Visit 4				*Visit 5*				*Visit 6*			
Date	17/05/2016				06/06/2016				14/06/2016			
Personnel	AC JS				AC JS				JK JS			
Temperature (ºC)	13				15				18			
Weather	Mild and clear				Patchy cloud				Clear and still			
Turbidity	1				1				2			
Vegetation cover	0				1				1			
Methods												
indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
	✓		✓	egg	✓	5		egg	✓		✓	egg
T. cristatus												
male					1							
female												
unknown												
total adults					1							
immature												
larvae												
eggs present?												
L. vulgaris												
L. helveticus												
R. temporaria												
B. bufo												
Other												

***Note**: Cells highlighted orange indicate a potential detectibility issue due sub-optimal survey conditions.*

Pond 2

1. Pond Details

Job Number	**5989**
Site	Climping

Pond number/reference	**Pond 2**
OS Grid reference	SU999 016
Location details	South of survey site, west of Climping Street
Access instructions	Accessed from Climping Street

Landowner name	Highways Agency
Address/email	
Telephone	

Habitat Suitability Index

			SI value
SI1.	Map location	**A/B/C**	A
SI2.	Surface area	**rectangle/ellipse/irregular**	irregular
		length (m)	
		width (m)	
		OR estimate (m^2) if irregular	
		area (m^2) =	*40*
SI3.	Dessication rate	**never/rarely/sometimes/frequently**	rarely
SI4.	Water quality	**good/moderate/poor/bad**	moderate
SI5.	Shade	% of margin shaded 1m from bank	40
SI6.	Waterfowl	**absent/minor/major**	absent
SI7.	Fish population	**absent/possible/minor/major**	absent
SI8.	Pond density	number of ponds within 1km	0.5
SI9.	Terrestrial habitat	**good/moderate/poor/isolated**	good
SI10.	Macrophyte cover	%	70

***Note**: Guidance in undertaking the HSI is available at www.narrs.org.uk.*
HSI calculation formulae adapted from Rob Oldham

HSI score = **0.70**

Pond suitability = **Good**

General description/notes/comments

A small pond situated approximately 20m north of Pond 1 on the western side of Climping Street. The waterbody had dense bramble scrub bordering the western bank with sparse willow dominating the eastern areas. Yellow-flag and bur-reed were noted as emergent with dense areas of starwort increasing throughout the surveys with the final survey noting approximately 80% coverage of starwort.

Pond 2

2. Survey Details

	Visit 1				**Visit 2**				**Visit 3**			
Date	07/04/2016				27/04/2016				10/05/2016			
Personnel	JK JS				JK JS				AC JS			
Temperature (ºC)	7				8				12			
Weather	Breezy and overcast				Dry, mild				Clear and windy			
Turbidity	1				1				1			
Vegetation cover	3				3				3			
Methods												
indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
	✓		✓	egg	✓	5		egg	✓	5		egg
T. cristatus												
male						2						
female												
unknown												
total adults						**2**						
immature												
larvae												
eggs present?												
L. vulgaris												
L. helveticus												
R. temporaria												
B. bufo												
Other												

	Visit 4				*Visit 5*				*Visit 6*			
Date	17/05/2016				06/06/2016				14/06/2016			
Personnel	AC JS				AC JS				JK JS			
Temperature (ºC)	13				15				18			
Weather	Mild and clear				Patchy cloud				Clear and still			
Turbidity	1				1				2			
Vegetation cover	3				4				4			
Methods												
indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
	✓		✓	egg	✓	5		egg	✓		✓	egg
T. cristatus												
male					1							
female												
unknown												
total adults					**1**							
immature												
larvae												
eggs present?												
L. vulgaris												
L. helveticus												
R. temporaria												
B. bufo												
Other												

***Note**: Cells highlighted orange indicate a potential detectibility issue due sub-optimal survey conditions.*

Pond 3

1. Pond Details

Job Number	**5989**
Site	Climping

Pond number/reference	**Pond 3**
OS Grid reference	SU995 022
Location details	North of site along Horsemere Green Lane
Access instructions	Accessed from Horsemere Green lane

Landowner name	Parish Council
Address/email	
Telephone	

Habitat Suitability Index

			SI value
SI1.	Map location	**A/B/C**	A
SI2.	Surface area	**rectangle/ellipse/irregular**	irregular
		length (m)	
		width (m)	
		OR estimate (m^2) if irregular	
		area (m^2) =	*640*
SI3.	Dessication rate	**never/rarely/sometimes/frequently**	never
SI4.	Water quality	**good/moderate/poor/bad**	moderate
SI5.	Shade	% of margin shaded 1m from bank	10
SI6.	Waterfowl	**absent/minor/major**	minor
SI7.	Fish population	**absent/possible/minor/major**	major
SI8.	Pond density	number of ponds within 1km	0.5
SI9.	Terrestrial habitat	**good/moderate/poor/isolated**	moderate
SI10.	Macrophyte cover	%	15

***Note**: Guidance in undertaking the HSI is available at www.narrs.org.uk.*
HSI calculation formulae adapted from Rob Oldham

HSI score = 0.48

Pond suitability = poor

General description/notes/comments

A medium sized village pond located on the southern side of Horsemere Green Lane north of the survey site. The pond measured approximately 640m2 with margins dominated by yellow-flag and reedmace. Surrounding habitat comprised residential properties with associated gardens to the south east and west and agricultural fields to the north. During the surveys a moderate sized population of carp and other ornamental fish were noted with a constant presence of wildfowl.

Pond 3

2. Survey Details

	Visit 1				Visit 2				Visit 3			
Date	07/04/2016				27/04/2016				10/05/2016			
Personnel	no access				JK JS				AC JS			
Temperature (ºC)					8				12			
Weather					Dry, mild				Clear and windy			
Turbidity					2				3			
Vegetation cover					2				2			
Methods												
indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
					✓	15		egg	✓	15		egg
T. cristatus												
male												
female												
unknown												
total adults												
immature												
larvae												
eggs present?												
L. vulgaris					2F 1M				1M 1F			
L. helveticus												
R. temporaria												
B. bufo												
Other												

	Visit 4				*Visit 5*				*Visit 6*			
Date	17/05/2016				06/06/2016				14/06/2016			
Personnel	AC JS				AC JS				JK JS			
Temperature (ºC)	13				15				18			
Weather	Mild and clear				Patchy cloud				Clear and still			
Turbidity	2				1				2			
Vegetation cover	2				2				3			
Methods												
indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
	✓		✓	egg	✓	15		egg	✓		✓	egg
T. cristatus												
male												
female												
unknown												
total adults												
immature												
larvae												
eggs present?												
L. vulgaris	2F				1F				1F			
L. helveticus												
R. temporaria												
B. bufo												
Other												

***Note**: Cells highlighted orange indicate a potential detectibility issue due sub-optimal survey conditions.*

Pond 4

1. Pond Details

Job Number	**5989**
Site	Climping

Pond number/reference	**Pond 4**
OS Grid reference	SU999 022
Location details	Off Waterford Gardens, north of site
Access instructions	Accessed from Waterford Gardens

Landowner name	Hobdens Property Management
Address/email	
Telephone	

Habitat Suitability Index

			SI value
SI1.	Map location	**A/B/C**	A
SI2.	Surface area	**rectangle/ellipse/irregular**	irregular
		length (m)	
		width (m)	
		OR estimate (m^2) if irregular	
		area (m^2) =	*50*
SI3.	Dessication rate	**never/rarely/sometimes/frequently**	never
SI4.	Water quality	**good/moderate/poor/bad**	poor
SI5.	Shade	% of margin shaded 1m from bank	0
SI6.	Waterfowl	**absent/minor/major**	absent
SI7.	Fish population	**absent/possible/minor/major**	major
SI8.	Pond density	number of ponds within 1km	0.5
SI9.	Terrestrial habitat	**good/moderate/poor/isolated**	isolated
SI10.	Macrophyte cover	%	15

***Note**: Guidance in undertaking the HSI is available at www.narrs.org.uk.*
HSI calculation formulae adapted from Rob Oldham

HSI score = **0.24**

Pond suitability = **Poor**

General description/notes/comments

One of two ornamental ponds situated within a small private residential complex south of Horsemere Green lane north of the proposed development site boundary. The pond measured approximately 50m2 and was connected to Pond 5 via a small stream. The pond was surrounded by ornamental shrub beds and amenity grassland with little potential hibernation habitat or sheltering opportunities.

Pond 4

2. Survey Details

	Visit 1				**Visit 2**				**Visit 3**			
Date	07/04/2016				27/04/2016				10/05/2016			
Personnel	JK JS				JK JS				AC JS			
Temperature (ºC)	7				8				12			
Weather	Breezy and overcast				Dry, mild				Clear and windy			
Turbidity	3				3				3			
Vegetation cover	0				1				1			
Methods												
indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
	✓		✓	efugia	✓		✓	egg	✓		✓	egg
T. cristatus												
male	1											
female												
unknown												
total adults												
immature												
larvae												
eggs present?												
L. vulgaris	1M											
L. helveticus												
R. temporaria												
B. bufo												
Other												

	Visit 4				*Visit 5*				*Visit 6*			
Date	17/05/2016				06/06/2016				14/06/2016			
Personnel	AC JS				AC JS				JK JS			
Temperature (ºC)	13				15				18			
Weather	Mild and clear				Patchy cloud				Clear and still			
Turbidity	3				3				3			
Vegetation cover	1				2				3			
Methods												
indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
	✓		✓	egg	✓		✓	egg	✓		✓	egg
T. cristatus												
male												
female												
unknown												
total adults												
immature												
larvae												
eggs present?												
L. vulgaris												
L. helveticus												
R. temporaria												
B. bufo												
Other												

***Note**: Cells highlighted orange indicate a potential detectibility issue due sub-optimal survey conditions.*

Pond 5

1. Pond Details

Job Number	**5989**
Site	Climping

Pond number/reference	**Pond 5**
OS Grid reference	SU999 022
Location details	Off Waterford Gardens, north of site
Access instructions	Accessed from farm Little Friths House

Landowner name	Hobdens Propoerty Mangement
Address/email	
Telephone	

Habitat Suitability Index

			SI value
SI1.	Map location	**A/B/C**	A
SI2.	Surface area	**rectangle/ellipse/irregular**	irregular
		length (m)	
		width (m)	
		OR estimate (m^2) if irregular	
		area (m^2) =	*45*
SI3.	Dessication rate	**never/rarely/sometimes/frequently**	never
SI4.	Water quality	**good/moderate/poor/bad**	poor
SI5.	Shade	% of margin shaded 1m from bank	0
SI6.	Waterfowl	**absent/minor/major**	absent
SI7.	Fish population	**absent/possible/minor/major**	major
SI8.	Pond density	number of ponds within 1km	0.5
SI9.	Terrestrial habitat	**good/moderate/poor/isolated**	isolated
SI10.	Macrophyte cover	%	10

***Note**: Guidance in undertaking the HSI is available at www.narrs.org.uk.*
HSI calculation formulae adapted from Rob Oldham

HSI score = **0.24**

Pond suitability = **Poor**

General description/notes/comments

Slightly larger than Pond 4 but of similar construction with a large population of fish present. The waterbody was noted to have a stand of reeds within the southern sections and several water lilies noted.

Pond 5

2. Survey Details

	Visit 1	**Visit 2**	**Visit 3**
Date	07/04/2016	27/04/2016	10/05/2016
Personnel	JK JS	JK JS	AC JS
Temperature (ºC)	7	8	12
Weather	Breezy and overcast	Dry, mild	Clear and windy
Turbidity	3	3	3
Vegetation cover	1	1	1
Methods			

indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
	✓		✓	egg	✓		✓	egg	✓		✓	egg
T. cristatus												
male												
female												
unknown												
total adults												
immature												
larvae												
eggs present?												
L. vulgaris												
L. helveticus												
R. temporaria												
B. bufo												
Other												

	Visit 4	*Visit 5*	*Visit 6*
Date	17/05/2016	06/06/2016	14/06/2016
Personnel	AC JS	AC JS	JK JS
Temperature (ºC)	13	15	18
Weather	Mild and clear	Patchy cloud	Clear and still
Turbidity	3	3	3
Vegetation cover	2	2	2
Methods			

indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
	✓		✓	egg	✓		✓	egg	✓		✓	egg
T. cristatus												
male												
female												
unknown												
total adults												
immature												
larvae												
eggs present?												
L. vulgaris												
L. helveticus												
R. temporaria												
B. bufo												
Other												

***Note**: Cells highlighted orange indicate a potential detectibility issue due sub-optimal survey conditions.*

Pond 6

1. Pond Details

Job Number	**5989**
Site	Climping

Pond number/reference	**Pond 6**
OS Grid reference	SU999 023
Location details	North of site, South of Horsemere Green Lane
Access instructions	From Waterford gardens

Landowner name	Hobdens Property Management
Address/email	
Telephone	

Habitat Suitability Index

			SI value
SI1.	Map location	**A/B/C**	A
SI2.	Surface area	**rectangle/ellipse/irregular**	irregular
		length (m)	
		width (m)	
		OR estimate (m^2) if irregular	
		area (m^2) =	2
SI3.	Dessication rate	**never/rarely/sometimes/frequently**	never
SI4.	Water quality	**good/moderate/poor/bad**	moderate
SI5.	Shade	% of margin shaded 1m from bank	0
SI6.	Waterfowl	**absent/minor/major**	absent
SI7.	Fish population	**absent/possible/minor/major**	absent
SI8.	Pond density	number of ponds within 1km	0.5
SI9.	Terrestrial habitat	**good/moderate/poor/isolated**	moderate
SI10.	Macrophyte cover	%	0

***Note**: Guidance in undertaking the HSI is available at www.narrs.org.uk.*
HSI calculation formulae adapted from Rob Oldham

HSI score = 0.44

Pond suitability = poor

General description/notes/comments

A tiny ornamental water feature located immediately south off Horsemere Green Lane. The features was connected to Pond 7 via a culvert under Waterford Gardens road. No vegetation was noted within the waterbody with a average depth of 0.2m. Some surrounding planted shrubbery was present with gravel and rock piles forming the immediate surrounding habitat.

Pond 6

2. Survey Details

	Visit 1	Visit 2	Visit 3
Date	07/04/2016	27/04/2016	10/05/2016
Personnel	JK JS	JK JS	AC JS
Temperature (ºC)	7	8	12
Weather	Breezy and overcast	Dry, mild	Clear and windy
Turbidity	1	1	1
Vegetation cover	0	0	0
Methods			
indicate methods used or number of bottle traps	torch ✓ / trap / net ✓ / other efugia	torch ✓ / trap / net ✓ / other efugia	torch ✓ / trap / net ✓ / other efugia
T. cristatus			
male			
female			
unknown			
total adults			
immature			
larvae			
eggs present?			
L. vulgaris			
L. helveticus			
R. temporaria			
B. bufo			
Other			

	Visit 4	*Visit 5*	*Visit 6*
Date	17/05/2016	06/06/2016	14/06/2016
Personnel	AC JS	AC JS	JK JS
Temperature (ºC)	13	15	18
Weather	Mild and clear	Patchy cloud	Clear and still
Turbidity	1	1	1
Vegetation cover	0	0	0
Methods			
indicate methods used or number of bottle traps	torch ✓ / trap / net ✓ / other efugia	torch ✓ / trap / net ✓ / other efugia	torch ✓ / trap / net ✓ / other efugia
T. cristatus			
male			
female			
unknown			
total adults			
immature			
larvae			
eggs present?			
L. vulgaris			
L. helveticus			
R. temporaria			
B. bufo			
Other			

***Note**: Cells highlighted orange indicate a potential detectibility issue due sub-optimal survey conditions.*

Pond 7

1. Pond Details

Job Number	**5989**
Site	Climping

Pond number/reference	**Pond 7**
OS Grid reference	SU999 023
Location details	North of site, south of Horsemere Green Lane
Access instructions	Waterford Gardens

Landowner name	Hobdens Property Management
Address/email	
Telephone	

Habitat Suitability Index

			SI value
SI1.	Map location	**A/B/C**	A
SI2.	Surface area	**rectangle/ellipse/irregular**	irregular
		length (m)	
		width (m)	
		OR estimate (m^2) if irregular	
		area (m^2) =	*13*
SI3.	Dessication rate	**never/rarely/sometimes/frequently**	never
SI4.	Water quality	**good/moderate/poor/bad**	poor
SI5.	Shade	% of margin shaded 1m from bank	0
SI6.	Waterfowl	**absent/minor/major**	absent
SI7.	Fish population	**absent/possible/minor/major**	absent
SI8.	Pond density	number of ponds within 1km	0.5
SI9.	Terrestrial habitat	**good/moderate/poor/isolated**	moderate
SI10.	Macrophyte cover	%	10

***Note**: Guidance in undertaking the HSI is available at www.narrs.org.uk.*
HSI calculation formulae adapted from Rob Oldham

HSI score = **0.51**

Pond suitability = **below average**

General description/notes/comments

A small pond linked to Pond 6 via a culverted pipe. The waterbody measured approximately 13m2 and was lined. A waterfall was present on the northern bank. A single waterlily was noted within the pond with no substrate present. Surrounding habitat was dominated by amenity grassland and rockery features with some planted shrubbery.

Pond 7

2. Survey Details

	Visit 1				Visit 2				Visit 3			
Date	07/04/2016				27/04/2016				10/05/2016			
Personnel	JK JS				JK JS				AC JS			
Temperature (ºC)	7				8				12			
Weather	Breezy and overcast				Dry, mild				Clear and windy			
Turbidity	1				1				2			
Vegetation cover	0				2				2			
Methods												
indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
	✓		✓	efugia	✓		✓	efugia	✓		✓	efugia
T. cristatus												
male												
female												
unknown												
total adults												
immature												
larvae												
eggs present?												
L. vulgaris												
L. helveticus												
R. temporaria												
B. bufo												
Other												

	Visit 4				*Visit 5*				*Visit 6*			
Date	17/05/2016				06/06/2016				14/06/2016			
Personnel	AC JS				AC JS				JK JS			
Temperature (ºC)	13				15				18			
Weather	Mild and clear				Patchy cloud				Clear and still			
Turbidity	1				3				2			
Vegetation cover	2				2				2			
Methods												
indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
	✓		✓	efugia	✓		✓	egg	✓		✓	egg
T. cristatus												
male												
female												
unknown												
total adults												
immature												
larvae												
eggs present?												
L. vulgaris	1M				1F				2F			
L. helveticus												
R. temporaria												
B. bufo												
Other												

***Note**: Cells highlighted orange indicate a potential detectibility issue due sub-optimal survey conditions.*

Ditch 1

1. Pond Details

Job Number	**5989**
Site	Climping

Pond number/reference	**Pond 8**
OS Grid reference	TQ006 023
Location details	East of survey site
Access instructions	Accessed from Church Lane

Landowner name	Mr Baird
Address/email	
Telephone	

Habitat Suitability Index

			SI value
SI1.	Map location	**A/B/C**	
SI2.	Surface area	**rectangle/ellipse/irregular**	
		length (m)	
		width (m)	
		OR estimate (m^2) if irregular	
		area (m^2) =	
SI3.	Dessication rate	**never/rarely/sometimes/frequently**	
SI4.	Water quality	**good/moderate/poor/bad**	
SI5.	Shade	% of margin shaded 1m from bank	
SI6.	Waterfowl	**absent/minor/major**	
SI7.	Fish population	**absent/possible/minor/major**	
SI8.	Pond density	number of ponds within 1km	
SI9.	Terrestrial habitat	**good/moderate/poor/isolated**	
SI10.	Macrophyte cover	%	

***Note**: Guidance in undertaking the HSI is available at www.narrs.org.uk.*
HSI calculation formulae adapted from Rob Oldham

HSI score =

Pond suitability =

General description/notes/comments

Located east of the survey site within an area of arable fields. The ditch measured approximately 230m in length with an average width of 2m and an overall depth of 0.1 – 0.3m.

Ditch 1

2. Survey Details

	Visit 1	Visit 2	Visit 3
Date	07/04/2016	27/04/2016	10/05/2016
Personnel	JK JS	JK JS	AC JS
Temperature (ºC)	7	8	12
Weather	Breezy and overcast	Dry, mild	Clear and windy
Turbidity	1	1	1
Vegetation cover	0	0	0
Methods			
indicate methods used or number of bottle traps	torch ✓ / trap / net / other / refugia	torch ✓ / trap / net / other / refugia	torch ✓ / trap / net / other / refugia
T. cristatus			
male			
female			
unknown			
total adults			
immature			
larvae			
eggs present?			
L. vulgaris			
L. helveticus			
R. temporaria			
B. bufo			
Other			

	Visit 4	*Visit 5*	*Visit 6*
Date	17/05/2016	06/06/2016	14/06/2016
Personnel	AC JS	AC JS	JK JS
Temperature (ºC)	13	15	18
Weather	Mild and clear	Patchy cloud	Clear and still
Turbidity	1	1	1
Vegetation cover	0	0	0
Methods			
indicate methods used or number of bottle traps	torch ✓ / trap / net / other / refugia	torch ✓ / trap / net / other / refugia	torch ✓ / trap / net / other / refugia
T. cristatus			
male			
female			
unknown			
total adults			
immature			
larvae			
eggs present?			
L. vulgaris			
L. helveticus			
R. temporaria			
B. bufo			
Other			

***Note**: Cells highlighted orange indicate a potential detectibility issue due sub-optimal survey conditions.*