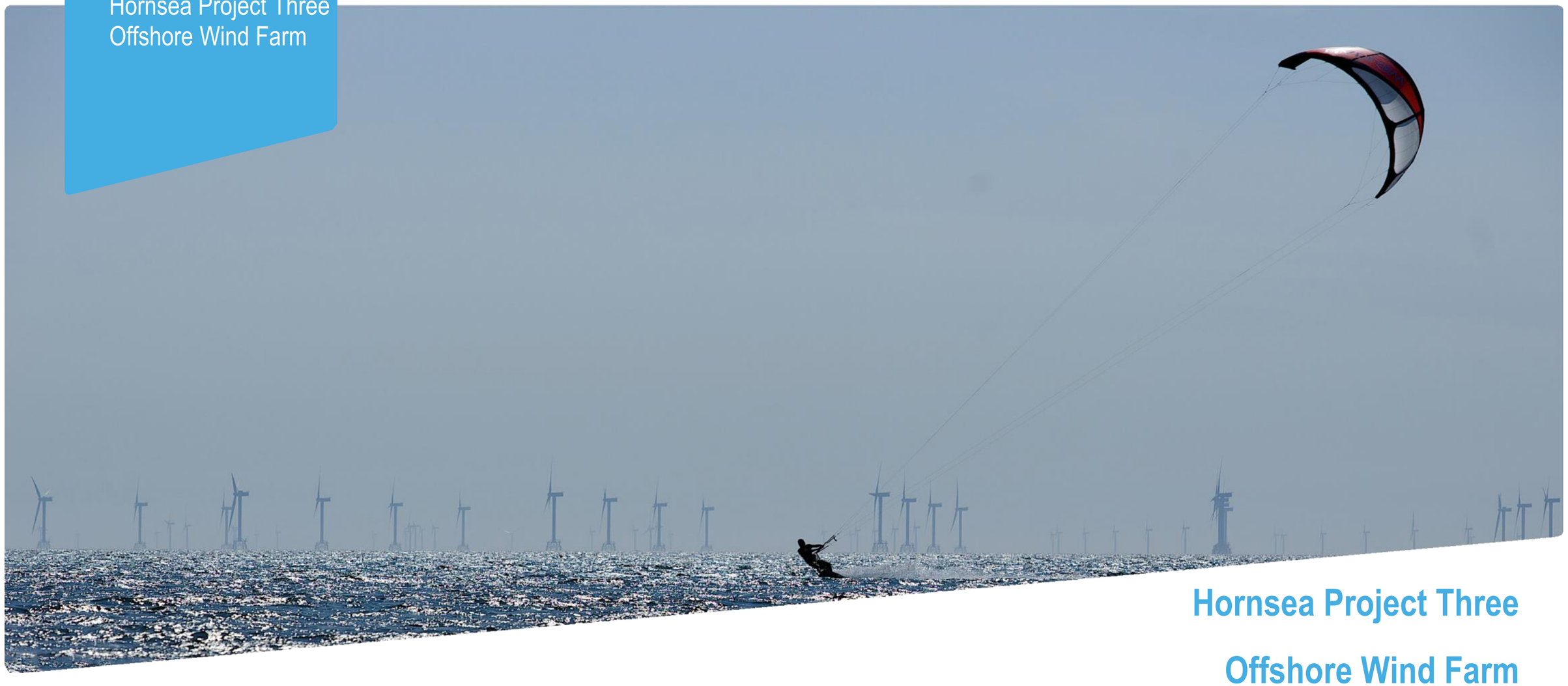
Hornsea Project Three
Offshore Wind Farm



Hornsea Project Three

Offshore Wind Farm

Environmental Statement:
Volume 6, Annex 3.5 - Great Crested Newt Survey

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Hornsea 3
Offshore Wind Farm

Ørsted

Environmental Impact Assessment

Environmental Statement

Volume 6

Annex 3.5 – Great Crested Newt Survey

Liability

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Front cover picture: Kite surfer near a UK offshore wind farm © Orsted Hornsea Project Three (UK) Ltd, 2018.

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Table of Contents

List of Tables

List of Charts

Glossary

Term	Definition
eDNA	Environmental DNA (eDNA) is DNA that is collected from the environment in which an organism lives.
Compound	A collective term used to refer to secondary construction compounds along the onshore cable corridor as well as the landfall construction compound (defined in detail in volume 1, chapter 3: Project Description). Although, there is also a main construction compound, this is referred to individually due to its distant location relative to the onshore cable corridor.
Macrophyte	Aquatic plants growing in or near water. They may be either emergent (with upright portions above the water surface), submerged or floating.
Phase 1 Habitat Survey	A field survey technique which provides a relatively rapid system to record and map semi-natural vegetation and other wildlife habitats.
Preliminary Ecological Appraisal	The first stage in any site ecological assessment. It has two main elements; an ecological desk study and an extended Phase 1 habitat survey.
Refugia	A habitat feature under which a reptile or amphibian can shelter or bask.
Survey Area	The survey area for the GCN survey comprised the PEIR onshore cable corridor search area and potential alternatives routes with an additional 250m survey buffer (see Figure 1)

Units

Unit	Description
°C	Celsius (temperature)
GW	gigawatt (power)
ha	Hectare (area)
m	Metre (distance)
m²	metre squared (area)
km	Kilometre (distance)

Acronyms

Unit	Description
DCO	Development Consent Order
EIA	Environmental Impact Assessment
HSI	Habitat Suitability Index
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
GCN	Great crested newt
PEA	Preliminary Ecological Appraisal
PEIR	Preliminary Environmental Information Report
PSCA	Population Size Class Assessment
SAC	Special Area of Conservation
SSSI	Site of Special Scientific Interest

1. Introduction

1.1 Development background

1.1.1.1 Ørsted is promoting an application for a development consent order ('DCO') for the Hornsea Project Three Offshore Wind Farm (hereafter referred to as 'Hornsea Three') a proposed offshore wind farm located in the southern North Sea. This report focuses on the onshore components of Hornsea Three (as described in volume 1, chapter 3: Project Description).

1.1.1.2 At the time of ecological survey scoping in December 2016, a 200 m wide cable corridor search area had been identified by Ørsted. The 200 m wide search area included the locations of the proposed onshore cable corridor, HVAC booster station, HVDC converter/HVAC substation, Norwich main national grid substation and construction compounds and was the focus of the Preliminary Environmental Information Report (PEIR) submitted in July 2017. This search area is hereafter referred to as the 'PEIR onshore cable corridor search area'. Following this, some alternate route considerations were added. Ecological survey area boundaries were based on the PEIR onshore cable corridor search area and alternate routes considered, with an appropriate survey buffer added for some survey types where necessary. The survey area applicable to this report is shown in Appendix A, Figure 1.1.

1.1.1.3 Subsequently, a route refinement process has been undertaken to refine the Hornsea Three onshore cable corridor to an approximately 80 m wide corridor (referred to as the 'onshore cable corridor') as well as identify locations of compounds, access roads and storage areas. The location of permanent and temporary land take associated with the HVDC converter/HVAC substation and HVAC booster station has also been refined. This process is described in more detail in volume 1, chapter 4: Site Selection and Alternatives.

1.1.1.4 A full description of Hornsea Three is provided in volume 1, chapter 3: Project Description.

1.2 Ecology background

1.2.1.1 A Preliminary Ecological Appraisal (PEA) was undertaken in 2016 (RPS, 2016) and included a Phase 1 survey of an area comprising a 500 m wide corridor (including the PEIR onshore cable corridor search area) and a desk study, whereby protected species data was requested from the Norfolk Biodiversity Information Service (NBIS) and Norfolk Reptile and Amphibian Group. No data was received from the Norfolk Reptile and Amphibian Group.

1.2.1.2 Subsequently, an additional Phase 1 habitat survey was undertaken to cover 30 areas which were either not accessible during the PEA, or became relevant to Hornsea Three due to design refinements (see volume 6, annex 3.1 of the Environmental Statement).

1.2.1.3 Records of Great Crested Newt (GCN) (*Triturus cristatus*) were returned as part of the PEA desk study, and suitable terrestrial and aquatic habitat was also identified within both of the Phase 1 survey areas, including within the PEIR onshore cable corridor search area. Based on these findings, further survey for GCN was recommended.

1.2.1.4 The results of the PEA and the additional Phase 1 habitat survey have been used to inform the scope and extent of the GCN surveys which are the focus of this report.

1.3 Legislative background

1.3.1.1 GCN are protected under the Conservation of Habitats and Species Regulations 2010, as amended, and are afforded additional protection under the Wildlife and Countryside Act 1981, as amended. Taken together this makes it an offence to:

- Deliberately or recklessly capture, injure, or kill a GCN;
- Disturb the species such that its local distribution is significantly affected or its ability to breed, migrate or hibernate is inhibited; and
- Damage, destroy or obstruct access to a place of shelter or resting place.

1.3.1.2 GCN is also listed as a Species of Principal Importance (SPI) under Section 41 of the Natural Environment and Rural Communities Act 2006.

1.4 The brief and objectives

1.4.1.1 The brief of the GCN survey was to:

- Undertake a survey of all potential GCN waterbodies identified from the PEA and Phase 1 Habitat surveys that have the potential to be impacted by Hornsea Three;
- Provide a survey report to include methods, results of GCN surveys and a digitised map of the survey results.

1.4.1.2 The objective of the survey was to identify the presence of GCN populations within the survey area to enable the assessment of potential impacts of Hornsea Three on this species within volume 6, chapter 3: Ecology and Nature Conservation of the Environmental Statement.

2. Methodology

2.1 Survey area

2.1.1.1 Based on a review of volume 1, chapter 3: Project Description and best practice guidance, a GCN survey area was defined to include the PEIR onshore cable corridor search area and potential alternatives routes with an additional 250 m survey buffer (in accordance with guidance on geographical limits of survey in the Great Crested Newt Mitigation Guidelines (English Nature, 2001)).

2.1.1.2 The survey methodology comprised: identification of potentially suitable GCN breeding sites (standing waterbodies comprises ditches and ponds) from the PEA report; an initial visit to all waterbodies, where land access was available, to assess suitability; sampling of suitable waterbodies (excluding waterbodies of poor suitability) to determine presence or likely absence of GCN based on environmental DNA (eDNA) analysis; and a further six survey visits to waterbodies with GCN present to assess the population size class. The surveys were undertaken between 18 January and 14 June 2017.

2.1.1.3 The main construction compound to the east of the Hornsea Three onshore cable corridor is outside of the survey area for this study and comprises existing hard standing with negligible ecological importance. Therefore, a detailed survey of baseline conditions was not required.

2.1.1.4 The survey stages are set out below and summarised in Chart 2.1. Further details on the methods for each stage is set out in sections 2.3 - 2.5.

- Stage 1: Habitat suitability assessment during which all waterbodies within the survey area, where access allowed, were visited to assess their suitability to support GCN. Waterbodies found to be unsuitable were scoped out from further survey, these included running water (streams and rivers), fishing lakes and farm slurry ponds. Waterbodies found to be suitable were given a Habitat Suitability Index (HSI) score (between 0 and 1) based on published guidance (Oldham *et al*., 2000);
- Stage 2: Suitable waterbodies with an HSI score >0.5 were subject to a presence or likely absence survey for GCN using environmental DNA (eDNA); and
- Stage 3: Where eDNA results indicated GCN presence, a population size class assessment (PSCA) survey was undertaken to estimate the size of the GCN population present, in accordance with best practice guidance (English Nature, 2001).

2.1.1.5 Surveys were undertaken during suitable weather conditions at a suitable time of year, in accordance with best practice guidance (English Nature, 2001).

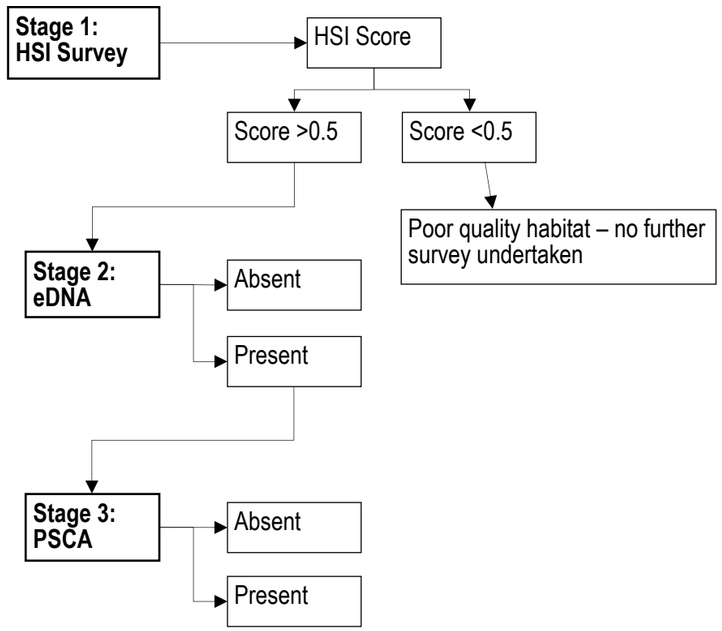

Chart 2.1: Great crested newt survey flow chart.

2.2 Surveyors

2.2.1.1 Surveys were undertaken by the following ecologists, employed and trained by Thomson Ecology: Ishbel Campbell BSc (Hons) MSc ACIEEM; Karen Akehurst BSc (Hons) MSc GradCIEEM; Lauren Hornsby BSc (Hons); Louise Bunn BSc (Hons) MSc ACIEEM; Rhiannon Williams BSc (Hons) MRes GradCIEEM; Robert Allen BSc (Hons) MSc GradCIEEM; Caroline Ritchie BSc (Hons) MSc; Joseph Baker BSc (Hons); Mercedes Malax-Echevarria BSc (Hons); Neil Whitehead BSc (Hons) MSc; Stephen Hewitt Bsc (Hons) ACIEEM.

2.3 Stage 1: Habitat suitability index

2.3.1.1 The results of the PEA (RPS, 2016), publically available aerial photography and Ordnance Survey mapping were used to identify the location of any waterbodies with potential to support breeding GCN within the survey area that required a habitat suitability assessment. In total 340 waterbodies were identified as requiring an assessment.

2.3.1.2 The habitat suitability assessment was undertaken using best practice HSI survey methodology (Oldham *et al*., 2000). The habitat suitability assessment was undertaken between 18 January and 8 June 2017.

2.3.1.3 The surveyor recorded suitability indices (SI) for ten habitat parameters, listed below, which were then subsequently used to calculate a HSI score:

- Location (in Britain) – this accommodates the large scale habitat features which affect GCN;
- Waterbody area (m^2) - GCN tend not to occur in small waterbodies or large waterbodies and more typically occur in fair-sized waterbodies, usually greater than 100 m^2, less than 300 m^2 and over 0.5 m deep;
- Desiccation rate (years out of ten that waterbody dries) - GCN have to spend a large proportion of the year in water and therefore tend to occur in waterbodies that are permanent and present all year round (although occasional drying may be of benefit as it kills fish populations);
- Water quality (subjective assessment) - GCN tend to occur in nutrient-rich waters and the larvae need well aerated water with a number of invertebrates;
- Proportion of shade (%) - GCN tend to occur in largely un-shaded waterbodies;
- Number of waterfowl - large numbers of waterfowl can remove aquatic vegetation, pollute water and persistently stir sediments which impedes GCN breeding, some waterfowl also predate GCN and their larvae;
- Fish population (subjective assessment) - GCN are vulnerable to fish predation and therefore they tend to avoid waterbodies that contain fish;
- Number of waterbodies within 1 km – GCN population persistence depends in part upon the distance separating breeding sites;
- Terrestrial habitat quality - GCN require more than 0.5 ha of suitable and accessible terrestrial habitat for a population to be viable. The primary requirements for GCN terrestrial habitats are refuge habitat for shelter and over-wintering, foraging opportunities, and connectivity to aid dispersal; and
- Macrophyte cover (%) - GCN require aquatic vegetation for egg-laying and tend to occur in waterbodies with a fair amount of aquatic vegetation.

2.3.1.4 In addition to the HSI data collected, each waterbody was photographed and a brief description was made of the waterbody and its surroundings.

2.3.1.5 The SI scores (expressed as values between 0 and 1) are used to calculate the HSI of each waterbody and were determined as a geometric mean using the following equation: HSI = (SI1 * SI2 * SI3 * SI4 * SI5 * SI6 * SI7 * SI8 * SI9 * SI10)/10. The result of this calculation was a single number between 0 and 1 which gives a quantitative assessment of each waterbody for its suitability to support GCN. A score of 0 represents a waterbody considered to be unsuitable for GCN, a score of 1 represents an ideal habitat for GCN.

2.3.1.6 A suitability category was assigned to each standing waterbody based on the HSI score as shown in the Table 2.1.

Table 2.1: Habitat suitability index categories.

HSI Score	Suitability Category
> 0.80	Excellent
0.70 – 0.79	Good
0.60 – 0.69	Average
0.50 – 0.59	Below Average
< 0.50	Poor

2.3.1.7 Although HSI scores are required to enable the completion of a Natural England Licence Mitigation Method Statement (should GCN be found to be present on a site and mitigation be required), they are not considered a reliable indicator of GCN presence or likely absence (Sellars, 2010). Therefore waterbodies were not screened out of further survey based on HSI score alone.

2.3.1.8 However, waterbodies were scoped out of further survey where they were:

- Filled in or dry for at least most of the year;
- A slurry pond;
- A chlorinated swimming pool;
- A fishing lake or pond which is stocked with fish and where emergent/submerged vegetation is absent;
- Running water (streams and rivers);
- A lake greater than 2 ha in size; or
- Saline.

2.3.1.9 The results of the HSI were however used to ascertain where further survey was required to determine presence or likely absence GCN. The method statements supplied to Natural England indicated that eDNA surveys would be undertaken in waterbodies identified as having a HSI of 0.5 (below average) or above (Thomson Ecology, 2017).

2.4 Stage 2: eDNA presence or likely absence survey

2.4.1.1 eDNA is DNA that is collected from the environment in which an organism lives. In aquatic environments, animals shed cellular material into the water via their saliva, urine, faeces and skin cells. This material contains DNA which may persist for several weeks and can be collected through a water sample. The sample can then be analysed to determine the presence or absence of certain species, such as GCN, in the waterbody. It is a more effective technique for detecting the presence of GCN than conventional techniques, however, it cannot yet be used to estimate population size.

2.4.1.2 All standing waterbodies not screened out in earlier HSI assessments (i.e. those with an HSI of 0.5 or above), and to which access was permitted, were subject to a presence/ absence survey using the eDNA technique. These were undertaken between mid-April to early May in accordance with best practice guidance (Biggs *et al.* 2014). Waterbodies with an HSI of below 0.5 (poor category) were not surveyed. Although it is possible for waterbodies with an HSI score of below 0.5 (poor category) to support breeding GCN, it is considered of low likelihood and for this reason survey of these waterbodies was not undertaken. This approach was agreed with Natural England in advance of the surveys being undertaken. The locations of all waterbodies are shown in Appendix A, Figure 2.1 to 2.16.

2.4.1.3 Before collecting samples, the surveyor identified twenty eDNA sample collection points. These were spread out as evenly as possible around the edge of the waterbody, without giving cause for the surveyor to enter the water. Samples were then taken from the water in strict accordance with the published technical advice note (Defra Science and Research Project WC1067) and by suitably trained and experienced GCN surveyors.

2.4.1.4 Samples were sent to a suitably equipped laboratory for analysis to determine if GCN eDNA was present. The laboratory methodology was based on standard best-practice Defra Science and Research Project WC1067.

2.5 Stage 3: Population size class assessment

2.5.1.1 The PSCA was undertaken for all waterbodies confirmed as supporting GCN during the eDNA survey (where access was permitted). The PSCA was undertaken in accordance with best practice guidance (English Nature, 2001) during suitable weather conditions (above 5°C).

2.5.1.2 This involved up to six visits to each of the waterbodies spread over the survey period (8 May 2017 to 14 June 2017) with at least three of the visits undertaken during the optimal survey season (mid-April to mid-May). Where no adult GCN were recorded in the first four visits, no further visits were undertaken and the population size class estimate was considered to be small, based on the fact that presence had been confirmed by eDNA analysis and in some cases also by the presence of GCN eggs.

2.5.1.3 During each visit at least three techniques were used to search for the presence of GCN, depending on waterbody suitability as suggested in Froglife (2001). This approach is in line with English Nature (now Natural England) Guidelines (2001). Numbers and life stage of any GCN encountered were recorded during each survey visit. In addition, and in line with Natural England requirements, the air temperature (°C), vegetation cover (%) and turbidity (0-5 score) were also recorded.

2.5.1.4 The survey techniques used include:

- Egg Search: Submerged vegetation was searched for the presence of GCN eggs. The eggs are usually wrapped in the leaves of aquatic plants such as water mint (Mentha aquatica) and water forget-me-not (Myosotis scorpioides), but can also be wrapped in dead leaves or overhanging grass leaves. It was necessary to unwrap a folded leaf to identify the egg. This interference increases the risk of predation for the egg, therefore once an egg is found at a waterbody the use of this technique ceased.
- Torchlight Survey: The perimeter of each waterbody (where accessible) was walked at night, at least two hours after dark. The bottom of the pond was searched with a powerful torch (minimum 500,000 candle power in line with Natural England guidelines) and sightings of GCN were recorded. If present and given sufficient water clarity, adult GCN were seen using this technique in the shallow edges of the pond, where they may be feeding, showing courtship behaviour or laying eggs.
- Bottle Trapping: Bottle traps were used to capture GCN. Bottle traps comprise plastic drinks bottles with their tops cut off and inverted, so as to make a funnel leading into the bottles. GCN encountered the traps during their nocturnal activities and whilst exploring the object, they became trapped inside. Traps were placed at 2 m intervals around the accessible margins of the waterbodies, with the density of traps increased in the most suitable areas. Traps were set in the early evening and retrieved early the following morning.
- Netting: Netting was used as the third technique when one of the above techniques could not be carried out, for example if a lack of accessible vegetation prevents egg searching. The perimeter of each waterbody (where accessible) was walked using a long handled dip net to sweep the margins of the waterbody for submerged GCN. At least 15 minutes of netting effort was used per 50 m of shoreline.

2.5.1.5 The peak adult count recorded using any torchlight survey or bottle trapping on any one of the survey visits was calculated for each waterbody. The peak count of adult GCN was used to give an estimated population size class for each waterbody as follows:

- 'Small' for peak counts up to ten;
- 'Medium' for peak counts between 11 and 100; and
- 'Large' for peak counts over 100.

2.6 Limitations

2.6.1.1 Sources used to identify waterbodies requiring survey were the PEA (RPS, 2016), results from the Phase 1 habitat surveys, publically available aerial photography and Ordnance Survey mapping. Although there is the potential that some small waterbodies, such as private ponds, may not have been identified from the existing data, any new waterbodies which were identified during site visits and the GCN surveys were subsequently mapped and where required, surveys undertaken. The survey approach described in this report was agreed with Natural England in advance and is therefore considered robust.

2.6.1.2 The survey area for this study was based on the PEIR onshore cable corridor search area and some alternative route options considered after issue of the PEIR, with an additional survey buffer of 250 m. Following completion of the survey the refinement of the onshore cable corridor, the main and secondary construction compounds, access roads and storage areas have been finalised. At some locations the finalised onshore cable corridor and associated infrastructure fall outside of the survey area. These design refinements were identified outside of the survey season and therefore it was not possible to undertake GCN surveys in these areas, which amount to 4.76 ha (0.89% of the onshore cable corridor and associated infrastructure area).

2.6.1.3 Although the status of landowner permission to access survey areas was reviewed on a weekly basis during the survey season for this species, land access permission was not available for 121 waterbodies either to undertake a habitat suitability assessment or eDNA presence or likely absence survey. This represents 35.5% of the waterbodies identified from the PEA and Phase 1 habitat surveys as requiring survey. These waterbodies are shown in Appendix A, Figure 2.1 to 2.16 (relative to the survey area and the onshore cable corridor) and listed in the results section.

2.6.1.4 Although it was not possible to survey the areas listed above in 2017, they were mostly covered by the PEA (RPS, 2016) providing ecological data on habitat types and species desk study records, which, combined with the ability to characterise from the large volume of data collected in the remainder of the survey area, is considered sufficient to inform the impact assessment reported in volume 6, chapter 3: Ecology and Nature Conservation of the Environmental Statement. It is assumed that GCN will be present where suitable habitat exists, where desk study records and/or survey information from other parts of the route indicate likely presence.

2.6.1.5 The areas where survey could not be completed, that will be impacted by the development will be checked during pre-construction surveys enabling amendment of mitigation or the application of further mitigation, to that specified in volume 6, chapter 3: Ecology and Nature Conservation of the Environmental Statement.

2.6.1.6 The main construction compound to the east of the Hornsea Three onshore cable corridor is outside of the survey area for this study and is not shown in Appendix A, Figure 2.1 to 2.16. However, given that this compound comprises existing hard standing with negligible ecological importance, it is considered that a detailed survey of baseline conditions were not required.

3. Results

3.1 Background

3.1.1.1 Results for each of the three survey stages are presented below. Table 3.3 provides a summary of the results. Full results are presented in Appendix B: Waterbody summary list and locations of waterbodies and results are shown in Appendix A, Figure 2.1 to 2.16. Images of all waterbodies found to have GCN present are shown in Appendix A, Figure 3.1 to 3.5.

3.2 Habitat suitability index

3.2.1.1 A total of 340 waterbodies were identified for HSI survey; of these, 82 could not be assessed due to land access restrictions (see section 2.6) and 50 were found to be unsuitable during the field visit because they were dry, absent or were running water. A total of 208 waterbodies were found to be suitable, of which 54% were excellent or good, 32% were average or below average and 14% were poor suitability. Table 3.1 gives the number of waterbodies within each HSI category.

Table 3.1: Summary of GCN HSI results.

HSI Category	Number of waterbodies
Excellent	57
Good	56
Average	48
Below Average	18
Poor	29
Unsuitable (dries annually, running water or absent)	50
No access to survey	82
Total	**340**

3.3 eDNA presence or likely absence survey

3.3.1.1 Based on the above, a requirement for GCN eDNA presence or likely absence survey was identified for 179 waterbodies with a suitability category of below average or above (132 were excluded from further survey because they were either of poor suitability, unsuitable or access was not possible). Of these, 39 waterbodies were not accessible during the survey period and ten waterbodies were no longer suitable to support GCN because they were dry (eight waterbodies) or had been filled in (two waterbodies). In addition, 15 waterbodies could not be surveyed using the eDNA technique because they were in the process of drying out and the remaining water level was too shallow to sample. Of the 115 waterbodies sampled, GCN were determined to be present in 28 waterbodies and absent in 87 waterbodies.

3.4 Population size class assessment

3.4.1.1 The 28 waterbodies where eDNA sampling had confirmed the presence of GCN were targeted for PCSA; however, during the survey period four of the 28 waterbodies could not be visited due to access limitations. Of the 24 waterbodies surveyed, six were estimated to have a medium population of GCN and 18 were estimated to have a small population of GCN. A large GCN population was not recorded in any waterbodies. In nine of the waterbodies recorded to have a small population, no adult GCN were recorded during the PSCA survey and the small population estimate is based on the confirmed presence of GCN from the eDNA sampling and in two of these waterbodies the presence of GCN eggs. PSCA results are given in Table 3.2.

Table 3.2: Population size class estimate results.

Pond ID	Number of visits	GCN Recorded	Peak Count	Estimated population size class
G1A5	4	No	0	Small *
G1B6	5	No	0	Small *
G1B13a	6	No	0	Small *
G1B18	6	No	0	Small *
G1C57	4	Yes - Eggs	0	Small *
G1C64	6	Yes	6	Small
G1C73	6	Yes	4	Small
G1E10	6	Yes	12	Medium
G1E14	6	Yes	19	Medium
G1E16	4	No	0	Small *

Pond ID	Number of visits	GCN Recorded	Peak Count	Estimated population size class
G1E17	6	Yes	6	Small
G1E21	6	Yes	2	Small
G1E22	6	Yes	3	Small
G1E6	6	Yes	16	Medium
G1E7	6	Yes	20	Medium
G1E8	6	Yes	4	Small
G1E9	6	Yes	12	Medium
G1F45	6	Yes - Eggs	0	Small *
G1F50	4	No	0	Small *
G1F67	4	No	0	Small *
G1G19	6	Yes	1	Small
G1B19	7	Yes	2	Small
G1B20	7	Yes	15	Medium
G1E34	7	Yes	1	Small
* There were no adults recorded during surveys, however the positive eDNA result or presence of GCN eggs does indicate GCN presence, these waterbodies have been classed with small population size.				

Table 3.3: Summary of great crested newt survey results.

	Survey Stage	No. of sites surveyed	Results Category		Total
Stage 1	Waterbodies identified for habitat suitability assessment	340	No access to survey		82
			Unsuitable (permanently dry, absent, running water)		50
			Suitable (208)	Poor (no further survey)	29
				Below Average	18
				Average	48
				Good	56
				Excellent	57
Stage 2	Waterbodies identified for eDNA survey (suitable waterbodies below average and above)	179	No access to survey		39
			Found to be unsuitable (waterbody now dry or filled in)		10
			Not surveyed (too shallow)		15
			eDNA survey (115)	GCN Absent	87
				GCN present	**28**
Stage 3	Waterbodies identified for population size class assessment (PSCA)	28	No access to survey		4
			PSCA (24)	Small (eDNA only – no adults recorded)	9
				Small	9
				Medium	6
				Large	0

4. Conclusion

4.1.1.1 A total of 340 waterbodies were identified to be potentially suitable to support GCN within the GCN survey area. Of these 82 waterbodies could not be visited due to land access limitation. A total of 258 waterbodies were visited to undertake a habitat suitability assessment. Fifty of the waterbodies visited were found to be unsuitable to support breeding GCN (dry, absent or running water), whilst 208 waterbodies were found to be suitable. Of these, 57 were excellent, 56 were good, 48 were average, 18 were below average and 29 were poor.

4.1.1.2 Based on these results, 179 waterbodies were identified for GCN eDNA presence or likely absence survey (the 29 waterbodies which were categorised as being of poor habitat suitability were excluded). GCN eDNA survey recorded GCN likely absent in 87 waterbodies and present in 28 waterbodies. Thirty-nine waterbodies could not be surveyed due to lack of land access, ten were found to be unsuitable because they were now dry or had been filled in and 15 waterbodies could not be sampled because they were drying out and the water level was too shallow to sample.

4.1.1.3 Population size class assessments (PSCA) were carried out on 24 of the 28 waterbodies where eDNA sampling had confirmed GCN presence. Four waterbodies with confirmed GCN presence could not be accessed for PSCA.

4.1.1.4 The PSCA found 18 waterbodies with a small GCN population (in nine of these waterbodies no adults were recorded and the small population size was assumed based on the presence of GCN eggs or from the eDNA survey result) and six waterbodies with a medium population. There were no waterbodies recorded with large populations.

4.1.1.5 GCN were recorded as being present in 28 waterbodies distributed along the entire length of the survey area, however none of these fall within the onshore cable corridor.

4.1.1.6 Results of the survey have been used to inform the final location and design of the onshore components of Hornsea Three (see volume 1, chapter 4: Site Selection and Alternatives) and to enable the assessment of the potential impacts on ecology and nature conservation and associated mitigation, reported in volume 6, chapter 3: Ecology and Nature Conservation of the Environmental Statement.

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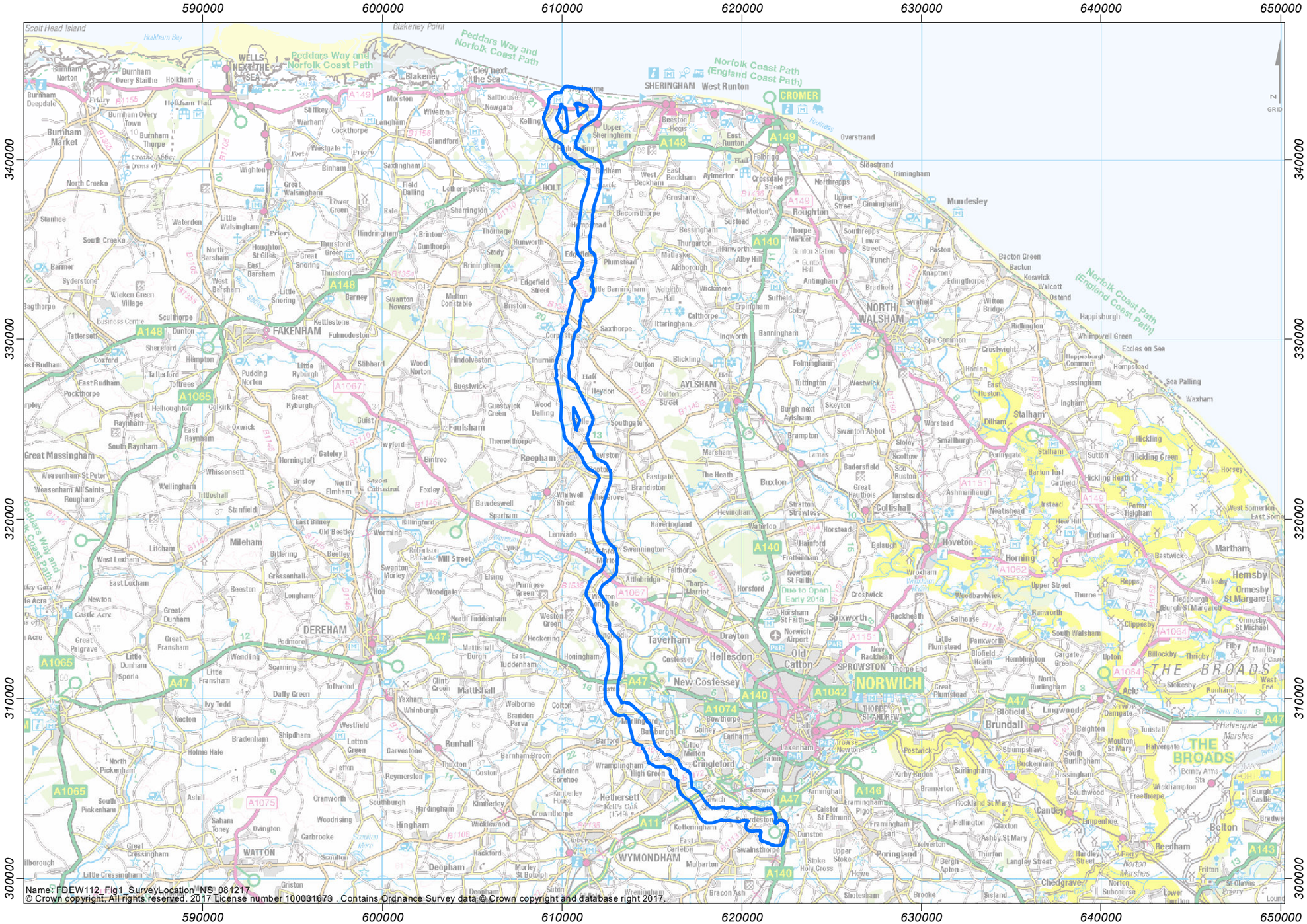
Appendix A Figures

A.1 GCN survey area



Name: FDEW112_Fig1_SurveyLocation_NS_081217

Great Crested Newt Survey Area

It is drawn to the readers attention that the survey area depicted in this figure is not representative of the final project boundary. The relationship between the final project boundary and the survey area, as well as any implications for the baseline information as it relates to the EIA is discussed in the limitations section of this annex (see Section 2).

Reference System : OSGB36
Projection : BNG

Scale@A3:1:250,000
Vertical reference: Newlyn

0 1 2 Kilometres

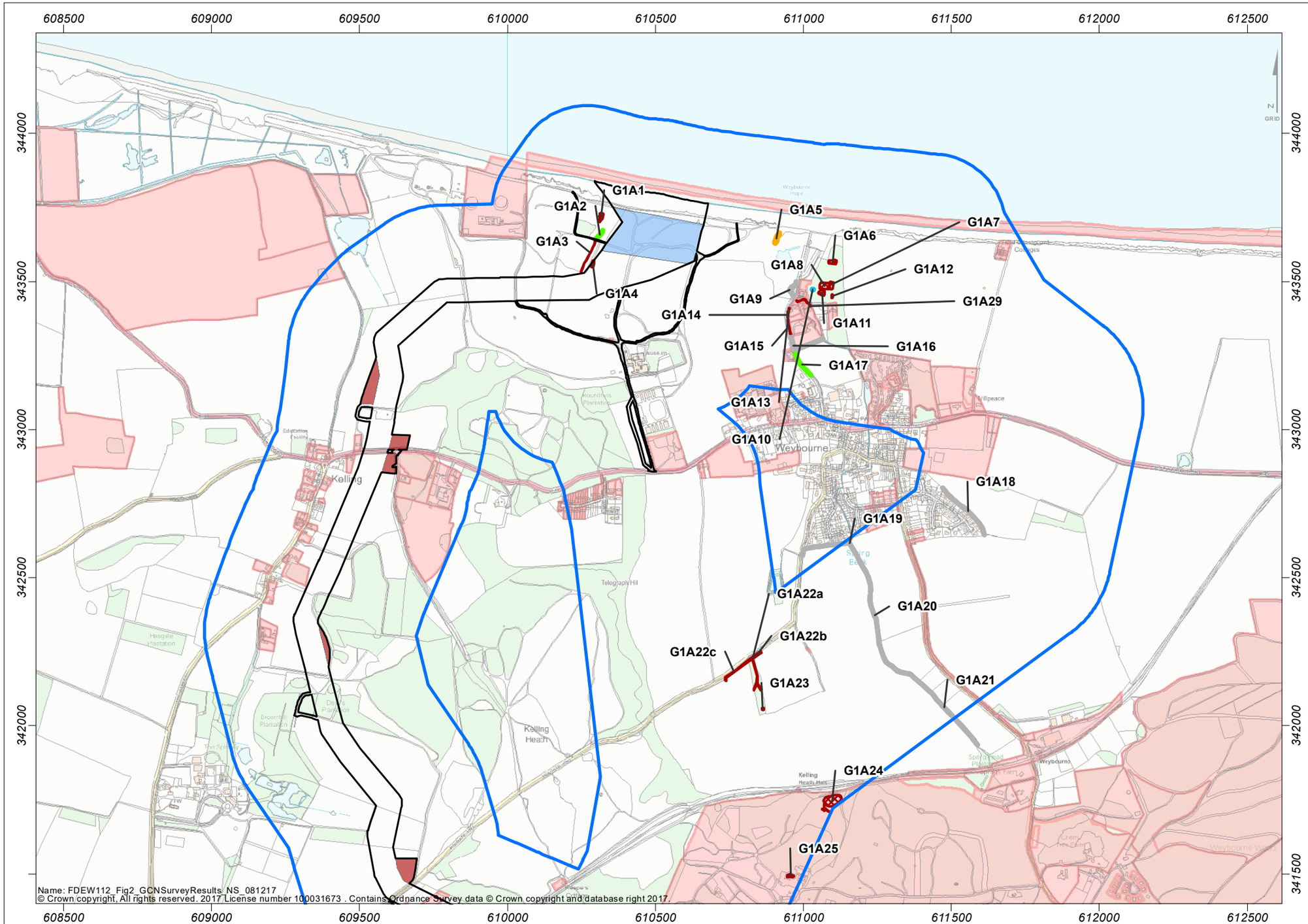
REV	REMARK	DATE
01	Initial Issue	22/08/2017

Hornsea Project Three
Figure 1.1:
Great Crested Newt Survey Area

Doc no: FDEW112/24387/1
Created by: NS
Checked by: AS
Approved by:NS

RPS Ørsted

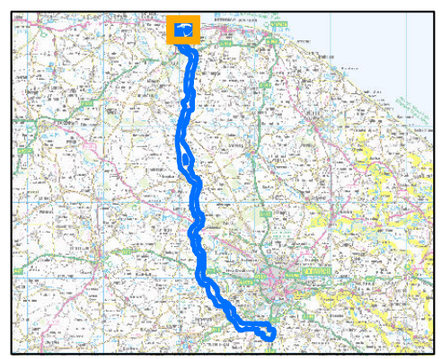
A.2 GCN survey results



Name: FDEW112_Fig2_GCNSurveyResults_NS_081217

Great Crested Newt Survey

- Great Crested Newts Present - Small Population
- Great Crested Newts Likely Absent (Suitable Waterbody)
- Poor Suitability - No Further Surveys
- Unsuitable
- Waterbody Not Surveyed Due to Access Limitations
- Survey Area Not Accessible
- Great Crested Newt Survey Area
- Landfall Construction Compound
- Storage Area
- Hornsea Three onshore cable corridor



Reference System : OSGB36
Projection : BNG

Scale@A3:1:15,000
Vertical reference: Newlyn

0 400 Metres

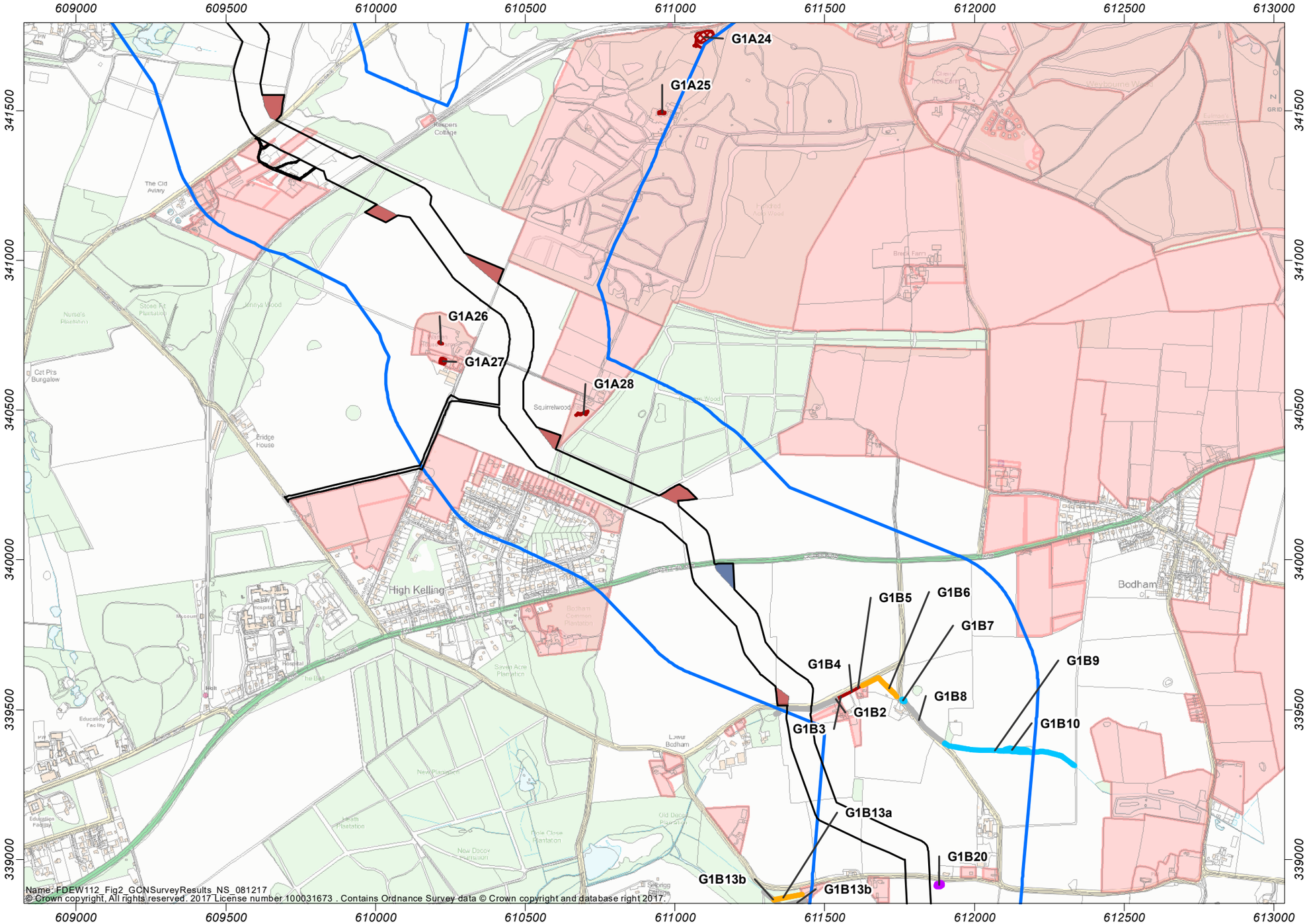
REV	REMARK	DATE
01	Initial Issue	22/06/2017

Hornsea Project Three

Figure: 2.1
Great Crested Newt Survey Results.

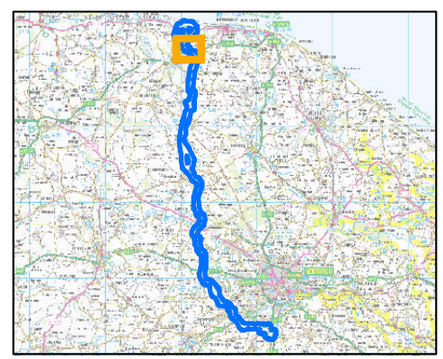
Doc no: FDEW112/24275/1
Created by: NS
Checked by: HC
Approved by:NS

RPS Ørsted



Great Crested Newt Survey

- Great Crested Newts Present - Medium Population
- Great Crested Newts Present - Small Population
- Great Crested Newts Likely Absent (Suitable Waterbody)
- Unsuitable
- Waterbody Not Surveyed Due to Access Limitations
- Survey Area Not Accessible
- Great Crested Newt Survey Area
- Storage Area
- Compound
- Hornsea Three onshore cable corridor



Reference System : OSGB36
Projection : BNG

Scale@A3:1:15,000
Vertical reference: Newlyn

0 400 Metres

REV	REMARK	DATE
01	Initial Issue	22/06/2017

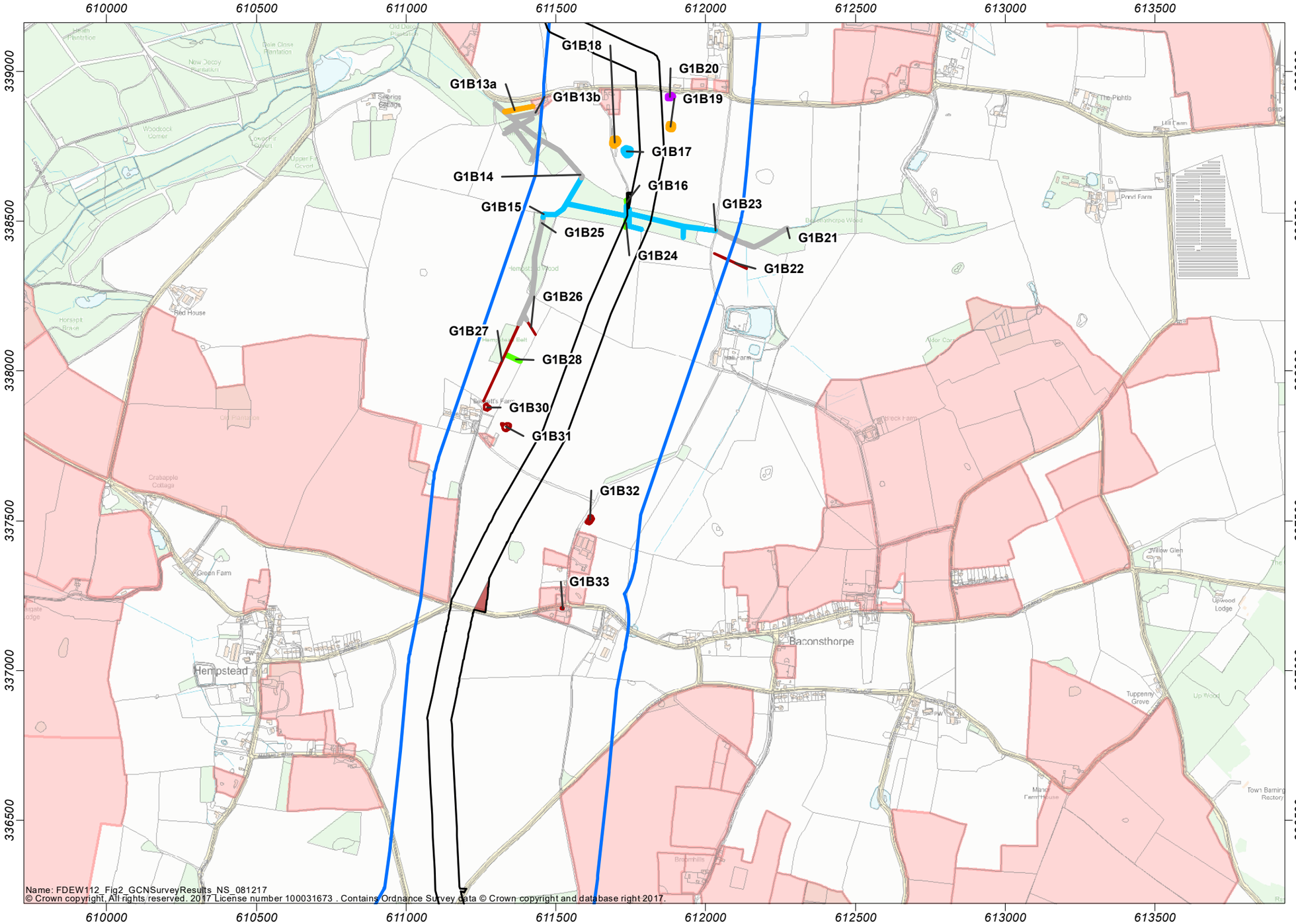
Hornsea Project Three

Figure: 2.2

Great Crested Newt Survey Results.

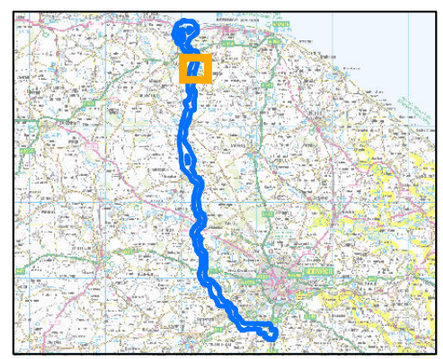
Doc no: FDEW112/24276/1
Created by: NS
Checked by: HC
Approved by:NS

RPS Ørsted



Great Crested Newt Survey

- Great Crested Newts Present - Medium Population
- Great Crested Newts Present - Small Population
- Great Crested Newts Likely Absent (Suitable Waterbody)
- Poor Suitability - No Further Surveys
- Unsuitable
- Waterbody Not Surveyed Due to Access Limitations
- Survey Area Not Accessible
- Great Crested Newt Survey Area
- Storage Area
- Hornsea Three onshore cable corridor



Reference System : OSGB36
Projection : BNG

Scale@A3:1:15,000
Vertical reference: Newlyn

0 400 Metres

REV	REMARK	DATE
01	Initial Issue	22/06/2017

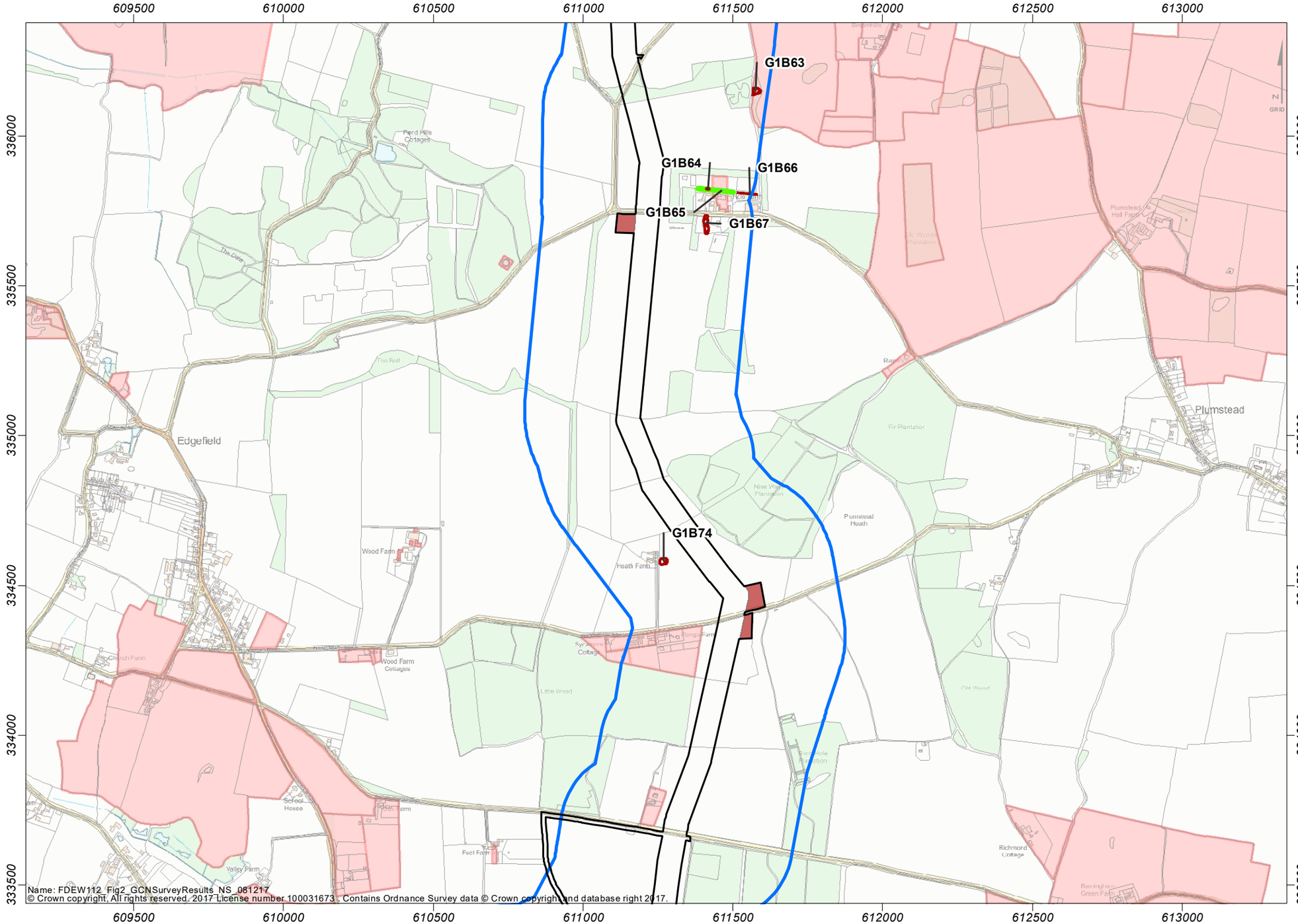
Hornsea Project Three

Figure: 2.3

Great Crested Newt Survey Results.

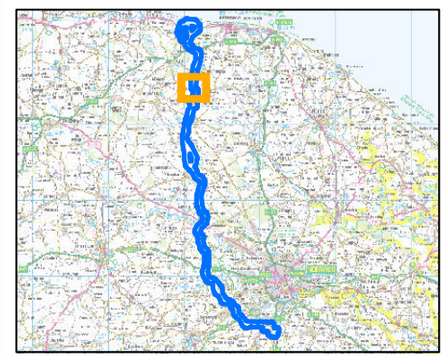
Doc no: FDEW112/24277/1
Created by: NS
Checked by: HC
Approved by:NS

RPS Ørsted



Great Crested Newt Survey

- Poor Suitability - No Further Surveys
- Waterbody Not Surveyed Due to Access Limitations
- Survey Area Not Accessible
- Great Crested Newt Survey Area
- Storage Area
- Hornsea Three onshore cable corridor



Reference System : OSGB36
Projection : BNG

Scale@A3:1:15,000
Vertical reference: Newlyn

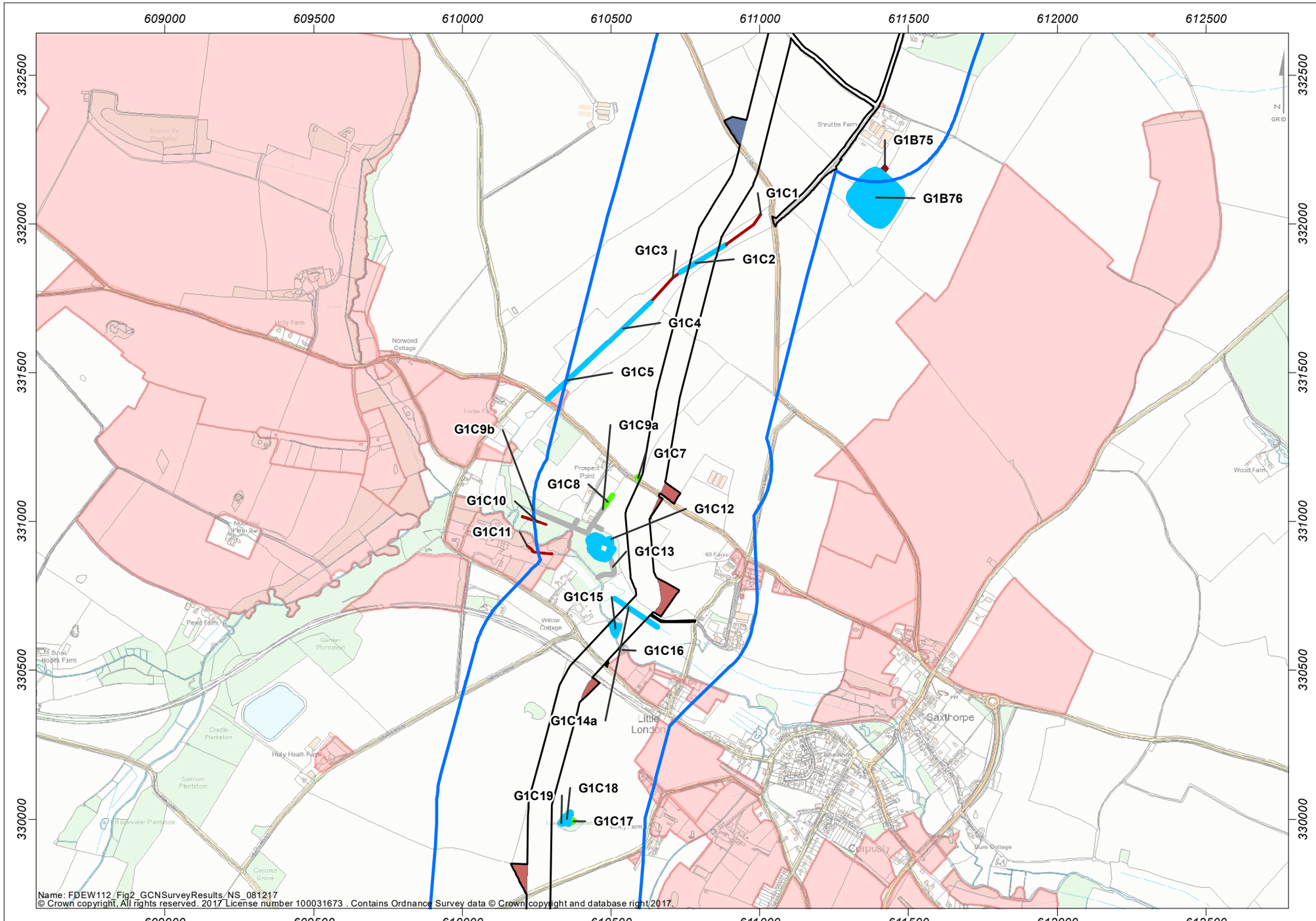
0 400 Metres

REV	REMARK	DATE
01	Initial Issue	22/06/2017

Hornsea Project Three
Figure: 2.4
Great Crested Newt Survey Results.

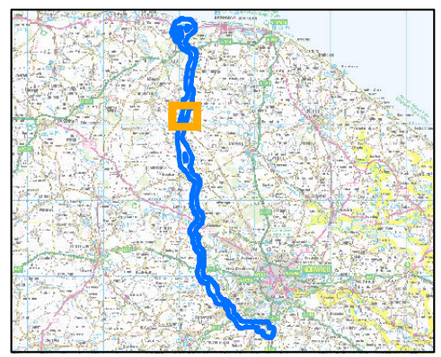
Doc no: FDEW112/24278/1
Created by: NS
Checked by: HC
Approved by:NS

RPS Ørsted



Great Crested Newt Survey Results

- Great Crested Newts Likely Absent (Suitable Waterbody)
- Poor Suitability - No Further Surveys
- Unsuitable
- Waterbody Not Surveyed Due to Access Limitations
- Survey Area Not Accessible
- Great Crested Newt Survey Area
- Storage Area
- Compound
- Hornsea Three onshore cable corridor



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Scale@A3:1:15,000
Vertical reference: Newlyn

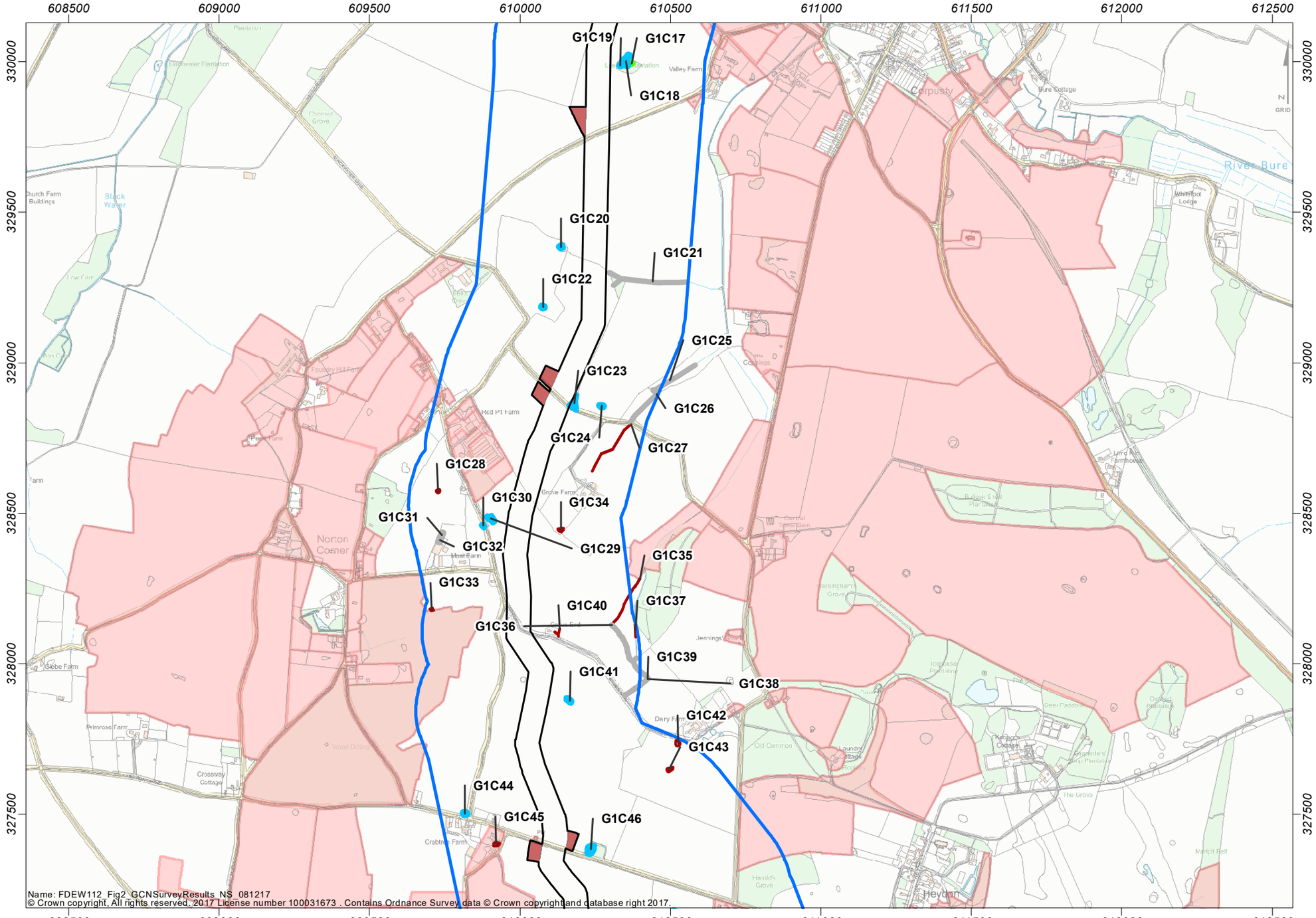
0 400 Metres

REV	REMARK	DATE
01	Initial Issue	22/06/2017

Hornsea Project Three
Figure: 2.5
Great Crested Newt Survey Results.

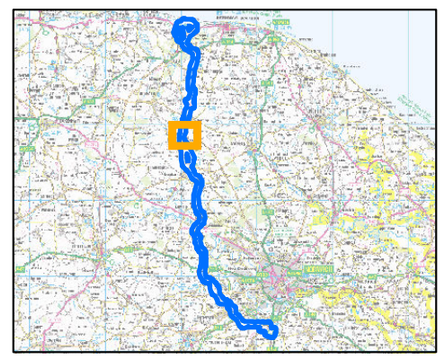
Doc no: FDEW112/24279/1
Created by: NS
Checked by: HC
Approved by:NS

RPS Ørsted



Great Crested Newt Survey

- Great Crested Newts Likely Absent (Suitable Waterbody)
- Poor Suitability - No Further Surveys
- Unsuitable
- Waterbody Not Surveyed Due to Access Limitations
- Survey Area Not Accessible
- Great Crested Newt Survey Area
- Storage Area
- Hornsea Three onshore cable corridor



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Scale@A3:1:15,000
Vertical reference: Newlyn

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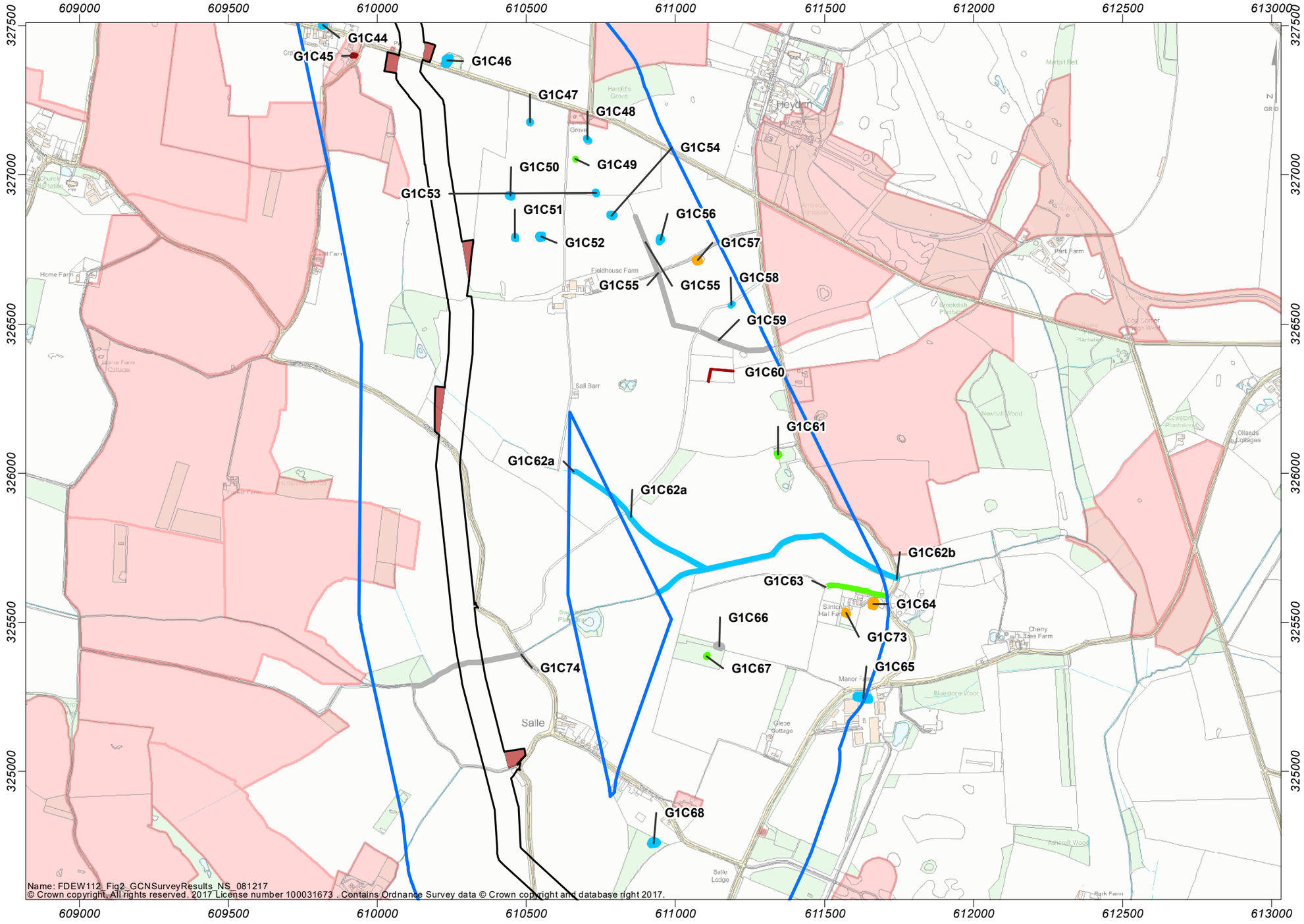
REV	REMARK	DATE
01	Initial Issue	22/06/2017

Hornsea Project Three
Figure: 2.6
Great Crested Newt Survey Results.

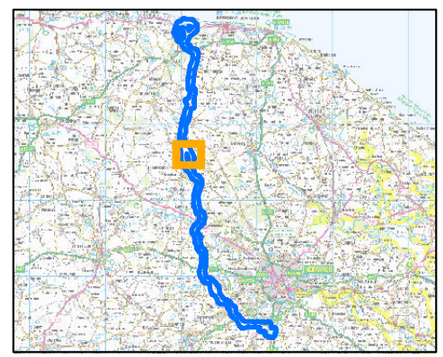
Doc no: FDEW112/24280/1
Created by: NS
Checked by: HC
Approved by:NS

RPS Ørsted



Great Crested Newt Survey Results

- Great Crested Newts Present - Small Population
- Great Crested Newts Likely Absent (Suitable Waterbody)
- Poor Suitability - No Further Surveys
- Unsuitable
- Waterbody Not Surveyed Due to Access Limitations
- Survey Area Not Accessible
- Great Crested Newt Survey Area
- Storage Area
- Hornsea Three onshore cable corridor



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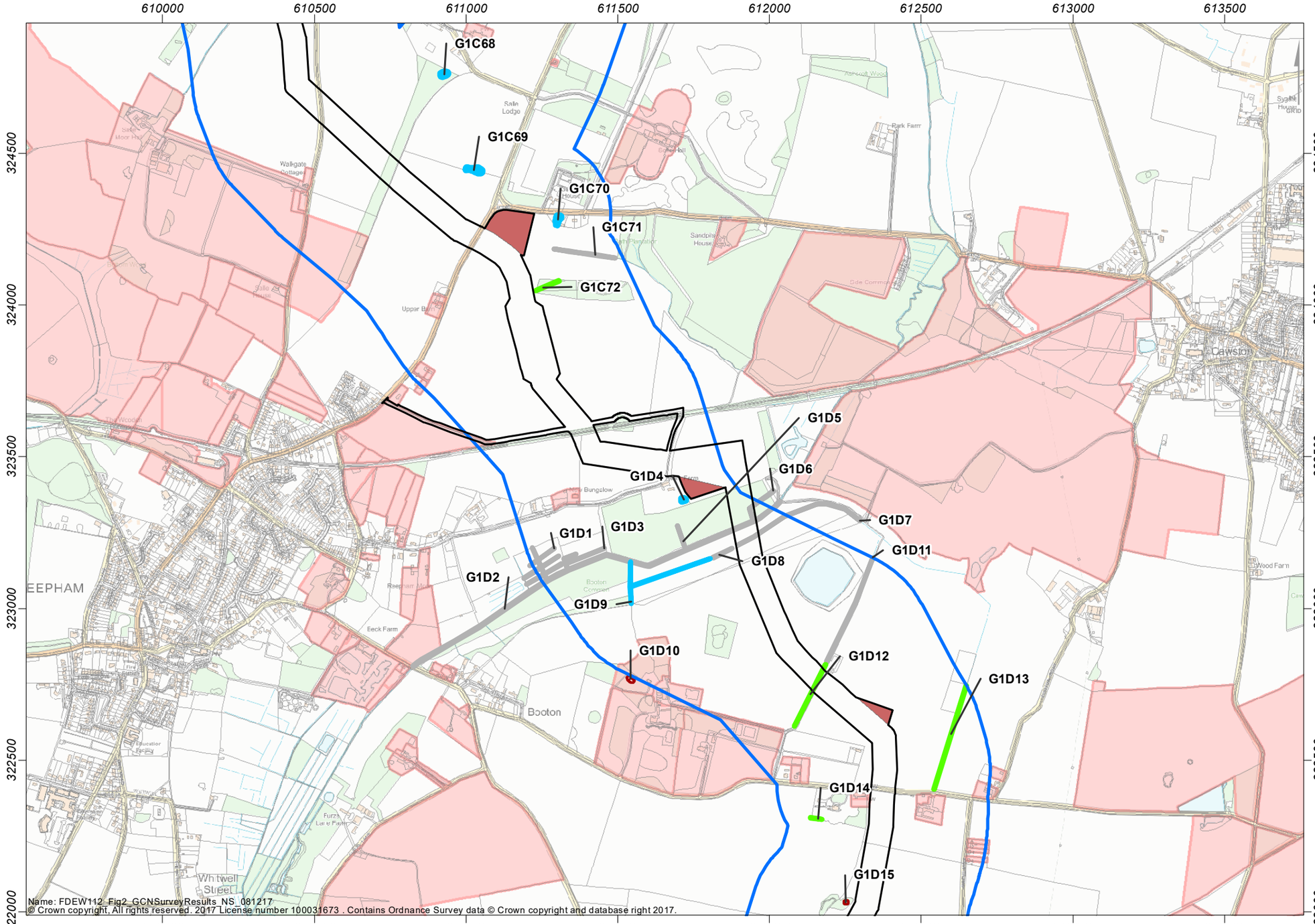
REV	REMARK	DATE
01	Initial Issue	22/06/2017

Hornsea Project Three
Figure: 2.7
Great Crested Newt Survey Results.

Doc no: FDEW112/24281/1
Created by: NS
Checked by: HC
Approved by:NS

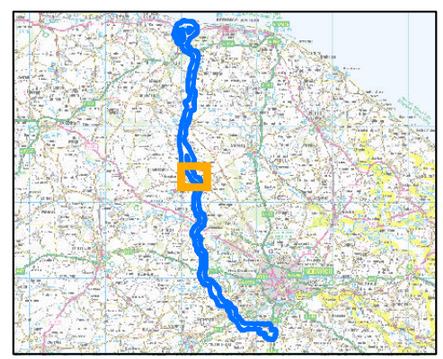
RPS Ørsted



Name: FDEW112_Fig2_GCNSurveyResults_NS_081217

Great Crested Newt Survey

- Great Crested Newts Likely Absent (Suitable Waterbody)
- Poor Suitability - No Further Surveys
- Unsuitable
- Waterbody Not Surveyed Due to Access Limitations
- Survey Area Not Accessible
- Great Crested Newt Survey Area
- Storage Area
- Hornsea Three onshore cable corridor



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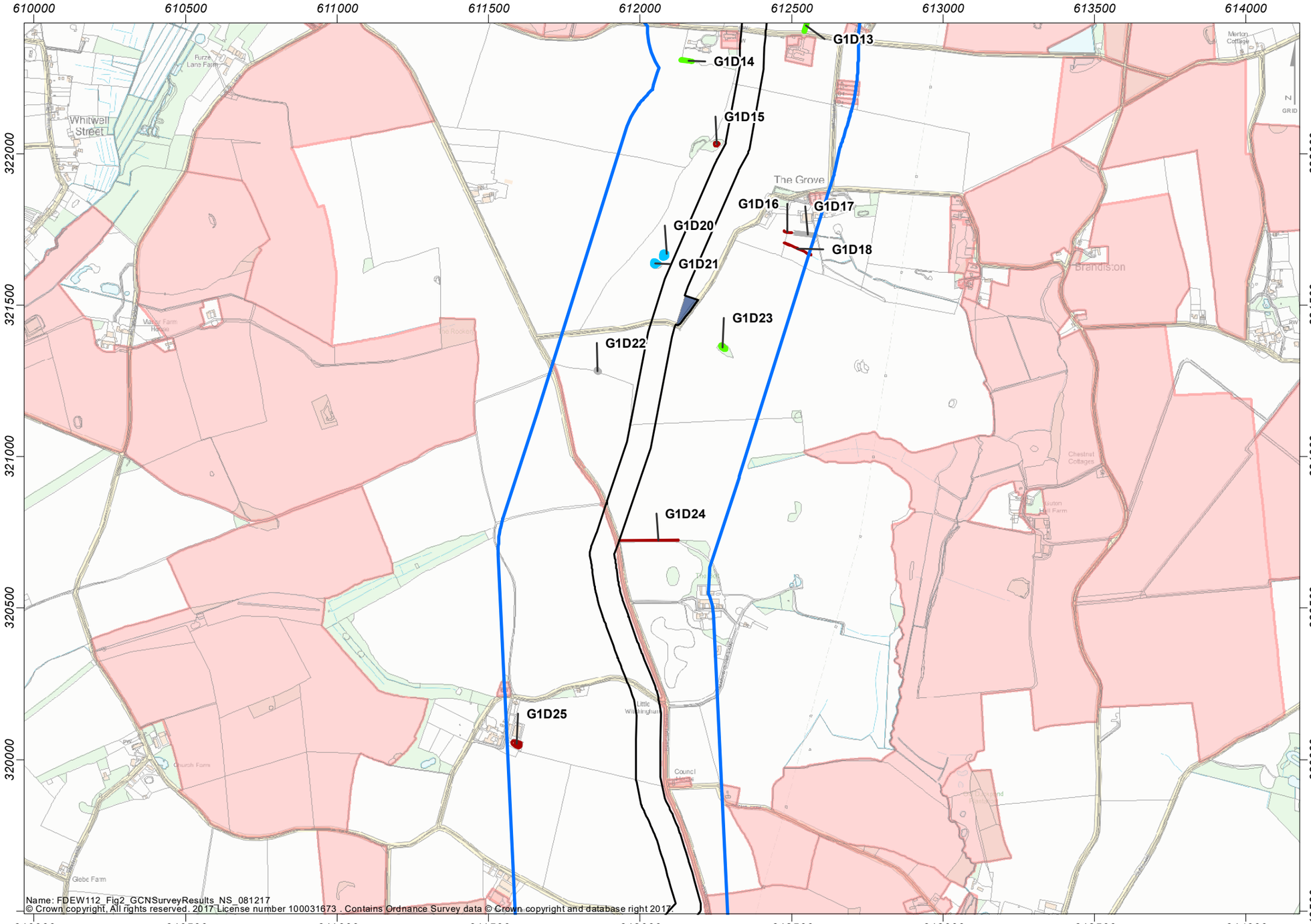
REV	REMARK	DATE
01	Initial Issue	22/06/2017

Hornsea Project Three
Figure: 2.8
Great Crested Newt Survey Results.

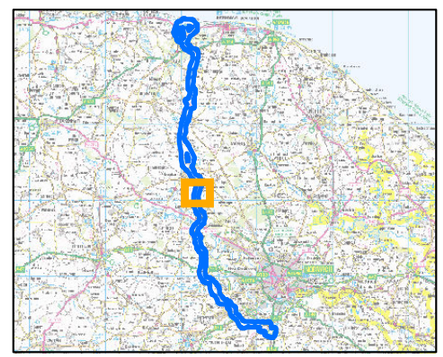
Doc no: FDEW112/24282/1
Created by: NS
Checked by: HC
Approved by:NS

RPS Ørsted



Great Crested Newt Survey Results

- Great Crested Newts Likely Absent (Suitable Waterbody)
- Poor Suitability - No Further Surveys
- Unsuitable
- Waterbody Not Surveyed Due to Access Limitations
- Survey Area Not Accessible
- Great Crested Newt Survey Area
- Compound
- Hornsea Three onshore cable corridor



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Scale@A3:1:15,000
Vertical reference: Newlyn

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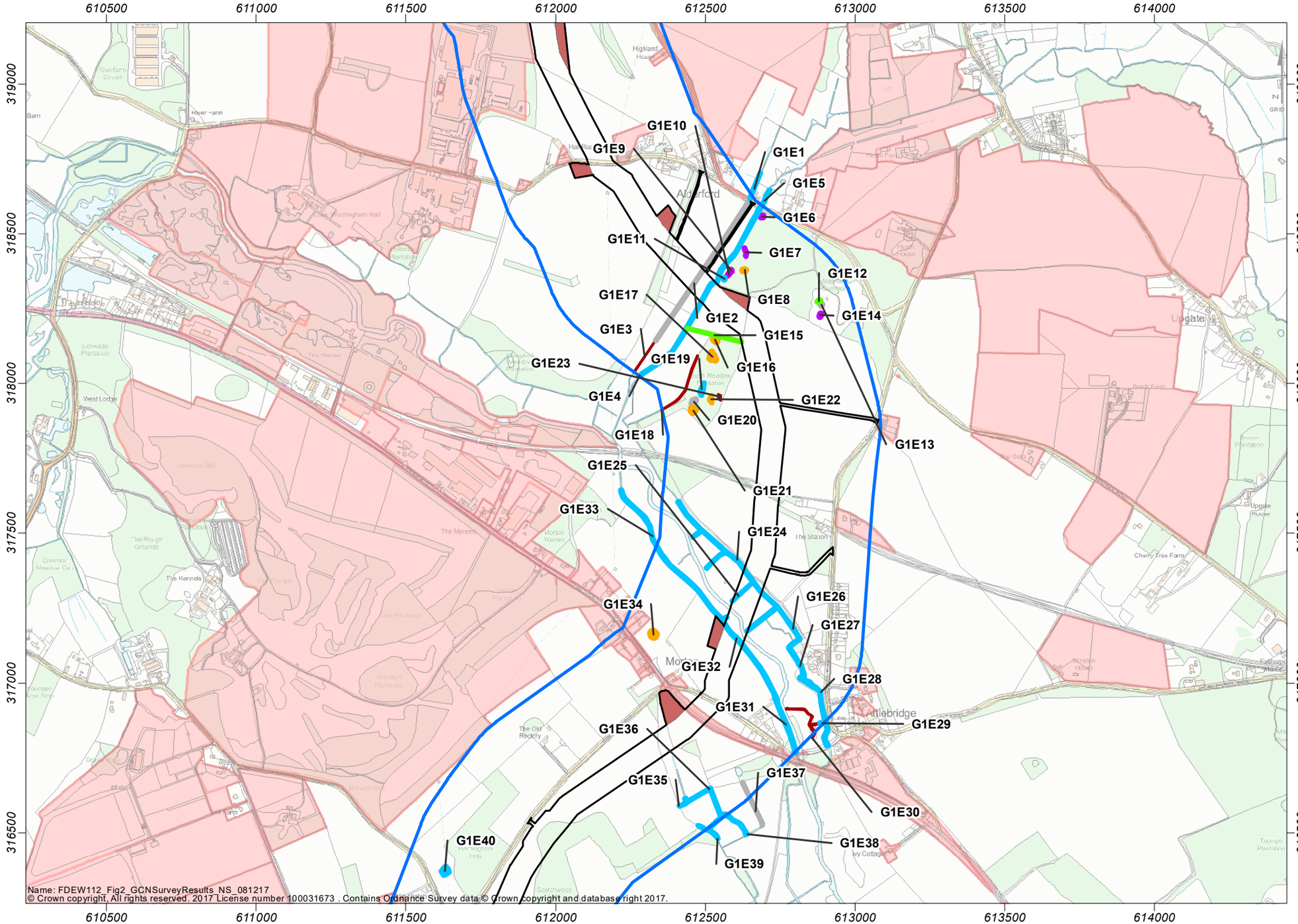
REV	REMARK	DATE
01	Initial Issue	22/06/2017

Hornsea Project Three
Figure: 2.9
Great Crested Newt Survey Results.

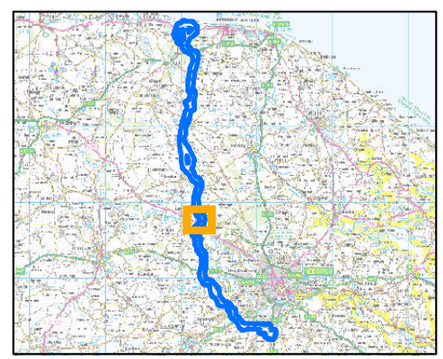
Doc no: FDEW112/24283/1
Created by: NS
Checked by: HC
Approved by:NS

RPS Ørsted



Great Crested Newt Survey Results

- Great Crested Newts Present - Medium Population
- Great Crested Newts Present - Small Population
- Great Crested Newts Likely Absent (Suitable Waterbody)
- Poor Suitability - No Further Surveys
- Unsuitable
- Waterbody Not Surveyed Due to Access Limitations
- Survey Area Not Accessible
- Great Crested Newt Survey Area
- Storage Area
- Hornsea Three onshore cable corridor



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Scale@A3:1:15,000
Vertical reference: Newlyn

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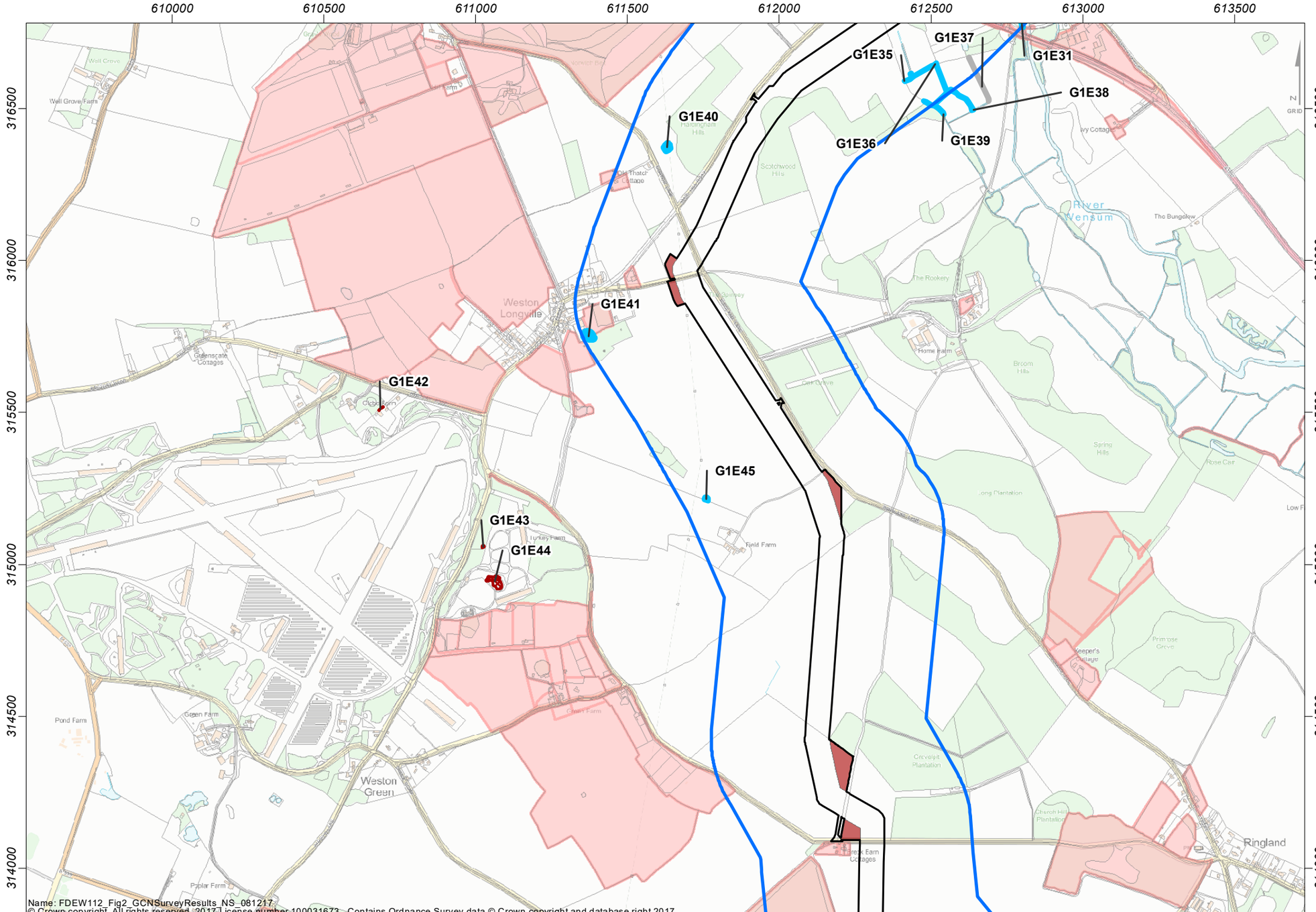
REV	REMARK	DATE
01	Initial Issue	22/06/2017

Hornsea Project Three

Figure: 2.10
Great Crested Newt Survey Results.

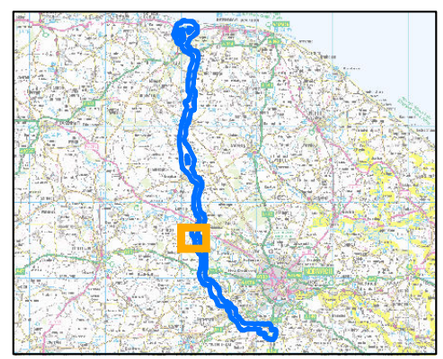
Doc no: FDEW112/24284/1
Created by: NS
Checked by: HC
Approved by:NS

RPS Ørsted



Great Crested Newt Survey

- Great Crested Newts Likely Absent (Suitable Waterbody)
- Unsuitable
- Waterbody Not Surveyed Due to Access Limitations
- Survey Area Not Accessible
- Great Crested Newt Survey Area
- Storage Area
- Hornsea Three onshore cable corridor



Reference System : OSGB36
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Vertical reference: Newlyn

0 400 Metres

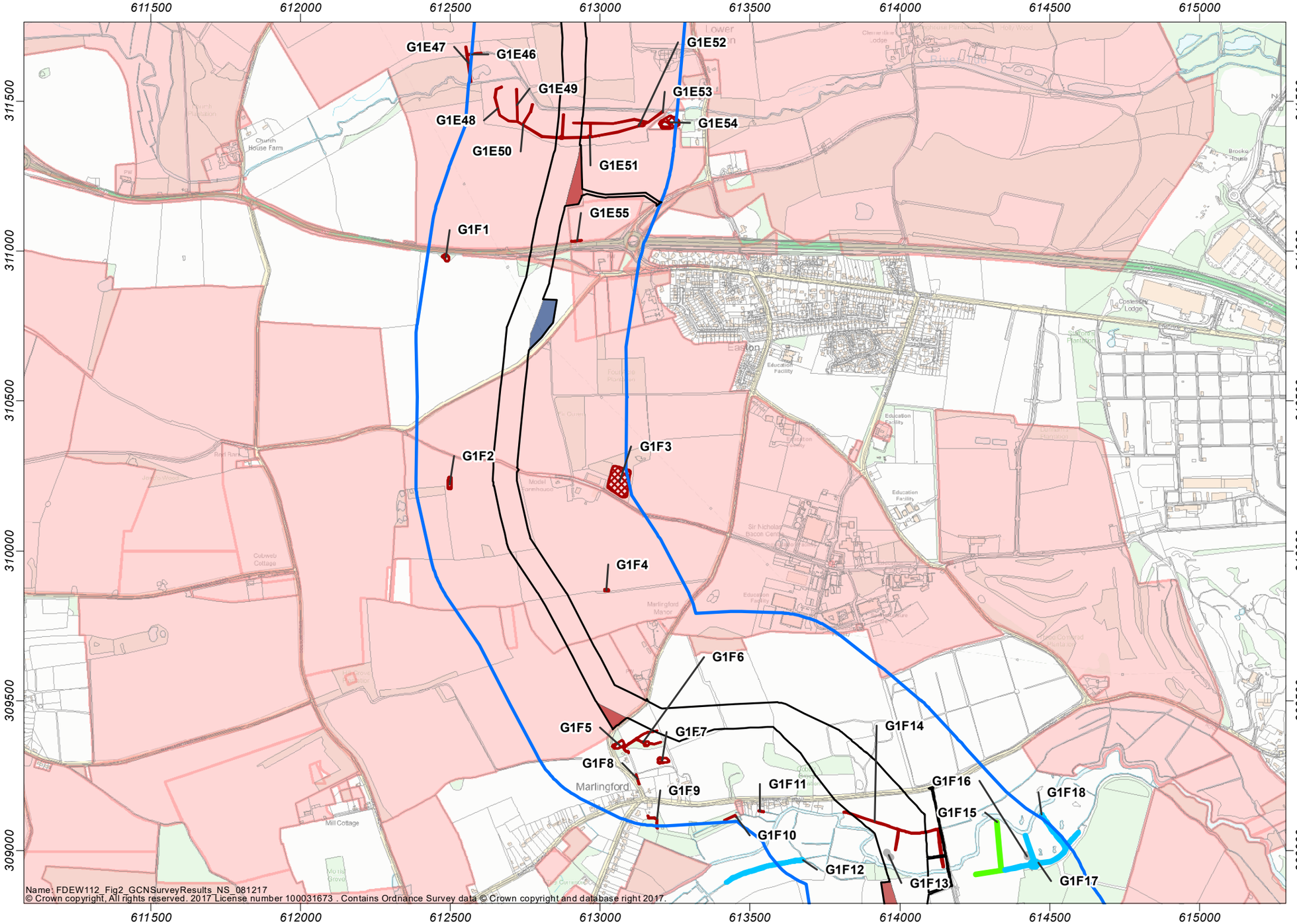
REV	REMARK	DATE
01	Initial Issue	22/06/2017

Hornsea Project Three

Figure: 2.11
Great Crested Newt Survey Results.

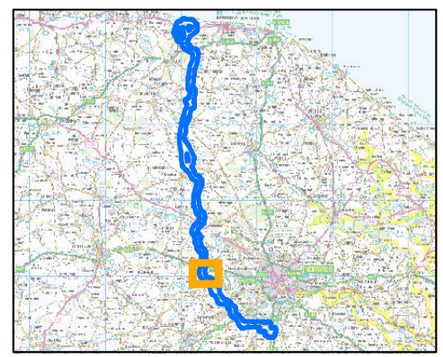
Doc no: FDEW112/24285/1
Created by: NS
Checked by: HC
Approved by:NS

RPS Ørsted



Great Crested Newt Survey

- Great Crested Newts Likely Absent (Suitable Waterbody)
- Poor Suitability - No Further Surveys
- Unsuitable
- Waterbody Not Surveyed Due to Access Limitations
- Survey Area Not Accessible
- Great Crested Newt Survey Area
- Storage Area
- Compound
- Hornsea Three onshore cable corridor



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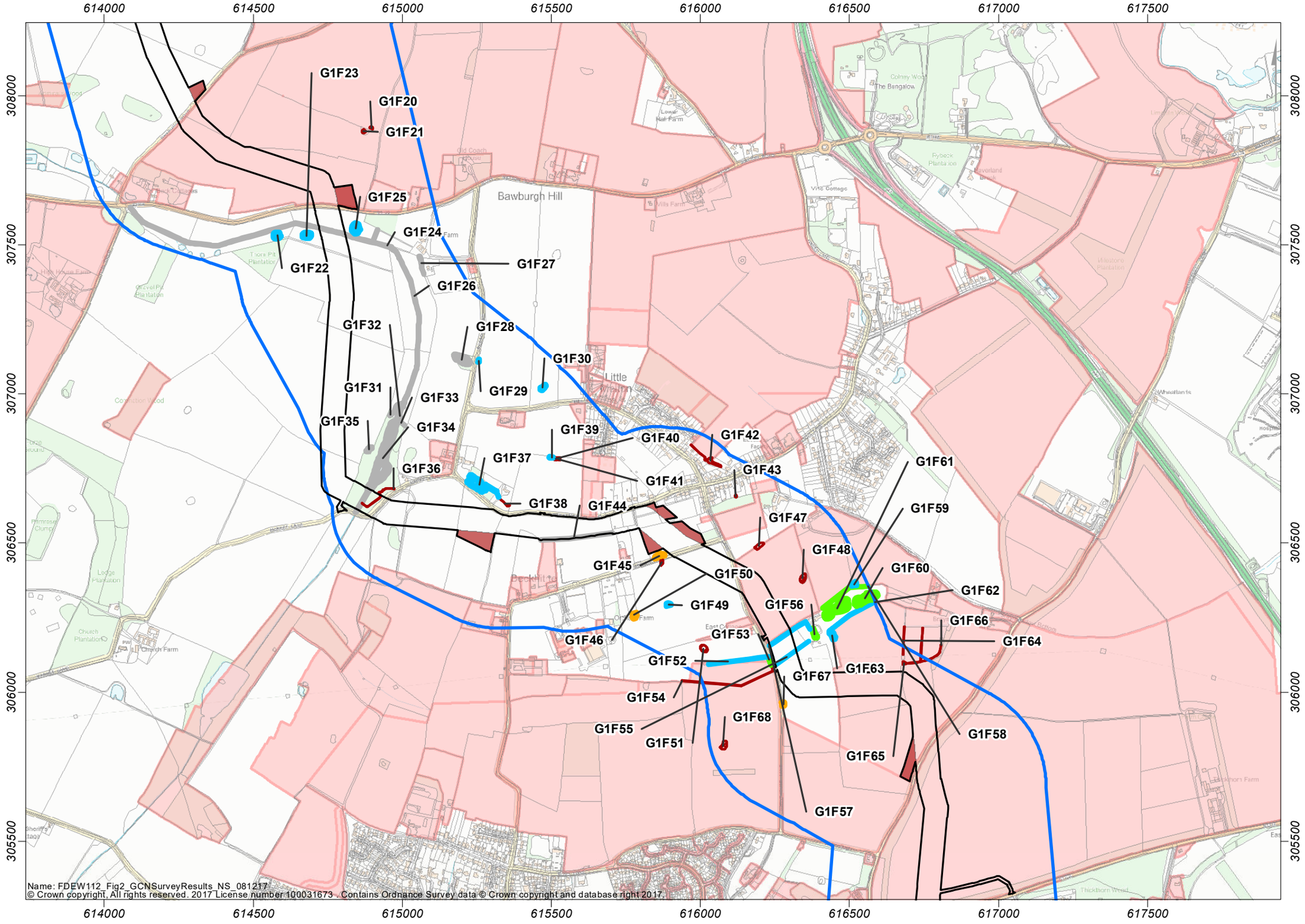
REV	REMARK	DATE
01	Initial Issue	22/06/2017

Hornsea Project Three
Figure: 2.12
Great Crested Newt Survey Results.

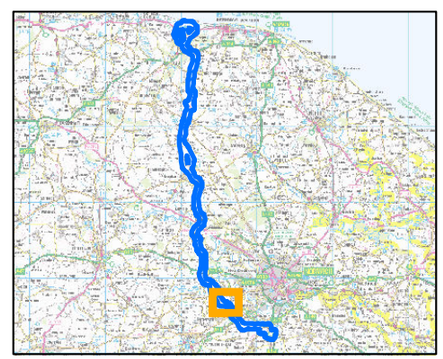
Doc no: FDEW112/24286/1
Created by: NS
Checked by: HC
Approved by:NS

RPS Ørsted



Great Crested Newt Survey

- Great Crested Newts Present - Small Population
- Great Crested Newts Likely Absent (Suitable Waterbody)
- Poor Suitability - No Further Surveys
- Unsuitable
- Waterbody Not Surveyed Due to Access Limitations
- Survey Area Not Accessible
- Great Crested Newt Survey Area
- Storage Area
- Hornsea Three onshore cable corridor



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Projection : BNG

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Vertical reference: Newlyn

0 400 Metres

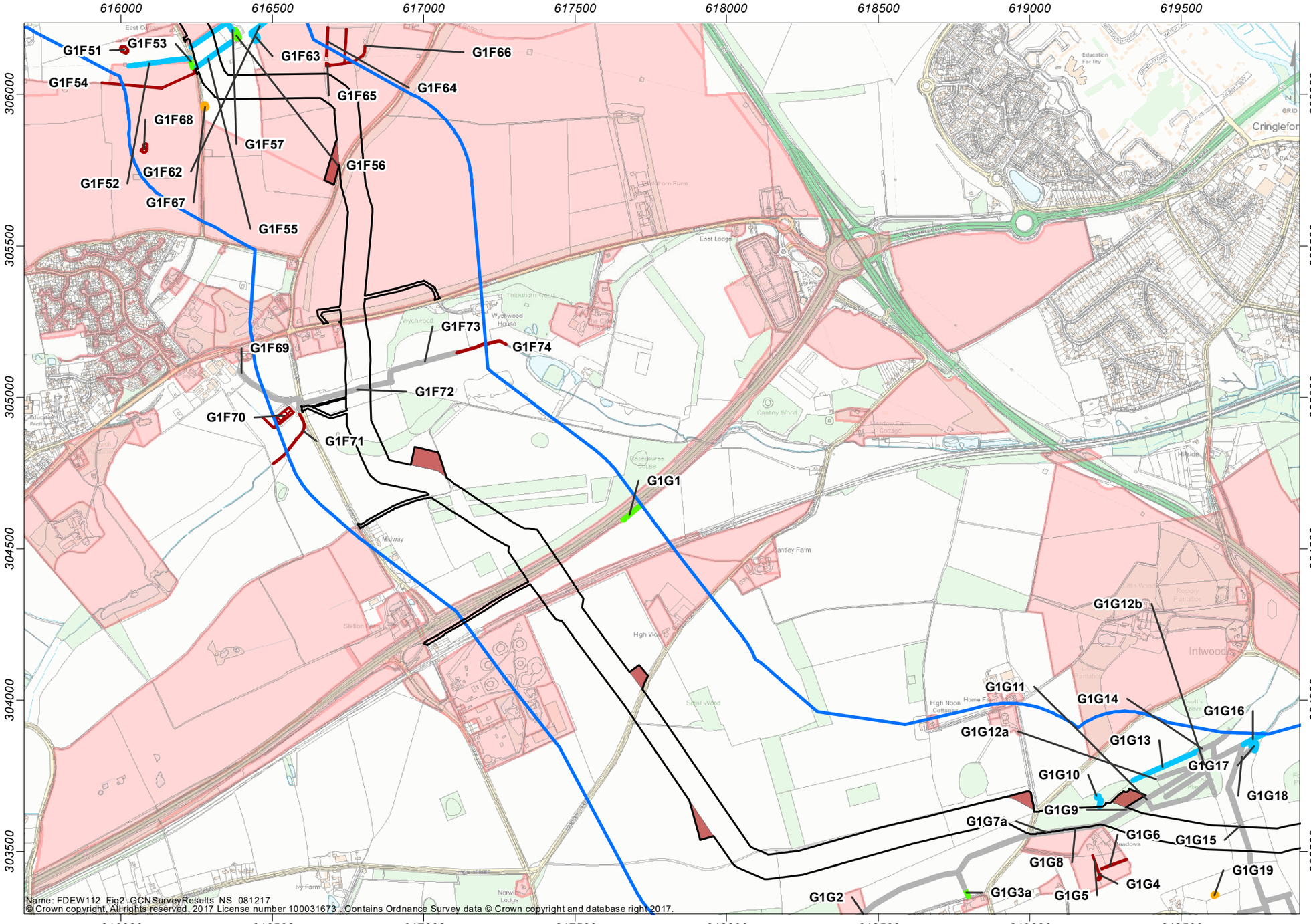
REV	REMARK	DATE
01	Initial Issue	22/06/2017

Hornsea Project Three

Figure: 2.13
Great Crested Newt Survey Results.

Doc no: FDEW112/24287/1
Created by: NS
Checked by: HC
Approved by:NS

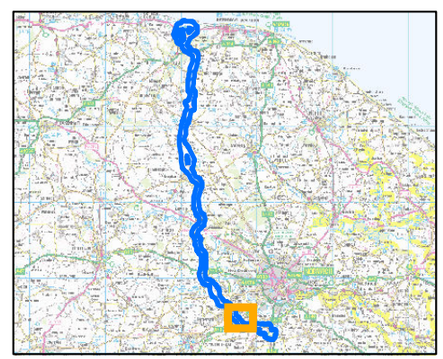
RPS Ørsted



Name: FDEW112_Fig2_GCNSurveyResults_NS_081217

Great Crested Newt Survey

- Great Crested Newts Present - Small Population
- Great Crested Newts Likely Absent (Suitable Waterbody)
- Poor Suitability - No Further Surveys
- Unsuitable
- Waterbody Not Surveyed Due to Access Limitations
- Survey Area Not Accessible
- Great Crested Newt Survey Area
- Storage Area
- Hornsea Three onshore cable corridor



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0 400 Metres

REV	REMARK	DATE
01	Initial Issue	22/06/2017

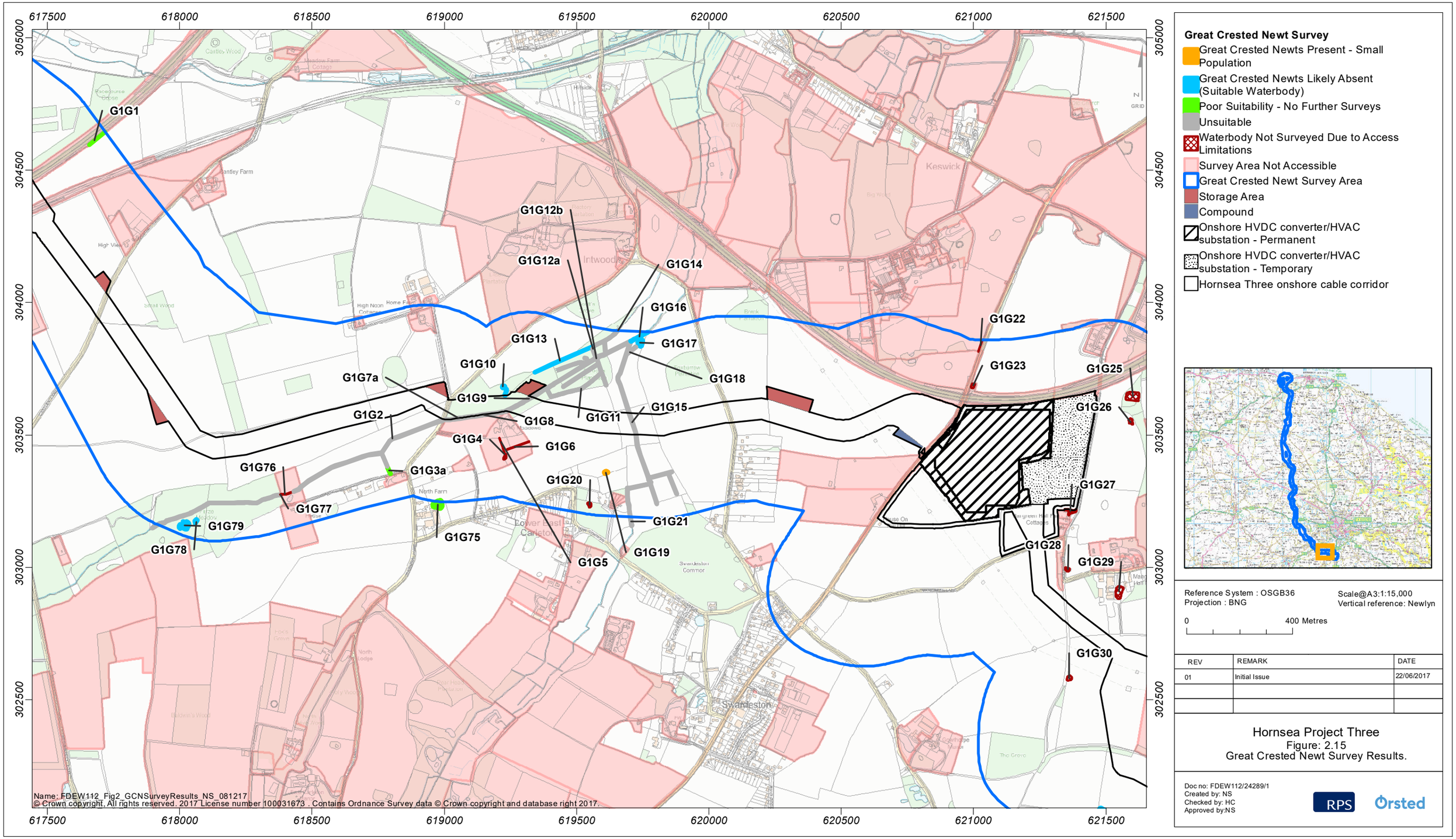
Hornsea Project Three

Figure: 2.14

Great Crested Newt Survey Results.

Doc no: FDEW112/24288/1
Created by: NS
Checked by: HC
Approved by:NS

RPS Ørsted



Great Crested Newt Survey

- Great Crested Newts Present - Small Population
- Great Crested Newts Likely Absent (Suitable Waterbody)
- Poor Suitability - No Further Surveys
- Unsuitable
- Waterbody Not Surveyed Due to Access Limitations
- Survey Area Not Accessible
- Great Crested Newt Survey Area
- Storage Area
- Compound
- Onshore HVDC converter/HVAC substation - Permanent
- Onshore HVDC converter/HVAC substation - Temporary
- Hornsea Three onshore cable corridor

Reference System : OSGB36
Projection : BNG

Scale@A3:1:15,000
Vertical reference: Newlyn

0 400 Metres

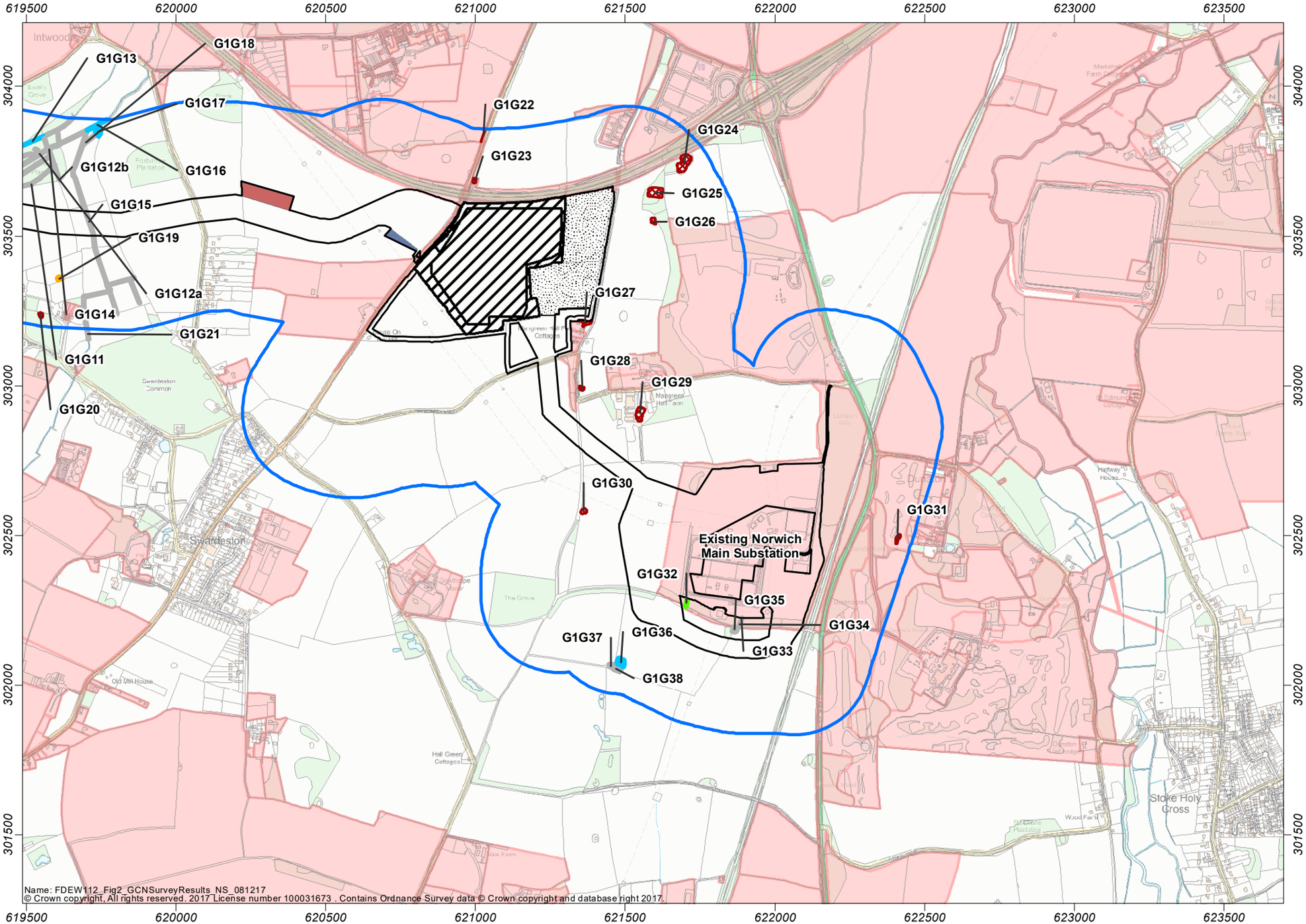
REV	REMARK	DATE
01	Initial Issue	22/06/2017

Hornsea Project Three

Figure: 2.15
Great Crested Newt Survey Results.

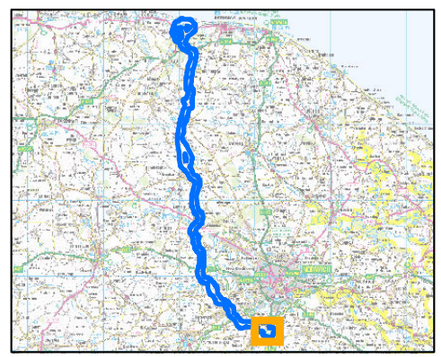
Doc no: FDEW112/24289/1
Created by: NS
Checked by: HC
Approved by:NS

RPS Ørsted



Great Crested Newt Survey

- Great Crested Newts Present - Small Population
- Great Crested Newts Likely Absent (Suitable Waterbody)
- Poor Suitability - No Further Surveys
- Unsuitable
- Waterbody Not Surveyed Due to Access Limitations
- Survey Area Not Accessible
- Great Crested Newt Survey Area
- Storage Area
- Compound
- Onshore HVDC converter/HVAC substation - Permanent
- Onshore HVDC converter/HVAC substation - Temporary
- Hornsea Three onshore cable corridor



Reference System : OSGB36
Projection : BNG

Scale@A3:1:15,000
Vertical reference: Newlyn

0 400 Metres

REV	REMARK	DATE
01	Initial Issue	22/06/2017

Hornsea Project Three

Figure: 2.16

Great Crested Newt Survey Results.

Doc no: FDEW112/24290/1
Created by: NS
Checked by: HC
Approved by:NS

RPS Ørsted

A.3 Photographs of the GCN survey

Photograph 1:
G1A5.

Photograph 2:
G1B13a.

Photograph 3:
G1B15.

Photograph 4:
G1B18.

Photograph 5:
G1B19.

Photograph 6:
G1B20.

Name: FDEW112_Fig3_GCNSurveyPhotos_DJ_131217

Reference System : N/A
Projection : N/A

Scale@A3: N/A
Vertical reference: N/A

REV	REMARK	DATE
01	Initial Issue	13/12/2017

Hornsea Project Three
Figure 3.1:
Photographs of the Great Crested Newt Survey

Doc no: FDEW112/24298/1
Created by: DJ
Checked by: NS
Approved by:NS

RPS Ørsted

Photograph 7:
G1B6.

Photograph 8:
G1C57.

Photograph 9:
G1C64.

Photograph 10:
G1C73.

Photograph 11:
G1E10.

Photograph 12:
G1E14.

Name: FDEW112_Fig3_GCNSurveyPhotos_DJ_131217

Reference System : N/A
Projection : N/A

Scale@A3: N/A
Vertical reference: N/A

REV	REMARK	DATE
01	Initial Issue	13/12/2017

Hornsea Project Three
Figure 3.2:
Photographs of the Great Crested Newt Survey

Doc no: FDEW112/24299/1
Created by: DJ
Checked by: NS
Approved by:NS

RPS Ørsted

Photograph 13:
G1E16.

Photograph 14:
G1E17,

Photograph 15:
G1E21.

Photograph 16:
G1E22.

Photograph 17:
G1E23.

Photograph 18:
G1E34.

Name: FDEW112_Fig3_GCNSurveyPhotos_DJ_131217

Reference System : N/A
Projection : N/A

Scale@A3: N/A
Vertical reference: N/A

REV	REMARK	DATE
01	Initial Issue	13/12/2017

Hornsea Project Three
Figure 3.3:
Photographs of the Great Crested Newt Survey

Doc no: FDEW112/24300/1
Created by: DJ
Checked by: NS
Approved by:NS

RPS Ørsted

Photograph 19:
G1E6.

Photograph 20:
G1E7.

Photograph 21:
G1E8.

Photograph 22:
G1E9.

Photograph 23:
G1F45.

Photograph 24:
G1F47.

Name: FDEW112_Fig3_GCNSurveyPhotos_DJ_131217

Reference System : N/A
Projection : N/A

Scale@A3: N/A
Vertical reference: N/A

REV	REMARK	DATE
01	Initial Issue	13/12/2017

Hornsea Project Three
Figure 3.4:
Photographs of the Great Crested Newt Survey

Doc no: FDEW112/24301/1
Created by: DJ
Checked by: NS
Approved by:NS

RPS Ørsted

Photograph 25:
G1F50.

Photograph 26:
G1F67.

Photograph 27:
G1G13.

Photograph 28:
G1G19.

Photograph 29:
G1G20.

Name: FDEW112_Fig3_GCNSurveyPhotos_DJ_131217

Reference System : N/A
Projection : N/A

Scale@A3: N/A
Vertical reference: N/A

REV	REMARK	DATE
01	Initial Issue	13/12/2017

Hornsea Project Three
Figure 3.5:
Photographs of the Great Crested Newt Survey

Doc no: FDEW112/24302/1
Created by: DJ
Checked by: NS
Approved by:NS

RPS Ørsted

Appendix B Waterbody Summary List

Table A.1: Summary list of waterbodies surveyed and results.

Pond ID	HSI Score	Suitability Category	eDNA Results	Number of PSCA Visits	GCN Adult Peak Count	Estimated population size class
G1A1	0.70	Average	No access			
G1A2	0.48	Poor	Not surveyed (poor HSI score)			
G1A3	0.69	Average	No access			
G1A4	0.69	Average	No access			
G1A5	0.75	Good	GCN Present	4	0	Small*
G1A6	No Access		No access			
G1A7	No Access		No access			
G1A8	No Access		No access			
G1A9	Unsuitable (Running water)					
G1A10	No Access		GCN Absent			
G1A11	No Access		No access			
G1A12	No Access		No access			
G1A13	No Access		No access			
G1A14	No Access		No access			
G1A15	No Access		No access			
G1A16	Unsuitable (running water)					
G1A17	0.34	Poor	Not surveyed (poor HSI score)			
G1A18	Unsuitable (dry)					
G1A19	Unsuitable (Running water)					
G1A20	Unsuitable (Running water)					
G1A21	Unsuitable (Running water)					
G1A22a	No Access		No access			
G1A22b	0.71	Good	No access			
G1A22c	0.89	Excellent	No access			
G1A23	No Access		No access			
G1A24	No Access		No access			

Pond ID	HSI Score	Suitability Category	eDNA Results	Number of PSCA Visits	GCN Adult Peak Count	Estimated population size class
G1A25	No Access		No access			
G1A26	No Access		No access			
G1A27	No Access		No access			
G1A28	No Access		No access			
G1A29	No Access		No access			
G1B2	Unsuitable (Running water)					
G1B3	No Access		No access			
G1B4	No Access		No access			
G1B5	No Access		No access			
G1B6	No Access		GCN Present	5	0	Small*
G1B7	0.63	Average	GCN Absent			
G1B8	Unsuitable (Running water)					
G1B9	0.85	Excellent	GCN Absent			
G1B10	0.82	Excellent	GCN Absent			
G1B13a	0.76	Good	GCN Present	6	0	Small*
G1B13b	Unsuitable (Running water)					
G1B14	Unsuitable (Running water)					
G1B15	0.84	Excellent	GCN Present	Access Limitation (1 visit only)	0	Unknown
G1B16	0.40	Poor	Not surveyed (poor HSI score)			
G1B17	0.83	Excellent	GCN Absent			
G1B18	0.81	Excellent	GCN Present	6	0	Small*
G1B19	0.70	Good	GCN Present	7	2	Small
G1B20	0.58	Below Average	GCN Present	7	15	Medium
G1B21	Unsuitable (Running water)					
G1B22	0.76	Good	No access			
G1B23	0.73	Good	GCN Absent			
G1B24	0.50	Poor	Not surveyed (poor HSI score)			
G1B25	Unsuitable (Running water)					
G1B26	0.63	Average	No access			
G1B27	0.71	Good	No access			

Pond ID	HSI Score	Suitability Category	eDNA Results	Number of PSCA Visits	GCN Adult Peak Count	Estimated population size class
G1B28	0.45	Poor	Not surveyed (poor HSI score)			
G1B30	0.73	Good	No access			
G1B31	0.57	Below Average	No access			
G1B32	0.71	Good	No access			
G1B33	No Access		No access			
G1B63	No Access		No access			
G1B64	0.57	Below Average	No access			
G1B65	0.36	Poor	Not surveyed (poor HSI score)			
G1B66	No Access		No access			
G1B67	0.81	Excellent	No access			
G1B74	0.73	Good	No access			
G1B75	0.52	Below Average	No access			
G1B76	0.75	Good	GCN Absent			
G1C1	0.71	Good	No access			
G1C2	0.73	Good	GCN Absent			
G1C3	0.71	Good	No access			
G1C4	0.73	Good	GCN Absent			
G1C5	0.76	Good	GCN Absent			
G1C7	0.43	Poor	Not surveyed (poor HSI score)			
G1C8	0.47	Poor	Not surveyed (poor HSI score)			
G1C9a	0.65	Average	Unsuitable (Dry)			
G1C9b	Unsuitable (Running water)					
G1C10	0.58	Below Average	No access			
G1C11	No Access		No access			
G1C12	0.83	Excellent	GCN Absent			
G1C13	0.60	Below Average	Not surveyed (too shallow)			
G1C14a	0.66	Average	GCN Absent			
G1C15	0.83	Excellent	GCN Absent			
G1C16	0.62	Average	Unsuitable (Dry)			
G1C17	0.30	Poor	Not surveyed (poor HSI score)			

Pond ID	HSI Score	Suitability Category	eDNA Results	Number of PSCA Visits	GCN Adult Peak Count	Estimated population size class
G1C18	0.72	Good	GCN Absent			
G1C19	0.59	Below Average	GCN Absent			
G1C20	0.78	Good	GCN Absent			
G1C21	Unsuitable (Running water)					
G1C22	0.74	Good	GCN Absent			
G1C23	0.72	Good	GCN Absent			
G1C24	0.70	Good	GCN Absent			
G1C25	0.66	Average	Not surveyed (too shallow)			
G1C26	0.78	Good	Unsuitable (Dry)			
G1C27	0.80	Excellent	No access			
G1C28	0.67	Average	No access			
G1C29	0.82	Excellent	GCN Absent			
G1C30	0.55	Below Average	GCN Absent			
G1C31	0.64	Average	Unsuitable (Filled in)			
G1C32	0.60	Average	Unsuitable (Filled in)			
G1C33	0.70	Good	No access			
G1C34	0.75	Good	No access			
G1C35	0.70	Good	No access			
G1C36	0.80	Excellent	Not surveyed (too shallow)			
G1C37	No Access		No access			
G1C38	0.77	Good	Not surveyed (too shallow)			
G1C39	0.68	Average	Not surveyed (too shallow)			
G1C40	0.63	Average	No access			
G1C41	0.51	Below Average	GCN Absent			
G1C42	0.75	Good	No access			
G1C43	0.80	Excellent	No access			
G1C44	0.76	Good	GCN Absent			
G1C45	No Access		No access			
G1C46	0.86	Excellent	GCN Absent			
G1C47	0.66	Average	GCN Absent			

Pond ID	HSI Score	Suitability Category	eDNA Results	Number of PSCA Visits	GCN Adult Peak Count	Estimated population size class
G1C48	0.62	Average	GCN Absent			
G1C49	0.50	Below Average	Not surveyed (poor HSI score)			
G1C50	0.78	Good	GCN Absent			
G1C51	0.84	Excellent	GCN Absent			
G1C52	0.80	Excellent	GCN Absent			
G1C53	0.78	Good	GCN Absent			
G1C54	0.73	Good	GCN Absent			
G1C55	Unsuitable (Dry)					
G1C56	0.82	Excellent	GCN Absent			
G1C57	0.82	Excellent	GCN Present	4	0 (eggs recorded)	Small*
G1C58	0.54	Below Average	GCN Absent			
G1C59	0.56	Below Average	Not surveyed (too shallow)			
G1C60	0.65	Average	No access			
G1C61	0.46	Poor	Not surveyed (poor HSI score)			
G1C62a	0.82	Excellent	GCN Absent			
G1C62b	0.82	Excellent	GCN Absent			
G1C63	0.44	Poor	Not surveyed (poor HSI score)			
G1C64	0.76	Good	GCN Present	6	6	Small
G1C65	0.70	Good	GCN Absent			
G1C66	0.50	Below Average	Not surveyed (too shallow)			
G1C67	0.43	Poor	Not surveyed (poor HSI score)			
G1C68	0.82	Excellent	GCN Absent			
G1C69	0.80	Excellent	GCN Absent			
G1C70	0.80	Excellent	GCN Absent			
G1C71	Unsuitable (Running water)					
G1C72	0.49	Poor	Not surveyed (poor HSI score)			
G1C73	0.76	Good	No access	6	4	Small
G1C74	Unsuitable (Running water)					
G1D1	0.86	Excellent	Not surveyed (too shallow)			
G1D2	Unsuitable (Running water)					

Pond ID	HSI Score	Suitability Category	eDNA Results	Number of PSCA Visits	GCN Adult Peak Count	Estimated population size class
G1D3	0.76	Good	Not surveyed (too shallow)			
G1D4	0.81	Excellent	GCN Absent			
G1D5	0.71	Good	Unsuitable (Dry)			
G1D6	0.72	Good	Unsuitable (Dry)			
G1D7	0.89	Excellent	Not surveyed (too shallow)			
G1D8	0.66	Average	Not surveyed (too shallow)			
G1D9	0.83	Excellent	GCN Absent			
G1D10	No Access		No access			
G1D11	0.77	Good	Unsuitable (Dry)			
G1D12	0.44	Poor	Not surveyed (poor HSI score)			
G1D13	0.45	Poor	Not surveyed (poor HSI score)			
G1D14	0.35	Poor	Not surveyed (poor HSI score)			
G1D15	0.62	Average	No access			
G1D16	0.60	Average	No access			
G1D17	Unsuitable (Running water)					
G1D18	0.64	Average	No access			
G1D20	0.65	Average	GCN Absent			
G1D21	0.67	Average	GCN Absent			
G1D22	0.51	Below Average	Not surveyed (too shallow)			
G1D23	0.46	Poor	Not surveyed (poor HSI score)			
G1D24	No Access		No access			
G1D25	No Access		No access			
G1E1	0.64	Average	GCN Absent			
G1E2	Unsuitable (Running water)					
G1E3	No Access		No access			
G1E4	0.69	Average	GCN Absent			
G1E5	0.63	Average	GCN Absent			
G1E6	0.82	Excellent	GCN Present	6	16	Medium
G1E7	0.85	Excellent	GCN Present	6	20	Medium
G1E8	0.78	Good	GCN Present	6	4	Small

Pond ID	HSI Score	Suitability Category	eDNA Results	Number of PSCA Visits	GCN Adult Peak Count	Estimated population size class
G1E9	0.68	Average	GCN Present	6	12	Medium
G1E10	0.86	Excellent	GCN Present	6	12	Medium
G1E11	0.74	Good	GCN Absent			
G1E12	0.47	Poor	Not surveyed (poor HSI score)			
G1E13	Unsuitable (Dry)					
G1E14	0.85	Excellent	GCN Present	6	19	Medium
G1E15	0.44	Poor	Not surveyed (poor HSI score)			
G1E16	0.74	Good	GCN Present	4	0	Small*
G1E17	0.76	Good	GCN Present	6	6	Small
G1E18	0.89	Excellent	No access			
G1E19	0.68	Average	GCN Absent			
G1E20	0.71	Good	Not surveyed (too shallow)			
G1E21	0.80	Excellent	GCN Present	6	2	Small
G1E22	0.67	Average	GCN Present	6	3	Small
G1E23	0.64	Average	GCN Present	No Access		
G1E24	0.83	Excellent	GCN Absent			
G1E25	0.79	Good	GCN Absent			
G1E26	0.77	Good	GCN Absent			
G1E27	0.86	Excellent	GCN Absent			
G1E28	0.89	Excellent	GCN Absent			
G1E29	0.71	Good	GCN Absent			
G1E30	0.82	Excellent	No access			
G1E31	0.80	Excellent	GCN Absent			
G1E32	0.88	Excellent	GCN Absent			
G1E33	0.85	Excellent	GCN Absent			
G1E34	0.96	Excellent	GCN Present	7	1	Small
G1E35	0.88	Excellent	GCN Absent			
G1E36	0.61	Average	GCN Absent			
G1E37	0.70	Good	Unsuitable (Dry)			
G1E38	0.86	Excellent	GCN Absent			

Pond ID	HSI Score	Suitability Category	eDNA Results	Number of PSCA Visits	GCN Adult Peak Count	Estimated population size class
G1E39	0.86	Excellent	GCN Absent			
G1E40	0.92	Excellent	GCN Absent			
G1E41	0.76	Good	GCN Absent			
G1E42	0.62	Average	No access			
G1E43	No Access		No access			
G1E44	No Access		No access			
G1E45	0.78	Good	GCN Absent			
G1E46	No Access		No access			
G1E47	No Access		No access			
G1E48	No Access		No access			
G1E49	No Access		No access			
G1E50	No Access		No access			
G1E51	No Access		No access			
G1E52	No Access		No access			
G1E53	No Access		No access			
G1E54	No Access		No access			
G1E55	No Access		No access			
G1F1	No Access		No access			
G1F2	No Access		No access			
G1F3	No Access		No access			
G1F4	No Access		No access			
G1F5	No Access		No access			
G1F6	No Access		No access			
G1F7	No Access		No access			
G1F8	No Access		No access			
G1F9	No Access		No access			
G1F10	No Access		No access			
G1F11	No Access		No access			
G1F12	0.63	Average	GCN Absent			
G1F13	Unsuitable (Dry)					

Pond ID	HSI Score	Suitability Category	eDNA Results	Number of PSCA Visits	GCN Adult Peak Count	Estimated population size class
G1F14	No Access		No access			
G1F15	0.47	Poor	Not surveyed (poor HSI score)			
G1F16	Unsuitable (Dry)					
G1F17	0.60	Average	GCN Absent			
G1F18	0.89	Excellent	GCN Absent			
G1F20	No Access		No access			
G1F21	No Access		No access			
G1F22	0.89	Excellent	GCN Absent			
G1F23	0.87	Excellent	GCN Absent			
G1F24	Unsuitable (Running water)					
G1F25	0.82	Excellent	GCN Absent			
G1F26	Unsuitable (Running water)					
G1F27	Unsuitable (Dry)					
G1F28	Unsuitable (Running water)					
G1F29	0.52	Below Average	GCN Absent			
G1F30	0.68	Average	GCN Absent			
G1F31	Unsuitable (Running water)					
G1F32	Unsuitable (Running water)					
G1F33	0.57	Below Average	Not surveyed (too shallow)			
G1F34	Unsuitable (Running water)					
G1F35	0.73	Good	Not surveyed (too shallow)			
G1F36	No Access		No access			
G1F37	0.80	Excellent	GCN Absent			
G1F38	No Access		No access			
G1F39	0.64	Average	GCN Absent			
G1F40	0.61	Average	No access			
G1F41	0.58	Below Average	No access			
G1F42	No Access		No access			
G1F43	No Access		No access			
G1F44	Unsuitable (Running water)					

Pond ID	HSI Score	Suitability Category	eDNA Results	Number of PSCA Visits	GCN Adult Peak Count	Estimated population size class
G1F45	0.80	Excellent	GCN Present	6	0 (eggs recorded)	Small*
G1F46	0.65	Average	No access			
G1F47	No Access		GCN Present	No Access		
G1F48	No Access		No access			
G1F49	0.68	Average	GCN Absent			
G1F50	0.73	Good	GCN Present	4	0	Small*
G1F51	0.79	Good	No access			
G1F52	0.61	Average	GCN Absent			
G1F53	0.45	Poor	Not surveyed (poor HSI score)			
G1F54	No Access		No access			
G1F55	0.62	Average	GCN Absent			
G1F56	0.44	Poor	Not surveyed (poor HSI score)			
G1F57	0.72	Good	GCN Absent			
G1F58	0.46	Poor	Not surveyed (poor HSI score)			
G1F59	0.66	Average	GCN Absent			
G1F60	0.30	Poor	Not surveyed (poor HSI score)			
G1F61	0.34	Poor	Not surveyed (poor HSI score)			
G1F62	0.66	Average	GCN Absent			
G1F63	0.72	Good	GCN Absent			
G1F64	No Access		No access			
G1F65	No Access		No access			
G1F66	No Access		No access			
G1F67	0.68	Average	GCN Present	4	0	Small*
G1F68	No Access		No access			
G1F69	Unsuitable (Running water)					
G1F70	0.81	Excellent	No access			
G1F71	0.67	Average	No access			
G1F72	Unsuitable (Running water)					
G1F73	Unsuitable (Running water)					
G1F74	0.90	Excellent	No access			

Pond ID	HSI Score	Suitability Category	eDNA Results	Number of PSCA Visits	GCN Adult Peak Count	Estimated population size class
G1G1	0.31	Poor	Not surveyed (poor HSI score)			
G1G2	Unsuitable (Running water)					
G1G3a	0.48	Poor	Not surveyed (poor HSI score)			
G1G4	No Access		No access			
G1G5	No Access		No access			
G1G6	No Access		No access			
G1G7a	Unsuitable (Running water)					
G1G8	Unsuitable (Running water)					
G1G9	Unsuitable (Running water)					
G1G10	0.68	Average	GCN Absent			
G1G11	Unsuitable (Running water)					
G1G12a	Unsuitable (Running water)					
G1G12b	Unsuitable (Running water)					
G1G13	0.90	Excellent	GCN Present	Access Limitation (1 visit)	0	Unknown
G1G14	Unsuitable (Running water)					
G1G15	Unsuitable (Running water)					
G1G16	0.76	Good	GCN Absent			
G1G17	0.83	Excellent	GCN Absent			
G1G18	0.54	Below Average	Unsuitable (Dry)			
G1G19	0.62	Average	GCN Present	6	1	Small
G1G20	0.81	Excellent	GCN Present			
G1G21	Unsuitable (Running water)					
G1G22	No Access		No access			
G1G23	No Access		No access			
G1G24	No Access		No access			
G1G25	No Access		No access			
G1G26	No Access		No access			
G1G27	No Access		No access			
G1G28	No Access		No access			
G1G29	No Access		No access			

Pond ID	HSI Score	Suitability Category	eDNA Results	Number of PSCA Visits	GCN Adult Peak Count	Estimated population size class
G1G30	No Access		No access			
G1G31	No Access		No access			
G1G32	0.41	Poor	Not surveyed (poor HSI score)			
G1G33	Unsuitable (Dry)					
G1G34	Unsuitable (Dry)					
G1G35	Unsuitable (Dry)					
G1G36	0.71	Good	GCN Absent			
G1G37	Unsuitable (Dry)					
G1G38	Unsuitable (Dry)					
G1G75	0.46	Poor	Not surveyed (poor HSI score)			
G1G76	No Access		No access			
G1G77	Unsuitable (Running water)					
G1G78	0.63	Average	GCN Absent			
G1G79	0.86	Excellent	GCN Absent			

* There were not adults recorded during surveys, however the positive eDNA result or presence of GCN eggs does indicate GCN presence, these waterbodies have been classed with small population size.