



Vattenfall Wind Power Ltd

Thanet Extension Offshore Wind Farm

**Annex 5-3: Great Crested Newt Survey
Report**

June, 2018, Revision A

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Vattenfall Wind Power Ltd

Thanet Extension Offshore Wind Farm

Annex 5-3: Great Crested Newt Survey Report

June, 2018

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Annex 5-3: Great Crested Newt Survey Report



June 2018

Amec Foster Wheeler
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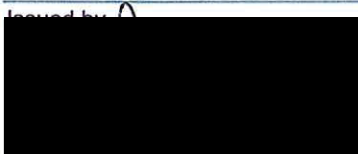


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1. Introduction

1.1 Purpose of this Report

- 1.1.1 This report is an update of the equivalent PEIR report that was issued in November 2017. It only contains minor updates, which relate to survey information that became available after submission of the PEIR and still represents the prevailing baseline conditions in autumn 2017.
- 1.1.2 This report details the results of Great Crested Newt (*Triturus cristatus*) (GCN) surveys undertaken in 2017, in order to inform the Environmental Impact Assessment (EIA) for Thanet Extension Offshore Wind Farm ('Thanet Extension'). This report forms a technical annex to Volume 3, Chapter 5 (Onshore Biodiversity) of the Environmental Statement (ES).

1.2 Background

- 1.2.1 GoBe Consultants, on behalf of Vattenfall Wind Power Ltd (VWPL), has commissioned Amec Foster Wheeler Environment & Infrastructure UK Ltd. (hereafter referred to as Amec Foster Wheeler) to undertake GCN surveys at Thanet Extension, located within Thanet and Dover districts, Kent. At the time of commission the proposed development comprised two options for the proposed route for the Thanet Extension (Option 1 (north) and Option 2 (south) – as illustrated in the Thanet Extension scoping report¹ (Figure 1.2) and on Figure 5.1: "Study area and Aol buffers for the Purpose of Scoping"²). At that stage, the onshore Area of Interest for ecology surveys (hereafter referred to as the Aol) was the 500metre (m) buffer zone around the two 25m wide Option 1 and Option 2 routes above mean High Water Springs (MHWS), plus species appropriate buffer zone.
- 1.2.2 The report is based on the Red Line Boundary (RLB) presented in the Preliminary Environmental Information Report (PEIR) submitted in November 2017. Since the publication of the scoping report, all biodiversity receptors have been re-scoped to take account of the revised RLB presented in the PEIR. The report includes receptors located within and, where appropriate, outside the RLB. Consequently, the spatial scope of surveys and results in this report ultimately reflects the RLB presented in the PEIR plus a buffer appropriate to the receptor concerned³. All references to the RLB in this report are based on the RLB presented in the PEIR.
- 1.2.3 For GCN as the subject of this technical report, this spatial scope of the study area is illustrated on Figure 5.3.1, Appendix A.

¹ Royal Haskoning DHV (2016) Thanet Extension Offshore Wind Farm, Environmental Impact Assessment, Report to Inform Scoping.

² This figure is appended to the Onshore Biodiversity Chapter 5 in the PEIR.

³ Tables 5.2 and 5.4 of the Onshore Biodiversity Chapter 5 in the PEIR demonstrate the consultations on the spatial scope of surveys with relevant stakeholders.

1.3 Site Description

- 1.3.1 The proposed development is located within eastern Kent in the Thanet and Dover districts and comprises an assortment of land parcels with terrestrial habitats comprising agricultural land, improved and semi-improved grassland, dense and scattered scrub, woodland stands, extensive networks of drainage ditches and coastal floodplain and grazing marsh.
- 1.3.2 The RLB includes in part, land statutorily designated as Thanet Coast and Sandwich Bay Ramsar, Thanet Coast and Sandwich Bay Special Protection Area (SPA), Sandwich Bay Special Area of Conservation (SAC), Sandwich and Pegwell Bay National Nature Reserve (NNR), and Sandwich Bay to Hacklinge Marshes Sites of Special Scientific Interest (SSSI).
- 1.3.3 Non-statutory sites within the RLB are the Sandwich and Pegwell Bay Kent Wildlife Trust Reserve (KWTR) and the A256 Roadside Nature Reserve (RNR).
- 1.3.4 Habitats comprise semi-improved neutral and improved grassland, scattered and dense scrub and scattered trees, adjacent to an extensive area of mudflats, coastal saltmarsh, coastal sand dune and floodplain grazing marsh to the east; a minor road, residential properties and extensive golf courses to the west. It contains a sports facility dominated by amenity grassland and scattered trees, an area of hardstanding and a section of drainage ditch. The southern area of land within the RLB is largely hardstanding in the vicinity of Richborough Port. West of the A256 (Ramsgate Road), the RLB surrounds land comprising Richborough Energy Park (REP) dominated by man-made structures and hardstanding, with areas of improved grassland, scattered tree, scattered and dense scrub in the north west.
- 1.3.5 Beyond the RLB to the north, east and west, lies reedbed, broadleaved woodland a network of drainage ditches and dense scrub, designated as a unit of Sandwich Bay to Hacklinge Marshes SSSI. To the west of the RLB, lies a large network of ditches and arable land including the Woods and Grassland Minster Marshes and the Ash Level and South Richborough Pasture Local Wildlife Sites (LWS).



2. Legislative and Policy Context

2.1 Great Crested Newt

The GCN is listed in Schedule 5 of The Wildlife and Countryside Act 1981 (as amended). The Act transposes into UK law the Convention on the Conservation of European Wildlife and Natural Habitats (commonly referred to as the 'Bern Convention'). GCN is listed on Schedule 5 of the Act in respect of Section 9, which makes it an offence, *inter alia*, to:

- ▶ Intentionally or recklessly kill, injure, or take (handle) a GCN;
- ▶ intentionally or recklessly damage, destroy or obstruct access to any structure or place that a GCN uses for shelter or protection; or
- ▶ Intentionally or recklessly disturb a GCN while it is occupying a structure or place that it uses for shelter or protection.

GCN receives further protection under Regulation 41 of The Conservation of Habitats and Species Regulations 2010 (as amended), which make provision for the purpose of implementing European Union Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora 1992. GCN is listed on Annex IV of the Directive, which means that member states are required to put in place a system of strict protection as outlined in Article 12, and this is done through inclusion on Schedule 2 of the Regulations, which makes it an offence, *inter alia*, to:

- ▶ Deliberately capture, injure or kill any GCN;
- ▶ Deliberately disturb a GCN, in particular any disturbance which is likely:
 - (a) To impair their ability:
 - (i) To survive, to breed or reproduce, or to rear or nurture their young,
 - or (ii) To hibernate or migrate.
 - (b) To affect significantly the local distribution or abundance of GCN; or
- ▶ Damage or destroy a breeding site or resting place of a GCN.



3. Method

3.1 Desk Study and Review of Secondary Data

- 3.1.1 The *Great Crested Newt Mitigation Guidelines*⁴ and Natural England's Standing Advice⁵ are the main source of guidance for GCN in the UK. The *Herpetofauna Workers' Manual*⁶, Oldham *et al.*'s paper on Habitat Suitability Indices (HSI)⁷, the HSI document produced as part of the National Amphibian and Reptile Recording Scheme (NARRS) project⁸, and the methods in the technical report⁹ that accompanies Defra's research project into environmental DNA (eDNA), and use of quantitative polymerase chain reaction testing provide further guidance on survey work. These guidelines have been taken into account when designing the survey methodology and programme of survey work.
- 3.1.2 At the time of the original desk study in February 2017, the study area for GCN was defined as onshore Aol for ecology surveys, plus an additional 500m buffer beyond the onshore Aol to account for the known mobility of GCNs.
- 3.1.3 To inform the survey design and provide context for future assessment, records of GCN presence were requested from Kent and Medway Biological Records Centre (KMBRC) for a 2km buffer around the onshore Aol.
- 3.1.4 The Multi-Agency Geographic Information for the Countryside (MAGIC)¹⁰ website, Ordnance Survey mapping and aerial photographs¹¹ were utilised to identify any water bodies present within the onshore Aol and a 500m buffer beyond the onshore Aol.

⁴ English Nature (2001). *Great Crested Newt Mitigation Guidelines*. English Nature, Peterborough.

⁵ Natural England (2015). *Great crested newts: surveys and mitigation for development projects* [Online] Available from: <https://www.gov.uk/guidance/great-crested-newts-surveys-and-mitigation-for-development-projects>.

⁶ Gent, A.H. and Gibson, S.D., Ed.s (1998). *Herpetofauna Workers' Manual*. Joint Nature Conservation Committee, Peterborough. Revised and reprinted 2003.

⁷ Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). *Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus)*. *Herpetological Journal*. **10** (4): 143-155.

⁸ NARRS (2007) *Great Crested Newt Habitat Suitability Index Assessment*; updated guidelines available from the National Amphibian and Reptile Recording Scheme (NARRS). [Online] Available from <http://narrs.org.uk/documents/HSI%20guidance.pdf>

⁹ Biggs J, *et al.* (2014). *Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5*. Technical advice note for field and laboratory sampling of great crested newt (*Triturus cristatus*) environmental DNA. Freshwater Habitats Trust, Oxford.

¹⁰ DEFRA (2017) *Magic Map Application* [Online] Available from: <http://www.magic.gov.uk/MagicMap.aspx>

¹¹ Google (2017). Google maps [Online] Available from: <http://maps.google.co.uk>

- 3.1.5 Additionally, a review was undertaken of relevant contextual information provided by available ecological survey reports¹² for projects on land adjacent in the onshore AoI and up to 2km from it, in order to inform the scope of the field survey work, as well as the overall assessment of the status of GCN populations using the study area.

3.2 Defining Survey Scope/Agreement of Suitable Survey Methods

- 3.2.1 In line with Chartered Institute of Ecological and Environmental Management (CIEEM) and Natural England guidance¹³, surveys were focussed on those areas in which works associated with the proposed development could contribute to significant adverse effects on GCN populations, or could result in contravention of the legislation protecting GCNs. After scoping the potential effects of the proposed works, it was considered that across much of the area where proposed development could occur, works would result in relatively low impacts due to the nature of the habitats affected, the small works footprint the short term timescale of the works and the proposed re-establishment of previously disturbed/removed habitats.
- 3.2.2 These potential effects were reassessed throughout the survey period in response to any design amendments during project development.
- 3.2.3 Discussions with Natural England (in line with the new Natural England licencing policies^{14, 15} and Technical Advice Note¹⁶) yielded the following agreed approach with respect to the undertaking of presence/absence surveys for GCN on the Thanet Extension. Given the low number of historical records of GCN within Thanet district¹⁷, and the likely impacts of the proposed route options (temporary disturbance to GCN and damage to primarily terrestrial habitats), the employment

¹² Greengage Ecology (2016). *Richborough Communications Mast - Chapter 6: Ecology* AECOM.

¹³ Chartered Institute of Ecology and Environmental Management (CIEEM (2016). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal*. Second Edition January 2016. CIEEM, Winchester. [Online] Available from: https://www.cieem.net/data/files/Publications/EclA_Guidelines_Terrestrial_Freshwater_and_Coastal_Jan_2016.pdf

¹⁴ Natural England (2016). *New licensing policies: great for wildlife-great for business*. [Online] Available from: <https://www.gov.uk/government/news/new-licensing-policies-great-for-wildlife-great-for-business>

¹⁵ Natural England (2017). *Consultation outcome. Wildlife licencing: comment on new policies for European protected species licences*. [Online] Available from: <https://www.gov.uk/government/consultations/wildlife-licensing-comment-on-new-policies-for-european-protected-species-licences>

In summary these policies introduce ways in which the licensing process will be streamlined, including the flexibility to reduce surveying where the impacts of the development on GCN can be predicted confidently. E mail record of discussion with NE based on these, 5/4/17.

¹⁶ DEFRA (2014). *Analytical and methodological development for improved surveillance of the Great Crested Newt, and other pond vertebrates - WC1067* [Online]. Available from: http://randd.defra.gov.uk/Document.aspx?Document=12287_WC1067_Appendix_5_TechnicalAdviceNoteUpdatedSept2014.docx

¹⁷ Provided by the desk study; presented in Table 5.1.

of traditional presence/absence surveys over the entire survey area would not further the level of certainty in respect of results and thus effects, nor would it further inform the mitigation required.

- 3.2.4 Therefore, an alternative, focussed survey effort was considered more appropriate; involving scoping of all water bodies that could be affected by the proposals within the onshore AoI and the 500m buffer. Those ponds which would be directly affected within 250m of the onshore AoI which are suitable to support GCN would then be assessed, with further surveys being the exception up to 500m, where we consider that impacts could still occur (due to connectivity/location of likely ponds and other terrestrial habitats). Assessment of ponds beyond 250m would also continue to provide information for compensation land, if required. 'Good' or 'excellent' ponds would also be sampled using eDNA techniques. However, if GCN have not been recorded after surveying the 'good'/'excellent' ponds, there will be a need to expand the sampling approach and will need to consider what, if any, additional categories of ponds need to be targeted for further survey.
- 3.2.5 Therefore, all suitable water bodies that lie within 250m of the onshore AOI which were identified by the HSI assessment (see Section 4 below for a description of the assessment methodology) to be of a 'good' category and above were to be sampled, where no notable impacts would be considered beyond that. A ~20% sampling of remaining ponds above the 'below average' category within 100m, and if required by the methodology in paragraph 3.2.4, up to 250m of the route alignment (on selection) were also surveyed.
- 3.2.6 It was noted that further survey using eDNA and traditional presence/absence surveys in 2018 may be necessary to further inform mitigation and in order to complete a derogation application if required. This would be necessary if once the design of the route alignment is finalised it has the potential to result in significant or legal effects for GCN.
- 3.2.7 Until the refinement and presentation of the new RLB, all ponds above 'below average' had to be sampled until those boundaries (and thus buffers) were defined. Following the new RLB refinement, the ponds were re-scoped, and where impacts of the proposed development could result in likely significant effects, they have been included in the data collation, survey and assessment process. Consequently, the results in this report ultimately reflects the RLB presented in the PEIR plus a buffer appropriate to the receptor concerned.



4. Field Surveys

4.1 Screening

4.1.1 In early 2017, 451 water bodies were identified as being within 500m of the original onshore Aol (comprising both Option 1 (north) and Option 2 (south)) during the desk-based screening exercise.

4.1.2 Since the publication of the scoping report, a re-screening exercise was undertaken and a total of 133 water bodies have been recorded within the RLB and 500m buffer; of which five were recorded within the RLB and the remaining 128 within the 500m buffer from the RLB (Figure 5.3.1, Appendix A).

4.2 Habitat Suitability Index Assessment

4.2.1 The screening process takes into account criteria included within the HSI developed by Oldham *et al* (2000), which provides a score of the suitability of a water body to support GCN and is a recognised tool for identifying water bodies with greatest potential to support this species. Where accessible, water bodies were screened from March through to July 2017, and key features that were considered during this process included:

- ▶ Whether they were receiving discharge of pollutants at excessive levels or containing anoxic waters;
- ▶ Levels of aquatic vegetation or other material that could be used for egg laying;
- ▶ Levels of fish activity (e.g. an intensively managed fishing lake) unless GCN presence was identified in previous surveys or waterfowl activity (considered excessive where the number of waterfowl present exceeds 10 per 1000m²);
- ▶ Whether they or whether there are, links to fast flowing streams;
- ▶ Had an intensive management regime (e.g. intensive bank management);
- ▶ Had an absence of suitable terrestrial habitat or connecting features e.g. mature hedgerows, ditches or woodland, between the water body and the 500m buffer: and
- ▶ Whether the presence of a significant barrier to movement¹⁸ between the water body and the RLB was present.

4.2.2 Following this screening exercise, those water bodies with potential to support GCN breeding were subject to further assessment. Each water body's data was assessed and a HSI score was generated using professional judgement of the surveyors and the method developed by Oldham *et al.*⁷, and adapted by the Amphibian and Reptile Conservation Trust⁸.

¹⁸ Examples of significant barriers to movement would include large or fast-flowing rivers, or very busy/high traffic volume roads at relevant times⁴.

4.2.3 The HSI is a numerical index, derived by scoring a range of habitat variables, where:

- ▶ < 0.5 = poor;
- ▶ 0.5 - 0.59 = below average;
- ▶ 0.6 - 0.69 = average;
- ▶ 0.7 - 0.79 = good; and
- ▶ 0.8 - 1 = excellent.

4.2.4 Guidance for habitat variable assessment includes:

- ▶ S1: Location – all the water bodies are in Zone A, which encompasses the South East of England;
- ▶ S2: Pond area (m²) – an estimate of surface area when water is at its highest level (excluding flooding events) rounded up to nearest 50m². The HSI score is read off the graph provided in the guidelines. (If the pond is more than 2000 m², this factor is omitted from the HSI calculation);
- ▶ S3: Years out of ten that pond dries out – based upon local knowledge if available (e.g. from landowner) and professional judgement; taking a precautionary approach on assessments made after atypical rain shortages/severe storm events. If the surveyor is unsure and cannot judge how often a pond dries up, 'sometimes dries' should be used;
- ▶ S4: Water quality – where possible, some invertebrate sampling with a pond-net should be done. Be aware that invertebrate levels vary with seasons. The assessment of 'Bad' water quality should only be made where there is clear evidence of continuous and long-term pollution (e.g. large scale tipping of refuse, or spillage of hydrocarbons) and the presence of certain invertebrates. Fish are unlikely to be present in ponds with bad water quality. If in doubt or unable to gather evidence, take a precautionary approach and mark up, not down;
- ▶ S5: Shade – assessed for the first metre from the shore, around the pond perimeter, and not over the whole pond. Shade is from trees, scrub or buildings, but not emergent vegetation;
- ▶ S6: Waterfowl – an assessment of 'Major' is only made if the bank is denuded of vegetation and there is no submerged vegetation. Moorhens are not included;
- ▶ S7: Fish – where possible use local knowledge (from the landowner or tenants) or pond-netting to assess small fish numbers. Ponds that occasionally dry out are unlikely to have more than minor fish populations. Assess as 'Major' if it is known that recent stocking has occurred, or there is evidence of heavy use by anglers;
- ▶ S8: Pond count (Number of ponds/km in 1km radius) – every pond has a value of 1 as there is a density > 10/km;

- ▶ S9: Terrestrial habitat – assessed within a 500m radius to the pond with connectivity;
- ▶ S10: % of macrophyte cover – assessed based upon the pond surface. This includes floating plants, both free-floating and rooted, submerged plants if they are at the surface, and emergent plants, but not filamentous algae.

4.2.5 The HSI method is a useful tool but should not be used in isolation to determine the suitability of water bodies for breeding GCN, and professional judgement drawing upon the surveyors' experience is also used. This is because GCNs are regularly found in water bodies that have low HSI scores.

4.2.6 The decision about which water bodies taken forward for further survey or scoped out (i.e. if the habitat is deemed unsuitable to support breeding GCN) is based in combination with the HSI scores and the findings of a review of existing data (see Section 2.1); it will never be based solely upon low HSI scores, although, notwithstanding this, the HSI scores provide useful supplementary information.

4.3 Presence/Absence Survey: eDNA Sampling

4.3.1 Following on from the HSI Assessment water bodies up to 500m from the RLB, where there was potential for legal or significant effects to occur, and which scored 'Excellent' and 'Good', were prioritised for sampling for positive presence using eDNA survey techniques, with those scoring 'average' and 'below average' sampled at a second stage.

4.3.2 Water bodies within 500m and 250m of the RLB were considered to be outside the Zone of Influence (Zoi), where impacts not would affect the water body or the respective GCNs' associated terrestrial habitat. This was determined based on the scale and nature of proposed works, their distance from the ponds, and/or the poor suitability of the terrestrial habitat which may link these water bodies to the potential development area.

4.3.3 This method currently requires one visit in the daytime during the period when the newts are likely to be present typically between 15 April and 30 June (coinciding with the peak breeding season for this species). Surveyors wore disposable gloves and shoe covers and sampling equipment was used only once, with all equipment discarded between each water body to minimise the risk of cross-contamination.

4.3.4 Samples gathered were stored within a refrigeration unit until they were transferred to an accredited laboratory for testing. The testing procedure involves the use of the quantitative polymerase chain reaction procedure (see Appendix D for details of the field survey protocol).

4.3.5 Any amphibians observed during the survey work were recorded. Any limitations to the survey work was noted, along with a clear reason for deviation from the preferred method (for example if it is not possible to take water samples from the majority of the banks of the water bodies due to health and safety (H&S) restrictions associated with access).

4.3.6 Survey visits were conducted in optimal weather conditions as defined by the survey guidelines⁹. Environmental variables experienced during surveys were

recorded for inclusion in the baseline survey report as were details of the surveyors present, the date, timing and duration of surveys, which are provided in Appendix E of this document.

4.4 Personnel

4.4.1 All survey work was undertaken by suitably qualified and experienced ecologist employed by Amec Foster Wheeler (ecologists worked in pairs for H&S reasons). Surveys at each individual water body were led by an ecologist holding a Natural England GCN Class 1 Survey Licence (CLS). The licence holding surveyors were:

- ▶ Jennifer Carr – 2015-18875-CLS-CLS;
- ▶ Kelly Jones - 2016-20883-CLS-CLS;
- ▶ Gregory Surgenor-Aldridge - 2016-23971-CLS-CLS;
- ▶ Sarah Allman - 2016-22931-CLS-CLS: and
- ▶ Lauren Fear - 2016-26681-CLS-CLS.

5. Results

5.1 Desk Study

- 5.1.1 The desk study data from KMBRC provided no records of GCNs within a 2km buffer from the RLB. One record of GCN is located 2.3 km to the north east of the RLB. A further two historical records of GCN (over 25 years old) made in Minster, beyond a 2km buffer from the RLB, were provided. Details of these records are provided for contextual purposes only in Table 5.1 below.

Table 5.1 Records of Great Crested Newt (from KMBRC)

| English name | Scientific name | Grid Reference | Location | Year | No. of records | Distance to the RLB (km) |
|--------------|---------------------------|----------------|------------------------------|-----------|----------------|---|
| GCN | <i>Triturus cristatus</i> | TR 364 644 | Private residence, Cliffsend | 2009 | 1 | 2.3 north east |
| GCN | <i>Triturus cristatus</i> | TR306641 | Minster | 1992 | 1 | 2.5 north west |
| GCN | <i>Triturus cristatus</i> | TR36C | Minster | 1981-1990 | 1 | Within the same 10 square as the site – to the south west |

5.2 Secondary Data

- 5.2.1 Secondary data provided by GoBe from Greengage Ecology¹² included a record of a positive eDNA result made at a small pond located approximately 1.2km south of the RLB, in 2015. However, further traditional survey of this pond, undertaken in 2016 yielded no positive results, with only a small population of smooth newt recorded. Other data considered in respect of contextual GCN populations, was that available from the Richborough Connection Project¹⁹. The desk study provided no records of GCN within a 2km buffer from the RLB. Surveys results recorded two water bodies within a 500m buffer from the RLB: water body 8B (recorded as 412 within this report) and water body 8I (recorded as 174 within this report). These water bodies were screened out of further assessment for the following reasons: Water body 8B (412): multiple negative factors including unsuitable habitat, poor water quality, fish and fowl presence and barriers to terrestrial movement; water body 8I (174): water body was dry.

¹⁹ National Grid (2016) Richborough Connection Project Environmental Impact Assessment.

5.3 Screening Results

- 5.3.1 With reference to OS 1:10,000 scale maps and aerial mapping, and site visits, 133 water bodies (37 ponds, 93 ditches and three sections of river) were identified as requiring a screening visit to assess for their suitability to support GCN. All water bodies within a 500m buffer of the RLB that were considered for assessment, are shown in the overview Figure 5.2.1, Appendix A.
- 5.3.2 Assessment of the water bodies was undertaken from March through to July 2017; permission to access 110 out of 133 water bodies was granted in this period.
- 5.3.3 Of the 110 water bodies accessed, 14 were scoped in for presence/absence surveys: 159, 187, 193, 196, 341, 343, 344, 345, 393, 394, 400, 423, 424, and 425.
- 5.3.4 Of these, the following waterbodies lie within the RLB: 161, 169, 172 and 195. As detailed below, all four waterbodies were screened out as they were unsuitable to support GCN.
- 5.3.5 A further 96 were scoped out at the initial screening stage, or following an initial site visit if they were found to have the following characteristics making them unsuitable to support GCN:
- ▶ The following 33 water bodies were found to be dry and given the absence of a suitable physical characteristics - depth/dimension/substrate, an absence of aquatic/marginal vegetation, and/or the presence of dense scrub/tree cover were assessed to be unlikely to hold water during the breeding season: 169, 172, 174, 179, 190, 194, 195, 201, 202, 204, 207, 208, 209, 210, 217, 226, 229, 230, 242, 285, 349, 390, 392, 395, 397, 398, 402, 414, 420, 421, 422, 429, and 430;
 - ▶ The following 41 water bodies – predominantly drainage ditches were found to have flowing water: 92, 157, 161, 162, 164, 165, 173, 180, 184, 186, 188, 189, 197, 199, 206, 223, 232, 233, 235, 237, 335, 336, 337, 338, 339, 342, 347, 396, 406, 409, 410, 411, 412, 413, 415, 416, 418, 438, 439, 441, and 442. The network of ditches within the Minster marshes area – within the western 500 m buffer to the RLB, and within the Stonelees Golf Centre in the northern 500 m buffer were observed to contain fish, and limited vegetation for egg laying was recorded, making the majority of these networks unsuitable to support GCN;
 - ▶ The following four water bodies were found to be tidal: 333, 391, 399, and 428. These included tidal lagoons within the NNR, and sections of the River Stour, which is also known to support large populations of fish, and to have a strong current;
 - ▶ Two water bodies were too shallow to sample (either eDNA or by traditional bottle trapping, torching or netting) as the channel had become congested and banks degraded by cattle poaching: 440 and 443;
 - ▶ The following 16 water bodies were found to contain fish: 166, 170, 182, 183, 198, 203, 231, 236, 238, 239, 240, 241, 340, 346, 348, and 350.
- 5.3.6 A further three water bodies were found to have access issues relating to the physical constraints associated with the water body, including those for reasons of

H&S; these were: 215, 216 and 401 and could not therefore be assessed for their suitability to support GCN.

- 5.3.7 The remaining 20 water bodies could not be accessed for scoping assessment²⁰: these were 156, 158, 163, 167, 171, 178, 181, 191, 200, 212, 218, 219, 221, 403, 404, 405, 407, 408, 417, and 434.
- 5.3.8 As it was not possible to gain access to these 23 water bodies to assess them, they could not be scoped in or out.
- 5.3.9 Full details of the screening assessment for ponds and ditches that have been identified to date, including those scoped in and out are provided in Table 5.2a, Appendix B, with all results are presented Figure 5.3.2 (Appendix A).

5.4 Habitat Suitability Index Assessment Results

- 5.4.1 The pond screening and ground scoping assessments undertaken between April and July 2017 identified 14 water bodies within the RLB and the 500m buffer, that have potential to provide breeding habitat for GCN. These were water bodies 159, 187, 193, 196, 341, 343, 344, 345, 393, 394, 400, 423, 424, and 425. Table 5.2 below summarises the findings of the HSI assessment for each of the water bodies. No water bodies were eliminated from survey based solely on HSI score. In total; five water bodies were scored 'excellent', three had a 'good' score, two scored 'average', three scored 'below average' and one scored 'poor', summarised below in Table 5.2.
- 5.4.2 A detailed breakdown of the HSI assessment is provided in Table 5.3a (Appendix C).

Table 5.2 HSI Assessment Results

| Water body reference | Distance from RLB | HSI score (rating) | Screening Decision |
|----------------------|-------------------|--------------------|---|
| 159 | 58m | 0.62 (Average) | Screened in. This water body was screened in due to its suitability as well as the surrounding foraging and hibernating opportunities, and the very close proximity to the RLB. |
| 187 | 9m | 0.72 (Good) | Screened in. This water body was screened in due to its suitability as well as connectivity, (as Sandwich Road is insufficient as a barrier to movement), the surrounding foraging and hibernating opportunities and the very close proximity to the RLB. |

²⁰ Due to landowner refusal or other land access constraints.

| Water body reference | Distance from RLB | HSI score (rating) | Screening Decision |
|-----------------------------|--------------------------|---------------------------|---|
| 193 | 298m | 0.59 (Below average) | Screened in. This water body was screened in due to its suitability as well as its connectivity and proximity to other water bodies. |
| 196 | 44m | 0.96 (Excellent) | Screened in. This water body was screened in due to its suitability as well as its connectivity, proximity to other water bodies, opportunities for foraging, and hibernation, as well as very close proximity to the RLB. |
| 341 | 340m | 0.8 (Excellent) | Screened in. This water body was screened in due to its suitability as well as its connectivity (as Sandwich Road is insufficient as a barrier to movement) and proximity to other water bodies, and opportunities for foraging, and hibernation. |
| 343 | 386m | 0.65 (Average) | Screened in. This water body was screened in due to its suitability as well as its connectivity (as Sandwich Road is insufficient as a barrier to movement) and proximity to other water bodies, and opportunities for foraging, and hibernation. |
| 344 | 367m | 0.78 (Good) | Screened in. This water body was screened in due to its suitability as well as its connectivity (as Sandwich Road is insufficient as a barrier to movement) and proximity to other water bodies, and opportunities for foraging, and hibernation. |
| 345 | 93m | 0.72 (Good) | Screened in. This water body was screened in due to its suitability as well as its connectivity (as Sandwich Road is insufficient as a barrier to movement) and proximity to other water bodies, and opportunities for foraging, and hibernation, and the close proximity to the RLB. |
| 393 | 271m | 0.83 (Excellent) | Screened in. This water body was screened in due to its suitability as well as the surrounding foraging and hibernating opportunities and its connectivity and proximity to other suitable water bodies. |
| 394 | 116m | 0.47 (Poor) | Screened in. This water body was screened in due to its connectivity and proximity to other suitable water bodies and good foraging and hibernating opportunities surrounding, and the close proximity to the RLB. |

| Water body reference | Distance from RLB | HSI score (rating) | Screening Decision |
|----------------------|-------------------|---------------------|---|
| 400 | 178m | 0.89 (Excellent) | Screened in. This water body was screened in due to its suitability and its connectivity and proximity to other water bodies with good hibernating, foraging and commuting habitat, and the close proximity to the RLB. |
| 423 | 442m | 0.5 (Below average) | Screened in. This water body was screened in due to its proximity to other water bodies with good hibernating, foraging and commuting habitat. |
| 424 | 353m | 0.91 (Excellent) | Screened in. This water body was screened in due to its connectivity (as Sandwich Road is insufficient as a barrier to movement) and proximity to other suitable water bodies and good foraging and hibernating opportunities surrounding, and the very close proximity to the RLB. |
| 425 | 111m | 0.5 (Below average) | Screened in. This water body was screened in due to its connectivity and proximity to other water bodies and good foraging and hibernating opportunities surrounding, and the close proximity to the RLB. |

5.5 Presence/Absence Survey: eDNA Sampling Results

- 5.5.1 Of the 14 water bodies scoped in for further survey, it was not possible to gain access²¹ to the following six during the survey season: 196, 341, 343, 344, 345, and 424. Permission was given to access 341, 344, 345 and 424 in October 2017. Subsequently these have been screened out of suitability for GCN due to the presence of flowing water and / or connectivity with waterbodies supporting fish populations. One further pond, 394 was found to be entirely dry in late May - June 2017 and therefore no water sample could be taken in the 2017 survey season.
- 5.5.2 eDNA samples were taken at the following seven water bodies: 159, 187, 193, 393, 400, 423 and 425. All water bodies were tested as negative for GCN; no degradation or inhibition of the samples was reported by the laboratory. Table 5.4 below summarises the results, with survey conditions summarised in Table 5.4a Appendix E.

²¹ This may be a result of a number of reasons including H&S, landowner refusal or other accessibility constraints.

Table 5.3 Summary of eDNA Results

| Water body reference | Limitations | Date of survey | Date sample arrived at laboratory | eDNA score | Further survey required |
|----------------------|---|----------------|-----------------------------------|--------------|-------------------------|
| 159 | Inflow and steep banks. Could sample > 80% of the perimeter of pooled ditch end. | 13/06/2017 | 13/06/2017 | Negative (0) | No |
| 187 | Inflow and steep banks. Could sample > 80% of the perimeter of pooled ditch end. | 13/06/2017 | 13/06/2017 | Negative (0) | No |
| 193 | Access to 25% of perimeter only for H&S reasons – steep banks | 07/06/2017 | 07/06/2017 | Negative (0) | No |
| 393 | Dense vegetation. Could sample > 80% perimeter. | 30/06/2017 | 30/06/2017 | Negative (0) | No |
| 400 | Access to 80% perimeter, breeding birds present restricted sampling from some areas | 23/06/2017 | 23/06/2017 | Negative (0) | No |
| 423 | Water less than 10cm deep around some areas of liner lip. | 07/06/2017 | 07/06/2017 | Negative (0) | No |
| 425 | Bird trapped in trough creating some disturbance to water. | 23/06/2017 | 23/06/2017 | Negative (0) | No |

5.6 Limitations

- 5.6.1 Limitations that may have negatively affected the probability of detecting GCN included limited accessibility to the shoreline of some water bodies (as described above in Table 5.4) due to the presence of dense vegetation and steeply sloping banks, turbid water and water surfaces dominated by aquatic vegetation which restricted sampling of water.
- 5.6.2 Twenty-three water bodies which were identified at the desk study phase could not be accessed for scoping assessment during the optimal survey season, due to landowner permission being withheld or not yet permitted. These were 156, 158, 163, 167, 171, 178, 181, 191, 200, 212, 215, 216, 218, 219, 221, 401, 403, 404,

405, 407, 408, 417, and 434. As it was not possible to gain access to the water bodies to assess them, they could not be scoped in or out to date.

- 5.6.3 The following two water bodies 196 scoring 'excellent' and 343 scoring 'average' could not be accessed in order for eDNA to be collected, due to landowner restrictions..
- 5.6.4 It should be noted that further unidentified water bodies may exist within land parcels located to the north, west and south of REP that could not be accessed this year.



6. Discussion/Conclusions

- 6.1.1 No records for GCN within the RLB, or within the 500m buffer were returned by the desk study. Three records for GCN were returned from the desk study, however all were beyond 2km of the RLB, and two were over 25 years old. An additional one record of positive eDNA was recorded ~2.3km of the RLB, however, further surveys on the same pond produced a negative result one month later. Consequently, no current reliable records of GCN exist within 2km of the RLB.
- 6.1.2 Of the 133 water bodies recorded from the desktop study, 96 were scoped out at the initial screening stage, or following an initial site visit if they were found to have characteristics making them unsuitable to support GCN. A further 23 could not be accessed for scoping where landowners had not permitted access within the survey season of 2017 (March to July inclusive).
- 6.1.3 An HSI assessment was conducted for the remaining 14 waterbodies, resulting in the following scores:
- ▶ One water body with a 'poor' score;
 - ▶ Three water bodies with a 'below average' score;
 - ▶ Two water bodies with an 'average' score;
 - ▶ Three water bodies with a 'good' score; and
 - ▶ Five water bodies with an 'excellent' score.
- 6.1.4 Presence/absence surveys using eDNA were conducted on seven water bodies. Of these seven waterbodies no positive results for GCN were recorded. Based upon negative eDNA results recorded in 2017, the following seven water bodies can be scoped out of further surveys in 2018: 159, 187, 193, 393, 400, 423 and 425.
- 6.1.5 Due to the lack of access to 23 waterbodies during the 2017 sampling season, and constraints to sample a further three waterbodies it is not possible to ascertain the presence or likely absence of GCN from the entire 500 buffer to the RLB. No population assessment surveys were conducted in 2017, therefore it is not possible to discuss meta-populations here.
- 6.1.6 However, the absence of positive GCN eDNA from the samples taken to date reflects the known lack of distribution of GCN across Thanet district.
- 6.1.7 A total of three water bodies that have been screened in still require eDNA sampling and/or traditional presence/absence surveys, with a further 23 water bodies requiring screening in 2017/2018 and possible eDNA sampling and/or traditional presence/absence surveys in the next available field season.





Appendix A

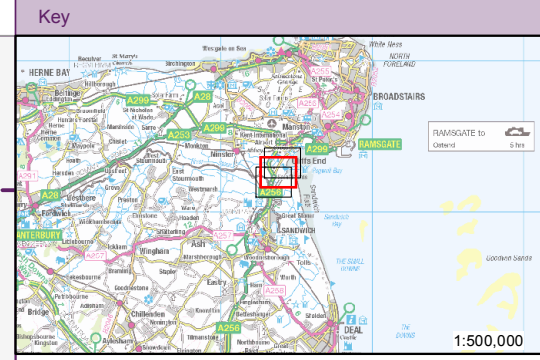
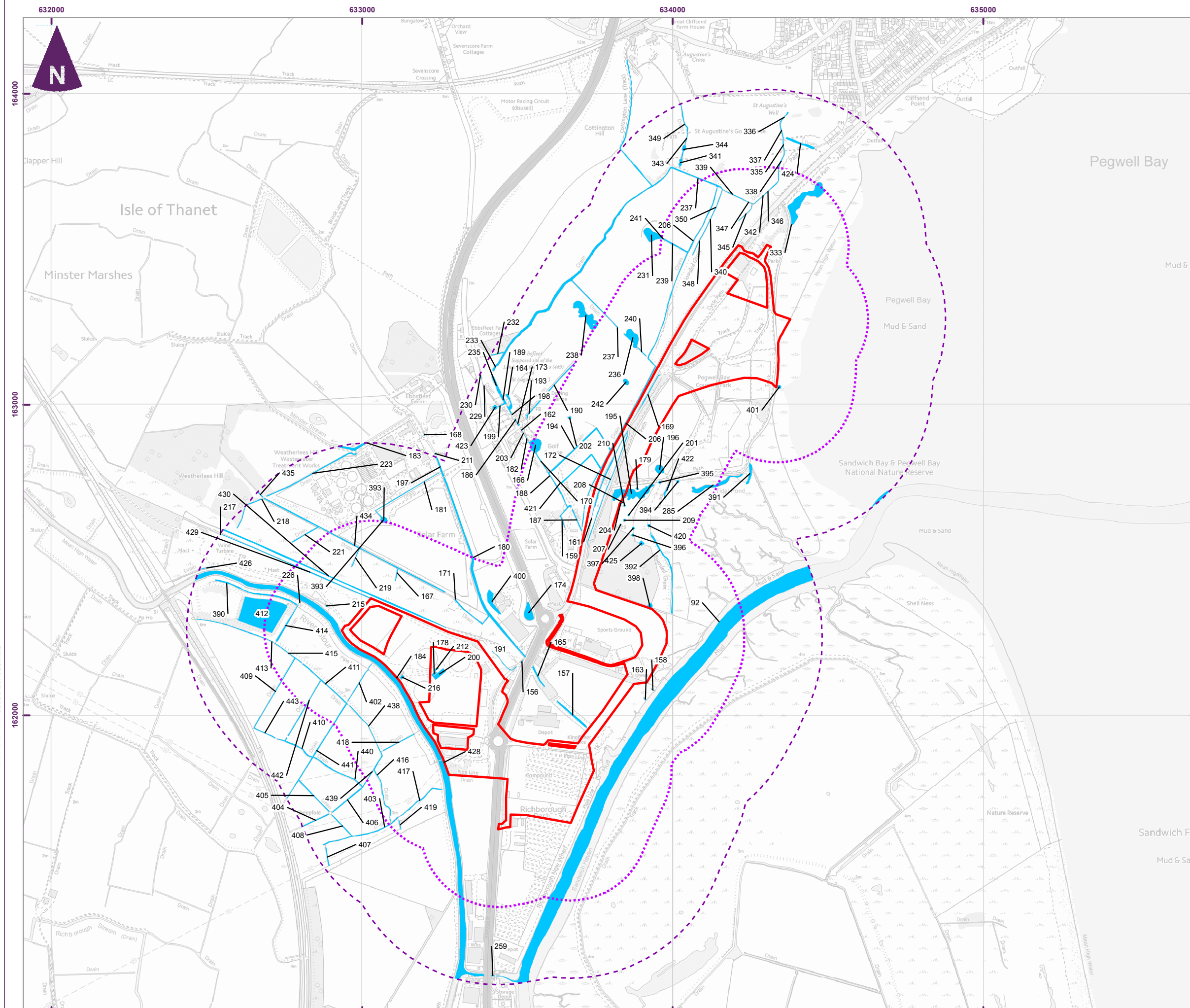
Figures

Figure 5.3.1 Great Crested Newt Study Area

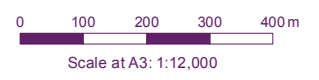
Figure 5.3.2 Great Crested Newt Water Body Screening Results

Figure 5.3.3 Great Crested Newt Presence/Absence Survey Results





- Thanet Extension Onshore Development Area
- 250m buffer from onshore development area
- 500m buffer from onshore development area
- Water bodies



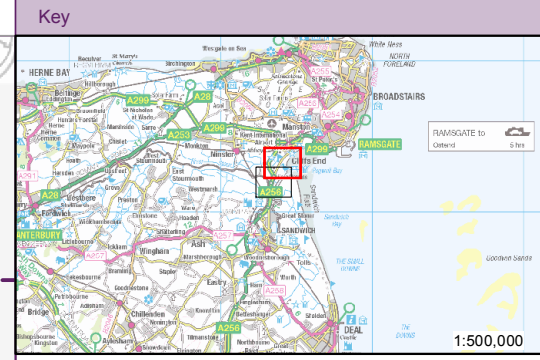
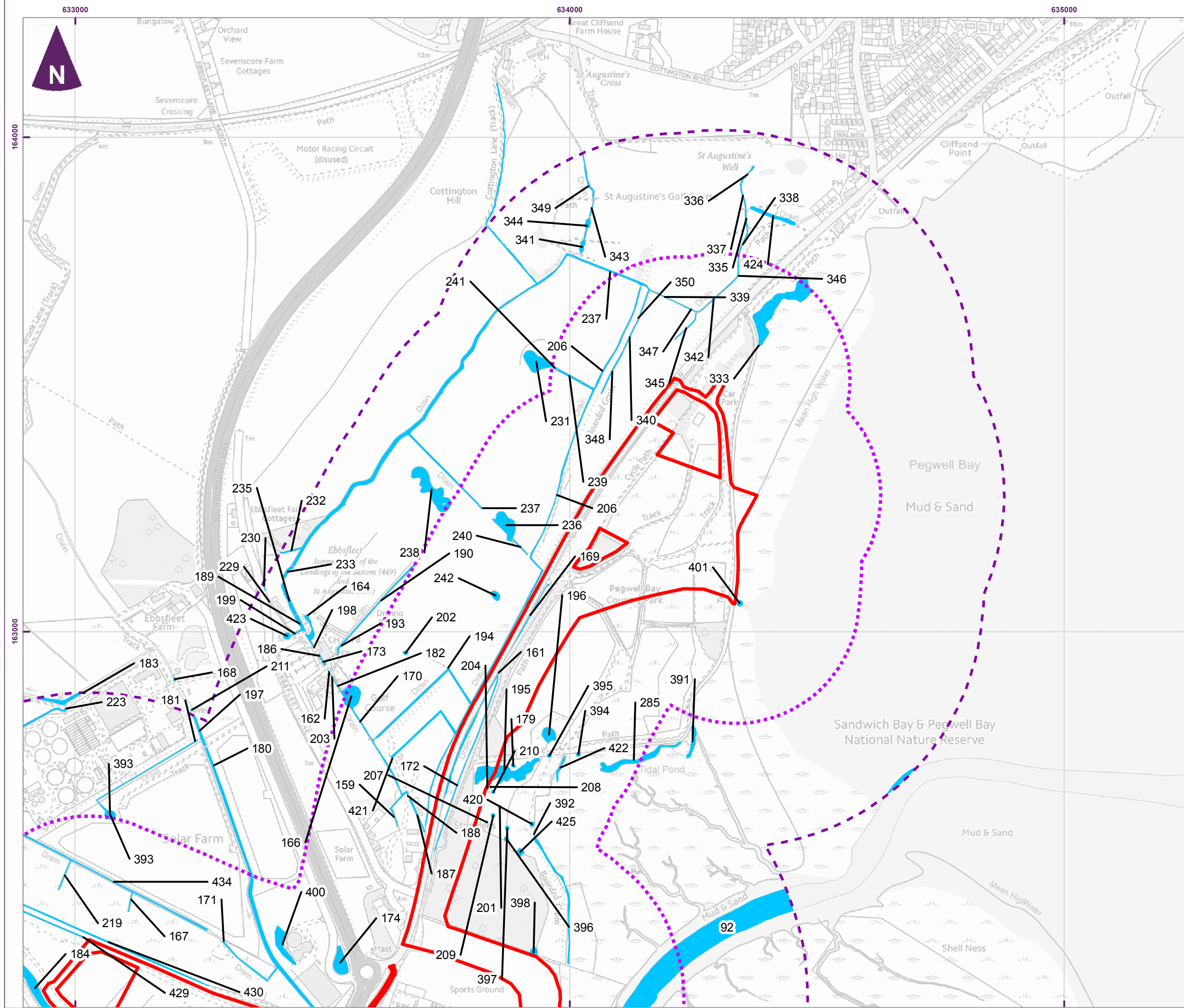
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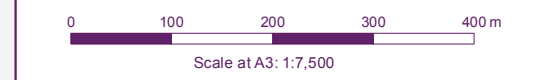
Thanet Extension Offshore Wind Farm Great Crested Nwt (GCN) Survey

amec foster wheeler

Figure 5.3.1a
Great Crested Nwt Study Area



- Thanet Extension Onshore Development Area
- 250m buffer from onshore development area
- 500m buffer from onshore development area
- Water bodies



Client

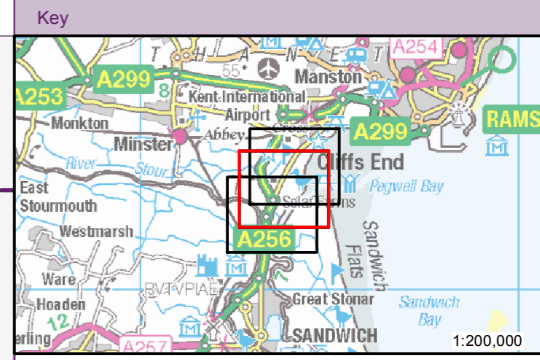
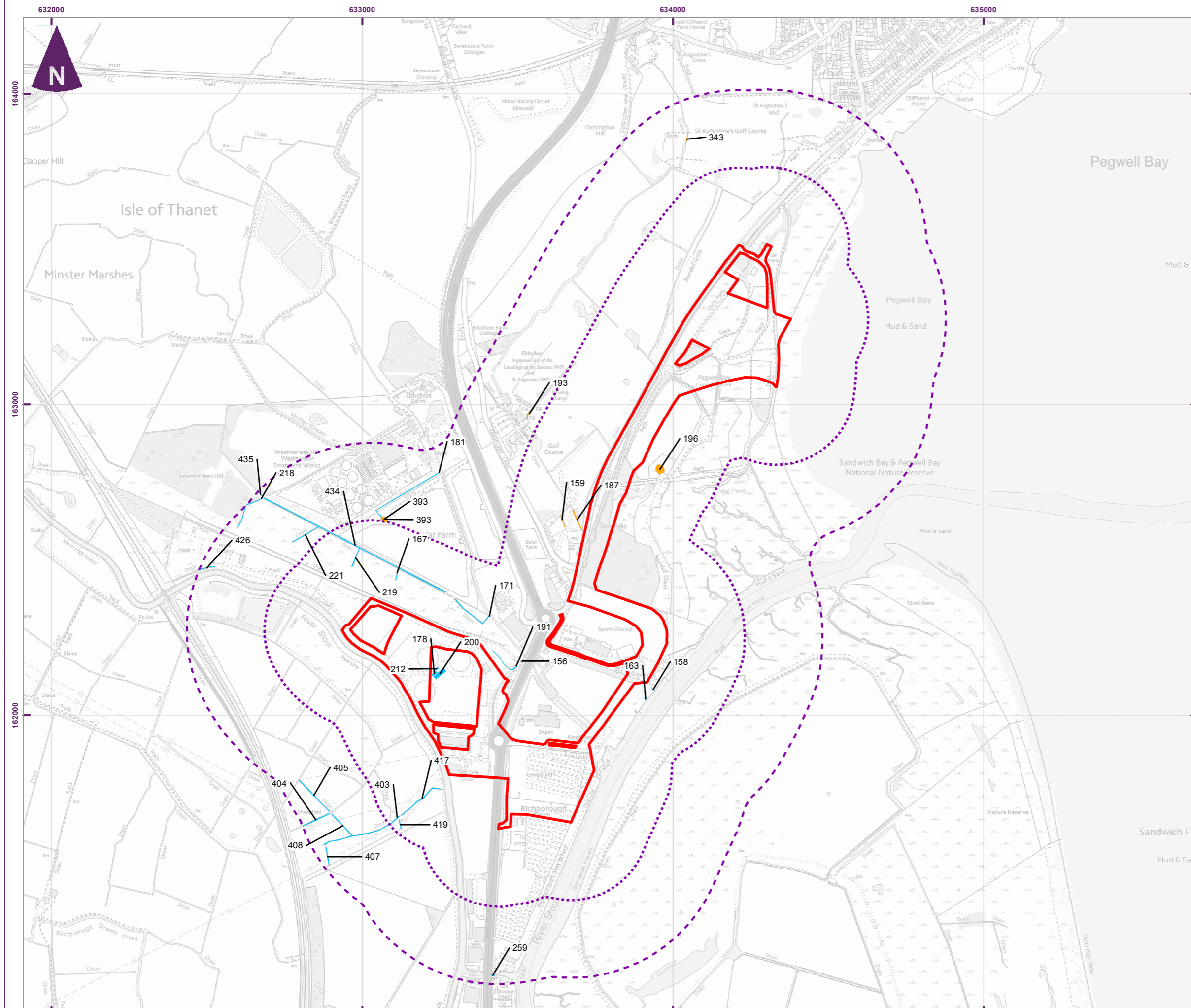
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Thanet Extension
Offshore Wind Farm
Great Crested Nwt
(GCN) Survey

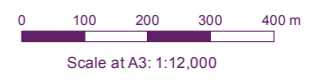
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wheeler

Figure 5.3.1b
Great Crested Nwt Study Area

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- Key**
- Thanet Extension Onshore Development Area
 - 250m buffer from onshore development area
 - 500m buffer from onshore development area
 - Water body not accessed for scoping - scoping required
 - Water body scoped in for survey



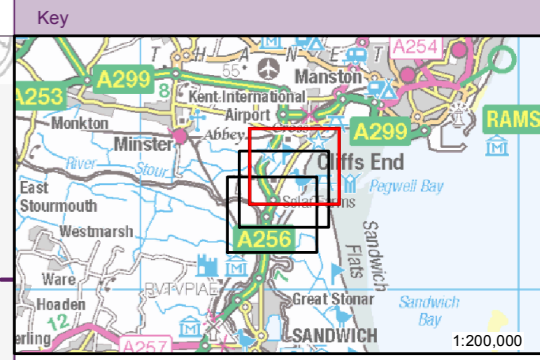
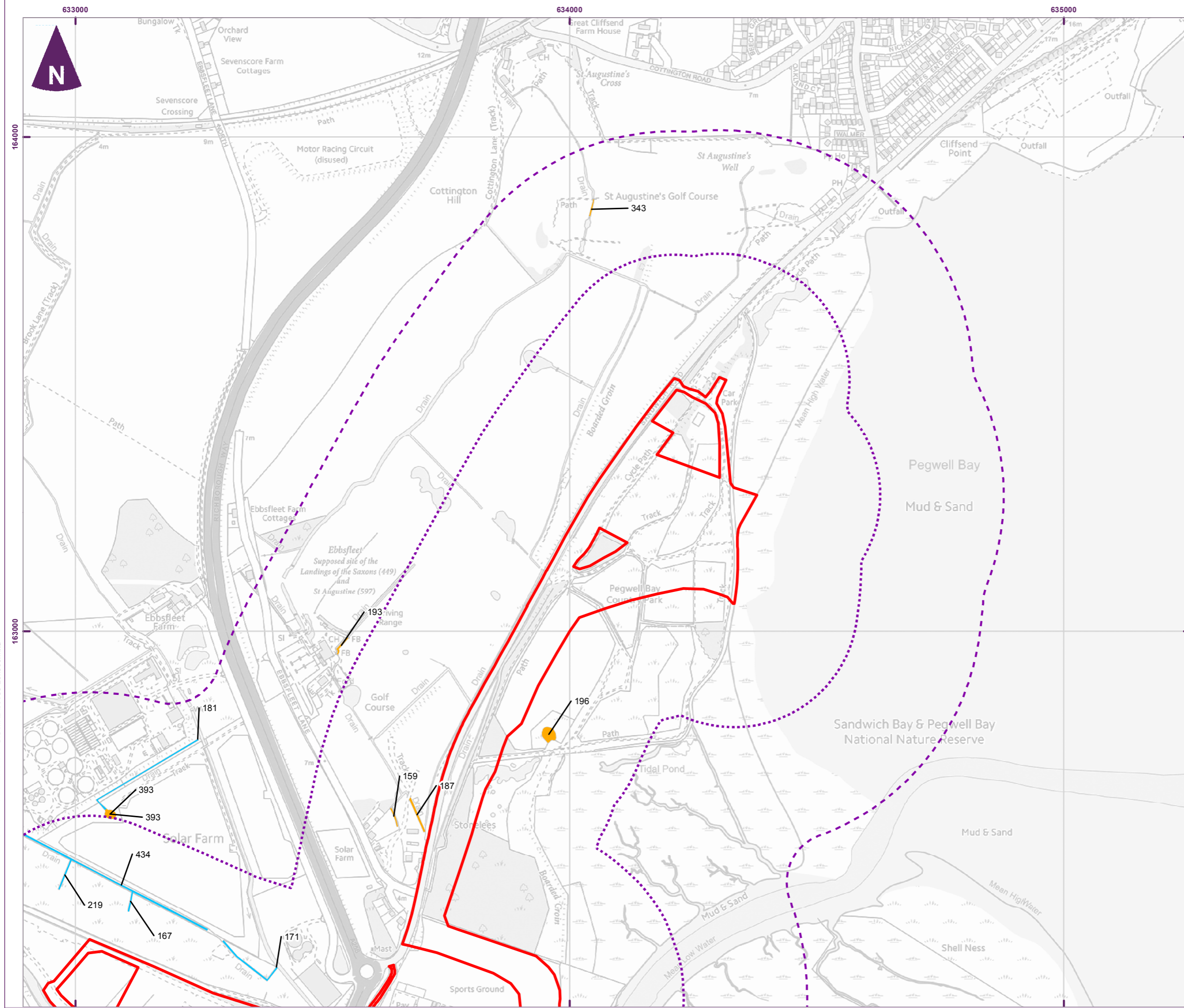
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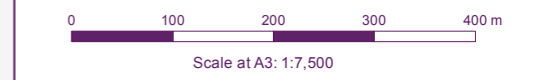
Thanet Extension
Offshore Wind Farm
Great Crested Newt
(GCN) Survey

Figure 5.3.2a
Great Crested Newt Water Body
Screening Results

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- Key**
- Thanet Extension Onshore Development Area
 - 250m buffer from onshore development area
 - 500m buffer from onshore development area
 - Water body not accessed for scoping - scoping required
 - Water body scoped in for survey



Client

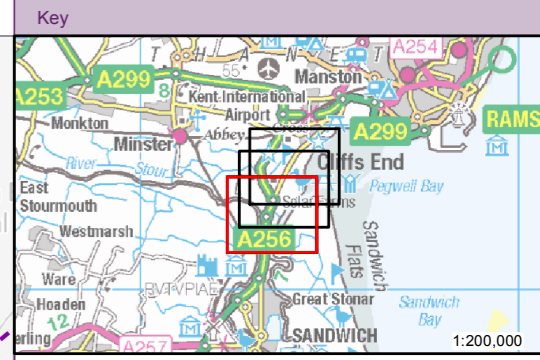
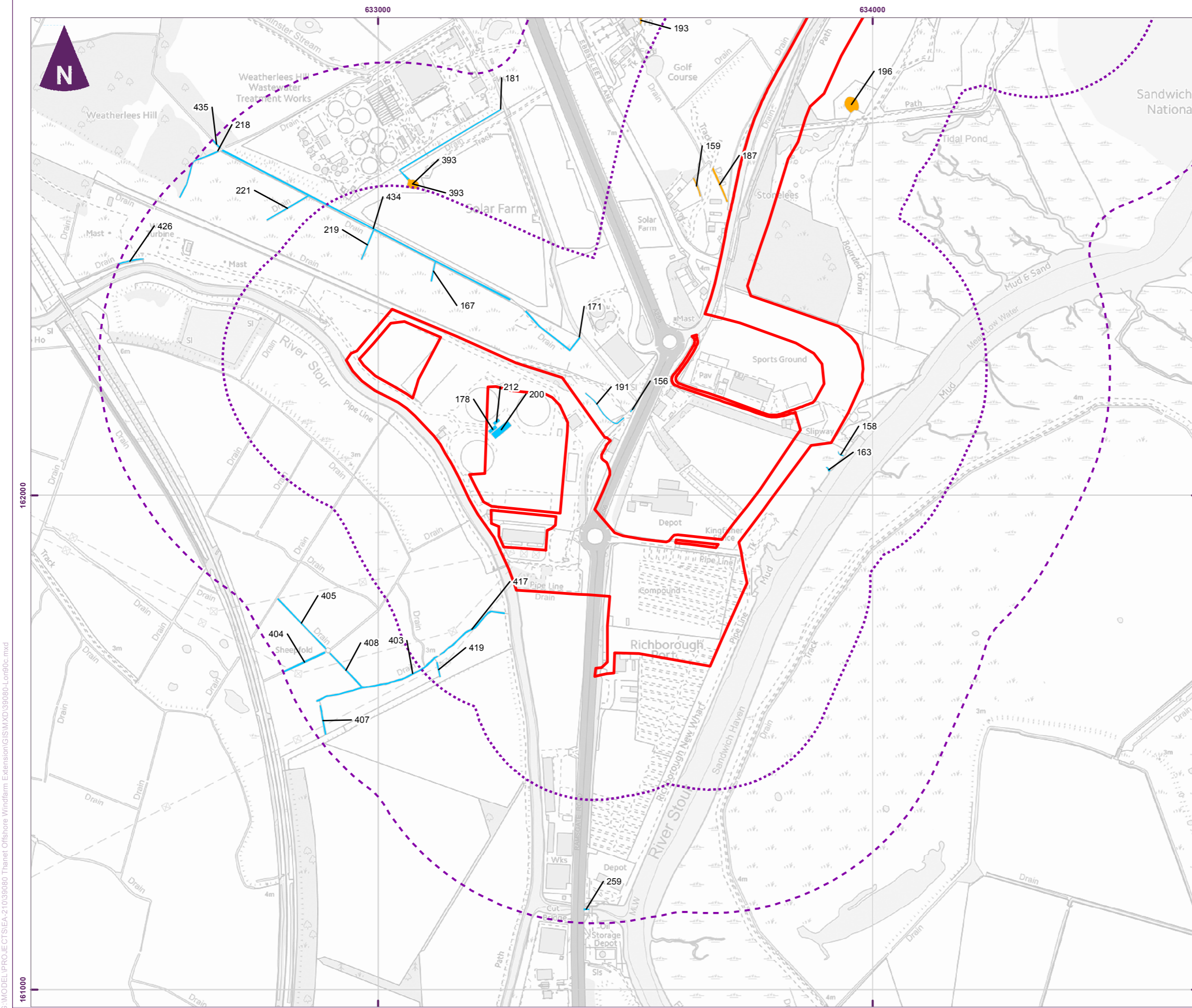
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Thanet Extension Offshore Wind Farm Great Crested Nwt (GCN) Survey

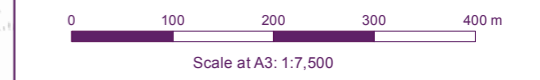
Figure 5.3.2b
Great Crested Nwt Water Body Screening Results

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- Key**
- Thanet Extension Onshore Development Area
 - 250m buffer from onshore development area
 - 500m buffer from onshore development area
 - Water body not accessed for scoping - scoping required
 - Water body scoped in for survey

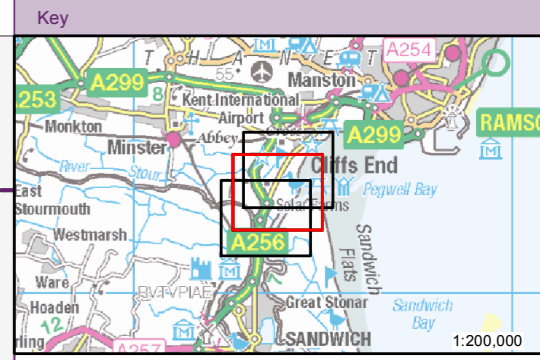
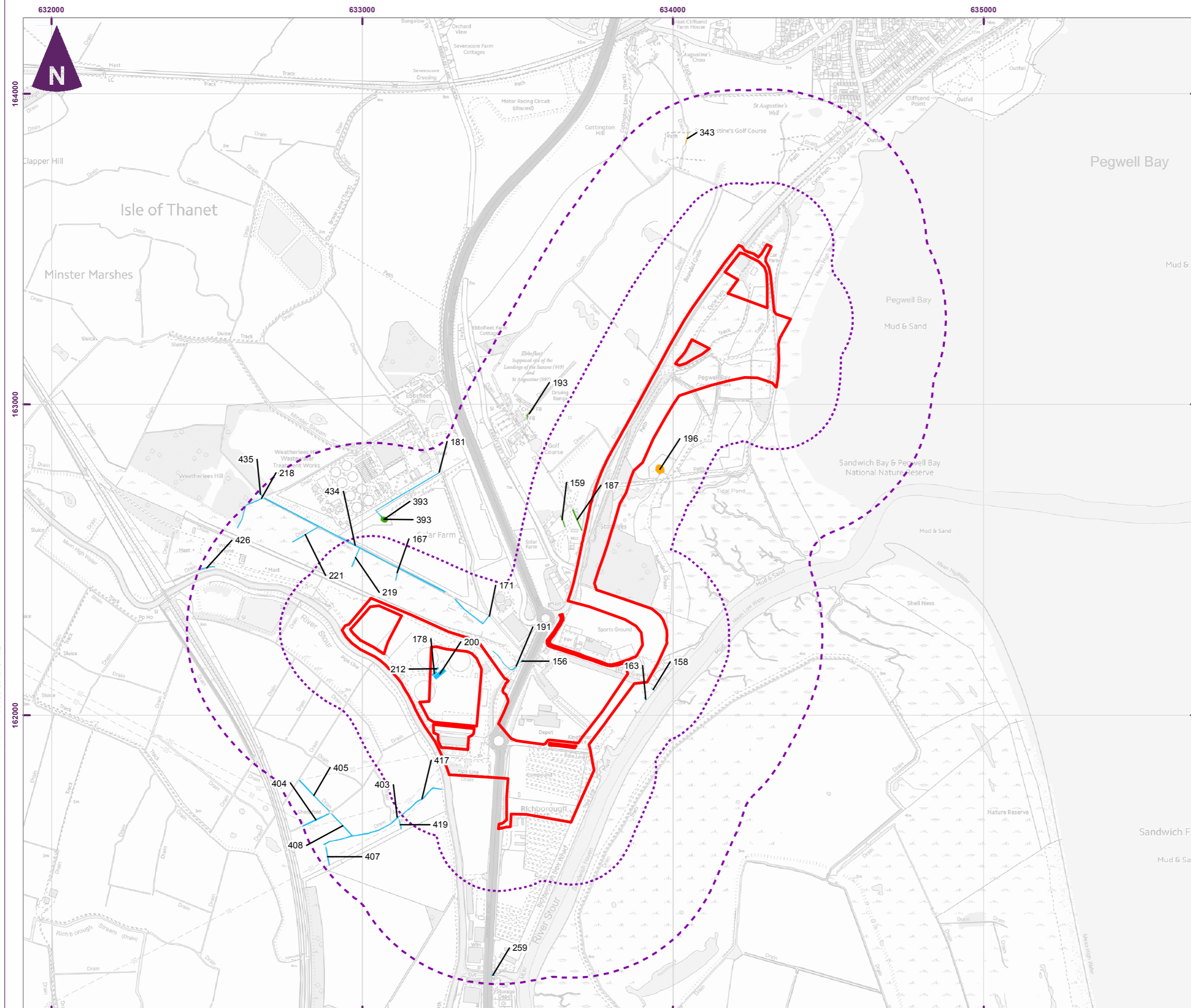


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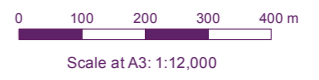
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Thanet Extension
Offshore Wind Farm
Great Crested Nwt
(GCN) Survey

Figure 5.3.2c
Great Crested Nwt Water Body
Screening Results



- Key**
- Thanet Extension Onshore Development Area
 - 200m buffer from onshore development area
 - 500m buffer from onshore development area
 - Water body not accessed
 - Water body surveyed: negative results
 - Water body scoped in - survey required



Client

VATTENFALL

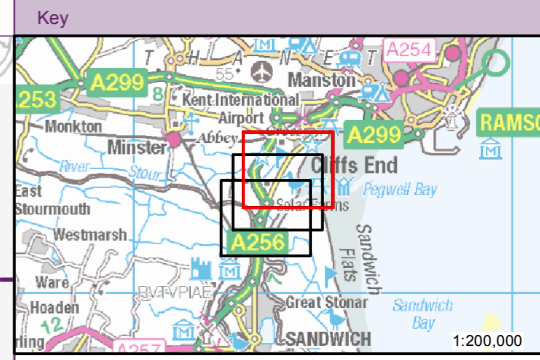
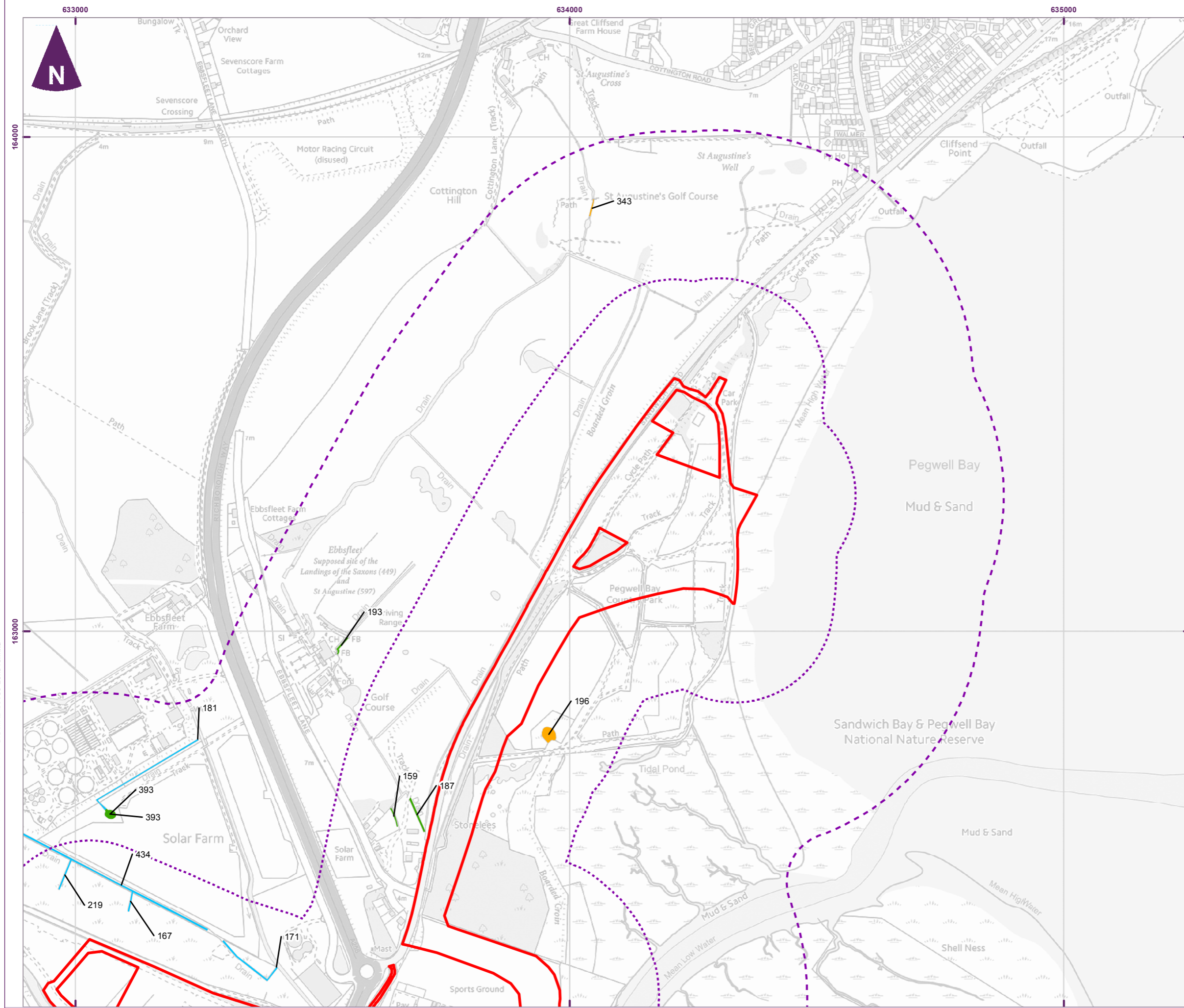
Thanet Extension
Offshore Wind Farm
Great Crested Newt
(GCN) Survey

amec
foster
wheeler

Figure 5.3.3a
Great Crested Newt Survey Results

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- Key**
- Thanet Extension Onshore Development Area
 - 200m buffer from onshore development area
 - 500m buffer from onshore development area
 - Water body not accessed
 - Water body surveyed: negative results
 - Water body scoped in - survey required

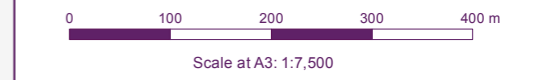
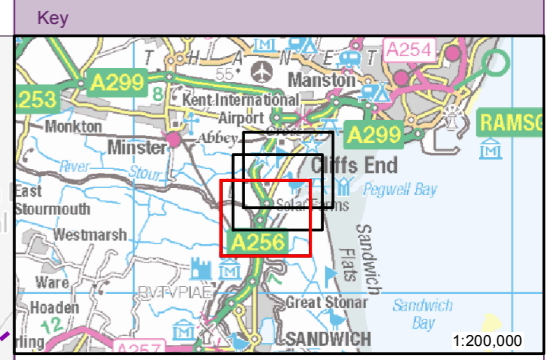
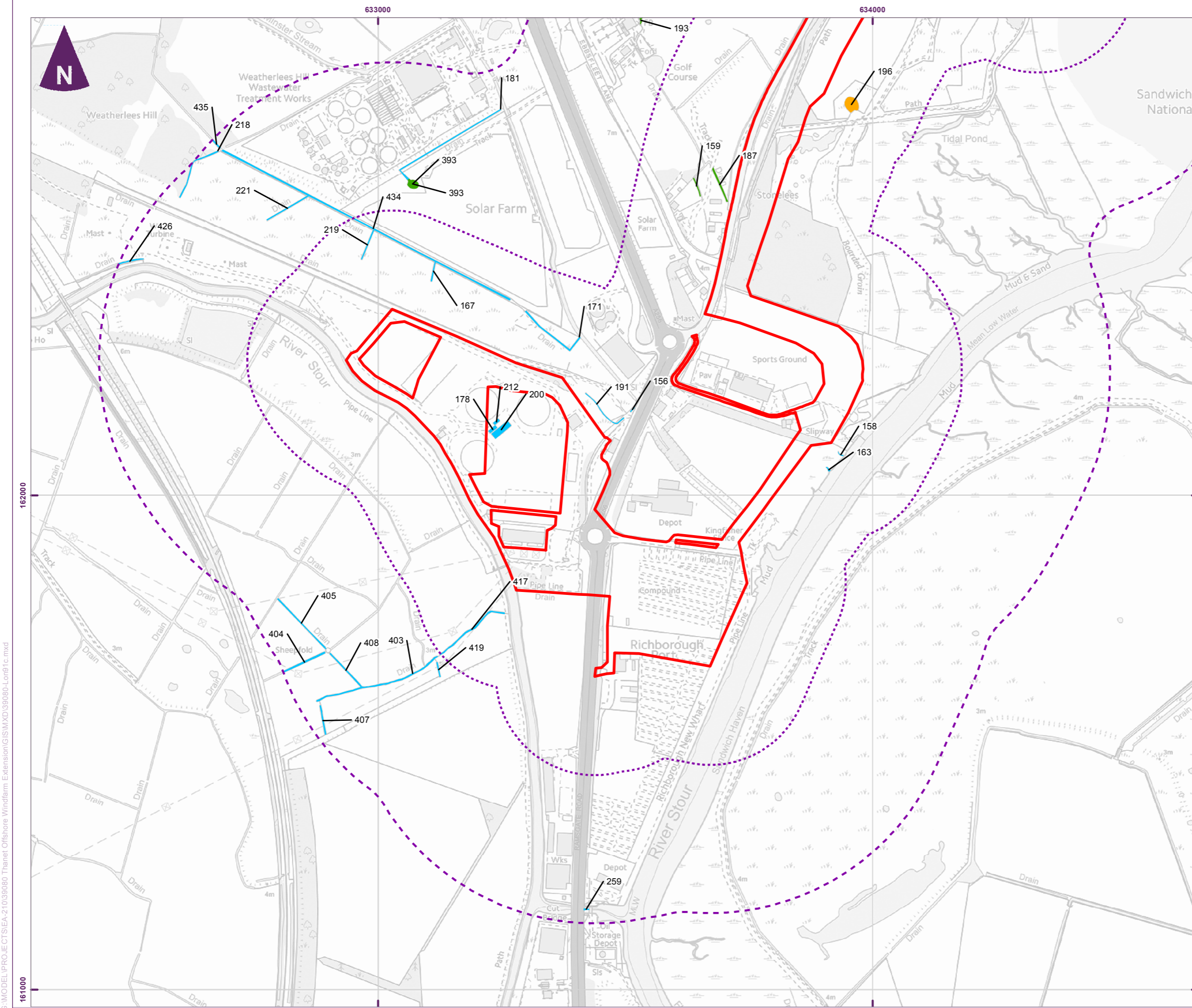


Figure 5.3.3b
Great Crested Newt Survey Results

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- Key**
- Thanet Extension Onshore Development Area
 - 200m buffer from onshore development area
 - 500m buffer from onshore development area
 - Water body not accessed
 - Water body surveyed: negative results
 - Water body scoped in - survey required

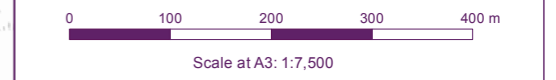


Figure 5.3.3c
Great Crested Nwt Survey Results

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Appendix B

Table 5.2a: Screening Results



Table 5.2a Screening Results

| Water body reference | Feature | Description | Screening for GCN ²² | Justification to screen out (and any other contextual information) |
|----------------------|---------|---|---------------------------------|---|
| 85 | Ditch | Dry | Out | Beyond 250m buffer to RLB Dry No macrophyte |
| 92 | River | Large, fast flowing and tidal river | Out | In and outflow Tidal No Macrophyte Fish presence H+S |
| 110 | Pond | Drainage pond for adjacent dual carriageway; approximately 900m ² dominated by common reed, entirely dry | Out | Dry No macrophyte Located beyond 2500m buffer to RLB and disconnected from suitable network of water bodies and terrestrial habitat |
| 111 | Ditch | Short section of dry drainage ditch; scrub and grass only, no aquatic or wetland vegetation. | Out | Beyond 250m buffer to RLB Dry No macrophyte |
| 112 | Ditch | Short section of dry drainage ditch; scrub and grass only, no aquatic or wetland vegetation. | Out | Beyond 250m buffer to RLB Dry |

²² Where scoped “In” see Table 5.2 in the report for rationale.

| Water body reference | Feature | Description | Screening for GCN ²² | Justification to screen out (and any other contextual information) |
|----------------------|-------------|--|---------------------------------|--|
| 113 | Ditch | Short section of dry drainage ditch; scrub and grass only, no aquatic or wetland vegetation. | Out | Beyond 250m buffer to RLB No macrophyte |
| 156 | Ditch | No access –unknown. | In | |
| 157 | Ditch | Ditch 125m long; common reed with tall ruderal vegetation, and improved grassland along western bank and dense scrub along eastern bank. | Out | In and outflow No macrophyte H+S |
| 158 | Tidal inlet | No access –unknown. | Out | Tidal No Macrophyte H+S |
| 159 | Ditch | Drainage ditch- stagnant ponded area approximately 30m ² adjacent to a vehicle track. | In | |
| 160 | Ditch | Drainage ditch section; 3m wide with steep banks; common reed along bank edge. | Out | Beyond 250m buffer to RLB In and outflow |
| 161 | Ditch | Ditch in heavily shaded tree and scrub line, flowing water. | Out | In and outflow No macrophyte |
| 162 | Ditch | Ditch 10m in length, adjacent to clubhouse and shop at Stonelees Golf Centre. 2m wide, heavily shaded by dense introduced shrub, scattered scrub and trees | Out | Fish presence. In and outflow No macrophyte |
| 163 | Inlet | No access, likely to be a tidal inlet | In | In until assessment can be undertaken to scope in or out |

| Water body reference | Feature | Description | Screening for GCN²² | Justification to screen out (and any other contextual information) |
|-----------------------------|----------------|--|---------------------------------------|---|
| 164 | Ditch | 2 -4m wide pooled ditch with gently grading earth banks. Vegetation dominated common reed, waterfowl present. | Out | Flowing. Fish Waterfowl |
| 165 | Ditch | Ditch 75m long; common reed with improved grassland and dense scrub above | Out | In and outflow No macrophyte |
| 166 | Pond | 50m x 50m circular pond with a joining ditches on east and west bank (20m in length each). Dense reed beds along entire perimeter. | Out | Fish presence. In and outflow |
| 167 | Ditch | No access -unknown | In | In until assessment can be undertaken to scope in or out |
| 169 | Ditch | Dry ditch in scrubby woodland verge | Out | Dry Deep shade No macrophyte |
| 170 | Ditch | Ditch 100m in length, east of pond 166. Dense reed beds along entire perimeter. Fish seen. | Out | Fish presence. In and outflow Deep shade No macrophyte |
| 171 | Ditch | No access -unknown | In | In until assessment can be undertaken to scope in or out |

| Water body reference | Feature | Description | Screening for GCN²² | Justification to screen out (and any other contextual information) |
|-----------------------------|----------------|--|---------------------------------------|---|
| 172 | Ditch | Ditch 500m long in scrubby woodland/tall herb verge. Wet in southern limit, flowing. Small isolated sections on north were wet only after rainfall in late July. | Out | In and outflow in southern section Dry in northern half for main breeding period. Deep shade No macrophyte |
| 173 | Ditch | Culverted section of ditch adjacent to clubhouse and shop at Stonelees Golf Centre. Reinforced steep banks with wooden panels with some steep natural banks. | Out | In and outflow Deep shade No macrophyte |
| 174 | Pond | Pond next to roundabout and dual carriageway. Likely dry by spring, dominated by reeds and willow saplings. Pipes from road for run off. 30m x 30m circular shape. | Out | Dry No macrophyte |
| 175 | Pond | Fishing pond stocked with carp. | Out | Beyond 250m buffer to RLB Significant fish presence No macrophyte Waterfowl |
| 176 | Pond | Fishing Lake. | Out | Beyond 250m buffer to RLB Significant fish presence. No macrophyte Waterfowl |

| Water body reference | Feature | Description | Screening for GCN²² | Justification to screen out (and any other contextual information) |
|-----------------------------|----------------|--|---------------------------------------|---|
| 177 | Ditch | Drainage ditch | Out | Beyond 250m buffer to RLB Fish Flowing- in and outflow |
| 178 | Ditch | No access -unknown | In | In until assessment can be undertaken to scope in or out |
| 179 | Pond | Shallow depression in tussocky grassland. | Out | Dry No macrophyte |
| 180 | Ditch | Flowing drainage ditch approximately 620m long. Steep vegetated banks, scattered scrub and tussocky grassland above banks. Occasional common reed. | Out | In and outflow Fish presence. |
| 181 | Ditch | Ditch approximately 240m long, with dense scrub and common reed – limited access, viewed from western and eastern ends only. | Out | Fish presence. In and outflow |
| 182 | Ditch | Ditch 20m in length. Dense reed. Fish seen. | Out | Fish presence. In and outflow No macrophyte |
| 183 | Ditch | Flowing drainage ditch 2m wide, 885m long | Out | Flowing Fish No macrophyte |

| Water body reference | Feature | Description | Screening for GCN²² | Justification to screen out (and any other contextual information) |
|-----------------------------|----------------|---|---------------------------------------|---|
| 184 | River Stour | Large flowing and tidal river | Out | In and outflow Tidal No macrophyte Fish presence |
| 185 | Ditch | Flowing ditch. Smothered by reed. Hard to see. Small pools of water in places | Out | Flowing |
| 186 | Ditch | Culverted section of ditch adjacent to clubhouse and shop at Stonelees Golf Centre. 2m wide. Reinforced steep banks with wooden panels. | Out | In and outflow No macrophyte |
| 187 | Ditch | Drainage ditch- stagnant ponded area approximately 40 m ² beyond a vehicle track | In | |
| 188 | Ditch | Drainage ditch section with scattered scrub along western bank, connecting to pond and further section of ditches | Out | In and outflow Fish presence No macrophyte |
| 189 | Ditch | Drainage ditch section with scattered scrub along western bank, connecting to pond and further section of ditches | Out | In and outflow Fish presence No macrophyte |
| 190 | Ditch | Dry ditch- very shallow line of sprayed grass | Out | Dry No macrophyte |
| 191 | Ditch | Unknown-no access | In | In until assessment can be undertaken to scope in or out |



| Water body reference | Feature | Description | Screening for GCN²² | Justification to screen out (and any other contextual information) |
|-----------------------------|----------------|--|---------------------------------------|---|
| 192 | Ditch | Dry ditch. | Out | Beyond 250m buffer to RLB Dry No macrophyte |
| 193 | Ditch | Ditch dominated by reed, no flow and steep banks. 40m long x 2m wide. | In | |
| 194 | Ditch | Drainage ditch section with scattered scrub along western bank, connecting to pond and further section of ditches | Out | In and outflow Fish presence No macrophyte |
| 195 | Pond | Tidal pool, dry at time of survey | Out | Tidal Dry |
| 196 | Pond | Pond surrounded by fencing with dense common reed and reedmace; measuring approximately 330m ² . Information board adjacent reports the presence of a smooth newt population. | In | |
| 197 | Ditch | Flowing drainage ditch approximately 620m long. Steep vegetated banks, scattered scrub and tussocky grassland above banks. Occasional common reed. | Out | In and outflow Fish presence. |
| 198 | Ditch | Flowing 2m wide ditch. | Out | Fish presence. In and outflow Deep shade No macrophyte |

| Water body reference | Feature | Description | Screening for GCN²² | Justification to screen out (and any other contextual information) |
|-----------------------------|----------------|---|---------------------------------------|---|
| 199 | Ditch | Drainage ditch section, in deep shade connecting to further sections of ditches | Out | Fish presence. In and outflow No macrophyte |
| 200 | Pond | No access-unknown | In | In until assessment can be undertaken to scope in or out |
| 201 | Pond | Dry | Out | |
| 202 | Depression | Shallow depression in improved grassland | Out | Dry No macrophyte |
| 203 | Ditch | Ditch 10m in length. Dense reed. Fish seen. | Out | Fish presence. In and outflow Deep shade No macrophyte |
| 204 | Pond | Dry | Out | |
| 206 | Ditch | Ditch overgrown with dense scrub casting heavy shade, wet and flowing in sections, dry in other areas | Out | In and outflow Fish presence. |
| 207 | Depression | Shallow depression in tussocky grassland | Out | Dry No macrophyte |
| 208 | Depression | Shallow depression in tussocky grassland | Out | Dry No macrophyte |
| 209 | Depression | Shallow depression in tussocky grassland | Out | Dry No macrophyte |

| Water body reference | Feature | Description | Screening for GCN²² | Justification to screen out (and any other contextual information) |
|-----------------------------|----------------|--|---------------------------------------|---|
| 210 | Depression | Shallow depression in tussocky grassland | Out | Dry No macrophyte |
| 212 | Unknown | No access-unknown | In | In until assessment can be undertaken to scope in or out |
| 213 | No access | No access-unknown | Out | Beyond 500m buffer to RLB |
| 214 | Ditch | Flowing drainage ditch with steep banks. | Out | Beyond 250m buffer to RLB In and outflow Fish presence |
| 215 | Tank | Metal tank, filled with water – possible equipment cleaning/damping down water supply tank | Out | No macrophyte |
| 216 | Tank | Metal tank, filled with water – possible equipment cleaning/damping down water supply tank | Out | No macrophyte |
| 217 | Ditch | Shallow dry ditch in dense scrub line | Out | Dry No macrophyte |
| 218 | Ditch | No access-unknown | In | In until assessment can be undertaken to scope in or out |

| Water body reference | Feature | Description | Screening for GCN²² | Justification to screen out (and any other contextual information) |
|-----------------------------|----------------|--|---------------------------------------|--|
| 219 | Ditch | No access-unknown | In | In until assessment can be undertaken to scope in or out |
| 220 | Depression | Dry depression on grassland and scrub | Out | Beyond 250m buffer to RLB Dry No macrophyte |
| 221 | Ditch | No access-unknown | In | In until assessment can be undertaken to scope in or out |
| 222 | Ditch | Dry scrubby depression | Out | Beyond 250m buffer to RLB Dry No macrophyte |
| 223 | Ditch | Flowing ditch with steep banks | Out | In and outflow |
| 225 | Pond | Pond with island | Out | Beyond 250m buffer to RLB Tidal/brackish, Water shallower than 10cm around shore |
| 226 | Ditch | Dry, shallow depression between drainage ditch and bank of River Stour | Out | Dry No macrophyte |

| Water body reference | Feature | Description | Screening for GCN²² | Justification to screen out (and any other contextual information) |
|-----------------------------|---------------------|--|---------------------------------------|---|
| 227 | River Stour | Large flowing and tidal river | Out | Beyond 250m buffer to RLB In and outflow Tidal No Macrophyte Fish presence |
| 228 | Unknown | No access-unknown | Out | Beyond 500m buffer to RLB |
| 229 | Depression in verge | Dry depression | Out | Dry No macrophyte |
| 230 | Depression in verge | Dry depression | Out | Dry No macrophyte |
| 231 | Pond | Large pond connected to ditch, banks dominate by common reed | Out | Major fish presence Inflow |
| 232 | Ditch | Drainage ditch connecting to network of ditches | Out | Inflow Fish |
| 233 | Ditch | Large flowing ditch | Out | Inflow |
| 234 | Ditch | Large flowing ditch | Out | Beyond 500m buffer to RLB Inflow Fish |
| 235 | Ditch | Drainage ditch connecting to network of ditches | Out | In and outflow Fish presence No macrophyte |

| Water body reference | Feature | Description | Screening for GCN²² | Justification to screen out (and any other contextual information) |
|-----------------------------|----------------|---|---------------------------------------|---|
| 236 | Pond | Large water body joined to ditches that form eastern boundary. Dense vegetation along banks dominated by common reed. | Out | Fish presence In and outflow |
| 237 | Ditch | Flowing, low water level. Marsh frog recorded here on the 19 th April 2017. | Out | Flowing |
| 238 | Pond | Large lake/pond. All banks dominated by reed. 300m long x 50m wide. | Out | Fish presence. |
| 239 | Ditch | Ditch | Out | Fish presence In and outflow |
| 240 | Ditch | Ditch | Out | Fish presence In and outflow |
| 241 | Ditch | Ditch | Out | Fish presence In and outflow |
| 242 | Depression | Sand bunker | Out | Dry No macrophyte |
| 243 | Ditch | Flowing drainage ditch, scattered scrub along both banks | Out | Beyond 500m buffer to RLB In and out flow Fish presence |
| 255 | Ditch | Drainage ditch within arable fields; steep banks, scattered scrub. | Out | Beyond 500m buffer to RLB In and outflow Fish presence |
| 259 | River Stour | Large flowing and tidal river – not accessed | Out | In and outflow Tidal No Macrophyte Fish presence |

| Water body reference | Feature | Description | Screening for GCN ²² | Justification to screen out (and any other contextual information) |
|----------------------|--------------------|--|---------------------------------|--|
| 260 | Unknown | No access-unknown | Out | Beyond 500m buffer to RLB |
| 285 | Shallow depression | Shallow depression in tussocky grassland adjacent to saltmarsh –likely to be tidal. Dry at the time of scoping and later into July | Out | Dry Tidal No macrophyte |
| 333 | Lagoon | Tidal lagoon | Out | Tidal, brackish Fish |
| 335 | Ditch | Flowing ditch. | Out | In and outflow Fish |
| 336 | Ditch | Flowing ditch. | Out | In and outflow Fish |
| 337 | Ditch | Flowing ditch. | Out | In and outflow Fish |
| 338 | Ditch | Fast flowing ditch | Out | In and outflow No macrophyte |
| 339 | Ditch | Flowing ditch. Common reed on one bank. Recently strimmed bank. | Out | In and outflow Fish |
| 340 | Ditch | Flowing drainage ditch, fish seen | Out | Fish In and outflow No macrophyte |
| 341 | Pond | Pond 10m wide x 30m long. Ditch at one end but no flow. Common frog seen. Dominated by reed mace. Duckweed present. | Out | Presence of flowing water and / or connectivity with waterbodies supporting fish populations |
| 342 | Ditch | Fast flowing ditch | Out | In and outflow |

| Water body reference | Feature | Description | Screening for GCN ²² | Justification to screen out (and any other contextual information) |
|----------------------|---------|---|---------------------------------|--|
| | | | | No macrophyte |
| 343 | Ditch | Ditch blocked at one end and not flowing. 25m in length. | In | |
| 344 | Pond | Pond 10m wide x 30m long. Attached to ditch network but no flow. Reed mace along banks. Inflow may affect eDNA results. | Out | Presence of flowing water and / or connectivity with waterbodies supporting fish populations |
| 345 | Ditch | 70m length of ditch 1m wide. No flow. Good macrophyte cover. Banks accessible. | Out | Presence of flowing water and / or connectivity with waterbodies supporting fish populations |
| 346 | Ditch | Flowing drainage ditch, fish seen | Out | Fish In and outflow No macrophyte |
| 347 | Ditch | Flowing ditch. Common reed on one bank. | Out | Flowing. |
| 348 | Ditch | Flowing drainage ditch, fish seen | Out | Fish In and outflow No macrophyte |
| 349 | Ditch | Dry | Out | |
| 350 | Ditch | Flowing drainage ditch, fish seen | Out | Fish In and outflow |

| Water body reference | Feature | Description | Screening for GCN ²² | Justification to screen out (and any other contextual information) |
|----------------------|------------|--|---------------------------------|--|
| | | | | No macrophyte |
| 354 | Unknown | Unknown –no access | Out | Beyond 500m buffer to RLB |
| 355 | Unknown | Unknown –no access | Out | Beyond 500m buffer to RLB |
| 356 | Unknown | Unknown –no access | Out | Beyond 500m buffer to RLB |
| 357 | Unknown | Unknown –no access | Out | Beyond 500m buffer to RLB |
| 390 | Ditch | Tussocky grassland with small earth bank between scrub line and river bank | Out | Beyond 250m buffer to RLB Dry No macrophyte |
| 391 | Tidal pool | Tidal ditch in saltmarsh- not accessible | Out | Beyond 250m buffer to RLB Tidal Ground nesting birds |
| 392 | Ditch | Dry | Out | Dry No macrophyte |
| 393 | Pond | Pooled end of ditch (not connected). Sheep poached banks. Dominated by common reed and occasional lesser reedmace. 30% of perimeter accessible. 30m wide x 10m long. | In | |
| 394 | Depression | Concrete pipe section in rough grassland, full of rainwater. | In | |

| Water body reference | Feature | Description | Screening for GCN²² | Justification to screen out (and any other contextual information) |
|-----------------------------|----------------|---|---------------------------------------|---|
| 395 | Depression | Shallow depression in tussocky, cattle poached grassland | Out | Dry in breeding season No macrophyte |
| 396 | Water trough | Water trough between path and fence | Out | Inflow No macrophyte Inaccessible to amphibians |
| 397 | Depression | Depression with mounded earth banks three quarters of the way around depression; metal waste. | Out | Dry No macrophyte |
| 398 | Depression | Depression in scrubby grassland | Out | Dry No macrophyte |
| 399 | Tidal pool | Tidal pool in saltmarsh | Out | Dry in breeding season Tidal Ground nesting birds No macrophyte |
| 400 | Pond | Steep bank. Dense common reed bed for biogas outflow. | In | |
| 401 | Tidal pool | Tidal pool in saltmarsh | Out | Tidal Ground nesting birds No macrophyte |
| 402 | Ditch | Shallow drainage ditch in cattle grazed fields. Banks heavily poached in places. | Out | Beyond 250m buffer to RLB |

| Water body reference | Feature | Description | Screening for GCN²² | Justification to screen out (and any other contextual information) |
|-----------------------------|----------------|--|---------------------------------------|---|
| 403 | Ditch | Unknown –no access | In | In until assessment can be undertaken to scope in or out |
| 404 | Ditch | Unknown –no access | In | In until assessment can be undertaken to scope in or out |
| 405 | Ditch | Unknown –no access | In | In until assessment can be undertaken to scope in or out |
| 406 | Ditch | Shallow drainage ditch in cattle grazed fields. Banks heavily poached in places. | Out | Flowing – in and outflow Water less than 10cm around banks |
| 407 | Ditch | Unknown –no access | In | In until assessment can be undertaken to scope in or out |
| 408 | Ditch | Unknown –no access | In | In until assessment can be undertaken to scope in or out |

| Water body reference | Feature | Description | Screening for GCN²² | Justification to screen out (and any other contextual information) |
|-----------------------------|----------------|--|---------------------------------------|---|
| 409 | Ditch | Shallow drainage ditch in cattle grazed fields. Banks heavily poached in places. | Out | Flowing – in and outflow Water less than 10cm around banks |
| 410 | Ditch | Shallow drainage ditch in cattle grazed fields. Banks heavily poached in places. | Out | Flowing – in and outflow Water less than 10cm around banks |
| 411 | Ditch | Shallow drainage ditch in cattle grazed fields. Banks heavily poached in places. Choked with New Zealand pigmyweed | Out | Flowing – in and outflow Water less than 10cm around banks |
| 412 | Reservoir | Reservoir, approximate area of 6,400m ² , located within cattle grazed fields and dense scrub. | Out | Fish |
| 413 | Ditch | Ditch with dense and scattered scrub along eastern bank | Out | Flowing – in and outflow Water less than 10cm around banks |
| 414 | Ditch | Dry ditch, heavily poached shallow ditch | Out | Dry No macrophyte |
| 415 | Ditch | Drainage ditch with scattered scrub along eastern bank. | Out | Flowing – in and outflow Water less than 10cm around banks |
| 416 | Ditch | Shallow drainage ditch in cattle grazed fields. Banks heavily poached in places. Choked with New Zealand pigmyweed | Out | Flowing – in and outflow Water less than 10cm around banks |

| Water body reference | Feature | Description | Screening for GCN ²² | Justification to screen out (and any other contextual information) |
|----------------------|------------|---|---------------------------------|--|
| 417 | Ditch | Unknown –no access | In | In until assessment can be undertaken to scope in or out |
| 418 | Ditch | Drainage ditch, with steep banks in west, very shallow or entirely absent banks in southern extent, scattered scrub on north eastern bank | Out | Flowing – in and outflow Water less than 10cm around banks |
| 419 | Ditch | Unknown –no access | In | In until assessment can be undertaken to scope in or out |
| 420 | Depression | Depression in scrub – measuring approximately 6m ² | Out | Dry No macrophyte |
| 421 | Ditch | No longer present –extensive earth movement, spoil, tall ruderal vegetation and improved grassland | Out | Dry No macrophyte |
| 422 | Ditch | Shallow depression in cattle grazed field. | Out | Dry in breeding season No macrophyte Water less than 10cm around banks |

| Water body reference | Feature | Description | Screening for GCN²² | Justification to screen out (and any other contextual information) |
|-----------------------------|----------------|--|---------------------------------------|--|
| 423 | Pond | Man-made plastic lined pond surrounded by rocks and tussocky improved grassland, with some self-seeded vegetation around margins | In | |
| 424 | Pond | Ponded end of ditch. 20m wide x 50m long. Reed dominated with good macrophyte cover. Shaded by trees along 50% of shoreline. | Out | Presence of flowing water and / or connectivity with waterbodies supporting fish populations |
| 425 | Water trough | Small water trough overgrown with vegetation | In | |
| 426 | Ditch | Unknown –no access | In | In until assessment can be undertaken to scope in or out |
| 427 | Ditch | Drainage ditch with dense scrub on both banks | Out | Beyond 500m buffer to RLB Heavy shade No macrophyte Flowing-in and outflow |
| 428 | River | River Stour - large flowing and tidal river | Out | Tidal Flowing Fish |
| 429 | Ditch | Dry drainage ditch under scrub | Out | Dry No macrophyte |

| Water body reference | Feature | Description | Screening for GCN²² | Justification to screen out (and any other contextual information) |
|-----------------------------|----------------|--|---------------------------------------|---|
| 430 | Ditch | Dry drainage ditch under scrub | Out | Dry No macrophyte |
| 431 | Ditch | Dry drainage ditch under scrub | Out | Beyond 500m buffer to RLB Dry No macrophyte |
| 432 | Depression | Shallow depression in tussocky tall herb and grassland | Out | Beyond 500m buffer to RLB Dry No macrophyte |
| 433 | Depression | Shallow depression in tussocky tall herb and grassland | Out | Beyond 500m buffer to RLB Dry No macrophyte |
| 434 | Unknown | Unknown –no access | In | In until assessment can be undertaken to scope in or out |
| 435 | Unknown | Unknown –no access | In | In until assessment can be undertaken to scope in or out |
| 436 | Ditch | Drainage ditch with dense scrub on both banks | Out | Beyond 500m buffer to RLB Flowing-in and outflow |

| Water body reference | Feature | Description | Screening for GCN²² | Justification to screen out (and any other contextual information) |
|-----------------------------|----------------|--|---------------------------------------|---|
| 437 | Ditch | Ditch by golf course car park. Dry by spring. | Out | Beyond 500m buffer to RLB Dry. |
| 438 | Ditch | Shallow drainage ditch in cattle grazed fields. Banks heavily poached in places. Choked with New Zealand pigmyweed | Out | Flowing-in and outflow Water less than 10cm around banks |
| 439 | Ditch | Shallow drainage ditch in cattle grazed fields. Banks heavily poached in places. Choked with New Zealand pigmyweed | Out | Flowing-in and outflow |
| 440 | Ditch | Shallow drainage ditch in cattle grazed fields. Banks heavily poached in places. | Out | Water less than 10cm around banks |
| 441 | Ditch | Shallow drainage ditch in cattle grazed fields. Banks heavily poached in places. | Out | Flowing-in and outflow |
| 442 | Ditch | Shallow drainage ditch in cattle grazed fields. Banks heavily poached in places. | Out | Flowing-in and outflow Water less than 10cm around banks |



Appendix C

Table 5.3a: Summary of HSI Assessment



Table 5.3 Summary of HSI Assessment

| Water body Reference | | Location | Pond Area | Permanence | Water quality | Shade | Waterfowl | Fish | Pond Density | Terrestrial habitat | Macrophyte | HSI score |
|----------------------|-------------|----------|-----------|------------|---------------|-------|-----------|----------|--------------|---------------------|------------|----------------------|
| 159 | Field Score | A | 30 | Never | Poor | 10 | Absent | Possible | 10 | Good | 10 | 0.62 |
| | HSI Score | 1 | 0.1 | 0.9 | 0.33 | 1 | 1 | 0.67 | 1 | 1 | 0.45 | Average |
| 187 | Field Score | A | 43 | Never | Poor | 25 | Absent | Possible | 10 | Good | 10 | 0.72 |
| | HSI Score | 1 | 0.4 | 0.9 | 0.33 | 1 | 1 | 0.67 | 1 | 1 | 0.45 | Good |
| 193 | Field Score | A | 80 | Rarely | Poor | 0 | Absent | Possible | 10 | Moderate | 0 | 0.59 |
| | HSI Score | 1 | 0.13 | 1 | 0.33 | 1 | 1 | 0.67 | 1 | 0.67 | 0.3 | Below Average |
| 196 | Field Score | A | 425 | Never | Good | 45 | Absent | Absent | 10 | Good | 60 | 0.96 |
| | HSI Score | 1 | 0.85 | 0.9 | 1 | 1 | 1 | 1 | 1 | 1 | 0.9 | Excellent |
| 341 | Field Score | A | 300 | Never | Good | 10 | Absent | Possible | 10 | Moderate | 10 | 0.8 |
| | HSI Score | 1 | 0.7 | 0.9 | 1 | 1 | 1 | 0.67 | 1 | 0.67 | 0.4 | Excellent |
| 343 | Field Score | A | 50 | Never | Good | 10 | Absent | Possible | 10 | Moderate | 5 | 0.65 |
| | HSI Score | 1 | 0.1 | 0.9 | 1 | 1 | 1 | 0.67 | 1 | 0.67 | 0.35 | Average |
| 344 | Field Score | A | 300 | Never | Good | 10 | Absent | Possible | 10 | Moderate | 5 | 0.78 |
| | HSI Score | 1 | 0.6 | 0.9 | 1 | 1 | 1 | 0.67 | 1 | 0.67 | 0.35 | Good |
| 345 | Field Score | A | 70 | Never | Good | 10 | Absent | Possible | 10 | Moderate | 80 | 0.72 |
| | HSI Score | 1 | 0.1 | 0.9 | 1 | 1 | 1 | 0.67 | 1 | 0.67 | 1 | Good |
| 393 | Field Score | A | 243 | Rarely | Moderate | 10 | Absent | Absent | 5 | Moderate | 25 | 0.833 |
| | HSI score | 1 | 0.6 | 1 | 0.67 | 1 | 1 | 1 | 1 | 0.67 | 0.6 | Excellent |



| Water body Reference | | Location | Pond Area | Permanence | Water quality | Shade | Waterfowl | Fish | Pond Density | Terrestrial habitat | Macrophyte | HSI score |
|----------------------|-------------|----------|-----------|------------|---------------|-------|-----------|----------|--------------|---------------------|------------|----------------------|
| 394 | Field Score | A | 3.3 | Sometimes | Poor | 0 | Absent | Absent | 10 | Good | 0 | 0.47 |
| | HSI score | 1 | 0.01 | 0.5 | 0.33 | 1 | 1 | 1 | 1 | 1 | 0.3 | Poor |
| 400 | Field Score | A | 890 | Rarely | Good | 25 | Absent | Absent | 5 | Poor | 85 | 0.89 |
| | HSI score | 1 | 0.95 | 1 | 1 | 1 | 1 | 1 | 1 | 0.33 | 0.95 | Excellent |
| 423 | Field Score | A | 2 | Rarely | Poor | 0 | Absent | Absent | 10 | Good | 0 | 0.5 |
| | HSI score | 1 | 0.01 | 1 | 0.33 | 1 | 1 | 1 | 1 | 1 | 0.3 | Below Average |
| 424 | Field Score | A | 1000 | Never | Good | 50 | Absent | Possible | 10 | Moderate | 80 | 0.91 |
| | HSI score | 1 | 0.95 | 0.9 | 1 | 1 | 1 | 0.67 | 1 | 0.67 | 1 | Excellent |
| 425 | Field Score | A | 2 | Rarely | Poor | 0 | Absent | Absent | 10 | Good | 10 | 0.5 |
| | HSI score | 1 | 0.01 | 1 | 0.33 | 1 | 1 | 1 | 1 | 1 | 0.3 | Below Average |



Appendix D

eDNA Collection Methodology





Step 1

Identify where 20 samples will be taken from the pond. The location of sub-samples should be spaced as evenly as possible around the pond margin, and if possible targeted to areas where there is vegetation which may be being used as egg laying substrate and open water areas which newts may be using for displaying.

Step 2

Open the sterile Whirl-Pak bag by tearing off the clear plastic strip 1cm from the top (along the perforated line), then pulling the tabs. The bag will stand-up by itself.

Step 3

Collect 20 samples of 30 millilitres (ml) of pond water from around the pond (see Step 1 above) using the ladle (fill the ladle), and empty each sample into the Whirl-Pak bag. At the end the Whirl-Pak bag should be just under half full (600 ml).

NOTE: Before each ladle sample is taken, the pond water column should be mixed by gently using the ladle to stir the water from the surface to close to the pond bottom without disturbing the sediment on the bed of the pond. It is advisable not to sample very shallow water (less than 5 - 10 cm deep).

Step 4

Once 20 samples have been taken, close the bag securely using the top tabs and shake the Whirl-Pak bag for 10 seconds. This mixes any DNA across the whole water sample.

Step 5

Put on a new pair of gloves to keep the next stage as uncontaminated as possible.

Step 6

Using the clear plastic pipette provided take c15 ml of water from the Whirl-Pak bag and pipette into a sterile tube containing 35 ml of ethanol to preserve the eDNA sample (i.e. fill tube to the 50ml mark). Close the tube ensuring the cap is tight.

Step 7

Shake the tube vigorously for ten seconds to mix the sample and preservative. This is essential to prevent DNA degradation. Repeat for each of the six conical tubes in the kit. Before taking each sample, stir the water in the bag to homogenize the sample - this is because the DNA will constantly sink to the bottom.

Step 8

Empty the remaining water from the Whirl-Pak bag back into the pond.

Step 9

The box of preserved sub-samples is then returned at ambient temperature immediately for analysis. If batches of samples are collected and stored prior to analysis they should



be refrigerated at 2 - 4°C. Kits can be stored for up to one month in a refrigerator before analysis. It is not necessary to freeze samples. Freezing may damage storage bottles, which can lead to leaking during transit, and unnecessarily increases costs by requiring refrigerated transport. The length of time eDNA samples are stored in a refrigerator prior to analysis should be recorded and passed on to the analysing laboratory. Use an appropriate labelling system to ensure that the kits are supplied with a unique reference number.



Appendix E

Table 5.4a: eDNA Survey Conditions





Table 5.4a eDNA Survey Conditions

| Water body ID | Date eDNA kit received | Date of survey | Date eDNA Kit sent to lab | Duration (hrs) | Surveyor | Weather | Perimeter access (%) | Notes |
|---------------|------------------------|----------------|---------------------------|----------------|---|----------------------------|----------------------|---|
| 425 | 21/06/17 | 22/06/17 | 23/06/17 | 1 | Lauren Fear, Gregory Surgenor- Aldridge | Scorching sun/hailstorm | 100 | No thick vegetation |
| 423 | 30/05/17 | 07/06/17 | 07/06/17 | 1 | Kelly Jones, Gregory Surgenor- Aldridge | Patchy cloud | 100 | Small newt swimming on surface. |
| 193 | 30/05/17 | 07/06/17 | 07/06/17 | 1 | Kelly Jones, Gregory Surgenor- Aldridge | Patchy cloud | 25 | Inflow under bridge, stick used, dense vegetation |
| 393 | 19/06/17 | 30/06/17 | 30/06/17 | 1 | Sabrina Bremner, Gregory Surgenor- Aldridge | Cloudy spots of rain, cool | 100 | Stick used |



| Water body ID | Date eDNA kit received | Date of survey | Date eDNA Kit sent to lab | Duration (hrs) | Surveyor | Weather | Perimeter access (%) | Notes |
|---------------|------------------------|----------------|---------------------------|----------------|-------------------------------|--------------|----------------------|---|
| 400 | - | 22/06/17 | - | 1 | Sarah Allman, Sabrina Bremner | Patchy cloud | 100 | Inflow from plant, steep banks |
| 159 | - | 20/06/17 | - | 1 | Jenni Carr, Sabrina Bremner | Sunny | - | Ditch with very slow flow, thick vegetation |
| 187 | - | 20/06/17 | - | 1 | Jenni Carr, Sabrina Bremner | Sunny | - | Ditch with very slow flow, thick vegetation |



| Water body reference | Date eDNA kit received | Date of survey | Date eDNA Kit sent to lab | Duration (hrs) | Surveyors | Weather | Perimeter access (%) |
|-----------------------------|-------------------------------|-----------------------|----------------------------------|-----------------------|--|-------------------------------|-----------------------------|
| 159 | 19/06/17 | 20/06/17 | 20/06/17 | 1 | Jenni Carr, Sabrina Bremner | Sunny | 30 |
| 187 | 19/06/17 | 20/06/17 | 20/06/17 | 1 | Jenni Carr, Sabrina Bremner | Sunny | 30 |
| 193 | 30/05/17 | 07/06/17 | 07/06/17 | 1 | Kelly Jones, Gregory Surgenor-Aldridge | Patchy cloud | 25 |
| 393 | 27/06/17 | 30/06/17 | 30/06/17 | 1 | Sabrina Bremner, Gregory Surgenor-Aldridge | Cloudy spots of rain, cool | 100 |
| 400 | 21/06/17 | 22/06/17 | 23/06/17 | 1 | Sarah Allman, Sabrina Bremner | Patchy cloud | 100 |
| 423 | 30/05/17 | 07/06/17 | 07/06/17 | 1 | Kelly Jones, Gregory Surgenor-Aldridge | Patchy cloud | 100 |



| Water body reference | Date eDNA kit received | Date of survey | Date eDNA Kit sent to lab | Duration (hrs) | Surveyors | Weather | Perimeter access (%) |
|-----------------------------|-------------------------------|-----------------------|----------------------------------|-----------------------|--|----------------------------------|-----------------------------|
| 425 | 21/06/17 | 22/06/17 | 23/06/17 | 1 | Lauren Fear, Gregory Surgenor-Aldridge | Scorching sun/hailstorm followed | 100 |



Appendix F

Table 5.5 Species Referred to in this Report



Table 5.5 Species Referred to in this Report

| Common name | Scientific name |
|--------------------------|------------------------------|
| <u>Amphibians</u> | |
| Common frog | <i>Rana temporaria</i> |
| Great crested newt | <i>Triturus cristatus</i> |
| Marsh frog | <i>Pelophylax ridibundus</i> |
| Smooth newt | <i>Lissotriton vulgaris</i> |
| <u>Plants</u> | |
| Lesser reedmace | <i>Typha angustifolia</i> |
| Reedmace | <i>Typha latifolia</i> |
| Common reed | <i>Phragmites australis</i> |
| Duckweed | <i>Lemna</i> sp. |

