



## **Cambois Connection – Onshore Scheme**

### **Environmental Statement Volume 3**

#### **Technical Appendix 9.3: Invertebrate Survey Report**



# Cambois Connection Onshore Scheme

## Technical Appendix 9.3: Invertebrate Survey Report

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R01	4 October 2023	Sophie McPeake	Duncan Watson	Susie Playford
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## 1.0 Introduction

### 1.1 Overview

Berwick Bank Wind Farm Limited (BBWFL) is a wholly owned subsidiary of SSE Renewables (SSER) (hereafter referred to as ‘the Applicant’). The Applicant is proposing the development of Offshore Export Cables, Onshore Export Cables, an Onshore Converter Station and associated grid connection at Blyth in Northumberland, known as the ‘Cambois Connection’ (‘the ‘Project’). The onshore components of the Project, landward of Mean Low Water Springs (MLWS) comprise the Onshore Scheme.

The purpose of this infrastructure is to facilitate the export of green energy from the generation assets associated with the Berwick Bank Wind Farm (BBWF), located in the outer Firth of Forth. A separate application for developing a grid connection to Branxton, East Lothian, has been included as part of the Applicant’s application for consent for BBWF, currently being determined separately<sup>1</sup>. The Project will enable the BBWF to reach full generating capacity (4.1 gigawatts (GW)) by 2030.

The Project comprises two distinct proposals, or ‘Schemes’, which will require three separate consents. For the Onshore Scheme (all activities and infrastructure landward of MLWS) consent will be sought via an outline planning application to Northumberland County Council (NCC) as the local planning authority (LPA) under Section 57 of the Town and Country Planning Act 1990.

The offshore components of the Project seaward of Mean High Water Springs (MHWS) (‘the Marine Scheme’) are located within both Scottish and English waters. In Scotland, the Marine Scheme is entirely within offshore waters (i.e., between the 12 nautical miles (nm) limit and the Scottish Exclusive Economic Zone). In England, the Marine Scheme is within offshore waters and inshore waters.

SLR was commissioned by SSE Renewables in May 2023 to undertake surveys for two butterfly species, grayling (*Hipparchia semele*) and dingy skipper (*Erynnis tages*), which represent local priorities for conservation and are known to be present within the area in which the Onshore Scheme will be located. This report presents the results of the surveys.

### 1.2 Purpose of this Report

This report provides details of the survey methodology (Section 2) and presents the results of the surveys (Section 3). Incidental sightings of other butterfly species are also detailed in this report. The assessment of impacts resulting from the proposed development is beyond the scope of this report and will be covered in an Environmental Statement (ES).

### 1.3 Evidence of Technical Competence and Experience

Surveys were carried out by SLR Ecologists Sara Toule and Callum Taylor.

Callum is a Senior Ecologist at SLR Consulting with over five years’ experience as a professional ecologist. He is a Qualifying member of the Chartered Institute of Ecology and Environmental Management (CIEEM) (QualCIEEM). Callum has been trained in butterfly

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<sup>1</sup> BBWF is subject to a separate consenting process. An application for consent under Section 36 of the Electricity Act 1989 (as amended) was submitted to MD-LOT and accepted in December 2022. The Branxton onshore infrastructure is subject to a separate planning application submitted to East Lothian Council and accepted in March 2023.



identification and survey methods and has been involved in the collection of all invertebrate data for the Onshore Scheme.

Sara is a Principal Ecologist at SLR with 10 years' ecological consultancy experience and an Associate member of CIEEM (ACIEEM). Sara conducted her MRes project on the day-flying slender Scotch burnet moth (*Zygaena exulans*) and has carried out several butterfly surveys during her time in consultancy.

The report has been authored by Sophie McPeake, with assistance from Callum Taylor. Sophie is employed by SLR Consulting as an Assistant Ecologist and is a Qualifying member of CIEEM. Sophie has a degree in BSc Environmental Management, and since joining SLR has undertaken a range of ecological surveys including numerous butterfly surveys on a variety of sites. She also has experience in survey reporting.

The review process was undertaken by Duncan Watson CEnv MCIEEM, who has provided technical support throughout the project and a Quality Assurance review of this report. Duncan is a Technical Director at SLR Consulting with over 25 years' professional ecology experience.



## 2.0 Methodology

### 2.1 Scope and Survey Areas

A document outlining proposed ecological survey requirements for the project was produced in May 2023 following walkover surveys of most land within the project boundary during April 2023<sup>2</sup>. The proposed scope was subsequently agreed with NCC<sup>3</sup>.

With respect to invertebrates, it was agreed with NCC to limit the survey to grayling and dinky skipper. Dinky skipper is a Section 41 species of principal importance in England under the Natural Environment and Rural Communities (NERC) Act 2006, and is also classed as a high priority species by Butterfly Conservation. Grayling is also a Section 41 species of principal importance under the NERC Act 2006, and a Butterfly Conservation high priority species.

It was noted that the Onshore Scheme is also likely to support other notable invertebrate species, most of which are likely to be associated with priority habitats such as dunes, open mosaic habitat and coastal saltmarsh. Across much of the Onshore Scheme impacts to these priority habitats would be temporary and the dunes would be avoided by use of trenchless technologies. Habitats affected by temporary loss would be reinstated following construction. The only area of habitat that would be permanently lost is at the converter station, where the habitats include rough grassland, hedgerows and plantation woodland. These habitats are relatively common and widespread and are considered unlikely to support invertebrate populations of high conservation importance. On the basis of the above, detailed surveys for other invertebrate species were not considered necessary.

The Onshore Scheme is located at Cambois, Blyth, south of the River Wansbeck and north of the River Blyth. The boundary for the Onshore Scheme along with the indicative infrastructure development zones is shown in Appendix A. Survey areas for grayling and dinky skipper are also shown in Figure 9.3.1 in Appendix A.

Survey areas were selected on the basis that they possessed habitat features suitable for one or both of the two target species. Colonies of grayling are commonly found in coastal habitats, e.g., sand dunes and upper saltmarshes. Where they are found inland, they favour areas with bare ground and sparse vegetation. Similarly, dinky skipper also requires areas of bare ground as well as patches of longer vegetation for shelter and roosting. Dinky skipper breed on sparse short swards of common bird's-foot trefoil (*Lotus corniculatus*). Whether or not an area would be subject to permanent habitat loss was also a determining factor in the selection of survey areas. This is especially relevant in the case of survey area at the converter station (Survey Area A, Figure 9.3.1 (Appendix A)), in that while the habitats present were considered unlikely to support grayling and dinky skipper, the area will be subject to permanent habitat loss. Furthermore, some of the larval food plants for grayling were also found to be present in this area (see below).

Survey areas consist of bare ground, tall grasslands, mosaic habitats, and edge habitats sheltered by woodland. The presence of larval foodplants was also a determining factor in the selection of survey areas. Grayling larvae feed on sheep's-fescue (*Festuca ovina*), red fescue (*F. rubra*), bristle bent (*Agrostis curtisii*), and early hair-grass (*Aira praecox*). Occasionally, coarser grasses such as tufted hair-grass (*Deschampsia cespitosa*) and marram (*Ammophila arenaria*) are also used<sup>4</sup>. Dinky skipper larvae tend to feed on common

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<sup>2</sup> SLR Consulting (2023) *Berwick Bank Offshore Wind Farm: Cambois Connections- Proposed Scope of Ecology Survey Work*

<sup>3</sup> Email from Colin Godfrey (NCC) to Kate Elliott (SSER) dated 24 May 2023.

<sup>4</sup> Butterfly Conservation. *Grayling*. [online] butterfly-conservation.org. Available at: <https://butterfly-conservation.org/butterflies/grayling> [Accessed 21 Sep. 2023].



bird's-foot trefoil but horseshoe vetch (*Hippocrepis comosa*) can also be used on calcareous soils, and greater bird's-foot trefoil (*L. pedunculatus*) can be used on heavier soils<sup>5</sup>. All potentially suitable habitat for either species within the Onshore Scheme area was included in one of the three survey areas identified.

The following briefly summarises the habitats found across each survey area:

- Survey Area A: tall tussocky grasslands bounded by woodland and scrub, with regularly disturbed ground creating linear habitats of shorter grasses and herbs. Larval foodplants present included tufted hair-grass, bird's-foot trefoil, greater bird's-foot trefoil and red fescue.
- Survey Area B: tall tussocky grasslands bounded by woodland and scrub, with regularly disturbed ground creating linear habitats of shorter grasses and herbs. Larval foodplants present included tufted hair-grass, bird's-foot trefoil, greater bird's-foot trefoil, horseshoe vetch and red fescue.
- Survey Area C: open mosaic habitat with an abundance of bare earth and short ephemeral herbs and grasses, bounded by scrub and woodland interspersed with tall grasslands. Larval foodplants include bird's-foot trefoil, greater bird's-foot trefoil and red fescue.

Further detail on the habitats present within the Onshore Scheme area is provided in a separate habitat survey report<sup>6</sup>.

## 2.2 Butterfly Surveys

Species-specific surveys were undertaken in three survey areas across the Onshore Scheme area, as shown in Figure 9.3.1 (Appendix A) following guidance set out by UK Butterfly Monitoring Scheme (UKBMS)<sup>7</sup>.

Each survey visit was conducted between 10am and 5pm in weather conditions deemed appropriate by UKBMS guidelines. Detailed survey metadata are provided in **Error! Reference source not found.** Four survey visits were carried out between 13<sup>th</sup> June and 10<sup>th</sup> August 2023. Survey dates were designed to accommodate the lifecycle and flight period of both grayling and dingy skipper. Grayling adults are in flight in peak numbers from mid-July until August, with some individuals persisting in September<sup>8,9</sup>, and consist of one generation per year only. Dingy skipper also typically only produce one brood per year, but on occasion there can be a partial second brood in particularly hot summers. Dingy skipper adults are in flight from early/mid-May until mid-June, and in the event of a second brood, August<sup>8,10</sup>.

During each visit, transects were walked across each survey area at a slow, steady pace, and all butterflies within a fixed distance of 2.5m each side and 5m ahead were recorded. In addition, any grayling and dingy skipper recorded outside the fixed distances were also

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<sup>5</sup> Butterfly Conservation. *Dingy Skipper*. [online] butterfly-conservation.org. Available at: <https://butterfly-conservation.org/butterflies/dingy-skipper> [Accessed 21 Sep. 2023].

<sup>6</sup> SLR Consulting (2023). *Cambois Connection Onshore Scheme: Habitat Survey Report*.

<sup>7</sup> UK Butterfly Monitoring Scheme (n.d.). *G2: Field guidance notes for butterfly transects* [online]. Available at: <https://ukbms.org/sites/default/files/downloads/UKBMS%20G2%20Transect%20field%20guidance%20%20notes.pdf> [Accessed 19 Sep. 2023].

<sup>8</sup> Butterflies of North East England, Northumbrian *Naturalist* Vol 77 2014.

<sup>9</sup> Jones, R. (2013). *Grayling Species Factsheet*. [online] Butterfly Conservation. Available at: <https://butterfly-conservation.org/sites/default/files/1grayling-species-factsheet.pdf> [Accessed 19 Sep. 2023].

<sup>10</sup> Wainwright, D. and Ellis, S. *Dingy Skipper Species Factsheet*. [online] Butterfly Conservation. Available at: <https://butterfly-conservation.org/sites/default/files/dingy-skipper-psf.pdf> [Accessed 19 Sep. 2023].





recorded. While the purpose of the survey was to determine presence or absence of grayling and dinky skipper, and to gain an idea of levels of abundance and distribution, other Lepidoptera species which were seen during the surveys were also recorded. Caution was exercised to prevent double counting by not counting behind/where had already been walked, and by ensuring butterflies which flew out of the fixed distance and then back in were not re-counted as a new individual.

When similar species were seen in flight, individuals were netted to aid accurate identification.

## 2.3 Incidental Recordings

Any butterflies seen by chance during the course of other ecological surveys were also recorded incidentally. Any such incidental records are noted in Table 3-1.

## 2.4 Survey Metadata

Survey metadata are provided in **Error! Reference source not found..**

**Table 2-1: Survey dates, times and weather conditions**

Survey Date	Average Wind Speed & Direction	Start Time	End Time	Average Precipitation	Average Cloud Cover	Average Temperature (Degrees Celsius)
13/06/23	1, NE	11:05	15:15	0	10	23
15/06/23	1, NE	11:30	15:35	0	10	22
13/07/23	3, NE	11:10	15:20	0	40	20
10/08/23	2, NE	11:00	15:20	0	30	22

Key: Wind Speed 0-12 (Beaufort Scale), Rain (0-4), where 0 = none and 4 = heavy rain, Cloud cover (%)

## 2.5 Limitations

Given that dinky skipper mainly fly from mid-May to mid-June, additional surveys in May might have been beneficial for the purpose of better determining abundance. Surveys in May were not possible however due to the generally poor weather conditions during the second half of the month. Given that the primary aim was to determine presence and/or absence, the surveys conducted provide sufficient data in that they confirm presence of the species within the Onshore Scheme area.

Due to weather conditions which did not meet survey guideline criteria (see above), the first two surveys were conducted within two days of one another. Ideally, surveys should have a gap of one week, however this is typically more relevant to abundance-focused surveys. Given that grayling do not fly until July, there is no risk that this will have compromised the quality of data for grayling. While dinky skipper fly earlier in the season, presence of dinky skipper was established during the first survey, indicating that the species was on the wing at the time of survey therefore it is unlikely this lack of gap between surveys has significantly impacted survey data.



## 3.0 Results

### 3.1 Results Summary

In total, across all survey areas and all survey visits, six grayling and four dingy skipper were recorded. A detailed summary of all survey results can be found in Table 3-1. In addition, there were two incidental records of grayling during a habitat survey on 5<sup>th</sup> July 2023.

An additional 12 species of butterfly, and one species of moth, were also recorded during the surveys. These have also been detailed in Table 3-1. Most of these species are widespread across the UK, however, the wall (*Lasiommata megera*) is a Section 41 species of principal importance in England under the NERC Act 2006. It is also a Butterfly Conservation high priority species. While it is widespread at present, it has declined by 77% since the 1970s<sup>11</sup>. The one moth species identified, cinnabar moth (*Tyria jacobaeae*), is also a Section 41 species of principal importance in England.

The location of all grayling and dingy skipper sightings, including incidental sightings during other surveys can be found in Figure 9.3.2 (Appendix A). All survey recordings of grayling were within survey area C, while dingy skipper was found in both survey areas B and C. The incidental records of grayling were recorded to the north and west of survey area C. Neither grayling or dingy skipper were recorded in survey area A (the converter station site).

**Table 3-1: Butterfly and Moth Species Recorded within the Onshore Scheme Area**

Species	Number of Sightings during Invertebrate Surveys	Number of Incidental Sightings during Other Surveys	Conservation Status
<b>Butterflies</b>			
Common blue <i>Polyommatus icarus</i>	10	1	Butterfly Conservation priority: low European Status: not threatened
Dingy skipper <i>Erynnis tages</i>	4	0	Section 41 species of principal importance in England under the NERC Act 2006 Butterfly Conservation priority: High European status: Not threatened
Grayling <i>Hipparchia semele</i>	6	2	Section 41 species of principal importance in England under the NERC Act 2006 Butterfly Conservation priority: High European status: Not threatened

<sup>11</sup> Butterfly Conservation (2019). *Wall*. [online] Butterfly-conservation.org. Available at: <https://butterfly-conservation.org/butterflies/wall> [Accessed 19 Sep. 2023].



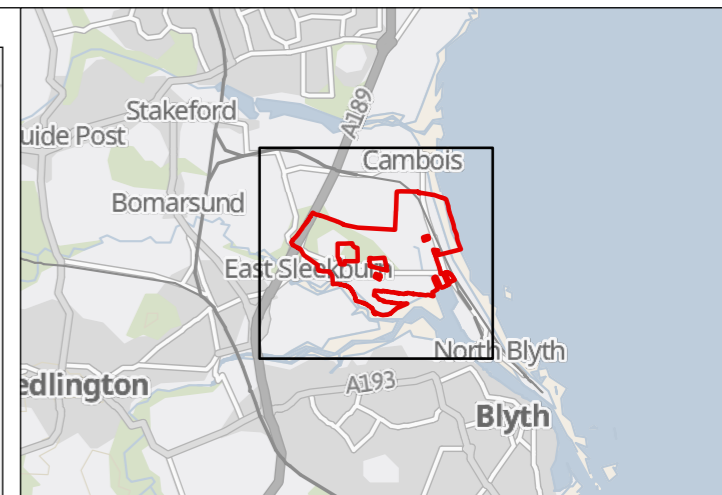
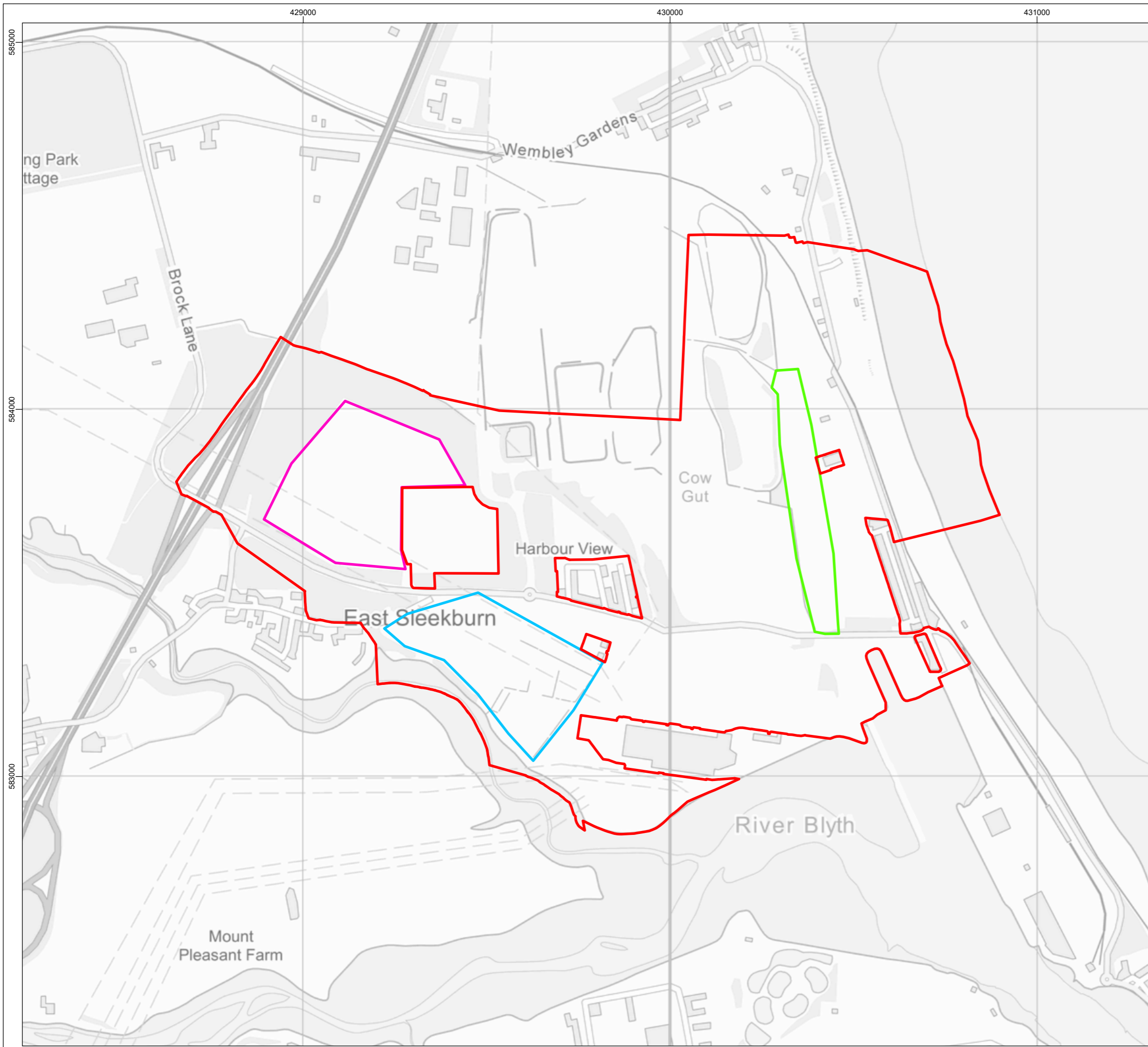
<b>Species</b>	<b>Number of Sightings during Invertebrate Surveys</b>	<b>Number of Incidental Sightings during Other Surveys</b>	<b>Conservation Status</b>
Large skipper <i>Ochlodes sylvanus</i>	155	0	Butterfly Conservation priority: Low European Status: Not threatened
Large white <i>Pieris brassicae</i>	54	0	Butterfly Conservation priority: Low European Status: Not threatened
Meadow brown <i>Maniola jurtina</i>	278	0	Butterfly Conservation priority: Low European Status: Not threatened
Peacock <i>Aglais io</i>	34	0	Butterfly Conservation priority: Low European Status: Not threatened
Red Admiral <i>Vanessa atalanta</i>	45	1	Butterfly Conservation priority: Low European Status: Not assessed
Peacock <i>Aglais io</i>	34	0	Butterfly Conservation priority: Low European Status: Not threatened
Red Admiral <i>Vanessa atalanta</i>	45	1	Butterfly Conservation priority: Low European Status: Not assessed
Ringlet <i>Aphantopus hyperantus</i>	22	52	Butterfly Conservation priority: Low European Status: Not threatened
Small copper <i>Lycaena phlaeas</i>	1	0	Butterfly Conservation priority: Low European Status: Not threatened
Small skipper <i>Thymelicus sylvestris</i>	22	0	Butterfly Conservation priority: Low European Status: Not threatened
Small white <i>Pieris rapae</i>	25	0	Butterfly Conservation priority: Low



Species	Number of Sightings during Invertebrate Surveys	Number of Incidental Sightings during Other Surveys	Conservation Status
			European Status: Not threatened
Speckled wood <i>Pararge aegeria</i>	8	0	Butterfly Conservation priority: Low European Status: Not threatened
Wall <i>Lasiommata megera</i>	1	0	Butterfly Conservation priority: High Section 41 species of principal importance in England under the NERC Act 2006 (widespread but rapidly declining) European threat status: Not threatened
<b>Moths</b>			
Cinnabar <i>Tyria jacobaeae</i>	15	26	Section 41 species of principal importance in England under the NERC Act 2006



# Appendix A Figures



- Legend**
- Site Boundary
  - Invertebrate Survey Areas**
  - Survey Area A
  - Survey Area B
  - Survey Area C

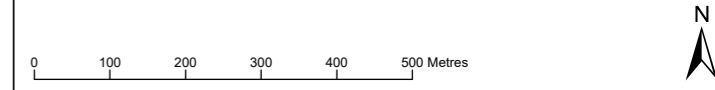
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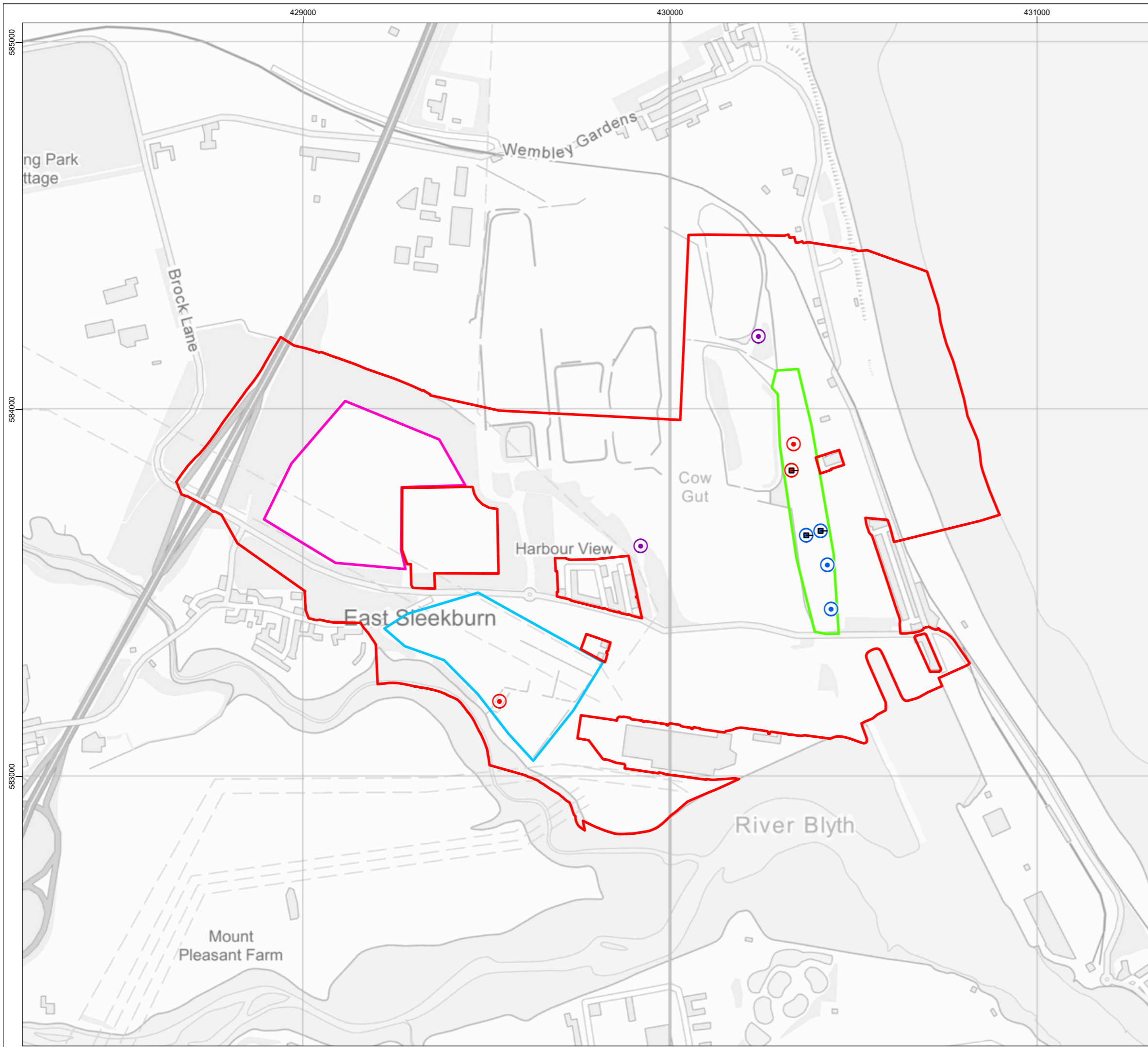
Project  
**CAMBOIS CONNECTION ONSHORE SCHEME**

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**FIGURE 9.3.1: INVERTEBRATE SURVEY AREAS**



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**Legend**

- Site Boundary
- Target Species Sightings**
- Dingy Skipper
- ⊞ Dingy Skipper (x2)
- Grayling
- ⊞ Grayling (x2)
- Grayling (Incidental Record)
- Invertebrate Survey Areas**
- Survey Area A
- Survey Area B
- Survey Area C

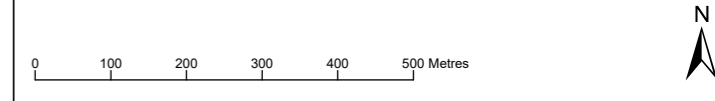
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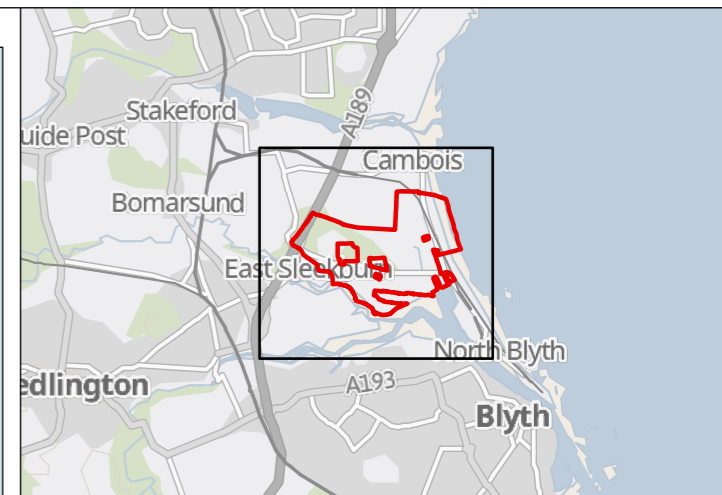
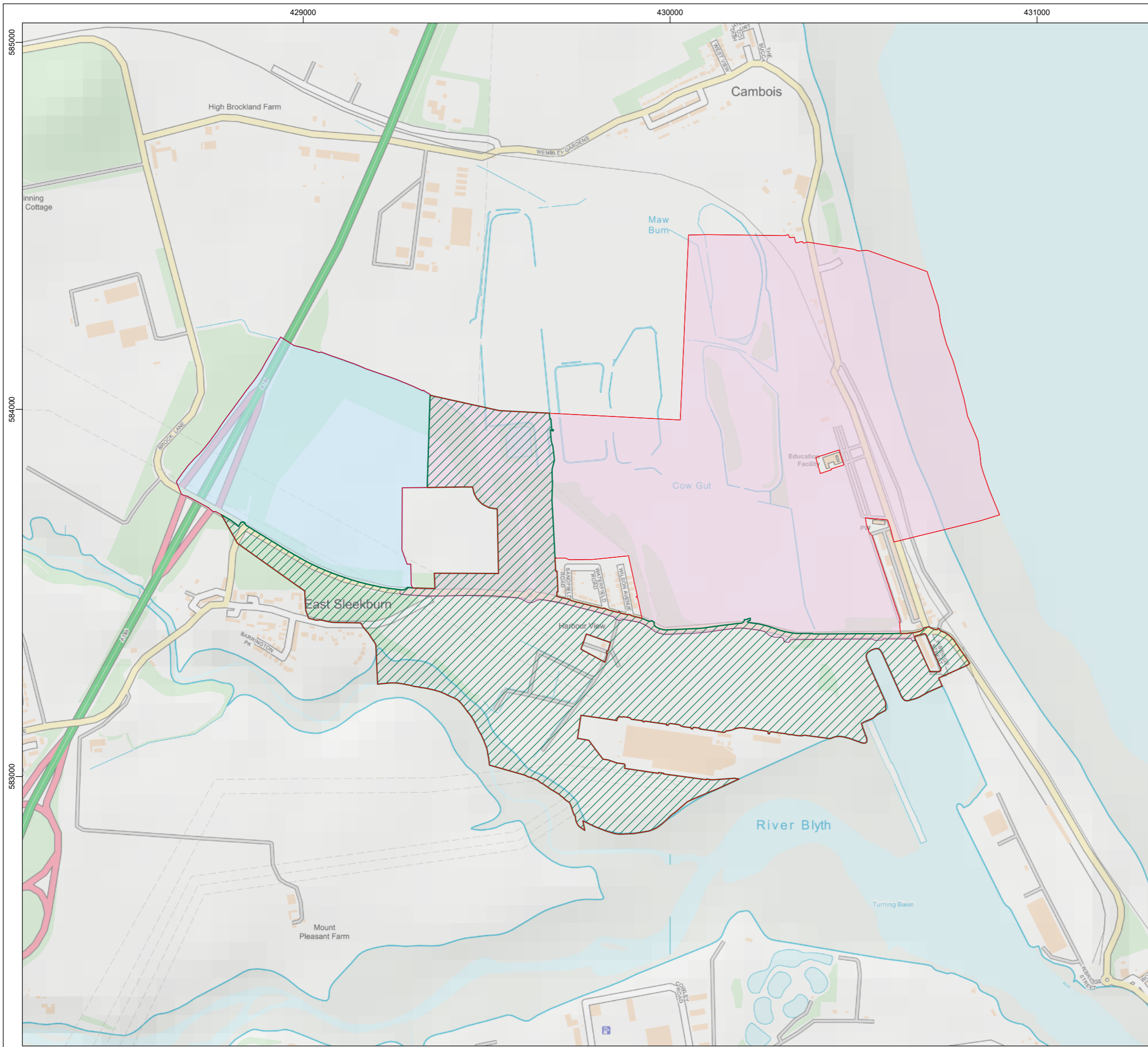
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**FIGURE 9.3.2: TARGET SPECIES SIGHTINGS**



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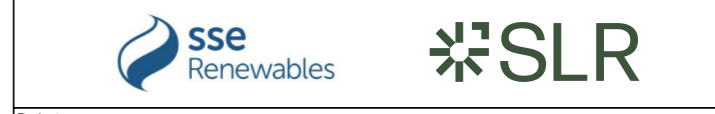
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- Legend**
- Site Boundary
  - Landfall and High-Voltage Direct Current (HVDC) Zone
  - High-Voltage Alternating Current (HVAC) Zone
  - Converter Station Zone

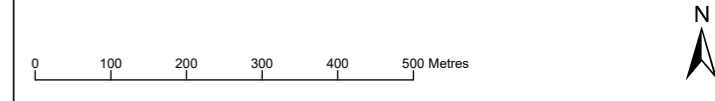
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Project  
**CAMBOIS CONNECTION ONSHORE SCHEME**

Title  
**INDICATIVE ZONES OF INFRASTRUCTURE**



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