LLŶR FLOATING OFFSHORE WIND PROJECT

Llŷr 1 Floating Offshore Wind Farm

Environmental Statement

Volume 6: Appendix 8C – Bat Survey Report

August 2024

Prepared by: Llŷr Floating Wind Ltd

FLOVENTIS ENERGY

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Acronyms and abbreviations

Acronym or Abbreviation	Definition	Acronym or Abbreviation	Definition
CSZ	Core Sustenance Zone	PEA / PEAR	Preliminary Ecological Appraisal / Report
EPSML	European Protected Species Mitigation Licence	SAC	Special Area of Conservation
EC	European Commission	SSSI	Site of Special Scientific Interest
NRW	Natural Resources Wales		

Glossary of project terms

Term	Definition
The Applicant	The developer of the Project, Llŷr Floating Wind Limited.
Array	All wind turbine generators, inter array cables, mooring lines, floating sub-structures and supporting subsea infrastructure within the Array Area, as defined, when considered collectively, excluding the offshore export cable(s).
Array Area	The area within which the wind turbine generators, inter array cables, mooring lines, floating sub-structures and supporting subsea infrastructure will be located.
Floventis Energy	A joint venture company between Cierco Ltd and SBM Offshore Ltd of which Llŷr Floating Wind Limited is a wholly owned subsidiary.
Landfall	The location where the offshore export cable(s) from the Array Area, as defined, are brought onshore and connected to the onshore export cables (as defined) via the transition joint bays.
Llŷr 1	The proposed Project, for which the Applicant is applying for Section 36 and Marine Licence consents. Including all offshore and onshore infrastructure and activities, and all project phases.
Marine Licence	A licence required under the Marine and Coastal Access Act 2009 for marine works which is administered by Natural Resources Wales (NRW) Marine Licensing Team on behalf of the Welsh Ministers.
Offshore Development Area	The footprint of the offshore infrastructure and associated temporary works, comprised of the Array Area and the Offshore Export Cable Corridor, as defined, that forms the offshore boundary for the S36 Consent and Marine Licence application.
Offshore Export Cable	The cable(s) that transmit electricity produced by the WTGs to landfall.
Offshore Export Cable Corridor (OfECC)	The area within which the offshore export cable circuit(s) will be located, from the Array Area to the Landfall.
Onshore Development Area	The footprint of the onshore infrastructure and associated temporary works, comprised of the Onshore Export Cable Corridor and the Onshore Substation, as defined, and including new access routes and visibility splays, that forms the onshore boundary for the planning application.
Onshore Export Cable(s)	The cable(s) that transmit electricity from the landfall to the onshore substation.
Onshore Export Cable Corridor (OnECC)	The area within which the onshore export cable circuit(s) will be located.

Term	Definition
proposed Project	All aspects of the Llŷr 1 development (i.e. the onshore and offshore components).
Onshore Substation	Located within the Onshore Development Area, converts high voltage generated electricity into low voltage electricity that can be used for the grid and domestic consumption.
Section 36 consent	Consent to construct and operate an offshore generating station, under Section 36 (S.36) of the Electricity Act 1989. This includes deemed planning permission for onshore works.

Table of Contents

Figures

Tables

8-C BAT SURVEY REPORT

8.1 Executive Summary

1. AECOM was commissioned by Llŷr Floating Wind Limited (hereafter 'the Applicant') to carry out bat surveys to inform the development of the construction of a terrestrial cable route and substations associated with an offshore wind power station (hereafter referred to as the 'proposed Project') in Pembrokeshire. This report provides the results of bat surveys conducted within the onshore land take only (hereafter referred to as the 'onshore development area'). The boundary of the onshore development area is illustrated on the figures provided in **Annex 8C-A**. The bat surveys detailed within this report were undertaken by AECOM in June-October 2023, inclusive, and include a single walked bat transect in June and July, two walked bat transects each in August and October and the deployment of five static bat detectors in October.

2. The objectives of this report are to:

   - Outline the methodology and results of the surveys;
   - Identify potential adverse impacts upon bats resulting from implementation of the proposed Project;
   - Provide general recommendations for the avoidance of potential impacts to bats as a result of the proposed Project; and,
   - Provide advice regarding the requirement for further survey to inform a thorough assessment of the ecological impacts of the proposed Project.

8.1.1. Methodology

3. A desk study was undertaken by AECOM in July 2023 to provide baseline information regarding the onshore development area. This followed the Bat Conservation Trust (BCT) Guidelines and included the identification of Sites of Special Scientific Interest (SSSIs) and Special Areas of Conservation (SACs) designated for bats within 10 km of the onshore development area and presence of records for legally protected and notable species within 2 km of the onshore development area. Existing reports regarding a nearby site, including a Preliminary Ecological Appraisal (PEA) and bat survey report were consulted (Greenlink, 2019a; Greenlink 2019b).

4. Night-time bat walkover surveys were undertaken in June, July, August and October 2023 by appropriately experienced AECOM ecologists following best practice guidelines in place at the time of survey (Collins, 2016; Collins 2023). Given restrictions with land access (see Limitations), walked transect surveys were only possible from public rights of way in June and July. To provide coverage of the majority of the onshore development area in August and October, two transects were walked in each month. The surveys involved walking a pre-defined route to provide coverage of habitats throughout the onshore development area, these are illustrated on **Figures 8C,1-4, Annex 8C-A**. Surveyors carried an Elekon Batlogger M to detect and record bat calls. In addition, static bat detectors were deployed at five locations in October 2023. Bat calls recorded during the surveys were identified by an appropriately experienced AECOM ecologist with Kaleidoscope Pro software. A hierarchical geographical approach was utilised to assign biodiversity importance of the bat assemblage associated with the onshore development area following the Bat Mitigation Guidelines (Reason & Wray, 2023).

5. The surveys outlined above were subject to several limitations, including restricted land access and sub-optimal survey weather conditions. See **Section 8.4.6** for further detail regarding this.

8.1.2 Results

6. The desk study identified ten SSSIs and SACs with bats listed as their primary designation, including sites designated for the presence of greater horseshoe bat (*Rhinolophus ferrumequinum)* maternity and hibernation roosts of national importance. Sites known to support large populations of lesser horseshoe bat (*Rhinolophus hipposideros*) are also present within 10 km of the onshore development area. See **Table 8C-7** for a description of each of the designated sites and the species it supports. Previous surveys undertaken in 2018 (Greenlink, 2019a; Greenlink, 2019b) identified the presence of at least ten bat species within the onshore development area, including rare species such as the greater and lesser horseshoe bat and barbastelle (*Barbastellus barbastellus*). A summary of the species recorded during these surveys is provided in **Table 8C-9.**

7. Bats were recorded on all walked transect surveys undertaken by AECOM in 2023 and throughout the onshore development area through the utilisation of static bat detectors. At least eight species were recorded through these surveys. The majority of calls are attributed to common species, with 71.4% and 17.4% of all calls identified as soprano pipistrelle (*Pipistrellus pygmaeus*) and common pipistrelle (*Pipistrellus pipistrellus*), respectively, during transect surveys. Greater and lesser horseshoe bats were both recorded during transects undertaken in July and August. Lesser and greater horseshoe bats accounted for 12.6% and 4.6% of all calls recorded by static bat detectors, respectively. A summary of the results of the bat transect surveys and static bat detector deployments are provided in **Table** 8C-10 **and Table 8C-11**, respectively. Detailed results of the static bat detector deployments are provided in **Annex 8C-C**. Given the incomplete survey results, no bat activity index was calculated.

8.1.3 Conclusions and Recommendations

8. Surveys undertaken by AECOM in 2023 identify that the onshore development area supports at least ten species of bat. Taken together with the results of surveys undertaken in 2018 (Greenlink, 2019b), this species assemblage includes twelve species and is of National value.

8.2 Introduction

9. This bat survey report has been prepared by AECOM Limited (hereafter AECOM) on behalf of the Applicant to provide an assessment of the potential impact on bats resulting from the construction of a terrestrial cable route and substation required to facilitate the proposed Llŷr floating offshore wind project (hereafter the 'proposed Project'). The proposed Project is to be constructed between Freshwater West and Pembroke Power Station, as shown by the boundary illustrated on the figures provided in **Annex 8C-A**. All land within this boundary is hereafter referred to as the 'onshore development area and the areas subject to survey in June-October 2023 are illustrated on **Figures 8C,1-5, Annex 8C-A**.

10. A Preliminary Ecological Appraisal (PEA) was undertaken by AECOM in August-October 2023. This identified the presence of habitats with Moderate suitability for foraging and commuting bats which therefore required further survey. The full results of the PEA, including an appraisal of the potential for the onshore development area to support protected species, are provided in the PEA report (AECOM, 2023).

8.2.1. The Onshore Development Area

11. The onshore development area includes land within the proposed terrestrial cable route and associated substations which runs from Freshwater West to Pembroke Power Station in the east. The onshore development area includes coastal habitats, particularly in the west, including dune systems. This habitat transitions into farmland, including arable and pasture, with hedgerow margins and small areas of woodland and scrub to the east. The wider landscape is dominated by farmland with Pembroke River to the east, Milford Haven to the north and open sea to the west.

8.2.2 The Proposed Project

12. The Applicant is proposing to develop floating offshore wind technologies to generate clean electricity from a renewable source, the wind. The proposed Project is hoping to achieve, along with other goals, the demonstration of a full-scale offshore floating solution with >12 MW turbines in UK waters. The proposal is for the offshore facility to connect to Pembroke Power Station in the east via a cable route, through the onshore development area. This report relates to the terrestrial ecology associated with the construction of the cable route and potential substations required to facilitate this.

8.2.3 Objectives

13. The objectives of this report are to outline the methodology and results of the surveys undertaken by AECOM between June and October 2023.

8.3 Legislation

14. All bat species native to the UK are protected under Regulation 43 of the Conservation of Habitats and Species Regulations 2017 (as amended). This makes it an offence to deliberately, intentionally or recklessly disturb a bat.

15. Disturbance of bats is defined as any activity which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young; to hibernate or migrate; or to affect significantly the local distribution or abundance of the species of bat.

16. Where development works are at risk of causing one or more of the offences listed above, a European Protected Species Mitigation Licence (EPSML) from Natural Resources Wales (NRW) may be obtained to facilitate the works that would otherwise be illegal.

17. Bats are also protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Lower levels of disturbance not covered by the Conservation of Habitats and Species Regulations 2017 (as amended) remain an offence under the Wildlife and Countryside Act 1981, although a defence is available where such actions are the incidental result of a lawful activity that could not reasonably be avoided.

18. Given the above legislation the potential presence of bats at a site represents a material consideration in the planning process. Even where planning permission is not required, there is still a legal responsibility placed on the developer to ensure that a NRW licence is obtained to cover any works that have the potential to result in an offence under the above legislation.

19. Seven of the UK bat species are listed as species of principal importance within Section 7 of the Environment (Wales) Act 2016, namely: barbastelle (*Barbastella barbastellus)*, Bechstein's (*Myotis bechsteinii*), noctule (*Nyctalus noctula*), common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), brown long-eared (*Plecotus auritus*), greater horseshoe (*Rhinolophus ferrumequinum*) and lesser horseshoe (*Rhinolophus hipposideros*).

8.3.1 European Protected Species Mitigation Licensing

20. Although the law provides strict protection to bats, it also allows this protection to be set aside (derogated) under Regulation 53 of the Habitats Regulations through the issuing of European Protected Species Mitigation Licences (EPSMLs), for the purpose of preserving public health; public safety; other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment. However, in accordance with the requirements of the Habitats Regulations, a licence can only be issued where the following requirements are satisfied:

- There is no satisfactory alternative; and,
- The action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

21. In Wales, EPSML applications are currently determined by NRW. NRW will normally only accept applications for schemes where planning consent has been granted and all ecology relevant conditions have been discharged.

8.4 Methodology

8.4.1 Desk Study

22. To inform the requirement for ecological survey, a desk-based study was undertaken by AECOM in July 2023 to inform the PEA. Relevant sources which were consulted during this study include:

- Greenlink bat report (Greenlink, 2019b) detailing the results of surveys to inform the installation of a cable route between Freshwater West and Pembroke Power Station. These surveys included preliminary ground level roost assessment surveys undertaken by Arup in March and November 2018 and bat activity surveys undertaken by Arup once a month (walked transects and static detector deployment) May-October 2018, inclusive;
- Greenlink PEA (Greenlink, 2019a) which describes the presence of incidental findings of features with suitability for roosting bats during a PEA undertaken by Arup in March-May 2018;
- NRW website for details of designated sites to identify designated sites of nature conservation importance within 2 km of the onshore development area. This was extended to 10 km for Sites of Special Scientific Interest (SSSIs) and Special Areas of Conservation (SACs) designated for bats; and,
- Local environmental records centre for records of non-statutory designated sites within 2 km of the onshore development area and records of bat species within 2 km of the onshore development area.

8.4.2 Bat Habitat Suitability

23. An appraisal was made of the potential suitability of the habitats within the onshore development area to support bats by AECOM in 2023 (AECOM, 2023). This concluded that the onshore development area supports habitat of Moderate suitability for foraging and commuting bats following the best practice guidelines[3] in place at the time.

24. A summary of the habitat suitability descriptions is provided in **Table 8C-1.** Guidelines regarding the best practice for bat surveys have been updated since these initial classifications, as described in the Limitations section below (Collins 2016; Collins 2023). It is considered that the classification of the habitat suitability within this onshore development area remains true and accurate, when compared to the more recently published survey guidelines (Collins, 2023).

Table 8C-1 Criteria for assessing the suitability of habitats for foraging and commuting bats

Habitat Suitability	Description
High	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses, and grazed parkland. Site is close to and connected to known roosts.
Moderate	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland, or water.
Low	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e., not very well connected to the surrounding landscape by another habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Negligible	Negligible habitat features onsite likely to be used by commuting or foraging bats.

Source: Descriptions summarised from Collins, 2016 to be applied using professional judgement

8.4.3 Field Survey

Bat Activity Surveys

Walked Transect Surveys (Nighttime Bat Walkover)

25. All walked bat activity transect surveys were undertaken with reference to the recommended survey methodology outlined in best practice guidelines available at the time of survey (see Limitations Section below for further information). The recommended survey effort was for surveys to be undertaken monthly given the Moderate suitability habitat for foraging and commuting bats identified by the PEA as summarised in **Table 8C-2** (AECOM, 2023). To provide appropriate coverage of the onshore development area, two transects would be required.

Table 8C-2 Recommended survey effort for bat activity surveys: Walked transect surveys

Habitat suitability	Previous survey guidelines* (walked transect survey)	Updated survey guidelines** (Night time bat walkover)
High	Up to two survey visits per month (April-October). At least one of the surveys should comprise dusk and pre-dawn (or dusk to dawn) within one 24-hour period.	One survey visit per season (spring: April/May, summer: June/July/August, autumn: September/October). Further surveys may be required if these visits, or the results of static detector surveys, reveal activity of interest that requires further observation onsite.
Moderate	One survey visit per month (April-October). At least one of the surveys should comprise dusk and pre-dawn (or dusk to dawn) within one 24-hour period.	
Low	One survey visit per season (spring: April/May, summer: June/July/August, autumn: September/October).	

**Source: Survey effort guidelines drawn from Collins, 2016, to be applied using professional judgement.*

***Source: Survey effort guidelines summarised from Collins, 2023, to be applied using professional judgement*

26. Given restrictions with land access (see Limitations Section below), walked transect surveys were only possible on five occasions, in August two transects were walked on consecutive nights and two transects were walked in a single night in October. Each survey commenced at sunset and lasted for at least two hours; this is thought to coincide with the peak activity periods as bats emerge and disperse from their roosts. The dates and times each survey was conducted is provided in **Table 8C-3.**

27. The surveys involved walking a pre-defined route to provide representative coverage of the habitats with potential value to bats that have potential to be impacted by the proposed Project. Bat activity surveys were not conducted in the west of the onshore development area as it is understood that the cable route will be installed via directional drilling in this area and therefore have minimal impact on bats potentially present. The routes were walked at a steady pace by two suitably experienced ecologists, the routes followed are illustrated on **Figures 8C,1-4, Annex 8C-A**. Listening points were conducted in June, July and August, during which the surveyors stopped to listen for bats for three minutes at set locations, as illustrated on **Figures 8C,1-3, Annex 8C-A**.

28. As required by the new survey guidelines, surveyors commenced the nighttime bat walkover survey in October with 30 minutes stationed on potential flight lines close to potential roosts near previously identified areas of woodland and broadleaved trees (Collins, 2023). The surveyors then continued to walk a pre-determined transect route for the remainder of the survey, as illustrated on **Figure 8C-4, Annex 8C-A**. No stops were carried out for listening during the October surveys as these are not required by the most recent survey guidelines (Collins, 2023).

29. An Elekon Batlogger M was carried by surveyors to detect and record bat calls, recordings were made to detail the flight direction, height, number and behaviour of any bats noted during the surveys. Identification of the bat species recorded during the transect survey was later analysed following the methodology outlined in **Section 8.4.4 Bat Sonogram Analysis**.

30. Surveys were undertaken in suitable weather conditions, with no heavy rain or strong wind and temperatures above 10°C. The dates, environmental conditions, and methodology followed during each of these surveys is summarised in **Table** 8C-3**.**

Table 8C-3 Dates and environmental conditions during walked transect surveys

Survey Type	Date	Sunset Time	Survey Start-Finish Time	Start/ Finish Temperature (°C)	Start/ Finish Wind Speed*	Start/ Finish Cloud Cover**	Start/ Finish Precipitation	Weather Description
Walked transect	13 June 2023	21:38	21:37-00:28	22 19	0 1	10-30 0	Dry Dry	Recent rain and thunderstorms in the week prior, though suitable conditions during the transect
Walked transect	19 July 2023	21:27	21:26-00:27	16 14	1 1	10-30 10-30	Dry Dry	Dry throughout, no strong wind or rain
Walked transect (West)	29 August 2023	20:14	20:14-23:14	16 15	2 2	40-60 60-90	Dry Dry	Overcast, warm and dry
Walked transect (East)	30 August 2023	20:11	20:11-23:10	14 14	1 2	60-90 60-90	Dry Dry	Overcast, warm and dry with minimal precipitation (drizzle) for two minutes before the survey
Night time bat walkover (West)	26 October 2023	18:04	17:47-21:12	14 14	1 1	60-90 60-90	Drizzle Dry	Short duration of light drizzle at the beginning of survey, otherwise dry throughout
Night time bat walkover (East)	26 October 2023	18:04	17:47-21:12	14 14	1 1	60-90 60-90	Drizzle Dry	Ten minutes of light drizzle at the beginning of the survey, otherwise dry throughout

*Beaufort scale: 0 No wind, 1 Light air (smoke drifts), 2 Light breeze (leaves rustle), 3 Gentle breeze (small twigs move), 4 Moderate breeze (small branches move), 5 Fresh breeze (small trees sway), 6 Strong breeze (large branches move), 7 Moderate gale (whole trees in motion)

**Percentage scale: 0 clear, 10-30 few clouds, 40-60 scattered clouds, 60-90 broken/heavy clouds

Static Detector Surveys

31. As the onshore development area was assessed as Moderate suitability for foraging and commuting bats, the walked transect surveys detailed above were complimented by the deployment of static bat detectors to record bat activity remotely in locations throughout the onshore development area for a minimum of five consecutive nights. The recommended survey effort for this was for the deployment of static bat detectors for five consecutive nights each month April-October, inclusive, as summarised in **Table** 8C-4. Deployment was only possible on a single occasion, in October 2023 (**Section 8.4.6 Limitations,** for further information).

Table 8C-4 Recommended survey effort for bat activity surveys: Static detector surveys

Habitat suitability	Recommended Survey Effort*
High	Data to be collected for a minimum of five consecutive nights per month (April-October, inclusive).
Moderate	
Low	Data should be collected for a minimum of five consecutive nights per seasons (spring: April/May, summer: June/July/August, autumn: September/October).

**Source: Survey effort guidelines summarised from Collins, 2023[4], to be applied using professional judgement*

32. Five Anabat Swift automated static bat detectors were deployed on 13 October 2023, and left in position for five consecutive nights. The location of the deployed bat detectors is illustrated on **Figure 8C-5, Annex 8C-A** and a description of these locations is provided in **Annex 8C-B.** The weather conditions during this time are summarised in **Table 8C-5**. The Anabat Swifts were set to start recording half an hour before sunset and to stop recording half an hour after sunrise. Bat calls were recorded in WAV format. All microphones were positioned at least 1 m above the ground in a position clear of vegetation to maximise the detection rate of passing bats.

Table 8C-5 Environmental conditions during static detector surveys October 2023

Date	Minimum Nightly Temperature (°C)	Nightly Rainfall	Minimum and Maximum Wind Speed (mph)
13 October 2023	9	0	10-18
14 October 2023	7	0	7-15
15 October 2023	6	0	5-10
16 October 2023	9	0	9-14
17 October 2023	12	0	22-32
Source: weather data from https://www.timeanddate.com/			

8.4.4 Bat Sonogram Analysis

33. All recordings of bats were analysed using appropriate software, Kaleidoscope was utilised for automatic species identification of all sound files. Following this, 10% of pipistrelle, noctule and noise recordings and all other calls were checked by a suitably experienced ecologist with reference to guidance materials (Russ, 2012). A further 10% of calls identified by the ecologist were subject to an additional check for quality assurance purposes.

8.4.5 Assessing the Importance of the Bat Assemblage

34. A hierarchical geographical approach was used to assign biodiversity importance of the bat assemblage associated with the onshore development area based upon the Bat Mitigation Guidelines (Reason & Wray, 2023). This approach has been developed to reflect geographic variations in species distributions as the conservation status of bat species varies between the different countries and counties of the UK. Consultation with statutory bodies and recognised regional experts has resulted in the categorisation of species as summarised in **Table 8C-6,** which reflects the relative abundance of species across the UK and assigns a score for each species. The geographical variation underpins the subsequent assessment of the importance of bat roosts, commuting routes and foraging areas, and the overall assemblage of bats present in an area.

Table 8C-6 Rarity Category for south-west England and south Wales

Rarity Category	Bat Species	Maximum Score
Widespread (Score 1)	Common pipistrelle Soprano pipistrelle Brown long-eared	Score 3
Widespread in many geographies, but not abundant in all (Score 2)	Whiskered (Myotis mystacinus) Brandt's (Myotis brandtii) Daubenton's Natterer's Noctule	Score 10
Rarer or restricted distribution (Score 3)	Lesser horseshoe Serotine (Eptesicus serotinus) Leisler's Nathusius pipistrelle	Score 12
Rarer Annex II species and very rare (Score 4)	Greater horseshoe Bechstein's Barbastelle Grey long-eared (Plecotus austriacus)	Score 16
Maximum possible score		41
Source: Summarised from Table 3.3 within the UK Bat Mitigation Guidelines (Reason & Wray, 2023).		

35. This scoring system is utilised to assign a value for each species identified within a study area, where a species of bat has been identified through the surveys described above, it has been recorded within these categories. The total score of the species identified is compared to the maximum possible score for the area (41 in south-west England and south Wales). Thresholds

are applied to this score to assign a level of importance of the assemblage identified within a site as below:

- County importance: threshold 45% of maximum (score 18+)
- Regional importance: threshold 55% of maximum (score 23+)
- National importance: threshold 70% of maximum (score 29+)

36. This standard method should only be utilised to assess the importance of an assemblage of bats within a site, where that is considered useful and/or necessary based on the information available. Assigning the level of importance provides contextual information only.

8.4.6 Limitations

37. Between the commencement of these surveys and writing of this report, updated guidelines were issued by the Bat Conservation Trust. The fourth edition of the guidelines was published in September 2023, surveys prior to this followed the guidelines provided within the third edition (Collins, 2016; Collins 2023). As different methodology was followed during the surveys, direct comparison between the results of the surveys is not provided.

Desk Study

38. The aim of a desk study is to help characterise the baseline context of a site and provide valuable background information that would not be captured by site survey alone. Information obtained during the course of a desk study is dependent upon people and organisations having made and submitted records for the area of interest. As such, a lack of records for a particular species does not necessarily mean that the species does not occur in the study area. Likewise, the presence of records for particular species does not automatically mean that these still occur within the area of interest or are relevant in the context of the works.

39. Where existing reports have been consulted (Greenlink 2019a; Greenlink 2019b), and external information utilised to inform the conclusions of this report, the information contained within these documents has not been verified by AECOM ecologists. It is assumed that the results provided within existing reports are true and correct.

Walked Transect Surveys

40. Due to land access restrictions bat surveys during the entire bat active season were not possible. To satisfy current best practice guidelines, at least one night-time bat walkover should be conducted in each season (spring – April / May, summer – June / July / August, autumn – September / October) (Collins, 2016; Collins, 2023). Given the extensive land area occupied by the onshore development area, two transects would be required to provide coverage of the entire area during each season. It is possible that the results of these surveys would indicate a requirement for additional, more frequent surveys throughout the survey period.

41. During the first two walked transect surveys (June and July 2023), it was not possible to survey the majority of the onshore development area due to land access constraints. The surveys were therefore undertaken following public rights of way only, the majority of this survey was conducted in areas not included within the final onshore development area boundary. This provides an indication of the species which may be present near to, or within, the onshore development area only and no information regarding the use of habitats. It is likely that key flightlines and foraging resources were not recorded during this survey.

42. During the transect surveys in August and October, access to the entire onshore development area was not possible. The routes walked were planned to allow survey of a range of habitats within the onshore development area and provide as much coverage as possible in the areas access was provided at the time of survey. No access was available for any surveys to be conducted in September.

43. The walked bat activity surveys were predominantly undertaken during optimal weather conditions and at appropriate timings. However, immediately prior to the August survey and at the beginning of the October survey, there was a small amount of drizzle as described in **Table 8C-3.** Since this was minimal and only occurred at the beginning of each survey then stopped, it is not thought that this weather will have had an impact on the activity of bats throughout the survey.

44. No dawn surveys were undertaken for bat activity, given that current best practice guidelines do not state this as a requirement, this is not considered to be a limitation to the survey results.

45. Overall, the bat surveys undertaken enable the identification of species present within the onshore development area, and an indication of the importance of the bat assemblage as described in **Section 3.5**. However, given the limitations encountered during the surveys, habitat use by bats, including specific commuting routes, could not be identified as a result of the surveys.

Static Detector Surveys

46. The static bat detectors were deployed in October only. To satisfy current best practice guidelines, it is recommended that static bat detectors are deployed for a minimum of five consecutive nights per month (April-October, inclusive) in sites categorised as Moderate or High suitability for foraging or commuting bats (Collins, 2016; Collins 2023). These surveys therefore only provide a snapshot of the current bat activity at the onshore development area. Static bat detector surveys do not allow the counting of bats, nor the observation of bat behaviour, only an indication of the species present within an area during a brief window of time.

47. During the static bat detector deployment, there were lower temperatures on several nights as described in **Table 8C-5**. Bat activity may therefore have been lower during these nights and not provide a true representation of the bat activity within the onshore development area. During the fifth night the static detectors were deployed (17 October 2023), minimum wind speed was 22 mph. Given that bat activity is known to decrease at wind speeds greater than 5.4 m/s (12.1 mph), and minimal bat calls were recorded during this night, it is concluded that the weather conditions were not suitable for bats during this night (Slack & Tinsley, 2015). The nightly average number of bat calls provided in **Table 8C-13** to **Table 8C-17** therefore do not include this night.

48. During the static bat detector deployment, the batteries failed at Location 3 on the third night and at Location 5 the SD card corrupted during the first night. Therefore, the recording at these locations was not successful for five nights. The first three nights of recordings at Location 3 are provided.

Bat Sound Analysis

49. Bat sonogram analysis provides information on the species present at each location, as well as the number and timing of bat passes. A bat pass is defined as a single automated detector file made up of bat pulses of a single species, this may be one or several bats. The number of passes recorded on static bat detectors gives an indication of the level of bat activity at a given

location, but this cannot be reliably correlated to actual bat abundance because there is no observational context.

50. Different bat species vary in their likelihood of detection using bat detectors. Long-eared bat species (*Plecotus* sp.) have very quiet echolocation calls that may only be recorded up to 10 m away and are often not recorded on bat detectors. Similarly, horseshoe bats *Rhinolophus* sp. have directional calls that can easily be missed if they are flying on the opposite side of a feature. Conversely, noctule can be recorded up to 50 m away. As a result, some species are often under or overrepresented during call analysis and it is, therefore, not viable to compare numbers of bat passes from different species.

51. It is accepted that Myotis bat species (*Myotis* sp.) are difficult to identify from echolocation alone, therefore these species are aggregated as '*Myotis* sp'. This aggregation, where undertaken, is widely accepted and does not affect the evaluation of the results of activity surveys. Grey long-eared bat (*Plecotus austriacus*) and brown long-eared bat cannot be identified to species level by their echolocation calls alone. All calls indicative of these species are therefore grouped together as '*Plecotus* sp.'.

Assessing the Importance of the Bat Assemblage

52. The methodology to assess the importance of the bat assemblage provides a standard method, particularly when assessing the potential impact of larger developments or works within a site known to support multiple bat species. However, the level of importance assigned provides contextual information only. The assessment accounts for only species present, not population size or the presence of roosts of high conservation value. As no surveys for roosting bats have been undertaken, the importance of the onshore development area for roosting bats has not been assessed.

53. Given the constraints regarding surveys in 2023, an entire survey data set is not available for the onshore development area. As such, records of barbastelle are included in the assessment of the importance of the bat assemblage within the onshore development area, based on information obtained during the desk study. The Bat Mitigation Guidelines recommend that bat trapping surveys are undertaken to confirm the presence of myotis species, however these have not been undertaken to inform the assessment within this report (Reason & Wray, 2023). Myotis species are grouped together for the purpose of this report due to the difficulty in identifying them to species level, as described above. Regarding the assessment of the importance of the bat assemblage within the onshore development area, two species of myotis are included, Bechstein's bat is not included in this calculation due to a lack of previous definitive records. For the purpose of assessing the importance of the bat assemblage, it is assumed that all records of long-eared bats are of brown long-eared bats.

8.5 Results

8.5.1 Desk Study

54. There are ten SACs and SSSIs which include bats within their citation or designation reason within 10 km of the onshore development area. Details of these are provided in **Table 8C-7** and their locations are illustrated on **Figure 8C-6.**

Table 8C-7 SACs and SSSIs designated for bats within 10 km

Designation	Reason for Designation	Location of Designated Site[1]
Limestone Coast of South Wales SAC	An area of coastline designated primarily for its habitats and species. The site contains the main hibernation site for the population of greater horseshoe bats associated with the Pembrokeshire Bat Sites SAC and may therefore be used by up to 5.5% of the UK population of greater horseshoe bat.	Within the onshore development area in the western portion. The designated site extends from the coastal section of the Site, north of the A4320 to the area immediately west of Newton.
Pembrokeshire Bat Sites and Bosherton Lakes SAC	Several Sites of Special Scientific Interest, which are primarily designated for habitats and greater horseshoe bats. The site supports approximately 9.5% of the UK greater horseshoe bat population and contains a mixture of maternity, transitory and hibernation sites. The lesser horseshoe bat is also present within this site.	The SAC is split across 8 Sites of Special Scientific Interest (SSSI) the closest of which; Orielton Stable Block and Cellars SSSI is located approximately 2.8 km southeast of the onshore development area
Milford Haven Waterway SSSI	Milford Haven Waterway SSSI supports nationally important numbers of greater and lesser horseshoe bats. Important breeding sites are recorded nearby to this designation and the broadleaved woodland and scrub provide essential feeding grounds for the bats, as well as connectivity and flightlines between other designated sites. Buildings and caves have been identified within and adjacent to this designation which support roosting horseshoe bats throughout the year.	Approximately 0.1 km east of the onshore development area at its north-eastern end at the Pembroke Power Station.
Castlemartin Range SSSI	Caves along the coast provide important winter roosting sites for large numbers of greater and lesser horseshoe bats and both species have been recorded regularly feeding over the range. Several military bunkers and associated buildings support roosting opportunities.	Approximately 0.4 km south of the onshore development area at its southwestern boundary and east of Freshwater West.
Orielton Stable Block and Cellars SSSI	The site is of special interest as one of the largest nursery roosts of lesser horseshoe bats in Pembrokeshire which have been recorded within this roost since the late 1960s. Regular monitoring since 1993 identifies an increasing trend in numbers with a peak of 130 bats recorded in June 2000. Greater horseshoe bats have also been recorded roosting in small numbers since the 1950s. Radio tracking has identified strong links between the horseshoe bats at this site and those at the Stackpole Estate. The largest colony of soprano pipistrelle known in Pembrokeshire also breed within a property on the Orielton Estate and noctule have been recorded in bat boxes erected in the woodland within the estate. Other species recorded include brown long-eared and whiskered bats.	Approximately 2.8 km southeast of the onshore development area.

[1] Where designated sites are situated outside of the onshore development area, the distance and direction is given at the closest point of the designated site from the onshore development area.

Designation	Reason for Designation	Location of Designated Site[1]
Scoveston Fort SSSI	This fort is of interest for its population of hibernating greater horseshoe bats. This is one of the largest hibernation sites of greater horseshoe bats in Wales, with consistent recordings of over 50 hibernating individuals since 2005. Grassland surrounding the fort is thought to provide good foraging opportunity as it is rich in invertebrate species and hedgerows lead away from the designation which form important flightlines and feeding corridors.	Approximately 4.2 km north of the onshore development area at its north-eastern extent, beyond the mouth of the estuary.
Stackpole SSSI	This SSSI is designated for its range of internationally and nationally important habitats and species. An important sheltered flight corridor is provided for greater and lesser horseshoe bats which connects the Stackpole Courtyard Flats and Walled Garden SSSI to Lodge Park Wood and Coldwell Woodland. Noctule bats have bred on Stackpole Warren and at least 40 Daubenton's bats (*Myotis daubentonii*) have a nursery roost under the bridge adjacent to the lake.	Approximately 5.8 km southeast of the onshore development area.
Stackpole Courtyard Flats and Walled Garden SSSI	The Stackpole clock tower loft is 'the major breeding site in Wales of the greater horseshoe bat' with at least 350 bats identified as reliant on the breeding site. The garden cellars and heating ducts support low numbers of bats (no more than 12), though large numbers of individuals pass through during the post-breeding dispersal of juveniles. The lofts immediately adjacent to the clock tower are also of significance for the lesser horseshoe bat. A maternity colony of 85-110 individuals is present and considered to be one of the largest lesser horseshoe bat colonies in Pembrokeshire. Lesser horseshoe bats are also regularly recorded in the cellars and heating ducts in the spring and autumn, small numbers (usually less than 20) also hibernate here in the winter months. The lofts and ducts are also used by a variety of other species which include common pipistrelle, brown long-eared bat, Natterer's bat (*Myotis nattereri*), Daubenton's bat, and whiskered bat.	Approximately 6.5 km southeast of the onshore development area
Park House Outbuildings, Stackpole SSSI	This site is of special interest as the largest known nursery roosts of lesser horseshoe bats in Pembrokeshire. It is very likely that this roost is closely linked to that identified in the nearby Stackpole Courtyard Flats and Walled Garden SSSI. A peak count of 204 adults was recorded in 1997. Greater horseshoe bats have also been recorded within outbuildings in the designated site, approximately 18 individuals were recorded in 1997. Other bat species observed emerging from the roost include common pipistrelle and brown long-eared bat.	Approximately 6.8 km southeast of the onshore development area

55. A data request response from the West Wales Biodiversity Information Centre identified records of at least ten bat species, records for both foraging/commuting and roosting bats are present for most of these species. A summary of the records identified is provided in **Table 8C-8.**

Table 8C-8 Summary of bat records within 2 km of the onshore development area

Species	Foraging/Commuting Records and Location[2]	Roosting Records and Location[2]	Species Core Sustenance Zone (CSZ) radius (BCT, 2016).
Brown long-eared bat	One record, 1.2 km southeast of the onshore development area with connectivity via farmland and hedgerows.	One record 1.6 km south of the onshore development area with connectivity via farmland and hedgerows.	3 km
Common pipistrelle	Two records, the closest 0.2 km north of the onshore development area within an adjacent field.	Two records, the closest 1.2 km south east of the onshore development area with connectivity via farmland and hedgerows.	2 km
Daubenton's bat	One record 0.2 km north of the onshore development area within an connected habitat.	N/A	2 km
Greater horseshoe bat	Two records, the closest 0.2 km north of the onshore development area within an adjacent field.	One record 0.6 km southeast of the onshore development area connected via farmland hedgerows and woodland.	3 km
Lesser horseshoe bat	One record 1.7 km southeast of the onshore development area with connectivity via farmland and hedgerows.	One record 1.6 km south of the onshore development area connected via farmland and hedges.	2 km
Natterer's bat	One record 0.5 km southeast of the onshore development area with connectivity via farmland, hedgerows and woodland.	One record 1.6 km south of the onshore development area connected via farmland and hedges.	4 km
Noctule	Three records, the closest 0.2 km north of the onshore development area within an adjacent field.	N/A	4 km
Serotine	N/A	One record, 1.2 km south east of the Study Area with connectivity via farmland and hedgerows.	4 km

[2] Where records are situated outside of the onshore development area, the distance and direction is given at the closest point of the feature from the onshore development area

Species	Foraging/Commuting Records and Location[2]	Roosting Records and Location[2]	Species Core Sustenance Zone (CSZ) radius (BCT, 2016).
Soprano pipistrelle	Two records, the closest 0.2 km north of the onshore development area within an adjacent.	N/A	3 km
Whiskered bat/Brandt's bat	Two records 1.6 km southeast of the onshore development area with connectivity via farmland and hedgerows.	N/A	1 km
Unknown species (*Chiroptera sp.*)	Two records, the closest 0.2 km north of the onshore development area within an adjacent field.	N/A	Unknown
Long-eared bat species	One record 1.7 km east of the onshore development area with connectivity via farmland woodland and hedgerows.	N/A	3 km
Pipistrelle species (*Pipistrellus sp.*)	Two records, the closest 1.6 km south of the onshore development area connected by farmland and hedges	N/A	2-3 km

56. During the PEA conducted by AECOM in 2023, trees and buildings were subject to preliminary roosting assessment to identify features with potential to support roosting bats within the onshore development area (AECOM, 2023). Several buildings and trees were identified as having potential to support roosting bats.

Previous Survey Data

57. Bat surveys previously undertaken in proximity to the Study Area identify the presence of multiple buildings and trees with features suitable for roosting bats. During 2018 surveys, 26 trees with potential to support roosting bats were climbed to provide further inspection, two of these were confirmed to support roosting bats (Greenlink 2019b). Droppings were also identified within a World War 2 structure above Freshwater West beach during the PEA conducted in 2018 (Greenlink, 2019a). Static bat detectors were deployed within this building and identified the presence of greater horseshoe bat in all months (May-September, inclusive). During July and August there was a high number of social calls recorded, considered to be suggestive of the presence of a maternity roost (Greenlink, 2019b). Lesser horseshoe bats were also recorded present within the structure, though they were recorded much less frequently than the greater horseshoe bat. The results of bat activity surveys undertaken in 2018 are summarised in **Table 8C-9.**

Table 8C-9 Summary of Greenlink bat survey results

Species	Survey type	Description of Records	Time of Earliest Recording	Likelihood of Roost Present within the Study Area
Barbastelle	Walked transect	Recorded only twice during transects, once in a woodland south of the power station and once near a stream to the south east of Rhoscrowther.	30 minutes after sunset	Highly likely to the south east of Rhoscrowther
	Static bat detector deployment	Recorded at five locations which are spread throughout the Greenlink survey area. All but one of these locations recorded barbastelle less than four times each month.	Not stated	Not stated
Greater horseshoe bat	Walked transect	Recorded throughout the Study Area during all transects except one. The earliest bat was recorded south-east of Rhoscrowther.	Approximately 30 minutes after sunset.	Confirmed in World War 2 structure
	Static bat detector deployment	Recorded throughout the Study Area, most frequently to the south of Rhoscrowther.	Not stated	Not stated
Lesser horseshoe bat	Walked transect	Recorded most frequently within a stream corridor around Neath bridge. Lesser horseshoe bat was recorded mostly in October.	Approximately 50 minutes after sunset.	Possible transitory or mating roost present near Neath bridge to the south of Rhoscrowther.
	Static bat detector deployment	Recorded in lower numbers than greater horseshoe.	Not stated	Not stated
Noctule	Walked transect	Recorded throughout the Study Area.	Approximately 20 minutes after sunset.	Likely
	Static bat detector deployment	Recorded at all locations except one, with brief passes most frequently recorded.	Not stated	Not stated
Leisler's bat	Walked transect	Recorded only once during transect surveys.	Nearly three hours after sunset.	Not stated
	Static bat detector deployment	Recorded on two occasions, both only single passes.	Not stated	Not stated
Myotis sp.	Walked transect	Recorded 57 times during the transect surveys, the majority of these calls were	Approximately 50 minutes after sunset.	Likely within woodland close to the existing

Species	Survey type	Description of Records	Time of Earliest Recording	Likelihood of Roost Present within the Study Area
		within woodland near the existing substation and near Neath Bridge.		substation and near Neath Bridge.
	Static bat detector deployment	Recorded at all locations.	36 minutes after sunset.	Likely
Common pipistrelle	Walked transect	Recorded second most frequently during transect surveys and present throughout the Study Area, including sand dunes at Freshwater West.	Recorded from sunset onwards.	Highly likely in the east and west of the Study Area.
	Static bat detector deployment	Recorded second most frequently during static bat detector deployments.	4 minutes after sunset.	Likely
Soprano pipistrelle	Walked transect	Recorded most frequently during walked transect surveys. Soprano pipistrelle was recorded throughout the Study Area, though most frequently in the east and to the south of the substation.	Recorded from sunset onwards.	Highly likely
	Static bat detector deployment	Recorded most frequently on static bat detectors with numerous calls less than 30 minutes after sunset.	Less than 30 minutes after sunset	Highly likely
Nathusius' pipistrelle (*Pipistrellus nathusii*)	Walked transect	Not recorded	N/A	Not stated
	Static bat detector deployment	Recorded on only ten occasions.	Approximately 40 minutes after sunset	Possibly
Long-eared bats	Walked transect	Recorded on only four occasions.	Approximately 50 minutes after sunset.	Likely
	Static bat detector deployment	Recorded at all but two locations.	58 minutes after sunset.	Likely

8.5.2 Field Survey

Walked Transect Surveys

58. A variety of species were recorded during the walked transect surveys, with a peak of eight species recorded in July and the most bat calls recorded in August. The majority of calls recorded during transect surveys were of common species, with 71.4% and 17.4% of calls associated with soprano pipistrelle and common pipistrelle, respectively. Greater and lesser

horseshoe bats were recorded infrequently, only in July and August. A count of bat passes for each species or group per survey is provided in **Table 8C-10.**

59. In June, bat activity commenced approximately 2 minutes after sunset (21:38) and continued throughout the duration of the transect until 23:21. Almost all bat records during this survey were those recorded commuting, though soprano pipistrelle and common pipistrelle were recorded foraging along the public footpath to the north of the onshore development area.

60. During the July transect, the greatest species diversity was recorded. Activity commenced at 22:01, approximately 30 minutes after sunset (21:27). Bat calls were recorded in several locations during this survey, though all were heard and not visually observed by the ecologists.

61. During the west transect in August, bat activity commenced at 20:57, approximately 43 minutes after sunset (20:14) and continued until 23:04. A mixture of species were recorded during this transect, as summarised in **Table** 8C-10 all species other than soprano pipistrelle were recorded commuting. One record of soprano pipistrelle was recorded to be foraging at 22:47 at the south of the transect.

62. The east transect recorded greater activity and diversity of species in August compared to the west transect. Similarly, the majority of species were recorded to be commuting, though soprano pipistrelle and common pipistrelle were recorded to be foraging throughout the transect. Bat activity during this transect began at 20:43, approximately 32 minutes after sunset (20:11) and continued until 23:09.

63. In October, recorded bat activity was generally lower and only soprano pipistrelle was recorded. The west transect recorded only a single pass at 20:35, approximately 2.5 hours after sunset (18:04). During the east transect in October, activity commenced at 18:47, approximately 43 minutes after sunset. Soprano pipistrelle was recorded foraging throughout the transect in the east until 21:01.

64. Of note, soprano pipistrelle calls were recorded from six minutes after sunset in June and noctule passes were recorded nine minutes after sunset in July. Illustrated results of the walked transect surveys, including the location of the recorded passes, are provided in **Figures 8C,1-4, Annex 8C-A.**

Table 8C-10 Species composition recorded during walked transect surveys

Survey Date	Species Recorded (Number of Passes)									Number of Species Recorded	Total Bat Calls Recorded
	Common pipistrelle	Soprano pipistrelle	Nathusius' [illegible]	Myotis sp.	Serotine	Noctule	Leisler's bat	Greater horseshoe bat	Lesser horseshoe bat		
13 June 2023	25	67	1	1	-	-	-	-	-	4	94
19 July 2023	7	56	-	2	4	9	1	4	1	8	84
29 August 2023	36	10	-	-	-	-	-	1	1	4	48
30 August 2023	13	139	-	4	4	18	-	-	1	6	179
26 October 2023 (West)	-	2	-	-	-	-	-	-	-	1	2
26 October 2023 (East)	-	58	-	-	-	-	-	-	-	1	58
Total passes	81	332	1	7	8	27	1	5	3	x	465
Species percentage of all bat passes	17.4	71.4	0.2	1.5	1.7	5.8	0.2	1.1	0.6	x	x

Static Detector Surveys

65. The deployment of static bat detectors at the locations illustrated on **Figure 8C-5**, **Annex 8C-A** and subsequent sonogram analysis identified at least seven species within the onshore development area during October. The recorded calls were dominated by common species, with soprano pipistrelle and common pipistrelle accounting for 50.0% and 12.8% of all passes, respectively. Following this, lesser horseshoe bat and myotis sp. each accounted for 12.6% of all recorded bat passes; Leisler's bat contributed 5.0% of recorded bat passes and greater horseshoe bat accounted for 4.6%. A summary of the species composition recorded by static bat detectors is provided in **Table 8C-11** and more detailed results are provided in **Annex 8C-C**. Given the limitations associated with the static detector deployment, no bat activity index was calculated.

Table 8C-11 Species composition recorded by static bat detector deployment

Deployment Location	Species Recorded (Number of Passes)											
	Common pipistrelle	Soprano pipistrelle	Nathusius' pipistrelle	Pipistrelle sp.	Myotis sp.	Noctule	Leisler's bat	Greater horseshoe bat	Lesser horseshoe bat	Long-eared bat sp.	Number of Species Recorded	Total Bat Passes Recorded
1	30	86	3	-	4	-	-	1	1	1	7	126
2	10	118	-	2	20	1	-	4	15	1	7	171
3	4	2	-	-	4	-	22	-	4	2	6	38
4	12	13			27	-	-	15	35	1	6	103
5												
Total passes	56	219	3	2	55	1	22	20	55	5		438
Species percentage of all bat passes	12.8	50.0	0.7	0.5	12.6	0.2	5.0	4.6	12.6	1.1		

8.6 Assessing the Importance of the Bat Assemblage

66. Using the scoring system recommended in the Bat Mitigation Guidelines the bat species assemblage identified within the onshore development area was valued at National level based on the species recorded during walked transect surveys and static detector deployment in 2023 (Reason & Wray, 2023). Barbastelle is included in the assessment due to the recorded presence during walked transect surveys conducted in 2018 (Greenlink, 2019,b) The determination of the value is summarised in **Table 8-12.**

67. It should be noted that the greater horseshoe bats within the onshore development area may be associated with the populations recorded within SACs, designated for bats in proximity to the onshore development area as described in **Table 8C-7.**

68. Given that greater horseshoe bats are also listed on Annex II of the EC Habitats Directive, their value are considered to be of International value.

Table 8-12 Importance of bat assemblage within the onshore development area

Species Identified	Rarity in South-west England and South Wales*	Score*
Common pipistrelle	Widespread	1
Soprano pipistrelle	Widespread	1
Brown long-eared	Widespread	1
Noctule	Widespread in many geographies, but not abundant in all	2
Whiskered/Brandt's/Natterer's bat	Widespread in many geographies, but not abundant in all	2
Daubenton's bat	Widespread in many geographies, but not abundant in all	2
Lesser horseshoe bat	Rare or restricted distribution	3
Serotine	Rare or restricted distribution	3
Leisler's bat	Rare or restricted distribution	3
Nathusius' pipistrelle	Rare or restricted distribution	3
Greater horseshoe bat	Rarer Annex II species and very rare	4
Barbastelle	Rarer Annex II species and very rare	4
Total score		**29**
Overall Value of Bat Assemblage within the onshore development area		**National**

8.7 Conclusions

69. Surveys undertaken by AECOM in 2023 identify that the onshore development area supports at least ten bat species. Taken together with the results of surveys undertaken in 2018 this species assemblage includes twelve species and is of National value (Greenlink, 2019b). The onshore development area is known to support species listed on Annex II of the EC Habitats Directive, including the lesser horseshoe bat, greater horseshoe bat and barbastelle. Greater horseshoe bats are also the primary designation feature of two SACs within 3 km of the onshore development area: Limestone Coast of South Wales SAC and Pembrokeshire Bat Sites and Bosherton Lakes SAC. Greater horseshoe bats also feature within the citation of eight SSSIs within 10 km of the onshore development area. Lesser horseshoe bats have been recorded within several of these SACs and SSSIs, though are not a primary reason for their designation. Given that lesser and greater horseshoe bats have a core sustenance zone of 3 and 2 km, respectively, there is potential for these species to rely on habitats present throughout the onshore development area for connectivity to important foraging areas (BCT,

2020). The population of greater horseshoe bats within these designations, and likely utilising habitat features within the onshore development area, is of international importance.

8.9 References

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Annex 8C-A Figures

Figure 8C-1. June bat transect results

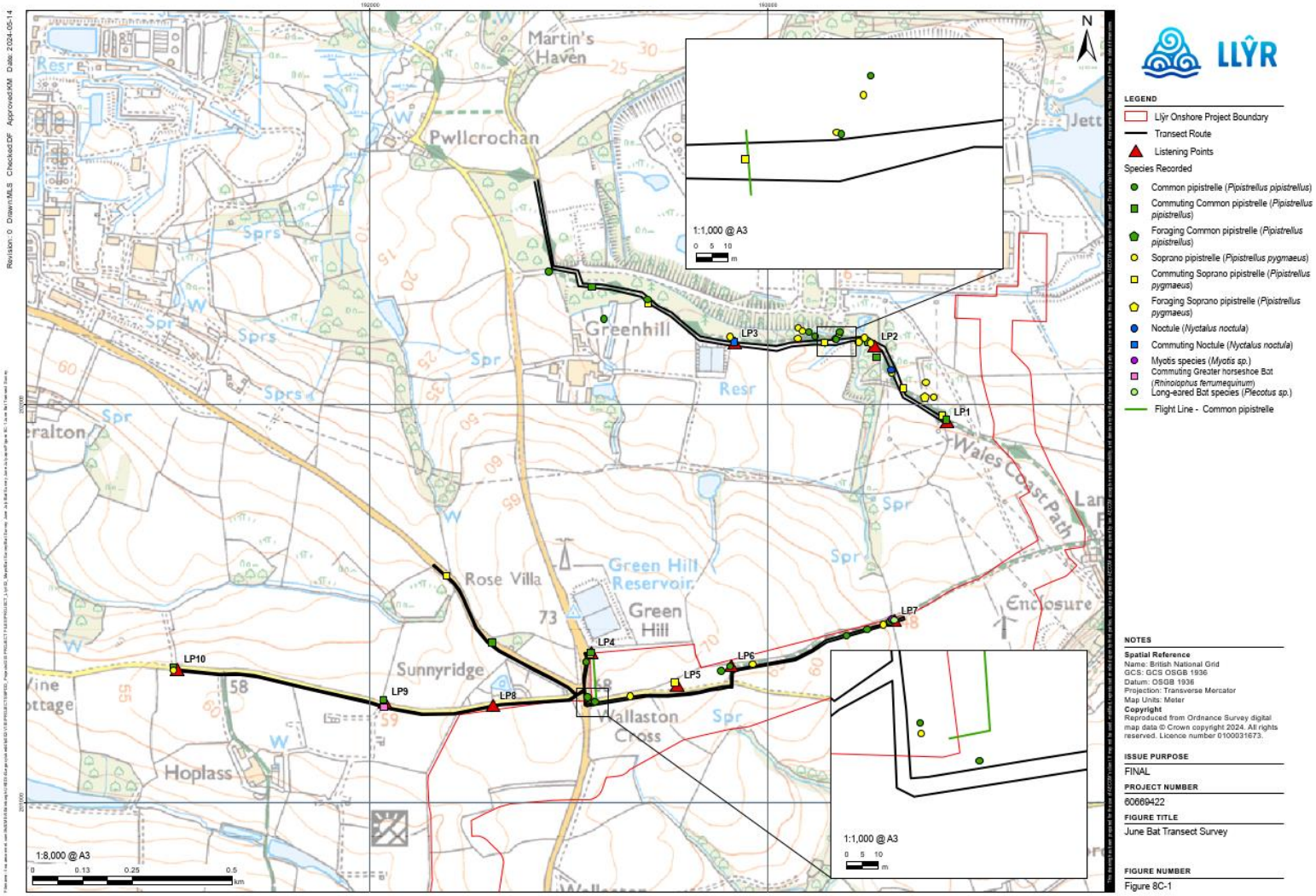


Figure 8C-2. July bat transect results

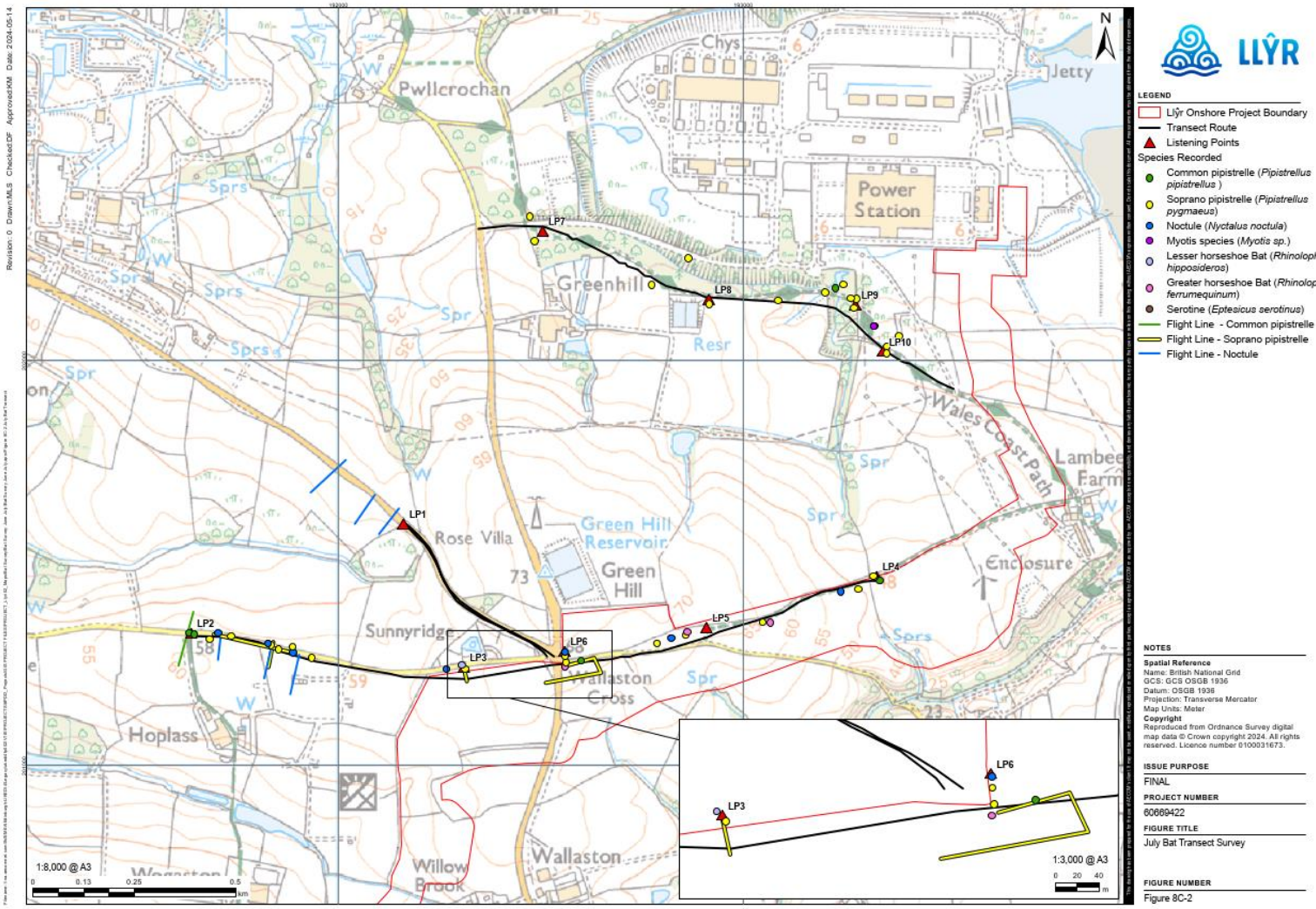


Figure 8C-3. August bat transect results

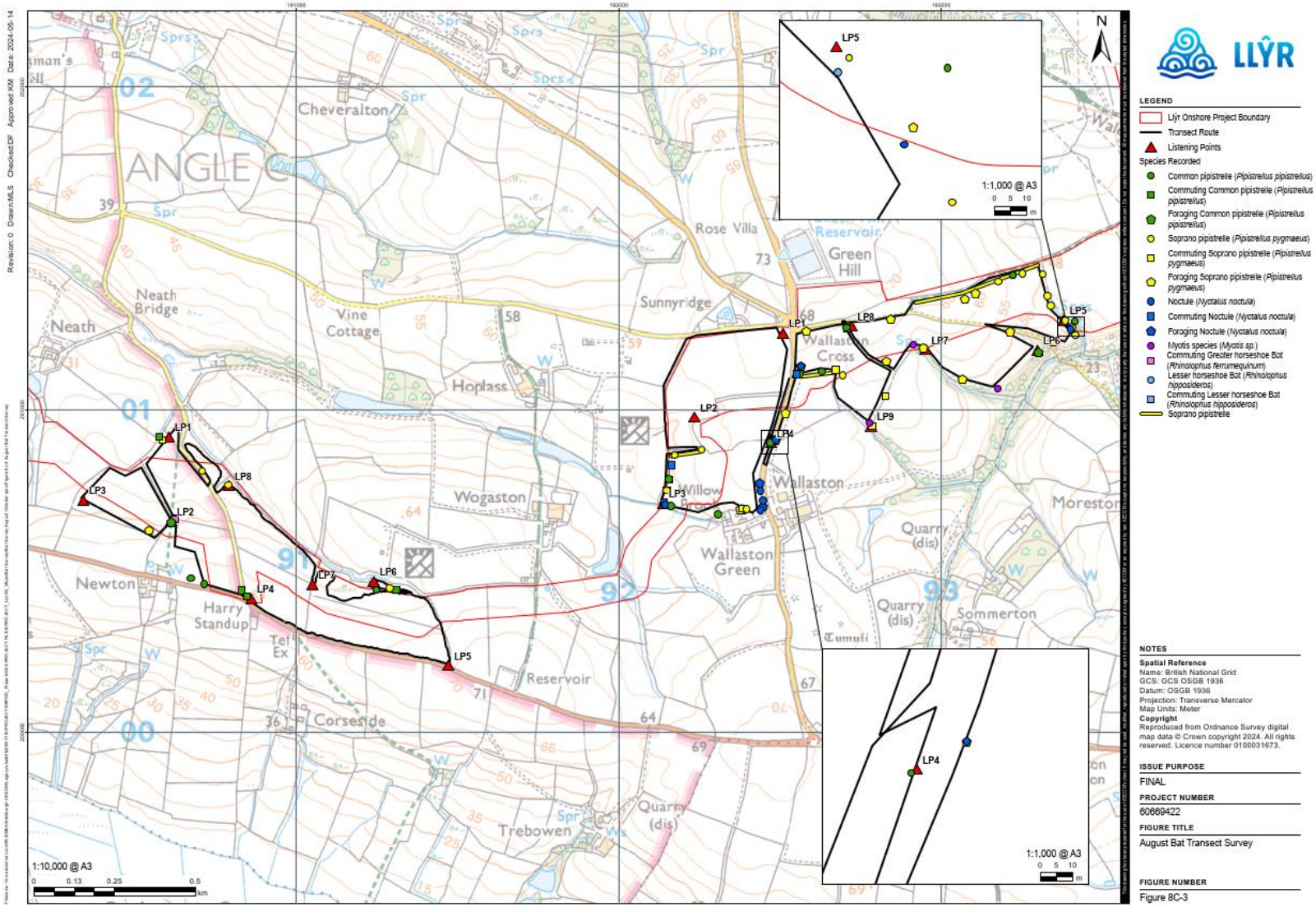


Figure 8C-4. October bat transect results

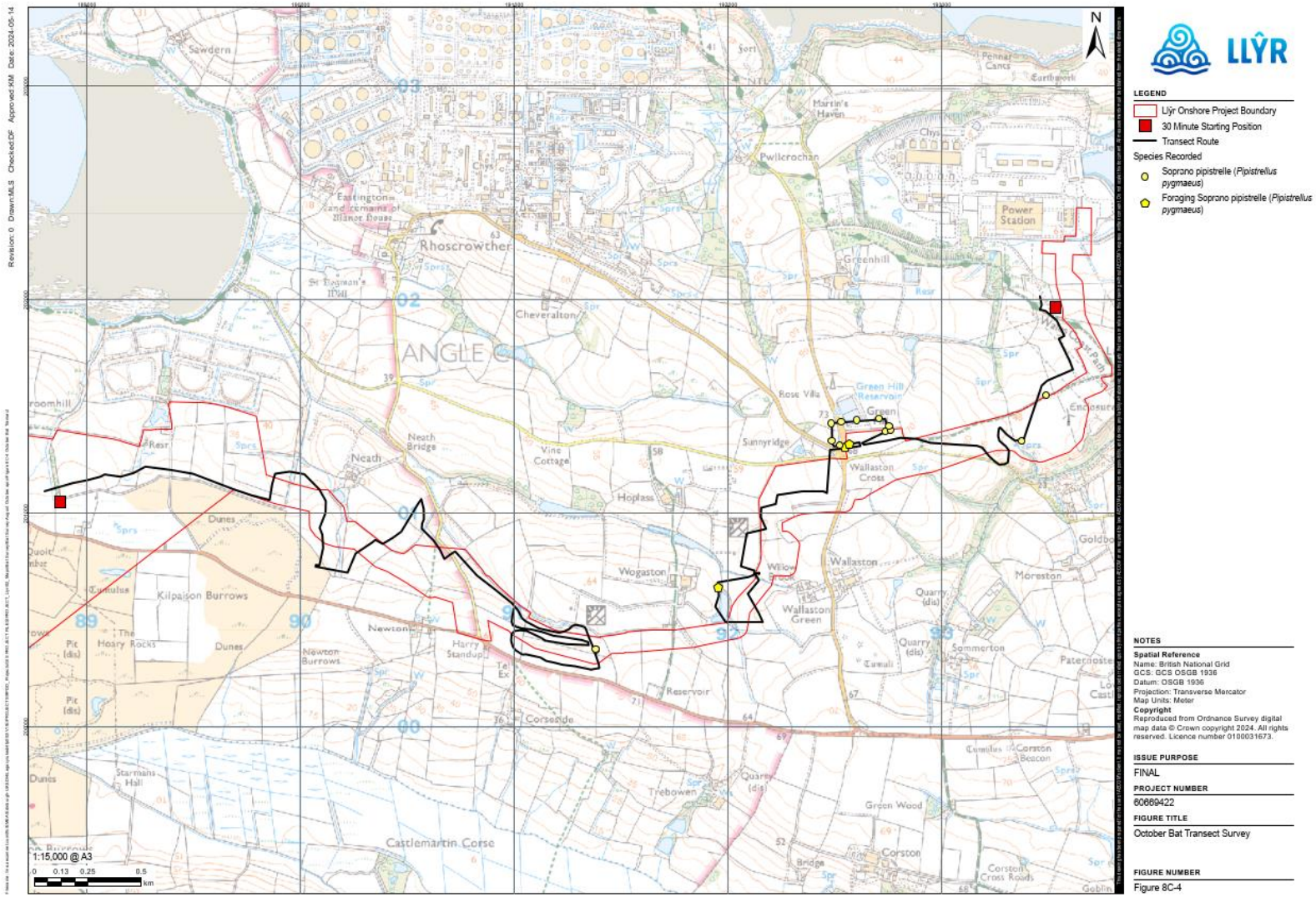


Figure 8C-5. Static detector locations

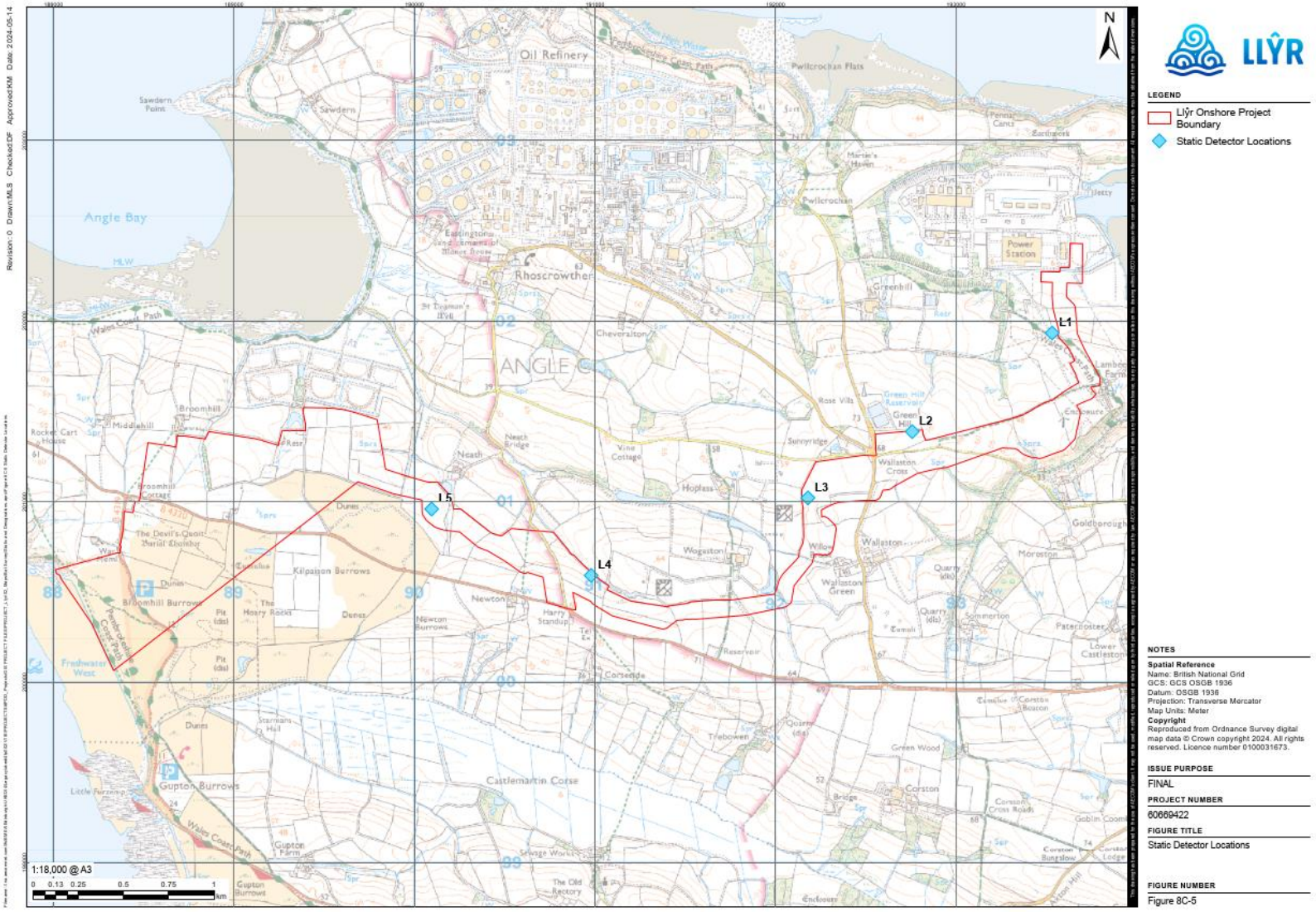
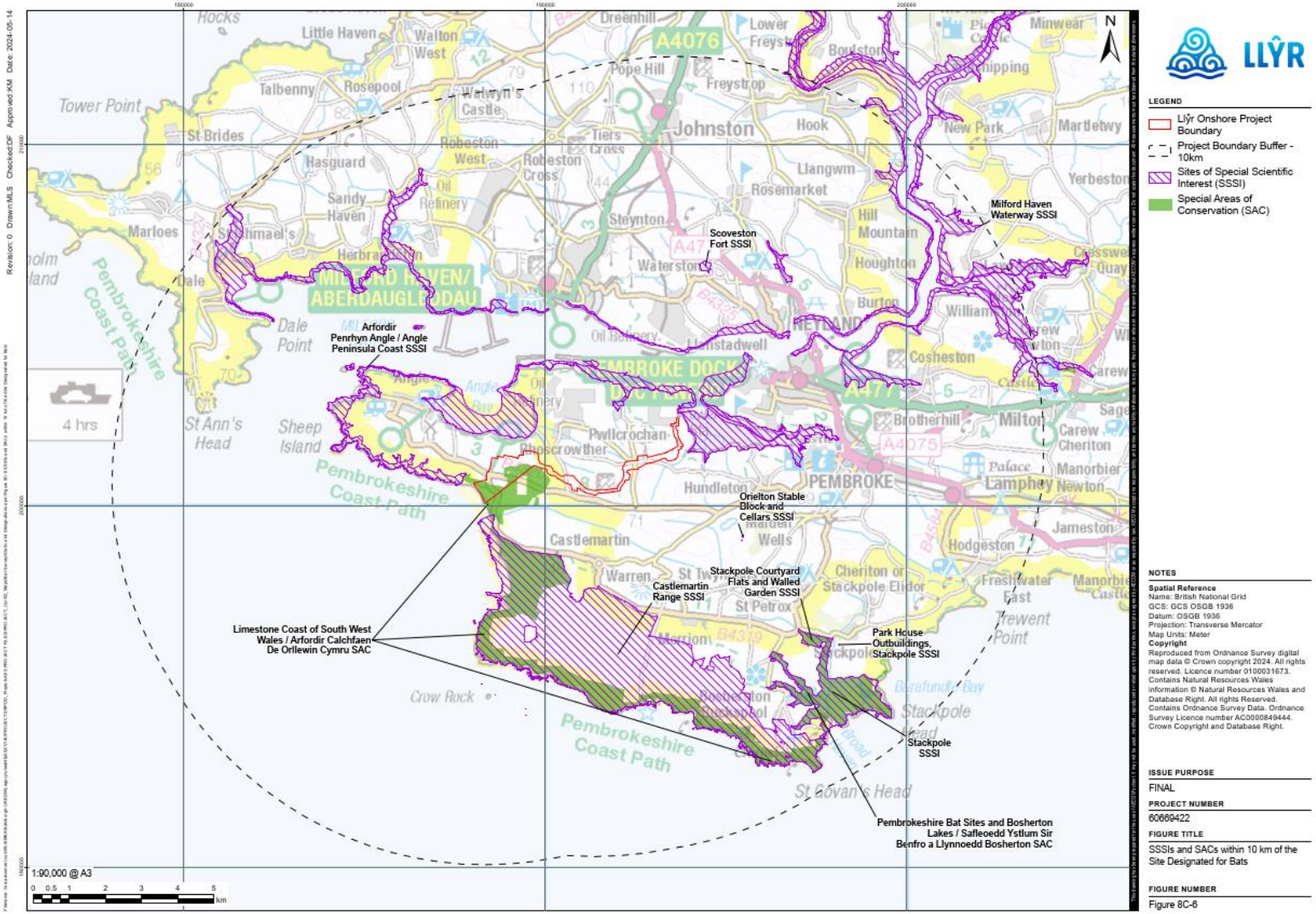


Figure 8C-6. SSSIs and SACs within 10 km of the onshore development area designated for bats



Annex 8C-B Location of static bat detectors

Static Bat Detector Reference	Location (National Grid Reference)	Location Description	Photograph of Deployment
Location 1	SM9360301884	Within an area of dense scrub associated with two species-poor intact hedgerows bounding arable fields.	
Location 2	SM9282801338	On a fence line adjacent to an intact, species-poor hedgerow to the north of a single track road.	
Location 3	SM9225000971	On the edge of dense scrub associated with an intact hedgerow and improved grassland.	
Location 4	SM9104900541	Within an area of dense scrub adjacent to broadleaved woodland associated with running water and improved grassland.	
Location 5	SM9016500909	On the periphery of broadleaved woodland bounded by ruderal vegetation and arable fields.	

Annex 8C-C Static bat detector results

Table 8C-13 Static bat detector results: Location 1

Species	Night					Grand Total	Nightly Average
	13/10/2023	14/10/2023	15/10/2023	16/10/2023	17/10/2023		
Myotis sp.			2	2		4	1.0
Nathusius' pipistrelle			3			3	0.75
Common pipistrelle			11	19		30	7.5
Soprano pipistrelle	5	19	40	22		86	21.5
Plecotus sp.		1				1	0.25
Greater horseshoe bat	1					1	0.25
Lesser horseshoe bat		1				1	0.25
Grand Total	6	21	56	43	0	126	31.5

Table 8C-14 Static bat detector results: Location 2

Species	Night					Grand Total	Nightly Average
	13/10/2023	14/10/2023	15/10/2023	16/10/2023	17/10/2023		
Myotis sp.	20					20	5.0
Noctule			1			1	0.25
Pipistrelle sp.		1	1			2	0.5
Common pipistrelle			10			10	2.5
Soprano pipistrelle	4	6	96	12		118	29.5
Plecotus sp.		1				1	0.25
Greater horseshoe bat			3	1		4	1.0
Lesser horseshoe bat			15			15	3.75
Grand Total	24	8	126	13	0	171	42.75

Table 8C-15 Static bat detector results: Location 3

Species	Night					Grand Total	Nightly Average
	13/10/2023	14/10/2023	15/10/2023	16/10/2023	17/10/2023		
Myotis sp.	2	2		N/A - Detector failed	N/A - Detector failed	4	1.3
Leisler's bat	6	3	13			22	7.3
Common pipistrelle			4			4	1.37
Soprano pipistrelle		1	1			2	0.6
Plecotus sp.			2			2	0.6
Lesser horseshoe bat		2	2			4	1.3
Grand Total	8	8	22	N/A	N/A	39	13.0

Table 8C-16 Static bat detector results: Location 4

Species	Night					Grand Total	Nightly Average
	13/10/2023	14/10/2023	15/10/2023	16/10/2023	17/10/2023		
Myotis sp.		7	9	8	3	27	6.75
Common pipistrelle			12			12	3.0
Soprano pipistrelle	1	5	5	2		13	3.25
Plecotus sp.		1				1	0.25
Greater horseshoe bat	4	1	4	6		15	3.75
Lesser horseshoe bat	1	8	6	20		35	8.75
Grand Total	6	22	36	36	3	103	25.75

Table 8C-17 Static bat detector results: Location 5

Species	Night					Grand Total	Nightly Average
	13/10/2023	14/10/2023	15/10/2023	16/10/2023	17/10/2023		
N/A	0	N/A - Detector failed	N/A - Detector failed	N/A - Detector failed	N/A - Detector failed	0	N/A
Grand Total	0	N/A	N/A	N/A	N/A	N/A	N/A