Ecological Impact Assessment

Pen Caer Lan, Seven Sisters, Neath

22 November 2024

Ecology
Arboriculture
Land Management

Report Details

Report Title	Ecological Impact Assessment
Report Reference	2258-EcIA-RY

Quality Assurance & Revision Record

Revision	Date	Author	Checked By	Approver	Summary of Changes
DRAFT	22 November 2024	Ryan Yeates BSc ACIEEM	Richard Pash BSc MCIEEM	Richard Pash BSc MCIEEM	

Disclosure

The content of this report that has been provided by GE Consulting is true, and has been prepared and submitted in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. Its contents are compliant with British Standard BS42020: 2013 Biodiversity Code of Practice for Planning and Development.

This report has been prepared for the exclusive use of the stated client and unless otherwise agreed in writing by GE Consulting, no other party may use, make use of or rely on the contents of the report. No liability is accepted by GE Consulting for any use of this report, other than for the purposes for which it was originally prepared and provided.
GE Consulting has exercised due care in preparing this report. It has not, unless specifically stated, independently verified information provided by others. No other warranty, express or implied, is made in relation to the content of this report and GE Consulting assumes no liability for any loss resulting from errors, omissions or misrepresentation made by others.
Any recommendation, opinion or finding stated in this report is based on circumstances and facts as they existed at the time that GE Consulting undertook the work. Nothing in this report constitutes legal opinion. If legal opinion is required the advice of a qualified legal professional should be secured.

Site Details

Site Name and Location	Pen Caer Lan, Seven Sisters, Neath
Central OS Grid Reference	SN807085
Client	Greentech Invest UK

Boundary

Executive Summary

Site Location	The Site is located approximately 0.8km west of the village of Seven Sisters. Surrounding land use comprises upland pastoral farmland utilised predominantly for sheep grazing.
Proposals	Detailed application for the installation of a solar farm.
Survey Work	Desk-based study, UK Habitat Classification survey, NVC survey, bat static detector survey, breeding bird survey and reptile survey.
Designated Sites with Potential Impacts	Neath Port Talbot Watercourses SINC, Ynysdawle SINC and Nant y Cafn SINC.
Baseline Habitats	The Site comprises several contiguous fields that are dominated by two NVC communities; M23b (*Juncus effusus/acutiflorus - Galium palustre* rush-pasture *Juncus effusus* sub-community) and M25b (*Molinia caerulea - Potentilla erecta* mire *Anthoxanthum odoratum* sub-community). Discrete areas of M23a (*Juncus effusus/ acutiflous-Galium palustre* rush-pasture *Juncus acutiflorus* sub-community (runnels and flushes)), M25c (*Molinia caerulea- Potentilla erecta* mire *Angelica sylvestris* sub-community) and MG7b (*Lolium perenne* leys and related grasslands *Lolium perenne-Poa trivialis* leys sub-community) and dense scrub are also present. Boundaries comprise a network of fence lines, tree lines (containing veteran trees) and surface water drainage ditches. A small unnamed watercourse runs through the Site from the north-west to the south-east.
Protected/ notable Species	The Site supports commuting and foraging bats, a 'good' population of common lizard, a notable assemblage of breeding birds (including red-listed species), common amphibians and badger. The Site also provides suitable habitat for hedgehog, invertebrates and otter.
Mitigation and Compensation	• Retention and buffering (15m) of tree lines, ditches, watercourses and 'complex habitat mosaic' and adherence to Pollution Prevention for Businesses (2024) guidance during construction. • Partial retention of M23b, M25b and M25c habitats. • Method statement to protect reptiles and amphibians during vegetation clearance. • Natural regeneration of tussocky purple moor grass/rush pasture following construction will mitigate impacts on reptiles and breeding birds. • Sensitive methodology to protect commuting and foraging bats from light spill during construction. • Precautionary measures for badger, breeding birds, hedgehog and otter. • Installation of solar arrays will also provide basking opportunities for reptiles and singing/territory forming opportunities for breeding birds and will compensate for the degradation of habitat condition below the arrays. The solar arrays can increase structural diversity, create new microclimates and increase invertebrate numbers.
Enhancements	• 15 no. tree-mounted bird boxes within existing tree lines. • 15 no. tree-mounted bat boxes within existing tree lines. • 6 no. hibernacula/habitat piles within undisturbed boundary vegetation and riparian corridor. • 1 no. otter holt within riparian corridor.

Contents

Figures

Appendices

1 Introduction

This report presents the results of an Ecological Impact Assessment (EcIA) at Pen Caer Lan, Seven Sisters, Neath in relation to a detailed planning application. The surveys were commissioned by Greentech Invest UK.

The area within the application boundary is hereafter referred to as the 'Site'.

1.1 Site Context

The Site is located approximately 0.8km west of the village of Seven Sisters. Surrounding land use comprises upland pastoral farmland utilised predominantly for sheep grazing.

1.2 Description of Proposed Development

Proposals consist of the installation of a solar farm comprising ground mounted solar PV panels with a generating capacity of up to 25MWp, including permanent grid connection hub, mounting framework, inverters, underground cabling, stock proof fence, CCTV, internal tracks and associated infrastructure, landscaping, biodiversity net benefit and environmental enhancements for a temporary period of 40 years (Drawing no: Site Block Plan – Proposed Draft V0.4).

1.3 Consultation

In 2021, consultation with the Planning Inspectorate was undertaken to determine whether the proposals constituted EIA development. The screening response, dated 21st September 2021, concluded that the proposal did not constitute EIA development and stated the following in relation to site sensitivity and ecological impacts:

"*The proposed development of a circa 20 MW solar farm with associated infrastructure would inevitably result in a number of effects, most notably in terms of the physical change to the site itself and landscape and visual impact. There is also potential for the loss of some SINC quality marshy grassland and impacts on a number of protected species. However, the majority of those impacts would be localised and could largely be reduced by the implementation of readily securable avoidance and mitigation measures. Whilst these issues will therefore likely be important considerations for the decision maker and will need to be subject to further assessment, I consider, based on the information available and advice from relevant consultees, that significant effects in relation to biodiversity are unlikely. Given a lack of likely significant effects in other respects, I am content that on balance, EIA is not required in this instance.*"

Specific consultation with NRW was undertaken as part of the EIA screening. Their response dated, 16th September 2021, was based off the Ecological Appraisal produced by BSG Ecology in August 2021 and concluded that significant impacts on protected species (particularly breeding birds) were considered unlikely:

"*<u>Protected Species</u>*

In consideration of the information contained within the above report, and notwithstanding that some assumptions are made in respect of the detail of the development, we are of the view that the proposed development is unlikely to have significant environmental effects on protected species, in respect of our remit.

However, we advise that any future application is supported by an Ecological Impact Assessment (EcIA) which is based on up to date ecological survey information for the site, sets out the likely impacts of the

proposed development based on firm development proposals, and confirms all of the mitigation and/or compensation (as appropriate) that will be put in place to address any anticipated impacts. It should also identify if any protected species licences will be required for the works.

Terrestrial Ornithology

It is our view that the development is unlikely to have significant effects on terrestrial ornithology. The site is not functionally connected to protected sites designated with bird features and while the site supports red and amber listed species these are still reasonably widespread. We recommend further development of the mitigation described in Section 5.1-5.3 of the ecological appraisal, which would likely overcome any local impacts. We would also look to the applicant to incorporate further enhancements to provide a net benefit to birds within the development design."

1.4 Aims

The aims of this report are to:

- Identify and describe the habitats and species likely to be affected by the proposed development and assess the ecological value of these features;
- Identify key ecological constraints to the proposed development and evaluate the significance of any potential effects; and,
- Provide recommendations for mitigation and enhancement opportunities in accordance with relevant planning policy, legislation and other published guidance (see **Appendix 2**).

2 Methods

2.1 Ecological Scoping and Baseline Data Collection

2.1.1 Desk Study

A desk-based study was undertaken in February 2024 whereby:

- South East Wales Biodiversity Records Centre (SEWBReC) was contacted for records of protected/ notable species and sites designated for nature conservation value within a 2km radius of the Site boundaries.
- MAGIC (www.magic.gov.uk) was searched for international designated sites (SAC, SPA and Ramsar) within 10km;
- Previous reports were reviewed with any relevant results provided in the appropriate sub-sections; and,
- Aerial photography of the wider area was reviewed to identify possible important habitat features.

2.2 Field Surveys

Table 1 summarises the surveys undertaken to provide ecological baseline information for the Site. Full details are provided in the appendices. Surveys for great crested newt (eDNA) were scoped out due to the availability of existing survey data (BSG Ecology, 2021), which returned a negative result.

Table 1: Summary of Baseline Data Collection Surveys

Survey Type	Date (s)	Relevant Appendix
Extended UK Habitat Classification Survey	February 2024	Appendix 3
National Vegetation Classification (NVC) Survey	June 2024	Appendix 4
Bat Static Detector Surveys	April – October 2024	Appendix 5
Breeding Bird Surveys	April – July 2024	Appendix 6
Reptile Surveys	June – July 2024	Appendix 7

2.3 Baseline Evaluation and Impact Assessment

Determining the importance of ecological features was undertaken in accordance with the Chartered Institute of Ecology and Environmental Management's Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2018). The guidelines recommend a scale of significance from International to Local ecological importance as a frame of reference, however notes that it can be adapted to suit local circumstances. As such, where ecological receptors are assessed to be of less than Local value, an additional valuation of 'Site value' has been included.

An assessment was then made of possible ecological impacts of the proposed development on each feature within the development's likely 'Zone of Influence' (ZoI). Where uncertainty exists, a precautionary approach has been adopted.

Measures are described to ensure that any impacts can be avoided, minimised or compensated for by applying the mitigation hierarchy in accordance with PPW (2024) paragraph 6.4.4 which states:

"All reasonable steps must be taken to maintain and enhance biodiversity and promote the resilience of ecosystems and these should be balanced with the wider economic and social needs of business and local communities. Where adverse effects on biodiversity and ecosystem resilience cannot be avoided,

minimised or mitigated/restored, and as a last resort compensated for, it will be necessary to refuse planning permission."

2.4 Limitations

Care has been taken to ensure that balanced advice is provided on the information available and collected during the study period (s), and within the resources available for the project. However, the possibility of important ecological features being missed due to survey timings, absence during surveys or the year of survey cannot be ruled out. In addition, the lack of evidence or records of protected species on Site does not preclude their presence from Site.

The following limitations, all caused by equipment failures, have been noted within the automated bat detector surveys:

- April – Locations 2, 3 and 5 only recorded for a total of four nights out of five;
- July – Location 3 only recorded for a total of four nights out of five;
- September – Location 2 only recorded for a total of four nights out of five; and
- October – Location 1only recorded for a total of four nights out of five.

In addition, due to access restrictions, a static detector survey could not be undertaken in May. To compensate for this, two static detector surveys were undertaken in June (within the first and last weeks of the month).

However, considering a total of seven automated bat detector surveys have been undertaken between April – October, it is considered that sufficient data has been collected to provide an accurate representation of the bat activity on Site and the above do not represent significant limitations that have affected the overall assessment.

3 Baseline Conditions & Evaluation

3.1 Designated Sites

A summary of designated sites within the search area is provided in **Table 2**.

Due to the nature of the proposals (solar development) and the spatial separation from the Site, all National Site Network and Statutory Designated Sites have been scoped out of further assessment.

Table 2: Designated sites records within 2km of Site boundary, 10km for European sites

Site Name	Proximity to Site	Description
National Site Network		
Coedydd Nedd a Mellte SAC	7.7km east	**Annex I habitats** that are a primary reason for selection of this site: • 91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles **Annex I habitats** present as a qualifying feature, but not a primary reason for selection of this site: • 9180 Tilio-Acerion forests of slopes, screes and ravines
Statutory Designated Sites		
Nant y Rhos SSSI	1.26km southwest	The site is of special interest for its species-rich fen meadow vegetation, which includes large populations of meadow thistle and whorled caraway. Most of the site supports vegetation that is dominated by purple moor-grass, accompanied by a range of characteristic associates including meadow thistle, flea sedge, carnation sedge and tawny sedge.
Sites of Importance for Nature Conservation		
Neath Port Talbot Watercourses SINC	Within Site	Blanket designation afforded to watercourses and their surrounds within the county borough.
Ynysdawle SINC	0.26km east	Heathland
Nant y Cafn SINC	0.47km east	Heathland
Neath Port Talbot Ancient Semi-natural Woodland	0.5km west	Blanket designation afforded to ancient woodland parcels within the county borough.
Blaendulais Marshy Grassland SINC	0.5km	Marshy grassland
Heol Heddwch SINC	0.9km east	Heathland, scrub and deciduous woodland
Gelli Dochlithe SINC	1km southwest	Grassland
Rhos Common SINC	1.2km west	Heathland
Sarn Helen SINC	1.25km east	Heathland
Land Behind Marigold Place SINC	1.35km east	Heathland

3.2 Habitats and Flora

A summary of the habitats can be found below along with their respective NVC community codes. The distribution of habitats is shown on **Figures 1a-1b** and full details with photographs are provided in **Appendix 4.**

The Site comprises several contiguous fields that are dominated by two NVC communities; M23b (*Juncus effusus/acutiflorus - Galium palustre* rush-pasture *Juncus effusus* sub-community) and M25b (*Molinia caerulea - Potentilla erecta* mire *Anthoxanthum odoratum* sub-community). M23b is the dominant habitat within the central fields with significant areas also present in the northern and southern fields and along the proposed access track, whereas M25b is dominant in the northern and southern fields. A small area of M23a (*Juncus effusus/ acutiflous-Galium palustre* rush-pasture *Juncus acutiflorus* sub-community (runnels and flushes)) is present in the southernmost field and several discrete areas of M25c (*Molinia caerulea- Potentilla erecta* mire *Angelica sylvestris* sub-community) are present in the central and northern fields. Furthermore, a complex mosaic of habitats is present adjacent to the main watercourse running through the Site. Given the irregular nature of the landforms and the small fragmentary areas of habitat in this area (which frequently merge into each other to create habitat mosaics) this area could not satisfactorily be sampled for NVC survey.

The majority of fields are bound by tree lines (containing a number of veteran trees) and associated ditches and watercourses, with the most significant watercourse running through the Site from the north-west to the south-east. In addition, a small parcel of dense scrub is present in the north-east of the Site.

Running from south to north, the access track comprises three distinct habitats, namely developed land; sealed surface, MG7b (*Lolium perenne* leys and related grasslands *Lolium perenne-Poa trivialis* leys sub-community) and M23b habitat.

All the M23 and M25 communities satisfy the South Wales SINC Designation criteria. In addition, the M25 communities qualify under the Purple Moor Grass and Rushes Pasture Priority Habitat. Therefore, the M23a, M23b, M25b and M25c communities within the Site are considered to be of **County** importance. The 'complex habitat mosaic', which comprises a combination of these communities, is also considered to be of **County** importance. The tree lines and watercourses are considered to be of **Local** importance. The dense scrub and MG7b community are considered to be of **Negligible** importance and have been scoped out of further assessment.

3.3 Fauna

Full survey results are included in the relevant appendices.

3.3.1 Amphibians

No records for great crested newt were returned from SEWBReC within 2km of the Site boundary. 7 records were returned for common toad within the past ten years, with the closest being 0.5km northwest. The tussocky pasture provides optimal habitat for amphibians during their terrestrial phase and a single ephemeral waterbody, associated with an old quarry pit, is present within the Site. However, the waterbody is considered sub-optimal for amphibians due to a lack of aquatic vegetation and poor water quality. In addition, this pond was subject to an eDNA survey in 2021 as part of a previous survey effort (BSG Ecology, 2021) and a negative result for great crested newt was returned; although common frog and toad were both recorded. Given the lack of species records, poor quality of aquatic habitat and historic survey data, great crested newt are considered to be **absent** from the Site and have been

scoped out of further assessment. However, given their known presence, the Site is considered to be of **Site** importance for other amphibian species.

3.3.2 Badger

SEWBReC returned 1 record for badger within 2km of the Site within the past ten years, the precise location of which was not provided due to sensitivity. The Site provides suitable foraging, commuting and sett building habitat in the form of tussocky pasture and tree lines with associated ditches. Widespread evidence of foraging badger, in addition to a number of disused badger setts, were recorded within the Site; however, no active setts were recorded.

Badgers are not listed as a species of principal importance for the conservation of biodiversity in Wales and have therefore not been assigned a scale of importance in this case but will be considered further in this assessment in relation to their legal protection only.

3.3.3 Bats

SEWBReC returned numerous records for bats within 2km of the Site within the past ten years, including brown long-eared., common pipistrelle, *Myotis spp*., Natterer's bat and soprano pipistrelle. Of these, 1 roost record was recorded within the past ten years belonging to *Pipistrellus* sp., 0.63km south of the Site. Older roost records for *Plecotus* sp. species, *Myotis spp*. and *Pipistrellus* sp. were also returned.

3.3.3.1 Roosting bats

A number of the trees within the tree lines support potential roost features (PRFs) for roosting bats. However, as all tree lines are set to be retained, buffered and protected from light spill as part of the development, no impacts on roosting bats (if present) are anticipated. Therefore, further surveys for roosting bats have not been undertaken. A scale of importance has not been assigned for roosting bats and they have been scoped out of further assessment.

3.3.3.2 Commuting and foraging bats

The tree lines, ditches and watercourses provide suitable commuting and foraging habitat for a variety of bat species, and these are connected to a network of suitable habitat (hedgerows, tree lines, watercourses and woodland) within the wider area. The Site is therefore considered to be of **moderate** suitability for commuting and foraging bats.

Seven automated detector surveys have been undertaken between April – October 2024. During these surveys, at least six species were recorded. These are shown below in order of frequency:

- Soprano pipistrelle (48.13%);
- Common pipistrelle (46.35%);
- *Myotis* sp (5.38%);
- *Plecotus* sp (0.13%);
- Serotine (<0.01%); and
- *Nyctalus* sp (<0.01%).

Static detector locations and average numbers of passes per species for each location are shown in **Figure 2**.

The assemblage of bats recorded during the surveys is considered to be fairly typical given the Site's geographic location and habitats available both on Site and within the wider landscape. The vast majority of activity within the Site belonged to soprano pipistrelle and common pipistrelle, both of which

are considered to be common and widespread within the UK and are considered to be light-tolerant. No Annex II species were recorded.

Locations 1-3 saw the highest levels of bat activity throughout the surveys, with each location comprising approximately 30% of the total passes recorded within the Site. Locations 4-5 both saw overall low levels of activity, with Location 4 seeing 7.5% of passes and location 5 seeing the fewest at 3%.

The Site is predominantly used by common and widespread species and is therefore considered to be of **Site** importance for commuting and foraging bats.

3.3.4 Birds

SEWBReC returned numerous records for protected and notable birds within 2km of the Site within the past ten years, incuding cuckoo (BoCC Red), peregrine (WCA), swift (BoCC Red), starling (BoCC Red) and red kite (WCA). The tussocky pasture, dense scrub, tree lines and watercourses provide optimal habitat for a number of bird species.

The breeding bird surveys recorded a total of 41 species. These species were recorded throughout the tussocky pasture and boundary vegetation, and a particular concentration of records were noted within and adjacent to the major watercourse and along the north-eastern Site boundary. Of these, 24 were notable species (at least Amber-listed BoCC 5, SPI, Local BAP or Sch1 WCA) and 13 species (including four ground-nesting species) were classified as breeding within the Site. Both meadow pipit and skylark were observed entering or leaving suitable nest sites within the tussocky pasture, and confirmed to be breeding, on multiple surveys. The peak counts for meadow pipit and skylark were 23 and 11 respectively and it is clear that the Site supports a considerable population of Welsh and UK Red list designated ground nesting birds.

Furthermore, significant probable breeding populations of Red list (Welsh BoCC4) passerine species were observed within the Site; most notably eight concurrent grasshopper warbler and fourteen willow warbler territories. Both of these species were predominantly recorded within boundary vegetation and within the river corridor, however this is not necessarily indicative of their nesting locations. This is especially true for grasshopper warbler, whose nesting preferences include rough grassland and marshland and it is considered likely that they are utilising the tussocky pasture habitat to nest within the Site, and are using the boundary vegetation and river corridor habitats to sing and form territories. Willow warbler, on the other hand, commonly nest low in scrub and hedgerows and it is considered likely that their recorded locations are an accurate representation of where they're nesting.

Although it is important to note that the habitats present within the Site are relatively common and widespread in the local area, there are notable breeding species within the Site and the Site is therefore considered to be up to **County** importance for breeding birds.

3.3.5 Dormouse

No records were returned for dormice within 2km of the Site within the past ten years. The tree lines and dense scrub within the Site lack connectivity both within the Site and the wider area. Furthermore, the tree lines within the Site are considered sub-optimal due to the lack of suitable understorey vegetation. Dormice are therefore considered to be **absent** from the Site and have been scoped out of further assessment.

3.3.6 *Invertebrates*

SEWBReC returned 72 records for protected and notable invertebrates within 2km of the Site within the past ten years, including species such as marsh fritillary. No records of notable/ protected invertebrates were recorded within the Site boundary or adjacent habitats, however, it is likely that these species could be using the onsite habitats. The tussocky pasture, tree lines and associated ditches and watercourses provide suitable habitat for a range of invertebrates, especially deadwood-associated species. However, these habitats are common and widespread in the local area and the Site is therefore considered to be of no more than **Site** importance for invertebrates.

3.3.7 *Reptiles*

SEWBReC returned 39 records for reptiles within 2km of the Site within the past ten years. This included 14 records for common lizard, with the closest being 1.2km east; 9 records for grass snake, with the closest being 1.05km northwest; and 16 records for slow worm, with the closest being 1.2km northwest. The tussocky pasture, tree lines, wet ditches and watercourses provide optimal habitat for a number of reptile species. The reptile surveys recorded the presence of a breeding common lizard population, with the majority of observations recorded within the tussocky pasture habitat in the north-east of the Site. A peak count of 6 adults was recorded, which according to good-practice guidelines (Froglife, 1999), is classified as a 'good' population size. However, due to the abundance of similar habitat within the local area, the Site is considered to be of no more than **Local** importance for reptiles.

3.3.8 *Other Notable Species*

SEWBReC returned 9 records for hedgehog, with the closest being 0.4km east. One record for otter was returned, 1.38km northwest. No records were returned for water vole. The tussocky pasture and tree lines provide suitability for hedgehog whilst the watercourses, primarily the one running from north-west to south-east through the Site, provides some suitability for otter. Although no evidence of either species was recorded within the Site, it is considered possible that both species could utilise the Site to commute and forage. The Site is considered to be of **Site** importance for hedgehog and precautionary measures will be adopted during construction and operation to avoid potential impacts on otter should they be present.

4 Further Survey Work

No further ecological survey work is considered necessary for this application; however any changes to the proposed masterplan or if any significant amount of time has passed since the date of this report, a re-appraisal may be required.

5 Impact Assessment And Mitigation

5.1 Designated Sites

5.1.1 *Sites of Importance for Nature Conservation (SINCs)*

The entire Site lies within the Neath Port Talbot Watercourses SINC, a blanket designation afforded to watercourses and their surrounds within the county borough. It is important to note that additional detail on what constitutes the 'surrounds' of a watercourse is not available within the site designation information; online resources show the majority of county borough of Neath Port Talbot under this one SINC designation. Therefore, to inform the impact assessment process below, it has been assumed that 'surrounds' constitutes the riparian habitats adjacent to the watercourses than run through the county borough.

The proposed scheme, in the absence of mitigation, would result in a loss and/or fragmentation of SINC quality habitat. Furthermore, in the absence of mitigation there is a risk of degradation of SINC quality habitats caused by pollution and run-off during the construction phase.

Firstly, to mitigate for the potential loss and/or fragmentation of habitats, all watercourses within the Site have been afforded a 15m buffer. A temporary bridge will be installed over the main watercourse to allow construction to be undertaken in the north-east of the Site. This encroachment is considered to have a negligible impact on the watercourse and its surrounds, given its small-scale and temporary nature. The buffers will be clearly marked through Heras fencing (or similar) and will be subject to regular checks throughout construction to ensure they are still intact. In addition to protecting the watercourses, this buffer will also serve to protect the riparian habitats surrounding the watercourses. Furthermore, standard airborne and water pollution prevention measures, in line with the Pollution Prevention for Businesses (2024) guidance, will be followed construction to avoid negative impacts through pollution and run-off.

In addition, both Ynysdawle SINC (0.26km) and Nant y Cafn SINC (0.47km) are within 0.5km of the Site and in the absence of mitigation there is a risk of negative indirect impacts caused by pollution and run-off during the construction phase on the heathland habitats for which they are designated. To mitigate for this, as listed above, standard airborne and water pollution prevention measures will be followed during construction, in line with the Pollution Prevention for Businesses (2024) guidance.

With the proposed mitigation measures no significant impacts are anticipated for Neath Port Talbot Watercourses SINC, Ynysdawle SINC or Nant y Cafn SINC.

5.2 Habitats and Flora

The proposed layout includes the use of existing farm access tracks and field gates and existing breaches wherever possible and will not require any losses to boundary vegetation. These will be used during construction, maintenance and decommissioning. All tree lines, ditches and watercourses are to be retained and suitably protected during installation with 15m buffers. The area identified as ‘complex habitat mosaic’ will be retained and suitably protected during installation although a negligible area (c.0.005ha) will be lost to allow the creation of an access track across the watercourse.

Panels will be bolt anchored to a metal frame, which will be mounted on steel posts driven or secured into the ground (the pile driven sub-construction method) (see below **Photograph 1**). Solar panels will not be vertically aligned. By design, solar panels will be positioned at an inclined angle with significant clearance between rows and the arrays themselves are partially transparent, which will permit vegetation growth beneath.

There is a risk that construction activities may inadvertently lead to dust, pollution events, or sediment run-off resulting in damage to those habitats that are within relatively close proximity and/or are hydrologically connected to the construction footprint. A Construction and Environmental Management Plan (CEMP) will be produced to include all elements of the construction program when the construction contractor is appointed post consent and will be agreed with the LPA by condition.

The implementation of standard pollution prevention, runoff control measures and dust suppression measures in accordance with current good practice, will ensure potential indirect effects on designated Sites are avoided. Working areas will be clearly defined and buffers to sensitive boundary vegetation created. All hedgerows and trees will be protected during construction in accordance with BS 5837:2012 protection measures under an Arboricultural Method Statement.

Whilst proposals will not result in wholesale losses to habitats effects of shading and the existing hydrological regime would be expected to lead to partial degradation of habitats and a reduction in

species diversity beneath the panels. These effects are discussed below in relation to the specific habitats and NVC communities present on Site.

Photograph 1: Illustrative photo showing solar frame installation

An outline Landscape and Ecology Management Plan (LEMP) (2258-LEMP-RY) has been produced to provide a framework for delivery of management prescriptions for the benefit of biodiversity over the lifetime of the development proposals. The LEMP includes details of management of all new and retained habitats and will be a live document with regular review periods and iterations.

5.2.1 M23a/M23b/M25b/M25c NVC communities

Solar panels individually have a relatively small footprint and installation will require direct land take of a small proportion of these in-field habitats. However, during installation there is potential for damage to these habitats through, for example, rutting and compaction in wet weather from site vehicles and dust deposition during dry conditions. However as discussed previously these impacts will be limited as far as possible through sensitive installation methods under provisions of an approved CEMP.

The proposals will impact on the various identified NVC grassland and rush pasture communities within the Site. The hydrological regime and drainage of the Site could be altered by the installation of the solar arrays effecting the way in which water naturally flows and is stored within these habitats. This could negatively impact the habitats' ability to function and the suitability of ground conditions for the species that form the specific habitats. In addition, although the tussocky structure of the grassland is likely to regenerate following installation, the increased shading under the arrays will lead to a reduction of species diversity. Shade-tolerant species would be expected to dominate, outcompeting those species which are less accustomed to the shade. For example, purple moor grass, marsh bedstraw and tormentil, all of which form key components of M23 and M25 communities, require at least partial shade (3-6 hours of sunlight per day) to grow. This level of sunlight will not be achieved under the solar arrays and it is considered that species such as soft rush, which can tolerate higher levels of shade, could become dominant; leading to a reduction in overall species diversity. However, within margins and the

gaps in the solar arrays and in areas receiving less shading, similar species composition and habitats structure would be expected to continue to prevail.

It is acknowledged that, despite the mitigation proposed (partial retention of some habitats), the proposals could lead to a reduction in the coverage and quality of the M23a, M23b, M25b and M25c habitats within the Site for the operational lifetime of the development.

5.2.2 'Complex habitat mosaic'

A complex mosaic of NVC communities, comprising irregular landforms and small habitat fragments, are present adjacent to the watercourse running through the Site.

The habitat mosaic is set to be retained and protected as part of the development with a 15m buffer, although a negligible area (0.005ha) will be lost to allow the creation of the access track across the watercourse. The buffer will be clearly marked through Heras fencing (or similar) and will be subject to regular checks throughout construction to ensure they are still intact. This buffer will also ensure that the habitat mosaic is not negatively impacted through the tracking of vehicles, and dust, vibration and pollution run-off during construction activities. The Pollution Prevention for Businesses (2024) guidance will be followed throughout construction. Given the negligible area of habitat loss and mitigation measures above, no significant impacts are anticipated on the complex habitat mosaic.

5.2.3 Tree lines, ditches and watercourses

The majority of fields are bounded by tree lines and associated ditches and watercourses, with the most significant watercourse running through the Site from the north-west to the south-east.

All tree lines, ditches and watercourses are to be retained and protected with a 15m buffer. An existing breach in the western tree line will be utilised to allow the creation of the access track into the Site, and exiting breaches within the on-site tree lines will be utilised for the internal access tracks, ensuring no loss to tree lines within the Site. In addition, a temporary bridge will be installed over the major watercourse to allow construction to be undertaken in the north-east of the Site. This encroachment is considered to have negligible impact on the watercourse and its surrounds, given its small-scale and temporary nature. All buffers will be marked out with Heras fencing (or similar) and will be subject to regular checks throughout construction to ensure they are still intact.

These buffers will also ensure that the tree lines, ditches and watercourses are not negatively impacted through the tracking of vehicles, and dust, vibration and pollution run-off during construction activities. In addition, the Pollution Prevention for Businesses (2024) guidance will be followed throughout construction.

With the proposed mitigation measures no significant impacts are anticipated for tree lines, ditches or watercourses.

5.3 Fauna

5.3.1 Amphibians and reptiles

Common toad and common frog have been recorded within the Site, and the Site also supports a 'good' population of common lizard.

In the absence of mitigation, there is a risk of habitat loss and/or fragmentation causing a significant negative impact on the reptile population within the Site. Specifically, this comprises the loss/fragmentation of the tussocky pastures, tree lines, ditches and watercourses; all of which provide optimal reptile habitat. To partially mitigate for this, all boundary vegetation, ditches and watercourses

will be retained and protected with a 15m buffer as part of the development. The buffers will be clearly marked through Heras fencing (or similar) and will be subject to regular checks throughout construction to ensure they are still intact. Although areas of pasture will be cut short to facilitate the installation of the solar panels and associated posts (see below), the pasture will be allowed to regenerate following completion of the works. The exception to this being the internal tracks and access track, where a small amount of suitable pasture habitat (c. 0.30ha) will be permanently lost. Although it is considered possible that, due to additional shading, the pasture within the main Site may not regenerate to the same condition as it was pre-construction, it is anticipated that the pasture will still provide the necessary vegetation structure to support the population of reptiles currently present within the Site. Furthermore, the provision of solar panels will provide new opportunities for reptiles to bask.

As discussed above, without mitigation, there is a high risk of killing and/or injury to both reptiles and amphibians during installation of solar arrays. Therefore, the following method statement will be followed during site preparation and installation to protect reptiles and amphibians from harm:

- Initially, the vegetation removal will be cut to approximately 150mm, (starting from the centre of each field and working towards retained and buffered boundary vegetation) with the arisings removed and habitats left for a minimum of 48 hours in suitable weather conditions i.e. no rain or high winds;
- A further cut will then be made to 50mm, in the same direction as outlined above, to encourage any remaining reptiles/ amphibians towards the retained and buffered areas of suitable habitat.
- Once complete, the vegetation will be maintained at a low-level (<50mm) until the start of development works.

With the proposed mitigation and compensation measures no significant impacts are anticipated for reptiles or amphibians.

5.3.2 Badger and hedgehog

An update badger walkover will be undertaken 3 months prior to the commencement of construction activities to check for any fresh signs of sett building. If evidence of fresh sett building is identified, monitoring may be required.

Notwithstanding the above, to protect any badgers that may be utilising the Site for commuting and foraging, the following precautionary measures will be followed during construction:

- Trenches will be covered at the end of each working day and any temporarily exposed pipes will be capped to prevent badger gaining access during the night;
- Any trenches or deep pits which must be left open overnight will be provided with a means of escape should a badger enter. This would simply be in the form of a roughened plank of wood placed in the trench as a ramp to the surface;
- Any trenches/pits will be inspected each morning to ensure no badgers have become trapped overnight. Should a badger become trapped in a trench it may attempt to dig itself into the side of a trench and form a temporary sett. Should a trapped badger be encountered, the advice of an ecologist must be sought immediately. If necessary, the ecologist will contact the RSPCA or a vet who will move the badger to safety or provide treatment if required;
- The storage of topsoil or other 'soft' building material within the construction site will be given careful consideration. Badgers may readily adopt such mounds as setts. To avoid this, mounds will be kept to a minimum and any essential mounds will be subject to daily inspections;
- Food and litter are not to be left within the working area overnight to minimise the potential for any roaming badgers to be attracted to the construction site; and
- The storage of any chemical within the construction site will be contained in such a way that they cannot be consumed or knocked over by any wildlife.

The mitigation measures outlined above will also serve to protect hedgehogs and other mammals from harm. In addition, any features with potential to support hedgehog will be removed sensitively either by a check prior to removal, or by sensitive removal to ground level to allow a visual check for hedgehog. If a hedgehog is found at any point during construction works then works must stop immediately and an ecologist contacted in the first instance.

With the proposed mitigation and compensation measures no significant impacts are anticipated for badger or hedgehog.

5.3.3 Birds

The Site supports a total of 41 species within the Site, of which 24 are considered to be notable species and 13 were classified as breeding within the Site. Four ground-nesting bird species; meadow pipit, skylark, grasshopper warbler and willow warbler were recorded breeding throughout the Site.

In the absence of mitigation, there is a risk that the loss /fragmentation of tussocky pasture, tree line, ditch and riparian habitat, all of which provide optimal breeding bird habitat, will lead to a significant negative impact on the breeding bird population within the Site. In addition, if construction takes place during the breeding bird season, increased disturbance caused by construction noise, dust and vibration is likely to affect the ability of birds to hold territory and breed successfully within habitats adjacent to the works area. To partially mitigate for this, all boundary vegetation, ditches and riparian habitats will be retained and protected with a 15m buffer as part of the development. The buffers will be clearly marked through Heras fencing (or similar) and will be subject to regular checks throughout construction to ensure they are still intact. This retention and protection of suitable habitat will mitigate impacts on the nine non-ground-nesting birds recorded breeding within the Site, including species such as chaffinch, linnet, song thrush and wren.

However, the proposals will necessitate the temporary clearance of purple moor grass and rush pasture habitat to facilitate the installation of the solar arrays and also the permanent loss of c. 0.30ha of pasture habitat to create the internal tracks and access track. These works will lead to significant, albeit predominantly temporary impacts, on three of the four ground-nesting bird species within the Site. Impacts to willow warbler are not anticipated because, although ground-nesting, their preferences comprise low-level shrub, scrub and tree lines/hedgerows, all of which are to be retained and protected as detailed above. As discussed, the pasture will be allowed to regenerate following the completion of works and although it is considered likely that, due to additional shading, the pasture within the main Site may lose some suitability for ground-nesting birds, it will still provide notable value. In addition, a recent study has been published titled '*Solar parks can enhance bird diversity in agricultural landscape* (Jarčuška *et al*., 2024)'. This study is the first peer-reviewed study investigating the impact of solar farms on bird diversity across a large number of sites in Central Europe and it concludes that solar farms can enrich vegetation structural diversity, bird species diversity, abundance of invertebrate-eaters and abundance of ground foragers. Although the purple moor grass/rush pasture within the Site is not typical of an agricultural landscape, it has and is being managed in line with the requirements for pastoral sheep grazing and is therefore considered to be of relevance in relation to the study. For example, within the past year the majority of the pasture within the Site has undergone topping to ensure suitability for sheep grazing.

Therefore, the results of this study indicate that the loss of suitable ground-nesting habitat under the solar panels will be suitably compensated for through an increase in structural diversity, creation of new microclimates and an increase in invertebrate abundance. In addition, the conversion of the Site to a solar farm will lead to a cessation of the current topping management technique, which will also be favourable for breeding birds, and the solar panels will provide new perching and singing habitats for a number of bird species.

Given the protection afforded to all breeding birds, their nests, eggs and young, any vegetation clearance, including the future management of habitats, should be undertaken outside of the breeding bird season (March to August inclusive). If this is not practicable, then works should be preceded by a nesting bird check by a suitably qualified ecologist within 48 hours of the commencement of works. If evidence of nesting is recorded, works within that particular area should not proceed until the chicks have fledged, with a buffer zone around the active nest of 10m minimum.

With the proposed mitigation and compensation measures no significant impacts are anticipated for breeding birds.

5.3.4 Commuting and foraging bats

The Site supports an assemblage of commuting and foraging bats which is dominated by common and widespread species, specifically common pipistrelle and soprano pipistrelle (totalling 94.48% of all passes recorded within the Site).

Without appropriate mitigation, the loss and/or fragmentation of tree lines and ditches/watercourses around field and Site boundaries have the potential to negatively impact commuting and foraging bats within the Site.

To minimise the impacts on commuting and foraging bats, all boundary vegetation will be retained and protected with a 15m buffer as part of the development.

During the construction phase, the following mitigation measures will be implemented:

- All works will be undertaken during daylight hours, with works commencing no earlier than 30 minutes prior to sunrise and finishing no later than 30 minutes after sunset. No artificial lighting will be left on outside of normal working hours; and
- Where security lighting is required, it is recommended that these are motion activated with hooded luminaires, and these must be directed away from boundary vegetation and bat and bird boxes.

No additional lighting will be installed as part of the operational phase and as such no impacts on commuting and foraging bats are anticipated.

5.3.5 Invertebrates

Although a notable invertebrate assemblage hasn't been recorded within the Site, the habitats within the Site do provide optimal habitat for invertebrates.

Without appropriate mitigation, the loss and/or fragmentation purple moor grass and/or rush pasture, tree lines, ditches/watercourses has the potential to negatively impact any invertebrate assemblage that is present within the Site. To partially mitigate for this, all tree lines, ditches and watercourses will be retained and protected with a 15m buffer as part of the development. Although areas of pasture will be cleared to facilitate the installation of the solar panels and associated posts), the pasture will be allowed to regenerate following completion of the works and the commencement of the operation phase. Although it is considered possible that, due to additional shading, the purple moor grass/rush pasture may not regenerate to the same condition as it was pre-construction, it is anticipated that the pasture will still provide the necessary vegetation structure to support the invertebrate assemblage within the Site. In addition, the studied mentioned above '*Solar parks can enhance bird diversity in agricultural landscape* (Jarčuška *et al.*, 2024)' concludes that the installation of solar arrays can increase abundance of invertebrate-feeding bird species, which indicates that the proposals could lead to an increase in invertebrate numbers. Therefore, no significant impacts are anticipated for invertebrates.

5.3.6 Otter

Although no records of evidence of otter was recorded within or adjacent to the Site, there is the potential for otter to be negatively impacted through pollution and run-off into the watercourses during construction, should they be present. Therefore, to mitigate for this, the standard Pollution Prevention for Businesses (2024) guidance will be followed throughout construction to prevent pollution and run-off into the watercourses. With the proposed mitigation measures, no significant impacts on otter are anticipated.

6 Summary of Assessment and Mitigation

Figure 3 summarises and illustrates the avoidance, mitigation and compensation measures required to minimise significant impacts to ecological features. This demonstrates that the mitigation hierarchy has been adhered to by focusing on the **avoidance** of ecological features of greatest importance, mitigating unavoidable impacts and, as a last resort, providing **compensation**.

7 Enhancements

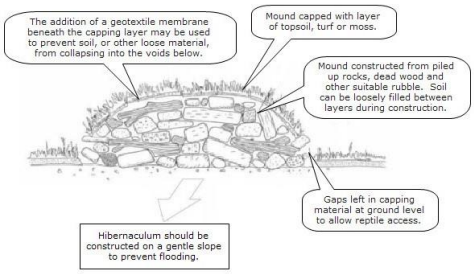
In addition to the mitigation requirements above, the following enhancements are recommended to further enhance the Site for biodiversity:

- Gappy tree lines across the Site will be enhanced with additional native planting;
- Opportunities to reinstate hedgerows and improve habitat connectivity will be taken where possible with lengths of new hedgerow comprising a variety of native species;
- Management of new hedgerows will aim to achieve hedgerows which are bushy and minimum 3m tall and 2m wide. Hedgerows will be cut on a minimum 3 year rotation, with a third of the hedgerow allowed to grow for a minimum of 5 to 7 years, allowing vegetation to fruit, which provides a food source for biodiversity;
- Retained field margins and buffers will be appropriately managed under provisions of a LEMP.

In addition, the enhancements detailed in **Table 3** are recommended in line with national guidance and local planning policy. Indicative locations are shown in **Figure 3.**

Table 3: Enhancement Features

Quantity & Type	Illustrations	Description & Installation
15 no. tree mounted bat box	 Schwegler 2F bat box	• To be externally mounted on trees at a height of at least 3m above ground level. • Fix securely to an open section of tree trunk. • Boxes are to be made of a durable material such as woodstone or woodcrete. • Suitable models include the Schwegler 2F bat box, Low Profile WoodStone Bat Box or similar approved. Suppliers include www.nhbs.com and www.wildcare.co.uk. • Locate where there is a clear, unlit flight path for bats to linear vegetation

Quantity & Type	Illustrations	Description & Installation
	 Low Profile WoodStone Bat Box	(e.g. hedgerows) and away from windows. • Install away from any lighting.
15 no. tree-mounted bird nest boxes	 Vivara Pro Seville nest box.	• Use woodstone/ woodcrete boxes that are more durable than wooden boxes e.g. the Vivaro Pro Seville nest box available from www.nhbs.com or www.wildcare.co.uk. • Boxes can have different size entrance holes for different bird species e.g. 32mm and 28mm. • Erect singly on trees, out of direct sun and the prevailing weather and away from perches where birds are at risk from predators. • Position boxes at a minimum of 3m above the ground. • Attach securely to an open section of trunk that is not obscured by vegetation.
6 no. hibernaculum/ habitat piles	 Example hibernacula design	• Provide hibernacula/ resting places for fauna such as reptiles, mammals and invertebrates. • Constructed from dead wood and rubble, topped with loose soil and turf. Dimensions to be a minimum of 2m length x 1m width x 1m height. • Located in suitable locations such as within the undisturbed boundary vegetation and river corridor.
1 no. Otter holt		• Provide resting and sleeping places for otter. • Constructed using log piles to a minimum specification of 5m x 3m x4m. • Large logs used for the base, which will form a series of chambers, whilst thinner logs can be used to roof the chambers and debris piled on top to make the structure waterproof. • Located within undisturbed area of river corridor.

8 Monitoring and Decommissioning

Monitoring should be undertaken to ensure that the mitigation described in this report has been undertaken to a satisfactory standard. This applies to both the construction and operation phases of the development.

Any future consent will include a planning condition requiring eventual decommissioning of the site including the removal of all equipment and the reinstatement of the land as per its current use and profile.

Over the likely 40 years of operation, the baseline conditions are likely to change but reliably predicting likely future decommissioning effects is not possible at this stage. However, potential impacts from decommissioning are considered likely to be similar to those already described in relation to the construction phase effects, namely direct and indirect disturbance and temporary habitat loss.

Update ecological surveys are likely to be necessary prior to decommissioning in order to record presence of protected and notable species and habitats and identify any necessary protection and mitigation measures in order to comply with planning policy and wildlife legislation applicable at the time.

9 Conclusions

In summary the Site was considered to be of relatively high ecological interest. Avoidance, mitigation and compensation measures have been incorporated into the design to ensure that the proposals have minimal adverse impacts on designated sites and protected species. However, following mitigation and compensation, degradation and impacts to grassland and rush pasture habitats are considered likely.

Enhancement features have also been described with the aim of providing an increase in wildlife opportunities on Site post-development, contributing to the aims of Planning Policy Wales and local policy.

10 References

Bat Conservation Trust/ Institute of Lighting Professionals (2023) *Guidance Note 08/23 - Bats and Artificial Lighting at Night*. Bats and the Built Environment Series. Available from: https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/

Bird Survey & Assessment Steering Group. (2023). *Bird Survey Guidelines for assessing ecological impacts, v.1.1.1*. https://birdsurveyguidelines.org *[14th November 2024]*

BSI (2012) *BS5837:2012 Trees in relation to design, demolition and construction. Recommendations*. British Standards Institution, London, UK.

BSI (2013) *BS42020:2013 Biodiversity. Code of practice for planning and development*. British Standards Institution, London, UK.

Butcher B., Carey P., Edmonds R., Norton L. and Treweek J (2020) *The UK Habitat Classification User Manual V1.1*

Butcher B., Carey P., Edmonds R., Norton L. and Treweek J (2020) *UK Habitat Classification – Habitat Definitions V1.1*

CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine, version 1.1*. Chartered Institute of Ecology and Environmental Management, Winchester.

Collins, J. (ed.) (2023) *Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition)*. The Bat Conservation Trust, London.

Froglife (1999) *Froglife Advice Sheet 10: Reptile Survey - An introduction to planning, conducting and interpreting surveys for snake and lizard conservation*. Froglife, London.

Gwent Wildlife Trust (2004) *Guidance for the Selection of Wildlife Sites in South Wales*. The South Wales Wildlife Sites Partnership.

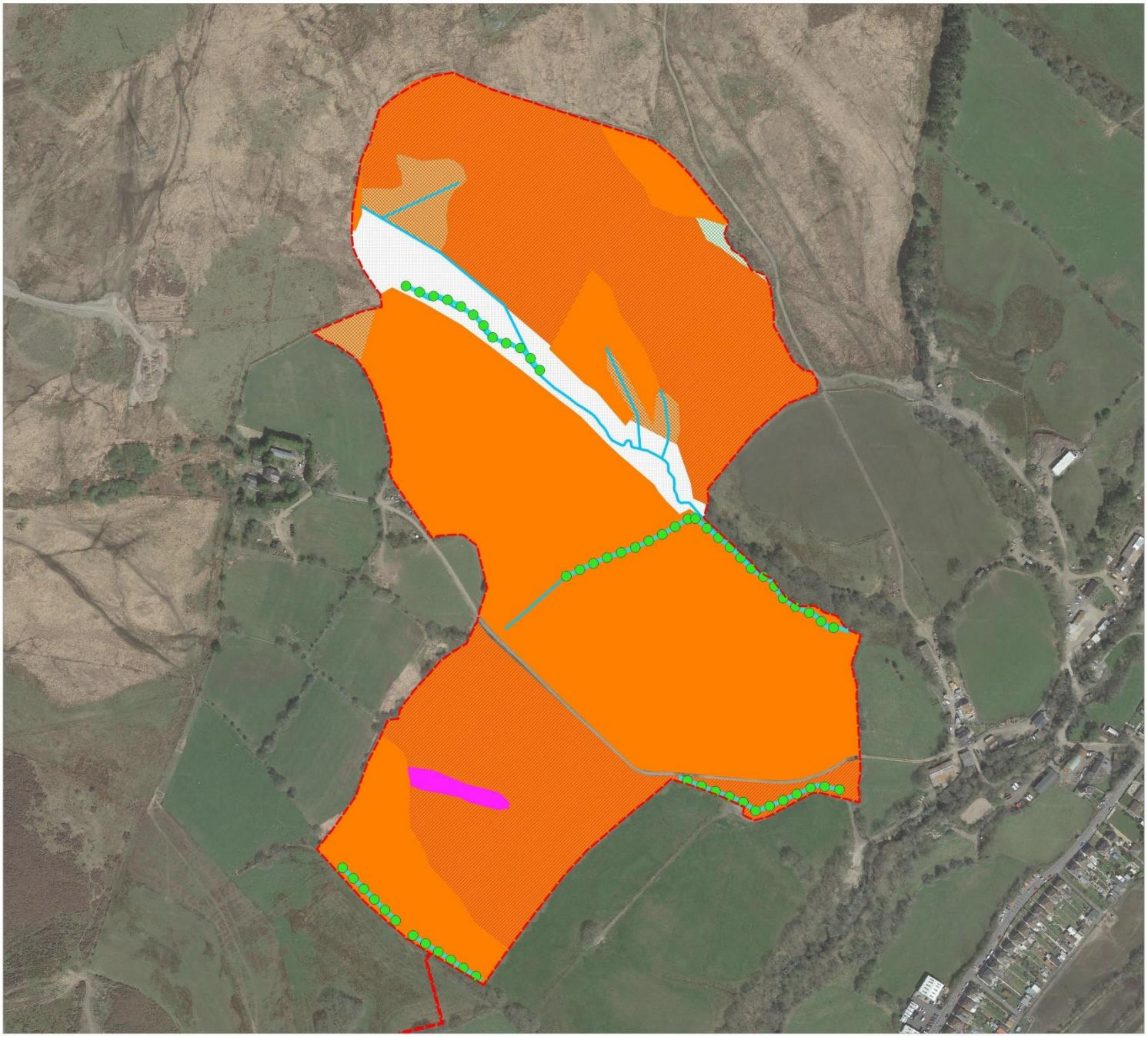
Johnstone, I.G., Hughes, J., Balmer, D.E., Brenchley, A., Facey, R.J., Lindley, P.J., Noble, D.G. and Taylor, R.C. (2022). *Birds of Conservation Concern Wales 4: the population status of birds in Wales*. Milvus: the Journal of the Welsh Ornithological Society. Available at: https://tinyurl.com/BoCCW4

Pollution Prevention for Businesses (2024). Available from: https://www.gov.uk/guidance/pollution-prevention-for-businesses

QGIS (2024). *QGIS Geographic Information System*. QGIS Association. Available from: www.qgis.org

Rodwell, J.S. (ed.) (2006) *National Vegetation Classification: Users' Handbook*. JNCC.

Stanbury A., Eaton M., Aebischer N., Balmer D., Brown A., Douse A., Lindley P., McCulloch N., Noble D., and Win I. (2021) *The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain*. British Birds 114: 723-747



Key:

- Site Boundary
- Dense scrub
- M23b Festuca rubra – Juncus effusus /acutiflorus - Galium palustre rush -pasture Juncus effusus sub-community)
- M25b (Molinia caerulea - Potentilla erecta mire Anthoxanthum odoratum sub-community)" mire Angelica sylvestris sub-community)
- Complex habitat mosaic
- M25c (Molinia caerulea- Potentilla erecta mire Angelica sylvestris sub-community)
- M23a Juncus effusus/ acutiflous-Galium palustre rush-pasture Juncus acutiflorus sub-community (runnels and flushes))
- Line of Trees (Ecologically Valuable) - with Bank or Ditch
- Watercourses

0 60 120 180 240 m

Figure 1a:

Baseline Habitats Plan (main site)

Project:

Pen Caer Lan Farm, Seven Sisters

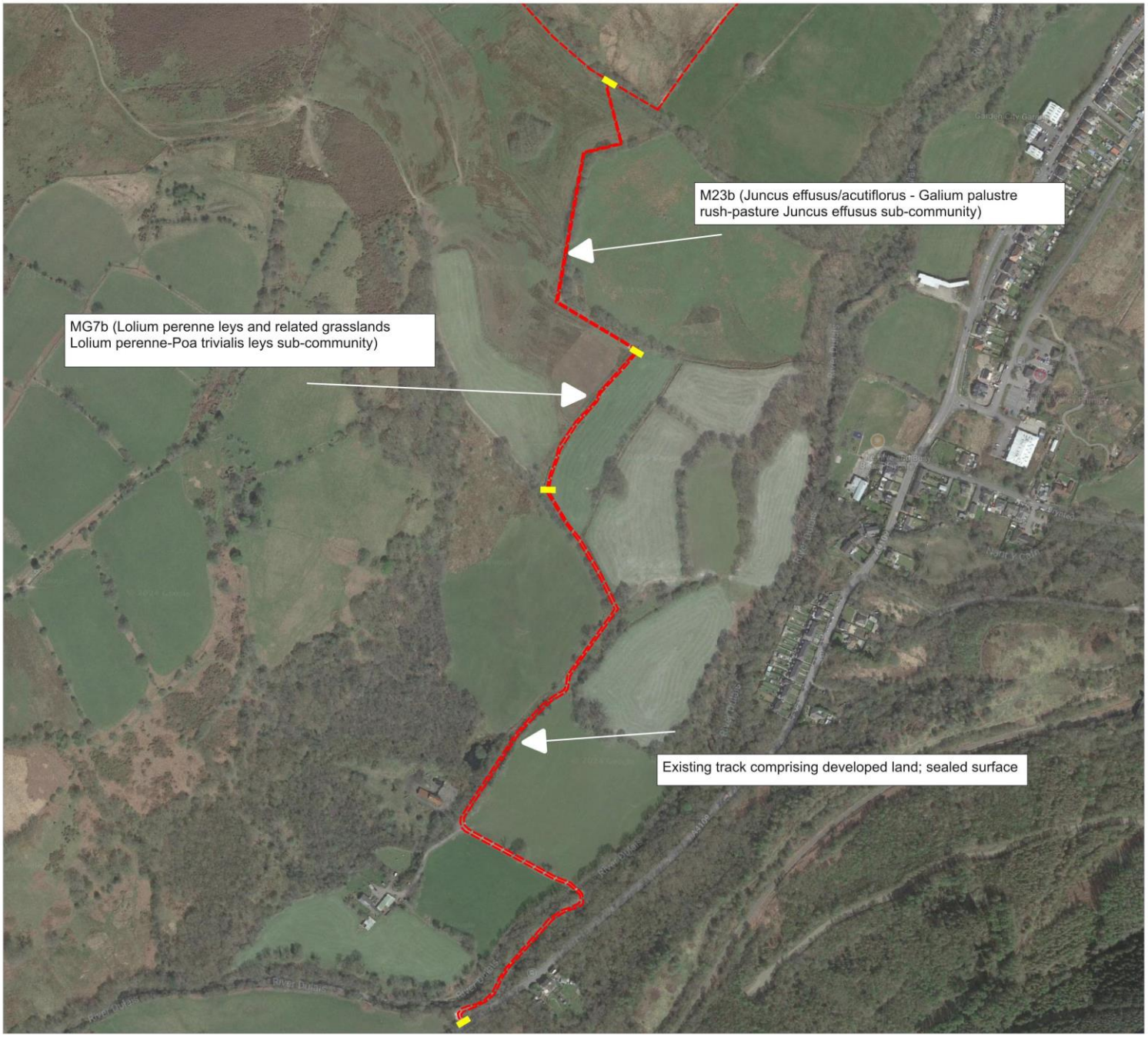
Client:

Greentech Invest UK

Date:	Drawn:
19/11/2024	RY
Ref:	Revision:
2258-EclA-F1a	N/A

ge consulting ECOLOGY ARBORICULTURE LAND MANAGEMENT

N



Key:

Site Boundary

0 70 140 210 280 m

Figure 1b:

Baseline Habitats Plan (access track)

Project:

Pen Caer Lan, Seven Sisters

Client:

Greentech Invest UK

Date: 15/11/2024

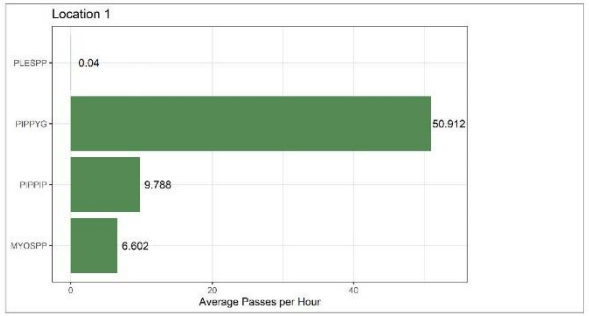
Drawn: RY

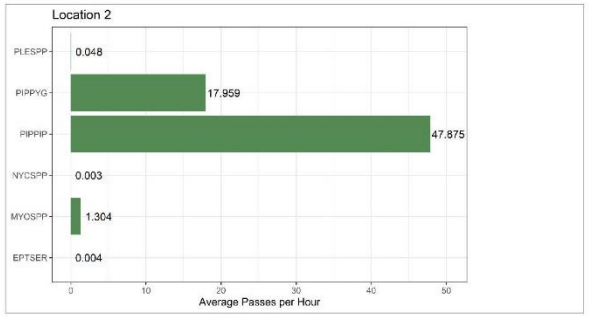
Ref: 2258-EcIA-F1b

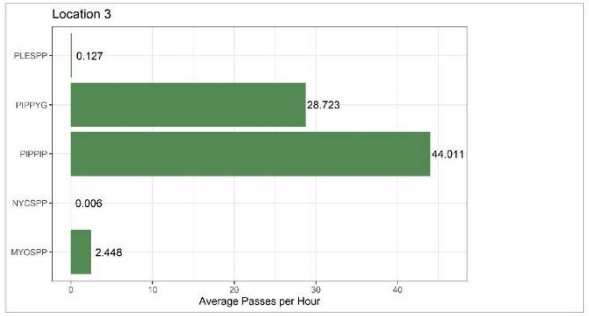
Revision: N/A

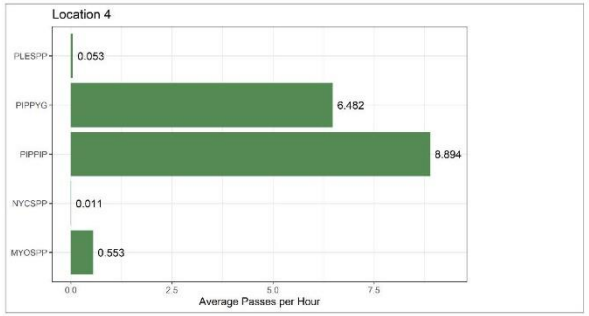
ge consulting ECOLOGY ARBORICULTURE LAND MANAGEMENT

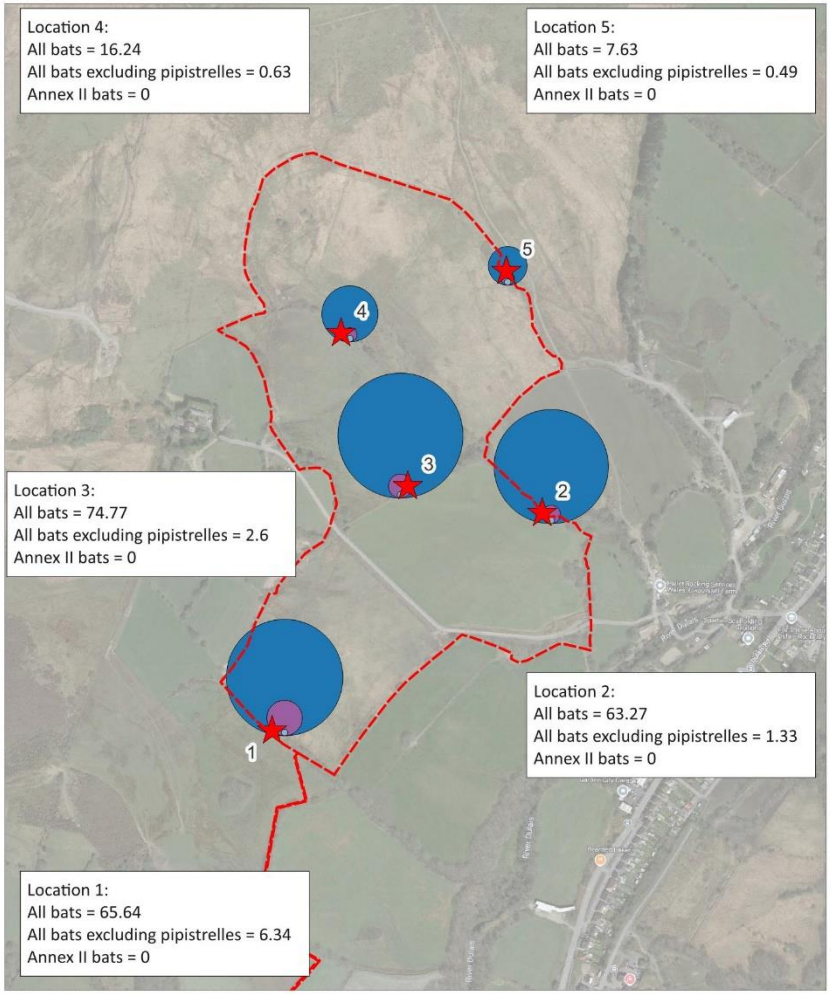
N

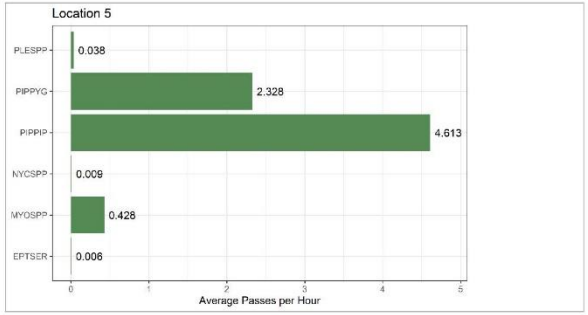












Key:

- Site Boundary
- Static Locations
- All bats
- Annex II
- Excl pips

Circles are indicative of the average number of bat passes per night for monthly surveys conducted between April and October

Graphs show the average number of passes per night for each species for each species across the survey season at each location. Annex II bat species are indicated with an "*".

0 100 200 300 400 m

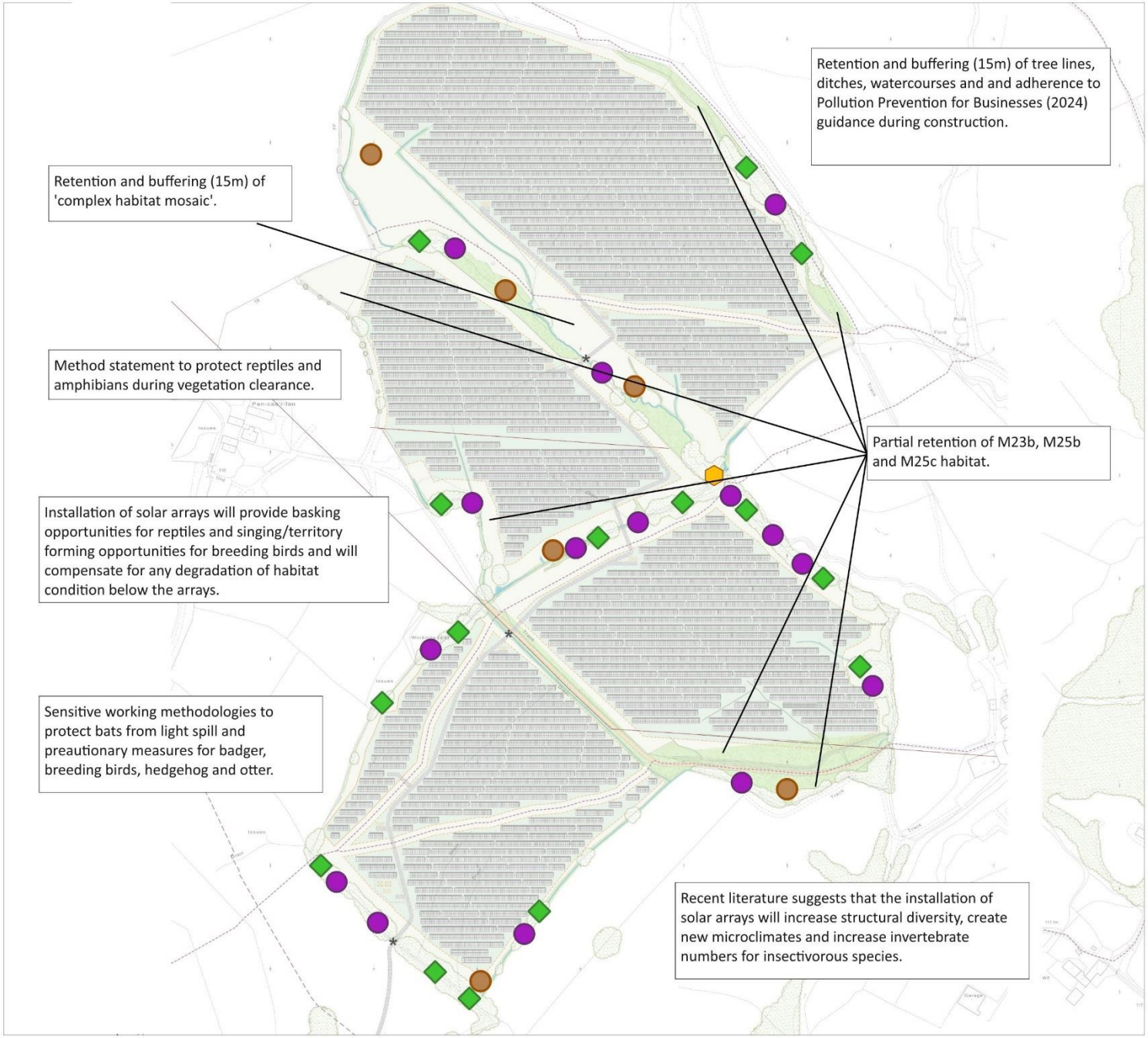
Figure 2:
Automated Bat Detector Survey Results

Project:
Pen Caer Lan Solar Farm

Client:
Greentech Invest UK

Date: 14/11/2024
Drawn: KO
Ref: 2258-EcIA-F2
Revision: -

N



Key:

- Otter holt
- Habitat Piles
- Tree Mounted Bat Box
- Tree Mounted Bird Box

0 50 100 150 200 m

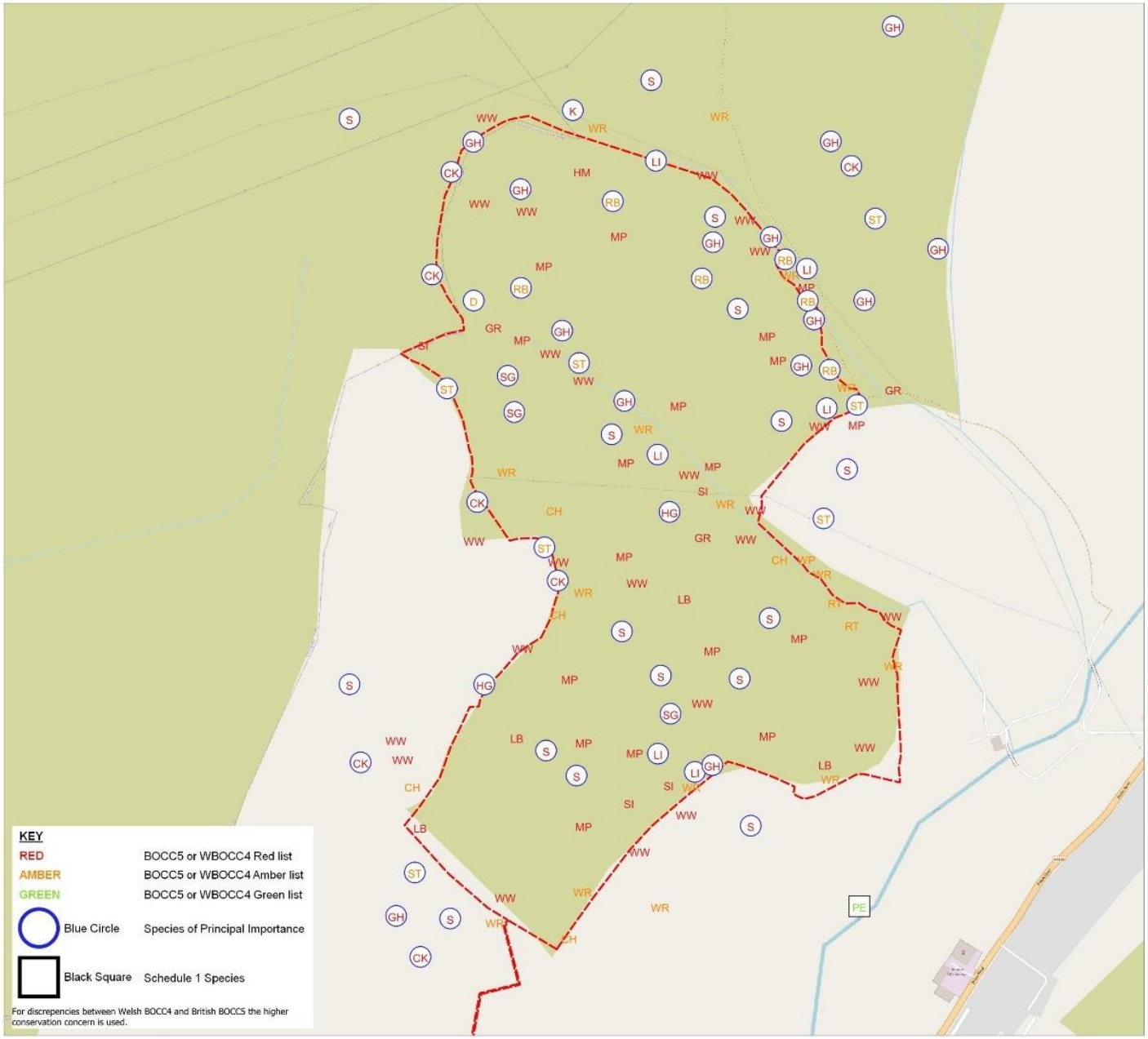
Figure 3:
Enhancements and Mitigation

Project:
Pen Caer Lan, Seven Sisters

Client:
Greentech Invest UK

Date: 19/11/2024
Drawn: RY
Ref: 2258-EcIA-F3
Revision: -

N



Key:

- I Site Boundary
- CH Chaffinch
- CK Cuckoo
- D Dunnock
- GH Grasshopper Warbler
- GR Greenfinch
- HG Herring Gull
- HM House Martin
- K Kestrel
- LB Lesser Black-backed Gull
- LI Linnet
- MP Meadow Pipit
- PE Peregrine
- RT Redstart
- RB Reed Bunting
- S Skylark
- ST Song Thrush
- SG Starling
- SI Swift
- WW Willow Warbler
- WP Woodpigeon
- WR Wren

0 70 140 210 280 m

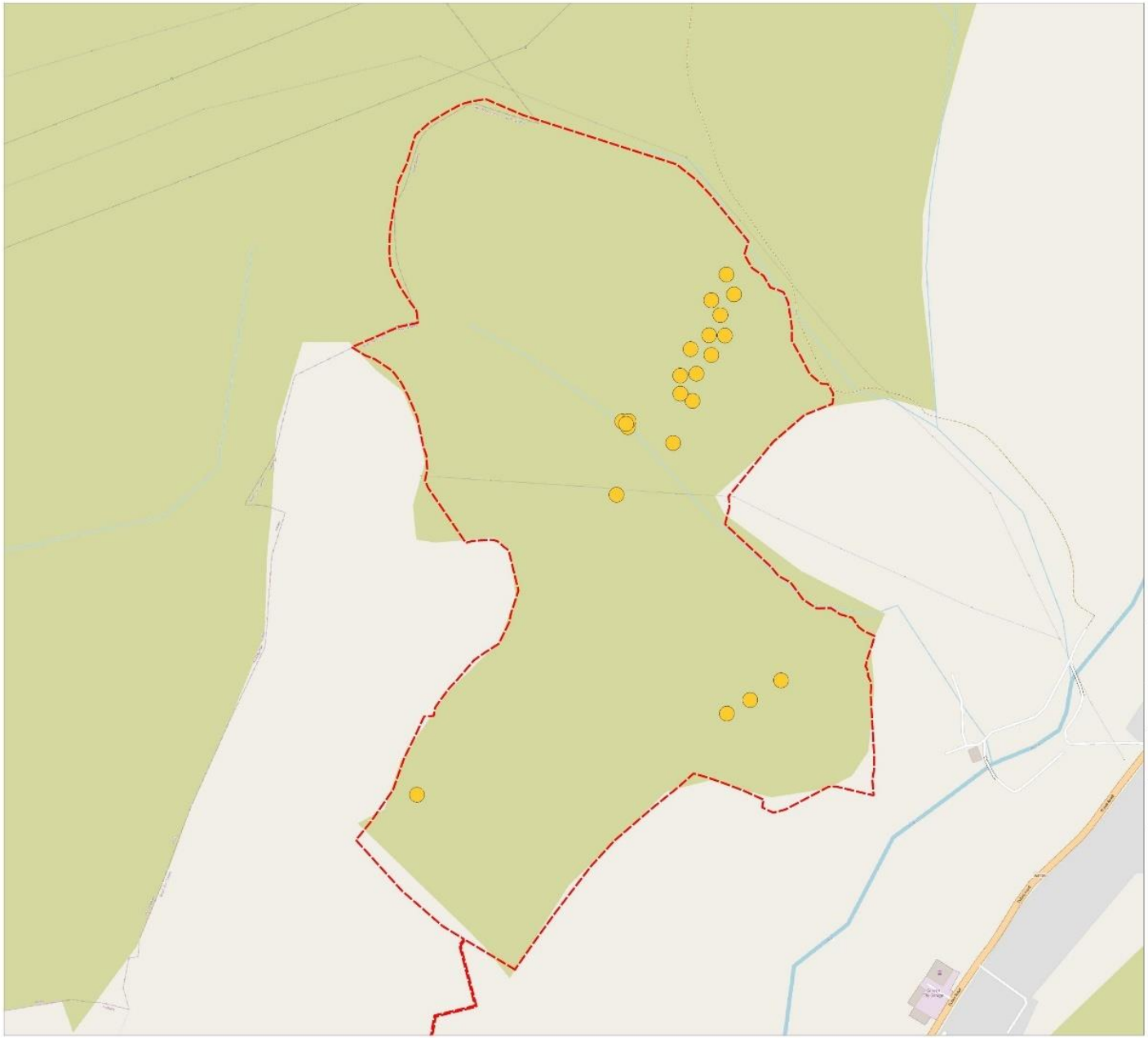
Figure 4:
Breeding Bird Survey Results

Project:
Pen Caer Lan, Severn Sisters

Client:
Greentech Invest UK

Date: 19/11/2024
Drawn: HD
Ref: 2258-EcIA-F4
Revision: EB

N



Imagery ©2024 CNES / Airbus, Getmapping plc, Infoterra Ltd & Bluesky, Maxar Technologies. Map data ©2024 Google

Figure 5:
Reptile Felt Locations and Results

Project:
Pen Caer Lan, Severn Sisters

Client:
Greentech Invest UK

Date:
19/11/2024

Drawn:
HD

Ref:
2258-EcIA-F5

Revision:
EB

Appendix 1 – General Glossary of Terms

Annex I	Threatened bird listed on Annex I of the EC Birds Directive/ Habitats listed on Annex I of the EC Habitats Directive
Annex II	Species of community interest whose conservation requires the designation of SACs
BAP	Biodiversity Action Plan
BMCL	Bat Mitigation Class Licence
BNG	Biodiversity Net Gain
BoCC	Bird of Conservation Concern
CEMP	Construction Environmental Management Plan
CWS	County Wildlife Site
DBW	Daytime Bat Walkover
EPS	European Protected Species
GLTA	Ground Level Tree Assessment
HPI	Habitat of Principal Importance required under Section 41 of the NERC Act 2006
HSI	Habitat Suitability Index
IRZ	Impact Risk Zone
GCN	Great crested newt
JNCC	Joint Nature Conservation Committee
LBAP	Local Biodiversity Action Plan
LEMP	Landscape and Ecology Management Plan
LWS	Local Wildlife Site
NBW	Night-time Bat Walkover
NE	Natural England
NERC Act	Natural Environment and Rural Communities Act 2006
NPPF	National Planning Policy Framework
NRW	Natural Resources Wales
NVA	Night Vision Aid
NVC	National Vegetation Classification Survey
OSWI	Other Site of Wildlife Interest
pCWS	Potential County Wildlife Site

PPW	Planning Policy Wales
PRA	Preliminary Roost Assessment
PRF	Potential Roost Feature
Ramsar	A wetland site designated to be of international importance under the Ramsar Convention
SAC	Special Area of Conservation
SPA	Special Protection Area
SPI	Species of Principal Importance required under Section 41 of the NERC Act 2006
SSSI	Site of Special Scientific Interest
UWS	Unconfirmed Wildlife Site
WCA	Wildlife and Countryside Act 1981(as amended)
ZOI	Zone of Influence

Appendix 2 – Planning Policy and Legislation

Habitat and Species Legislation

Species and habitats receive legal protection in the UK under various legislation, including:

- The Wildlife and Countryside Act (WCA) 1981 (as amended);
- The Conservation of Habitat and Species Regulations 2017 (as amended);
- The Countryside Rights of Way (CRoW) Act 2000;
- The Hedgerows Regulations 1997;
- The Protection of Badgers Act 1992; and
- The Natural Environment and Rural Communities (NERC) Act 2006.

Where relevant, this report takes into account the legislative protection afforded to specific habitats and species.

The Environment (Wales) Act 2016

Part 1 – Section 6 of The Environment (Wales) Act 2016 sets out requirements and duties for the Welsh Government and other public authorities to maintain and enhance biodiversity and promote the resilience of ecosystems. The duty places biodiversity as a natural and integral part of policy and decision making within public authorities.

The Policies are designed to:

- Maintain and enhance the natural environment through managing land appropriately to create healthy functioning ecosystems;
- Increase awareness of the importance of a biodiverse natural environment with healthy functioning ecosystems;
- Support ecological resilience, making the environment healthier for wildlife and people; and
- Be adaptive to a changing environment where there is a need to use resources efficiently.

Planning Policy Wales

Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, which together with PPW provide the national planning policy framework for Wales. The primary objective of PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales, as required by the Planning (Wales) Act 2015, the Well-being of Future Generations (Wales) Act 2015 and other key legislation and resultant duties.

Noteworthy policies relating to ecology and biodiversity are as follows:

- Green Infrastructure – an emphasis is placed on taking a proactive approach to green infrastructure including cross-boundary considerations;
- Net Benefit for Biodiversity and the Step-wise Approach - a strong focus is placed on securing a net benefit for biodiversity through the application of the step-wise approach utilising the DECCA framework, including the acknowledgement of off-site compensation measures as a last resort, and the need to consider enhancement and long-term management at each step;
- Non-statutory designations - Sites of Importance for Nature Conservation, Local Wildlife Sites, Local Nature Reserves, and Regionally Importance Geodiversity Sites make a vital contribution to delivering an ecological network for biodiversity and resilient ecosystems, and they should be given protection in development plans and the development management process; and
- Protected species- The presence of a species protected under European or UK legislation, or under Section 7 of the Environment (Wales) Act 2016 is a material consideration in the planning process and it is considered best practice that screening to determine the presence of protected species should be carried out by a competent ecologist on the basis of data provided by the relevant Local Environmental Record Centre.

Regional/ Local Planning Policy

The Neath Port Talbot County Borough Council Local Development Plan (2011-2026) was adoped in January 2016. It sets out the vision for the county borough up to 2026 and contains the following relevant policies:

- SP 14 – The Countryside and the Undeveloped Coast;
- SP 15 – Biodiversity and Geodiversity;
- EN 6 – Important Biodiversity and Geodiversity Sites; and
- EN 7 – Important National Features.

UK Post-2010 Biodiversity Framework

The UK Biodiversity Action Plan (UK BAP) was succeeded in 2012 by the 'UK Post-2010 Biodiversity Framework' which demonstrates a whole-environment strategy on how the UK contributes to achieving the Convention on Biological Diversity's (CBD) 20 Aichi Biodiversity Targets. In England, 'Biodiversity 2020: A strategy for England's wildlife and ecosystem services' (Defra, 2011) sets out the strategic direction for biodiversity policy in the future. The former UK BAP was used to draw up lists of species and habitats of 'principal importance' which continue to be regarded as priorities under the Post-2010 Biodiversity Framework and are identified under Section 41 of the NERC Act 2006; these species have been considered throughout this report.

Local Biodiversity Action Plan

The Neath Port Talbot Council Biodiversity Duty Plan 2023-2026 demonstrates how the Council will fulfil their legal duty under the Environment (Wales) Act 2016 and do their part to help nature in Neath Port Talbot to recover. It is intended to act as a driver behind conservation activities throughout Neath Port Talbot, with a specific focus on reversing widespread ecosystem degradation caused by pressures such as development, poor management, invasive non-native species and diseases.

Appendix 3 – Extended UK Habitat Classification Survey

Method

A site walkover was undertaken on 22 March 2024 by Nicholas Hargreaves BSc ACIEEM FISC 4 and Ryan Yeates BSc (Hons) ACIEEM when weather conditions were low-moderate drizzle.

Given the out of season survey and the potential for majority of the Site to comprise noteworthy habitats, the entire Site was subject to a full NVC survey **(Appendix 4).**

All habitats within the Site were identified, described and mapped during the field survey in accordance with the UK Habitat Classification (UKHab) UKHab Ltd. 2023 (V2.0)) with other linear and point features mapped using Phase 1 Habitat Survey symbology (JNCC 2010). Primary habitats have been mapped to a minimum mapping unit (MMU) of 25m^2, although where features of note of a smaller scale are present, these have also been recorded and mapped. Any habitats (e.g. traditional orchard) with no appropriate primary habitat label were assigned a secondary habitat code. Other secondary UKHab codes were recorded where relevant, although they are described qualitatively within this report for ease of reading. A non-exhaustive botanical species list was compiled, with plant names following Stace (2019).

The survey was extended to highlight the potential presence of protected and notable species in accordance with CIEEM's Guidelines for Preliminary Ecological Appraisal (2017). This involved a search to identify the presence or potential presence of species such as breeding birds, bats, badger, dormouse, reptiles and amphibians. Target Notes (TNs) were used to record any features or habitats of ecological interest. Where access allowed, adjacent habitats were also considered in order to assess possible impacts of the proposal in a wider context.

Appendix 4 – National Vegetation Classification (NVC) Survey

Method

An NVC survey of entre the Site was undertaken following the UKHAB survey. Prior to the survey, a desktop assessment was undertaken whereby OS maps, aerial photography and historical aerial photography were studied for any indication of areas of potential interest and any changes in management.

The survey was carried out on 02 June 2024 and 03 June 2024 by Phil Quinn MCIEEM when weather conditions were dry and still. The methodology was adapted from that described in National Vegetation Classification for Grasslands (Magnificent Meadows, 2014).

An initial walk-through of the areas was undertaken, whereby areas considered likely to be of similar vegetation types (habitat parcels) were identified and mapped (e.g. changes in colour/vegetation shapes, sward structure, management, location, slope and aspect).

Habitat parcels were then studied and plant coverage was recorded using the DOMIN scale. This entailed five 2m x 2m quadrats placed randomly through each unique stand. Where appropriate the Key within the National Vegetation Classification Field Guide to Woodland (JNCC, 2004) was followed. In addition, a thorough search for rare/notable plant species was also carried out. Data was entered in to the TABLEFIT programme to determine the "goodness-of-fit" to particular NVC communities (Rodwell, 1991a, 1991b, 1992, 1995 & 2000) setting parameters for mixed species cover and composition and/or composition only. Resulting matches were compared and assessed against NVC Handbooks before a final assessment of NVC community type was made.

A digital map of the NVC habitats was produced using QGIS (QGIS.org, 2024. *QGIS Geographic Information System*. QGIS Association. Available from: www.qgis.org). The habitat map is shown in **Figures 1a-1b**.

The NVC habitats present were evaluated against the South Wales SINC Designation Criteria.

Results

NVC habitats that best fit the habitats within the survey area are shown in **Figures 1a-1b**, with photographs in **Table 4** below.

Four of the NVC communities within the survey area are considered to meet the South Wales SINC Designation Criteria:

- "M23a *Juncus effusus/ acutiflous-Galium palustre* rush-pasture *Juncus acutiflorus* sub-community (runnels and flushes))"
- "M23b *Festuca rubra – "Juncus effusus/acutiflorus - Galium palustre* rush-pasture *Juncus effusus* sub-community)"
- "M25b (*Molinia caerulea - Potentilla erecta* mire *Anthoxanthum odoratum* sub-community)"
- mire *Angelica sylvestris* sub-community)"
- "M25c (*Molinia caerulea- Potentilla erecta* mire *Angelica sylvestris* sub-community)"

The habitats which align with SINC criteria are all within the Site boundary.

Table 4: Site Photographs

Ecological Feature	Photograph
M25b (*Molinia caerulea - Potentilla erecta* mire *Anthoxanthum odoratum* sub-community) in north of Site. Photo by Phil Quinn.	
'Complex habitat mosaic' adjacent to main watercourse running through Site from north-west to south-east. Photo by Phil Quinn.	
M23b *Festuca rubra – "Juncus effusus/acutiflorus - Galium palustre* rush-pasture *Juncus effusus* sub-community) in south-east of Site. Photo by Phil Quinn.	

Example of the tree lines and associated watercourses that form the majority of field and Site boundaries.	
The main watercourse that runs through the Site from north-west to south-east.	
Ephemeral waterbody associated with historic quarry pit.	

View across Site during UK Hab survey.	

Appendix 5 – Bat Activity Surveys

Methods

Survey Effort

During the walkover the Site was assessed as having moderate suitability for bats based on the presence of habitats that could be used by small numbers of bats such as a gappy hedgerows and isolated habitat (e.g. lone tree) which have little connection to the surrounding landscape.

Considering the predicted impacts of the proposed development on bats it was therefore proportionate to undertake automated detector surveys once a month between April and October 2024, in accordance with Collins (2023) and BS42020 (BSI 2013).

Automated Detector Surveys

This involved the deployment of five static detectors (Titley Scientific Swift or Wildlife Acoustics Song Meter SM2/Song Meter Mini), in hedgerows, along fences and at woodland edges. Locations were chosen through a "*judgmental*" strategy, considering features of greatest interest and those most likely to be impacted by proposals. Detectors were positioned on the leeward side of hedges and habitats, facing into the fields, to avoid noise from wind and vegetation. Statics were deployed for a minimum of five nights per month between April and October 2024. However, no deployments were made in May and instead, two deployments were made in June (within the first and last week of the month). These were the dates of static deployments:

- 25th – 29th April 2024
- 4th – 9th June 2024
- 26th - 30th June 2024
- 18th – 22th July 2024
- 23th – 27th August 2024
- 18th – 22th September 2024
- 17th – 21th October 2024.

Bat Data Analysis

The latest version of Wildlife Acoustics Kaleidoscope Pro software was used for processing and analysing static bat data. The confidence settings used were "liberal (this will produce more identifications but have more false positives)" with an audit of all recordings, including "noise" files. Batches of noise files and pipistrelle calls were checked depending upon their characteristics which are grouped by a range of variables including background noise and strength of calls. Myotis, Plecotus and Nyctalus species were identified to genus level. All bat calls other than common, soprano pipistrelle and Nyctalus species were verified manually in full, with at least 10% of calls checked again to confirm verification. A three-stage quality assurance process was undertaken, focusing on cryptic species.

Data from the automated surveys was then analysed and presented, using R Statistical Software (R Core Team 2021). A bat pass is defined as a sequence of echolocation calls separated from another call by a minimum of 2 seconds. Bat passes per hour for each species was calculated (bat pass/night length), allowing comparison between different seasons and locations on Site. The time of calls relative to sunset/sunrise was also calculated, using the 'bioRad' R package, and considered in relation to accepted emergence times for each species (Andrews and Peason 2022).

Results

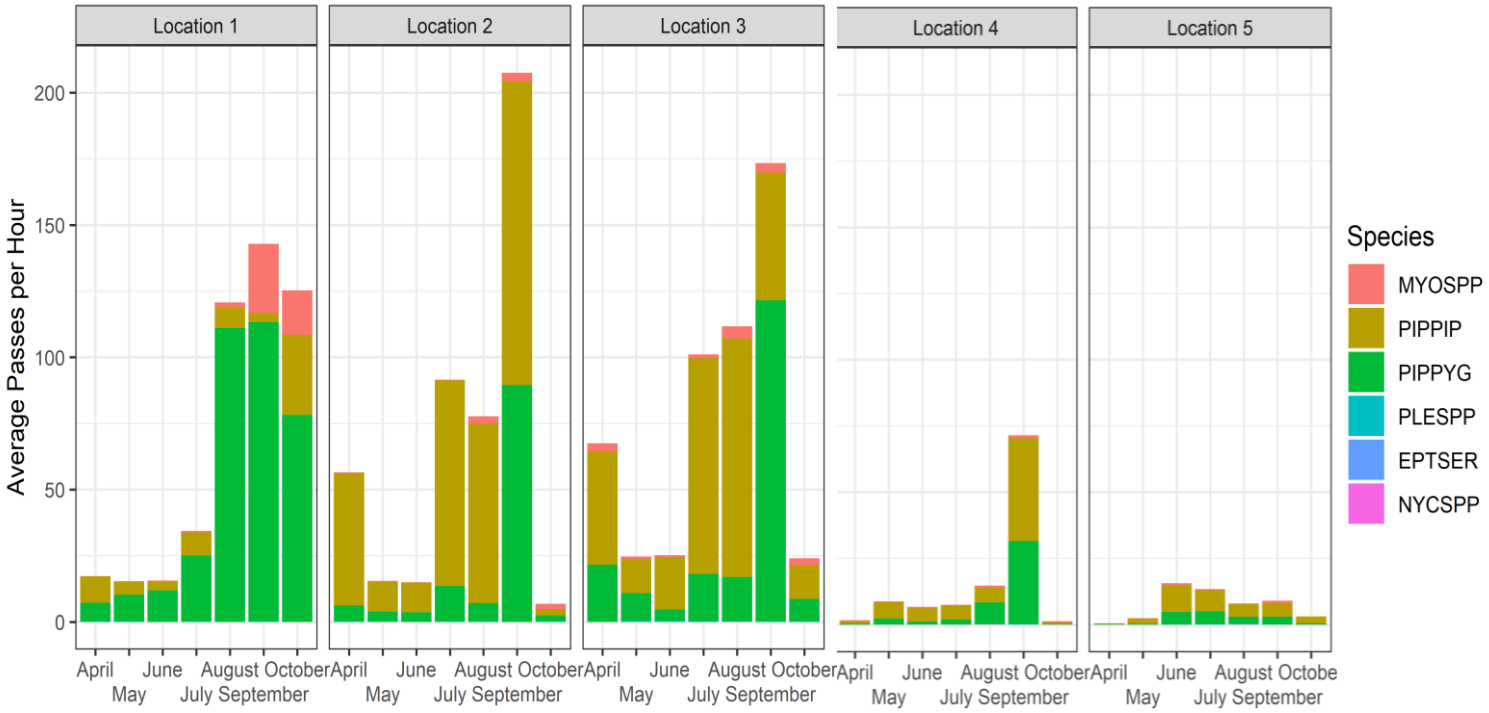
Automated Detector Survey

During the automated detector surveys, statics were placed at the following locations (illustrated in **Figure 2**):

- Location 1 – line of trees along a stream to the southwest, sits adjacent to proposed access track
- Location 2 – edge of wooded stream to the east of the site
- Location 3 – halfway along a sparsely vegetated fence line, central site
- Location 4 – along gappy tree line running north to south between two northern parcels of sheep pasture
- Location 5 – north-westernmost location in trees along sparsely vegetated fence line

Graph 1 below illustrates the relative abundance of bats during the survey period. A clear and overwhelming majority of passes were common and soprano pipistrelle. Locations 1, 2 and 3 each accounted for approximately 30% of total passes (24,843; 21,253; and 25,305 passes respectively). Location 4 had 7.5% (5957 passes) and location 5 had the fewest total passes, accounting for only 3% (2392 passes). September had the most passes consistently across all locations, with the exception of Location 5.

Soprano pipistrelle was the most frequently recorded bat species (48.13% of recorded bat passes per hour; 38,384 passes across all surveys), followed by common pipistrelle (46.35%; 36,965 passes). Soprano pipistrelles showed greatest affinity to location 1 whereas common pipistrelles showed greatest affinity to locations 2 and 3.

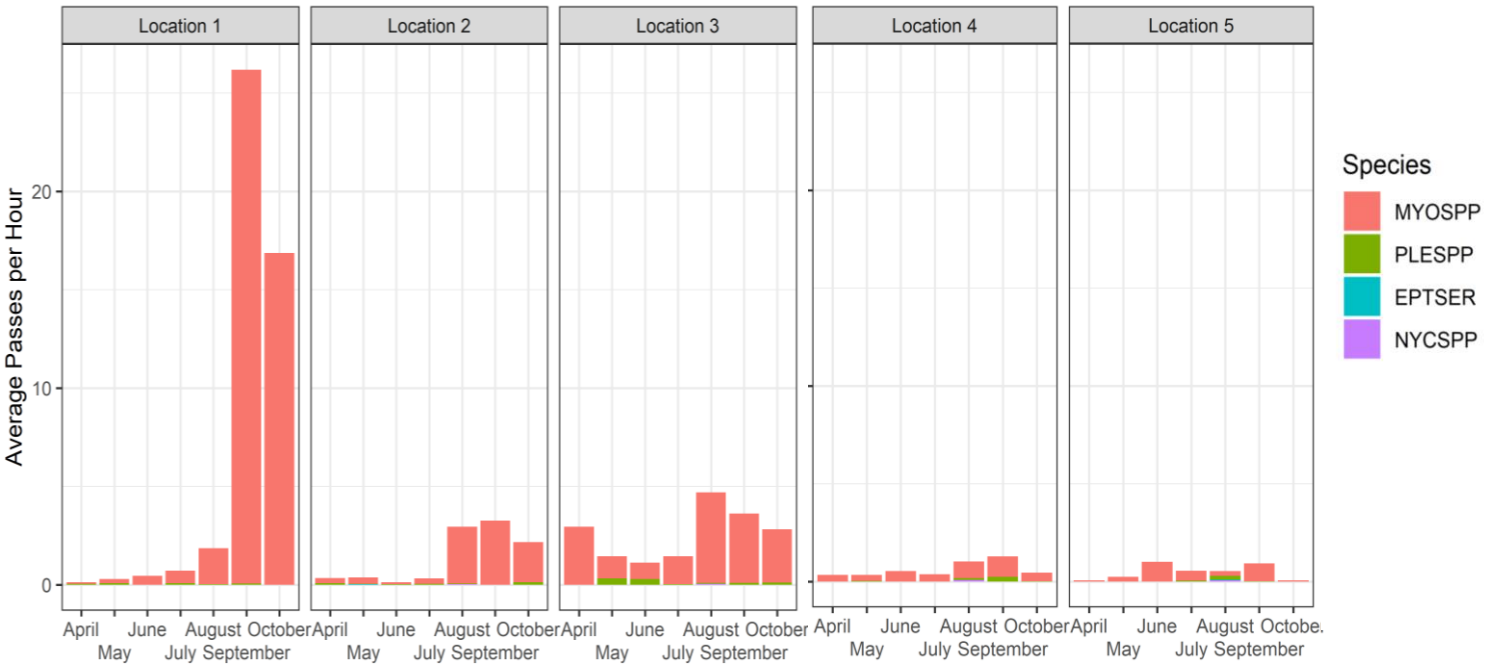


Graph 1: Average bat passes per hour during the automated detector survey period

PIPPIP = common pipistrelle; **PIPPYG** = soprano pipistrelle; **NYCSPP** = *Nyctalus* species; **EPTSER** = Serotine; **MYOSPP** = *Myotis* species; **PLESPP** = Plecotus sp. bat species.

Graph 2 below excludes pipistrelles for a clearer picture of activity for other species. Annex II designated bat species were not observed at any location. *Nyctalus* sp. and serotine species were observed a negligible number of times, accounting for 3 and 10 total passes respectively, across all surveys (<0.01% each).

Myotis species bats were the third most recorded species (4291 total passes (5.38%)) showing greatest affinity to location 1 and were the most common light-averse species at all locations. *Plecotus* sp., another light-averse species, had far fewer passes that Myotis (0.13%; 104 passes) but were also recorded at all locations. *Plecotus* sp. indicated no affinity for any specific location, visiting each one relatively equally.

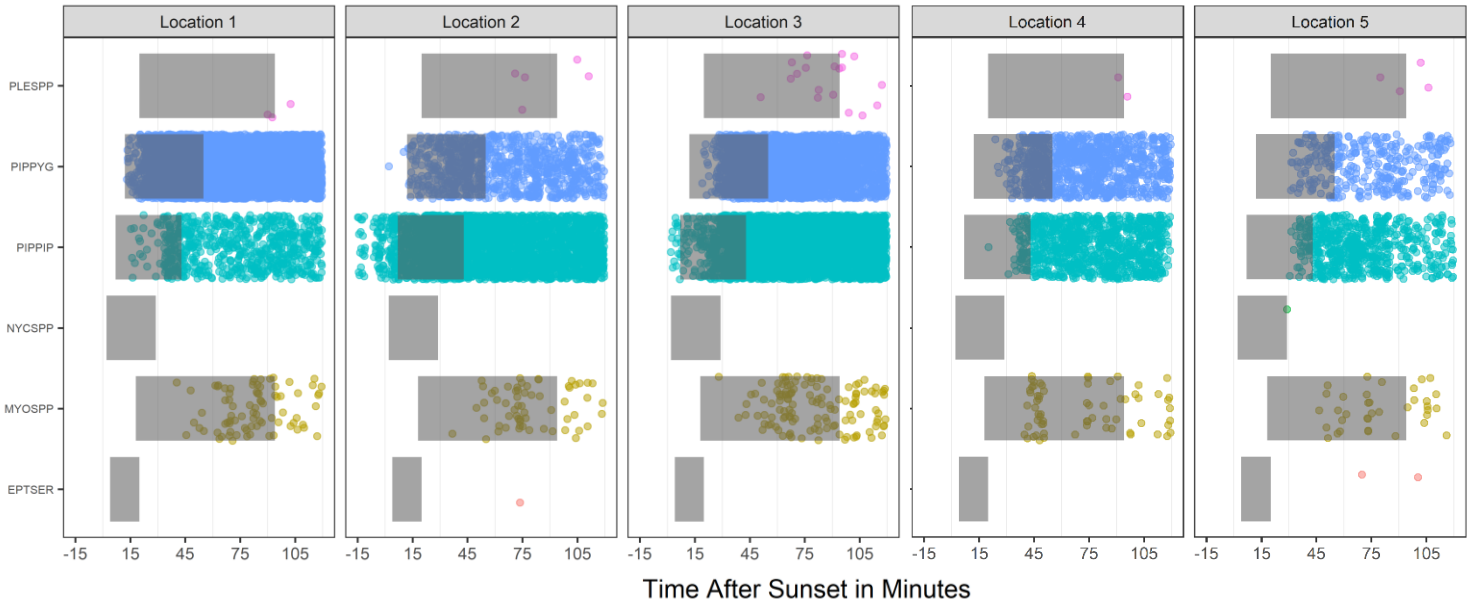


Graph 2: Average bat passes per hour during the automated detector survey period, excluding pipistrelles

NYCSPP = *Nyctalus* species; **EPTSER** = Serotine; **MYOSPP** = *Myotis* species; **PLESPP** = Plecotus sp. bat species.

Graph 3 shows the passes of species in relation to expected emergence times from Andrews and Pearson 2022, included on pg. 34-35 in the BCT survey guidelines. The graph shows that common pipistrelle, soprano pipistrelle, *Plecotus* sp., *Nyctalus* sp. and *Myotis* sp. bats were recorded on Site during their expected emergence period and therefore may be emerging from a roost nearby and commuting through the Site.

Low numbers of *Plecotus* sp., *Nyctalus* sp. and serotine species during their predicted emergence window indicates that there may be a roost in the vicinity, but that the Site does not appear to be of high importance as a commuting route. These species are more likely to be using the Site for foraging close to their roosting site before heading further afield.



Graph 3: All bat passes in relation to emergence periods for each species

PIPPIP = common pipistrelle; **PIPPYG** = soprano pipistrelle; **NYCSPP** = *Nyctalus* species; **EPTSER** = Serotine; **MYOSPP** = *Myotis* species; **PLESPP** = Plecotus sp. bat species.

Summary

The assemblage of bats recorded during the surveys is considered to be fairly typical given the Site's geographic location and habitats available both on Site and within the wider landscape. The vast majority of activity within the Site belonged to soprano pipistrelle and common pipistrelle, both of which are considered to be common and widespread within the UK and are considered to be light-tolerant. No Annex II species were recorded.

Locations 1-3 saw the highest levels of bat activity throughout the surveys, with each location comprising approximately 30% of the total passes recorded within the Site. Locations 4-5 both saw low levels of activity, with Location 4 seeing 7.5% of passes and location 5 seeing the fewest at 3%.

Low numbers of *Plecotus* sp., *Nyctalus* sp. and serotine species during their predicted emergence window indicates that there may be a roost in the vicinity, but these species are more likely to be using the Site for foraging close to their roosting site before heading further afield.

Appendix 6 – Breeding Bird Survey

Methods

A breeding bird survey was undertaken in spring through summer 2024 following methods adapted from the Bird Survey & Assessment Steering Group's guidance (2023). This consists of five dawn visits and a single dusk visit between late March and early July, consisting of a walked transect route encompassing the entire Site, starting within 30 minutes of sunrise in suitable weather conditions (avoiding cold, windy and wet days, although showery days make acceptable survey weather). Survey dates and weather conditions are summarised in **Table 5.**

Table 5: Dates, times and weather conditions for breeding bird survey

Visit	Date	Surveyor	Time	Weather
1	25/04/2024	HD	6:20 – 8:35	8C, CC 8/8, No Rain, Wind 2 (Beaufort)
2	15/05/2024	HD	5:45 – 7:20	10C, CC 4/8, No Rain, Wind 2 (Beaufort)
3	04/06/2024	HD	20:55 – 22:17	11C, CC 2/8, No Rain, Wind 3 (Beaufort)
4	19/06/2024	GV	4:56 – 7:35	12C, CC 5/8, No Rain, Wind 2 (Beaufort)
5	26/06/2024	GV	4:48– 7:35	14C, CC 1/8, No Rain, Wind 1 (Beaufort)
6	10/07/2024	GV	5:09 – 7:35	15C, CC 8/8, No Rain, Wind 3 (Beaufort)

HD = Harry Dyer BSc; **GV** = Gavin Vella BSc.

Notable bird species were recorded during the breeding bird survey, including WCA 1981 Schedule 1 species, birds listed on the UK Red-list of Birds of Conservation Concern 5 (BoCC; Stanbury *et al.*, 2021), birds listed on the Welsh Red-list of Birds of Conservation Concern 4 (BoCC; Johnstone *et al.*, 2022) where different from the UK-Wide BoCC5 list, species listed in Section 41/42 (Wales) of the NERC Act 2006 and Local BAP species. During the survey, information on species, their locations and behaviour was mapped and recorded.

Results

There were 78 records of notable birds within 2km of the Site boundary, the most significant of these have been summarised in **Table 6** below.

Table 6: Notable bird species within 2km (provided by SEWBReC)

Species	Scientific Name	Conservation Status	Record Details
Grasshopper Warbler	*Locustella naevia*	Red (Wales) S42 Red (UK)	11 individuals recorded between 2016 and 2020. 4 individuals recoded 500m north of the site in 2019.
Linnet	*Linaria cannabina*	Red (Wales) S42 Red (UK)	14 individuals between 2018 and 2019. 11 Individuals 500m north of the site in 2019.
Meadow Pipit	*Anthus pratensis*	Red (Wales) Amber (UK)	84 Individuals recorded between 2016 and 2019. A majority are within 500m of the site.
Mistle Thrush	*Turdus viscivorus*	Amber (Wales) Red (UK)	6 individuals recorded within 2km of the site boundary since 2017.
Skylark	*Alauda arvensis*	Amber (Wales) S42 Red (UK)	83 individuals recoded since 2016, all within 2km and 23

			of these within 500m of the site.
Snipe	*Gallinago gallinago*	Amber (Wales) Amber (UK)	37 Individuals within 2km since 2017.
Willow Warbler	*Phylloscopus trochilus*	Red (Wales) S42 Red (UK)	41 Individuals recorded within 2km of the site since 2015. 5 records 500m north of the site in 2019.

Red = Red listed Bird of Conservation Concern 5 (BoCC5) (Stanbury et al., 2021); **S41** = Species of Principal Importance under S41 of NERC Act 2006; **Amber** = Amber listed BoCC5; **Sch1**= listed on Schedule 1 of the Wildlife & Countryside Act 1981 (as amended). **XBAP** = XXX Biodiversity Action Plan species; **W.Red** = Red listed Bird of Conservation Concern Wales 4 (Wales BoCC4) (Johnstone et al, 2022); **W.Amber** = Amber listed Wales BoCC4; **S42** = Species of Principal Importance under Section 42 of the Environment (Wales) Act 2016;

A total of 41 species were recorded during the breeding bird survey of the Site. Of these, 24 were notable species (at least Amber-listed BoCC 5, SPI, Local BAP or Sch1 WCA). Results of notable species are detailed in **Table 7** and a full species list is provided in **Table 8.**

There were consistent and abundant observations of ground nesting birds within the site boundary. Both meadow pipit and skylark were observed entering or leaving a suitable nest site indicating an occupied nest on multiple surveys. The peak counts for meadow pipit and skylark were 23 and 11 respectively, and the Site supports a considerable population of Welsh and UK Red list designated ground nesting birds.

The Site also supports significant probable breeding populations of Red-list (Welsh BoCC4) passerine species, most notably eight concurrent grasshopper warbler territories and fourteen willow warbler territories.

Figure 4 illustrates the areas of the Site used by each notable species during the breeding season

Table 7: Breeding bird survey results – notable species

Species and Status				**Number of birds**							
Species	**Scientific Name**	**Conservation Status**	**Breeding Status**	**25/04/24**	**15/05/24**	**04/06/24**	**19/06/24**	**26/06/24**	**10/07/24**	**Peak Count**	**Recorded within Site Boundary**
Chaffinch	*Fringilla coelebs*	Amber	Possible	3	4	3	0	0	0	**4**	✓
Cuckoo	*Cuculus canorus*	Red (Wales) S42 Red (UK)	Probable	1	2	1	0	0	0	**2**	✓
Dunnock	*Prunella modularis*	Amber (Wales) S42 Amber (UK)	Possible	0	2	0	0	0	0	**2**	✓
Grasshopper Warbler	*Locustella naevia*	Red (Wales) S42 Red (UK)	Probable	2	1	2	3	8	3	**8**	✓
Green Woodpecker	*Picus viridis*	Amber (Wales)	Non-Breeding	0	0	0	1	0	0	**1**	✓
Greenfinch	*Chloris chloris*	Red (Wales) Red (UK)	Possible	0	0	1	1	1	0	**1**	✓
Grey Heron	*Ardea cinerea*	Amber (Wales)	Non-Breeding	0	0	0	0	2	0	**2**	✓
Herring Gull	*Larus argentatus*	Red (Wales) S42 Red (UK)	Non-Breeding	1	0	0	0	0	1	**1**	✓
House Martin	*Delichon urbicum*	Amber (Wales) Red (UK)	Non-Breeding	0	2	0	0	0	0	**2**	✓
Kestrel	*Falco tinnunculus*	Red (Wales) S42 Amber (UK)	Non-Breeding	0	0	0	0	0	1	**1**	✓
Lesser Black-backed Gull	*Larus fuscus*	Red (Wales) Amber (UK)	Non-Breeding	0	1	0	0	0	0	**1**	

Linnet	*Linaria cannabina*	Red (Wales) S42 Red (UK)	Possible	0	0	0	3	13	0	13	✓
Magpie	*Pica pica*	Amber (Wales)	Possible	2	0	0	0	0	0	2	
Meadow Pipit	*Anthus pratensis*	Red (Wales) Amber (UK)	Confirmed	11	1	4	23	12	16	23	✓
Peregrine	*Falco peregrinus*	Sch 1	Non-Breeding	1	0	0	0	0	0	1	
Redstart	*Phoenicurus phoenicurus*	Amber (UK)	Possible	0	0	0	0	1	4	4	✓
Reed Bunting	*Emberiza schoeniclus*	S42 Amber (UK)	Probable	0	0	0	1	4	2	4	✓
Skylark	*Alauda arvensis*	Amber (Wales) S42 Red (UK)	Confirmed	8	5	6	8	4	3	8	✓
Song Thrush	*Turdus philomelos*	S42 Amber (UK)	Probable	3	1	1	3	2	1	3	✓
Starling	*Sturnus vulgaris*	Red (Wales) S42 Red (UK)	Non-Breeding	~16	0	0	0	8	14	16	✓
Swift	*Apus apus*	Red (Wales) Red (UK)	Non-Breeding	0	0	0	0	6	2	6	✓
Willow Warbler	*Phylloscopus trochilus*	Red (Wales) Amber (UK)	Probable	14	6	3	0	4	2	14	✓
Woodpigeon	*Columba palumbus*	Amber (UK)	Probable	0	1	0	0	0	0	1	
Wren	*Troglodytes troglodytes*	Amber (UK)	Probable	11	5	3	0	0	0	11	✓

Red = Red listed Bird of Conservation Concern 5 (BoCC5) (Stanbury et al., 2021); **S41** = Species of Principal Importance under S41 of NERC Act 2006; **Amber** = Amber listed BoCC5; **Sch1**= listed on Schedule 1 of the Wildlife & Countryside Act 1981 (as amended). **W.Red** = Red listed Bird of Conservation Concern Wales 4 (Wales BoCC4) (Johnstone et al, 2022); **W.Amber** = Amber listed Wales BoCC4; **S42** = Species of Principal Importance under Section 42 of the Environment (Wales) Act 2016;

Table 8: Breeding bird survey results – complete species list

Common Name	Scientific Name
Blackbird	*Turdus merula*
Blue Tit	*Cyanistes caeruleus*
Canada Goose	*Branta canadensis*
Carrion Crow	*Corvus corone*
Chaffinch	*Fringilla coelebs*
Chiffchaff	*Phylloscopus collybita*
Cuckoo	*Cuculus canorus*
Dunnock	*Prunella modularis*
Goldfinch	*Carduelis carduelis*
Grasshopper Warbler	*Locustella naevia*
Great Spotted Woodpecker	*Dendrocopos major*
Great Tit	*Parus major*
Green Woodpecker	*Picus viridis*
Greenfinch	*Chloris chloris*
Grey Heron	*Ardea cinerea*
Herring Gull	*Larus argentatus*
House Martin	*Delichon urbicum*
Jackdaw	*Coloeus monedula*
Kestrel	*Falco tinnunculus*
Lesser Black-backed Gull	*Larus fuscus*
Linnet	*Linaria cannabina*
Magpie	*Pica pica*
Meadow Pipit	*Anthus pratensis*
Nuthatch	*Sitta europaea*
Peregrine	*Falco peregrinus*
Pheasant	*Phasianus colchicus*
Pied Wagtail	*Motacilla alba*

Common Name	Scientific Name
Raven	*Corvus corax*
Redstart	*Phoenicurus phoenicurus*
Reed Bunting	*Emberiza schoeniclus*
Robin	*Erithacus rubecula*
Siskin	*Spinus spinus*
Skylark	*Alauda arvensis*
Song Thrush	*Turdus philomelos*
Starling	*Sturnus vulgaris*
Stonechat	*Saxicola rubicola*
Swallow	*Hirundo rustica*
Swift	*Apus apus*
Willow Warbler	*Phylloscopus trochilus*
Woodpigeon	*Columba palumbus*
Wren	*Troglodytes troglodytes*

Appendix 7 – Reptile Survey

Methods

Surveys to ascertain the likely presence/ absence of reptiles were undertaken following current good practice methodologies (Froglife 1999). This involved the deployment of 150 0.5m^2 artificial refuges (roofing felt) on 30 April 2024 by Harry Dyer BSc in areas of suitable habitat.

Refuges were left to 'bed-in' for six weeks prior to a series of seven visits in which a search for reptiles was made both under/ on-top of refuges and within open habitats. Dates, personnel and weather conditions for visits are detailed in **Table 9**.

Table 9: Reptile survey dates and weather conditions

Visit	Date	Time	Surveyor	Temperature (°C)	Weather
1	18/06/2024	10.45am	Sian Musgrave	16.5C	80% cloud cover, light breeze, dry and sunny.
2	25/06/2024	10:00 AM	Sian Musgrave	22C	90% cloud cover, sunny intervals, humid and warm, no breeze
3	30/06/2024	10.30am	Sian Musgrave	16C	Overcast, humid, slight breeze, 80% cloud cover
4	02/07/2024	10.30am	Sian Musgrave	15C - 17C	Sunny intervals, cloud cover 80%, slight cool breeze
5	05/07/2024	10.30am	Sian Musgrave	16.5C	50% cloud cover, slight breeze
6	11/07/2024	10.30am	Sian Musgrave	17C	90% cloud cover, no breeze, humid
7	16/07/2024	10.45am	Sian Musgrave	16C- 20C	Overcast, sunny intervals, ground very wet and boggy in places

Results

A total of 22 Common Lizards were recorded during the seven survey visits, with a peak count of six adults on any one survey. Common Lizards were found throughout the open areas of the site and occasionally in association with hedgerows. The majority of observations were made in the northeastern field, in between tussocks of rushes as shown in **Figure 5**. The results indicate a breeding population due to the presence of gravid females. Fields and hedgerows along the eastern and southern boundaries were of limited value to reptiles and accordingly very few individuals were found in these locations.

This peak count of 6 Common Lizards corresponds to a 'Good' population of reptiles (Froglife 1999). However, the guidance assumes a density of 5-10 per hectare of suitable habitat whilst the density of reptile mats deployed was 4.4 per hectare of suitable habitat, a slight under representation. As such this peak count provides a slight underestimate of the population class at the Site.

Appendix 8 – List of Flora and Fauna Mentioned in Text

Flora

Common name	Scientific name	Recorded on Site?
Carnation Sedge	*Carex panicea*	✓
Flea Sedge	*Carex pulicaris*	✓
Jointed Rush	*Juncus articulatus*	✓
Marsh bedstraw	*Galium palustre*	✓
Meadow Thistle	*Cirsium dissectum*	✓
Purple Moor-grass	*Molinia caerulea*	✓
Red Fescue	*Festuca rubra agg.*	✓
Rough Meadow-grass	*Poa trivialis*	✓
Sessile Oak	*Quercus petraea*	✓
Sharp-flowered Rush	*Juncus acutiflorus*	✓
Perennial Rye-grass	*Lolium perenne*	✓
Soft-rush	*Juncus effusus*	✓
Sweet Vernal-grass	*Anthoxanthum odoratum*	✓
Tawny Sedge	*Carex hostiana*	✓
Tormentil	*Potentilla erecta*	✓
Wild Angelica	*Angelica sylvestris*	✓

Fauna

Common name	Scientific name	Recorded on Site?
Badger	*Meles meles*	✓
Blackbird	*Turdus merula*	✓
Blue Tit	*Cyanistes caeruleus*	✓
Brown long-eared bat	*Plecotus auritus*	✓
Canada Goose	*Branta canadensis*	✓
Carrion Crow	*Corvus corone*	✓
Chaffinch	*Fringilla coelebs*	✓
Chiffchaff	*Phylloscopus collybita*	✓
Common Frog	*Rana temporaria*	✓
Common lizard	*Lacerta vivipara*	✓
Common pipistrelle	*Pipistrellus pipistrellus*	✓
Common toad	*Bufo Bufo*	✓
Cuckoo	*Cuculus canorus*	✓
Dormouse	*Muscardinus avellanarius*	
Dunnock	*Prunella modularis*	✓
Goldfinch	*Carduelis carduelis*	✓
Grass snake	*Natrix helvetica*	✓
Grasshopper Warbler	*Locustella naevia*	✓
Great crested newt	*Triturus cristatus*	✓
Great Spotted Woodpecker	*Dendrocopos major*	✓
Great Tit	*Parus major*	✓
Green Woodpecker	*Picus viridis*	✓
Greenfinch	*Chloris chloris*	✓
Grey Heron	*Ardea cinerea*	✓
Hedgehog	*Erinaceus europaeus*	

Herring Gull	*Larus argentatus*	✓
House Martin	*Delichon urbicum*	✓
Jackdaw	*Coloeus monedula*	✓
Kestrel	*Falco tinnunculus*	✓
Lesser Black-backed Gull	*Larus fuscus*	✓
Linnet	*Linaria cannabina*	✓
Magpie	*Pica pica*	✓
Marsh fritillary	*Euphydryas aurinia*	
Meadow Pipit	*Anthus pratensis*	✓
Myotis bat species	*Myotis sp.*	✓
Natterer's bat	*Myotis nattereri*	✓
Noctule	*Nyctalus noctula*	✓
Nuthatch	*Sitta europaea*	✓
Otter	*Lutra lutra*	
Peregrine	*Falco peregrinus*	✓
Pheasant	*Phasianus colchicus*	✓
Pied Wagtail	*Motacilla alba*	✓
Raven	*Corvus corax*	✓
Red Kite	*Milvus milvus*	✓
Redstart	*Phoenicurus phoenicurus*	✓
Reed Bunting	*Emberiza schoeniclus*	✓
Robin	*Erithacus rubecula*	✓
Serotine	*Eptesicus serotinus*	✓
Sheep	*Ovis aries*	✓
Siskin	*Spinus spinus*	✓
Skylark	*Alauda arvensis*	✓
Slow worm	*Anguis fragilis*	✓
Song Thrush	*Turdus philomelos*	✓
Soprano pipistrelle	*Pipistrellus pygmaeus*	✓
Starling	*Turdus vulgaris*	✓
Starling	*Sturnus vulgaris*	✓
Stonechat	*Saxicola rubicola*	✓
Swallow	*Hirundo rustica*	✓
Swift	*Apus apus*	✓
Willow Warbler	*Phylloscopus trochilus*	✓
Woodpigeon	*Columba palumbus*	✓
Wren	*Troglodytes troglodytes*	✓

Website: www.ge-consulting.co.uk
Phone: 01647 253652
Email: info@ge-consulting.co.uk

GE Consulting is a trading name for
GE Consulting Services (UK) Ltd
registered number 08435536

Registered office: Unit 11A, Gidleys
Meadow Business Park, Christow,
Devon, EX6 7QB.
VAT Number 160595992

Ecology
Arboriculture
Land Management