



LAND OFF
MAES Y FFYNNON,
CHURCH ROAD, ROCH
PEMBROKESHIRE
Ecology Report

KITE ECOLOGY

April 2023

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Appendix 1

Weather conditions during the transect surveys

Appendix 2

Weather conditions during the static detector surveys

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This report, and the information contained in it, is intended to be valid for a maximum of 12 months from the date of the survey, providing no significant baseline changes have occurred.

Project number	Report number	Revision number	Date of issue
2225	001	Draft	07072022
2225	001	Updated plans	13042023
2225	001	Updated plans	19042023
2225	001	Updated plans	27042023

1 Executive Summary

1.1 Kite Ecology was commissioned by Wakefield Developments Pembrokeshire Limited to undertake an extended phase 1 and protected species surveys of land adjacent to Maes Y Ffynnon, Church Road, Pembrokeshire. Under the proposals the site, hereafter referred to as the 'Proposed Development', will be developed as housing.

An initial walkover survey of the site determined it to be of relatively low suitability habitat for bats so bat transect surveys were completed in July – October 2021 and May – June 2022 to record bat activity across the site. In combination with the walked transect surveys, additional bat activity data was gathered using an automated (static) bat detector. The detector was placed in the centre of the site for five consecutive nights over the same survey period as the transect surveys. The habitat was also deemed suitable for use by dormice, so a dormouse nest tube survey was completed between July 2021 and June 2022.

2 Introduction and site description

2.1 Introduction

An Extended Phase 1 and Protected Species survey of land off Maes Y Ffynnon, Church Road, Roch, Pembrokeshire was commissioned in relation to proposals to develop the site for housing.

2.2 Site description

The survey relates to an area of farmland to the north of the centre of the village of Roch. The land has not been used agriculturally for a number of years so has become dominated by scrubby vegetation. The site is included in the Local Development Plan under reference HSG/114/LDP/01. The extent of the survey area is shown in Figure 1.

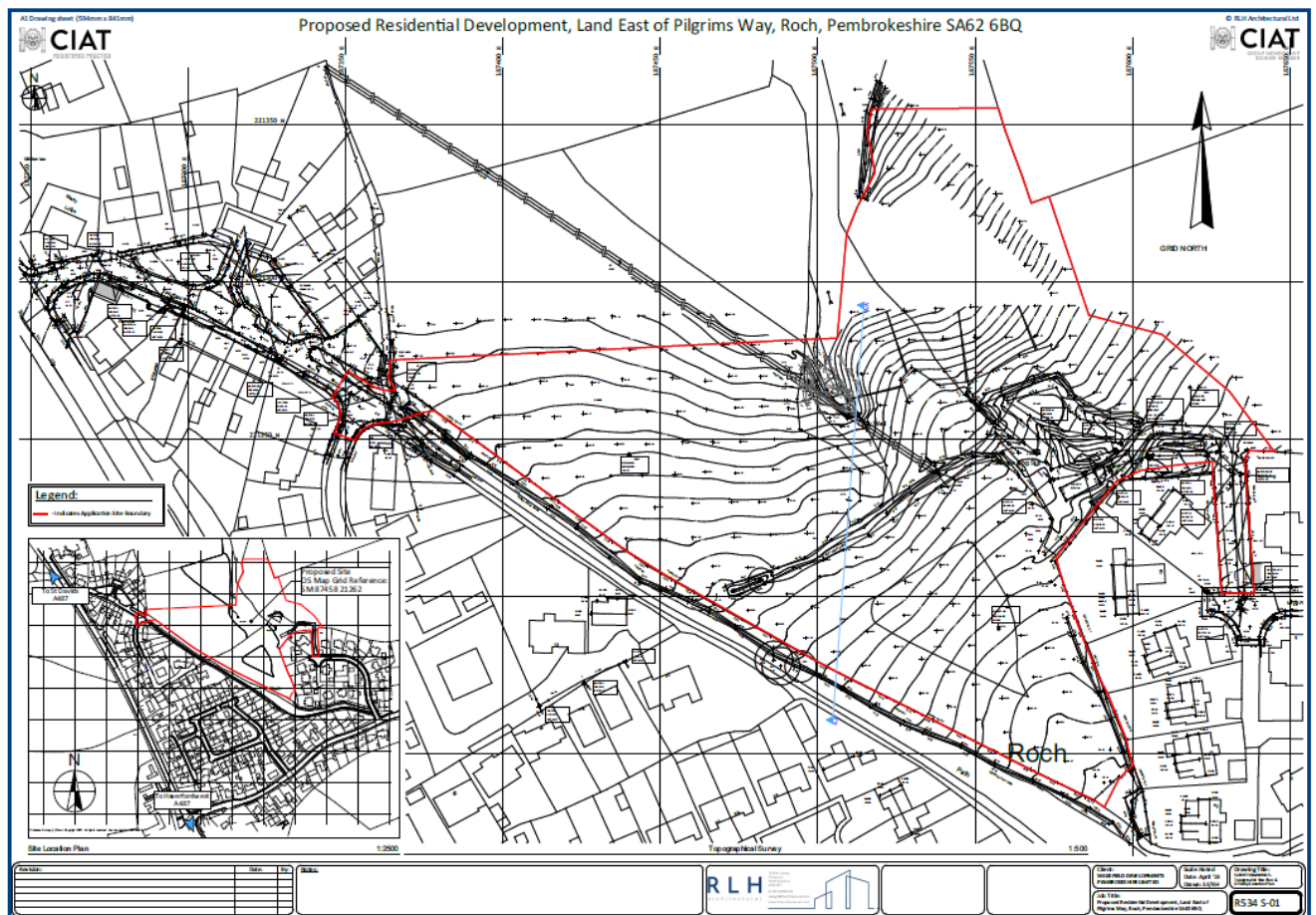


Figure 1. Survey area shown in red with land under same ownership in blue.

2.3 Summary of proposed development

Under the proposals, the site would be developed for housing.

2.4 This report contains sensitive wildlife information (particularly in relation to badger setts and bat roosts) and should not be placed in the public domain.

2.5 Unless the client indicates otherwise, all species records will be submitted to the relevant biological records centre.

3 Desk study

3.1 General

3.1.1 An initial site walkover of the site on 16th June 2021 determined it to be of medium suitability habitat for bats so bat transect surveys were completed in July – October 2021 and May – June 2022 to record bat activity across the site. In combination with the walked transect surveys, additional bat activity data was gathered using an automated (static) bat detector. The detector was placed in the centre of the site for five consecutive nights over the same survey period as the transect surveys. Targeted long-term bat surveys are required to determine potential impacts on bats, their roosts and Core Sustenance Zones (CSZ). A CSZ refers to the area surrounding a communal bat roost within which habitat availability and quality will have a significant influence on the resilience and conservation status of the colony using the roost. With reference to development, the CSZ could be used to indicate:

- The area surrounding a communal roost within which development work may impact the commuting and foraging habitat of bats using that roost.
- The area within which it may be necessary to ensure no net reduction in the quality and availability of foraging habitat for the colony.

The habitat was also deemed suitable for use by dormice, so a dormouse nest tube survey was completed between July 2021 and June 2022.

3.1.2 All surveys were undertaken by, or under the supervision of, a suitably licensed ecologist who is a full member of the Chartered Institute of Ecology and Environmental Management and a Chartered Environmentalist.

3.1.3 Surveys and reports have been completed following accepted guidelines and in accordance with CIEEM Guidelines for Ecological Report Writing (2015) and BS 42020:2013 *Biodiversity. Code of practice for planning and development*. (2013).

3.2 Desk study

3.2.1.1 Local Records Centre

The West Wales Biodiversity Information Centre (WWBIC) was contacted for known species records within a 2km radius. Details of designated sites within a 2km radius were also provided.

3.2.1.2 Results of the local records centre

There are over 4400 individual species records within a 2km radius of the site. Over 75% of the records relate to birds and moths at several well recorded locations. Of particular interest are the records of slow worm *Angius fragilis* within 70m of the site, as well as records for brown long eared bat *Plecotus auritus*, common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, *Myotis* and noctule *Nyctalus noctula*. Hedgehog *Erinaceus europaeus* have also been recorded within 260m of the site. The species records are summarised on Figure 3. The habitats on site have also been classified as either semi improved neutral grassland or dense scrub, as shown on Figure 4. There are also several small sections of ancient woodland within 2km, as shown on Figure 5. The site is within 2km of several designated sites, including the Western Cleddau River Site of Special Scientific Interest which also forms part of the Cleddau Rivers Special Area of Conservation. The site is also within the Pembrokeshire Coast National Park. The designated sites are shown on Figure 6.

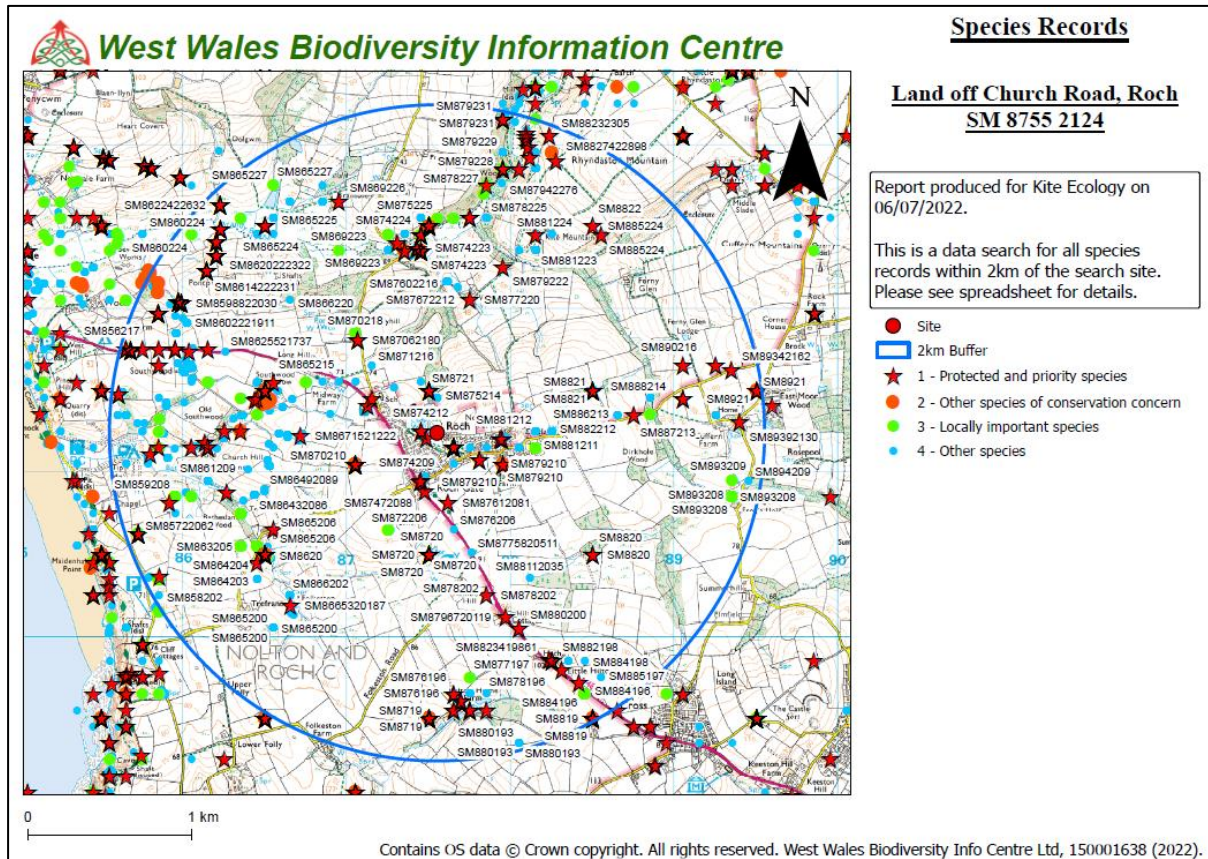


Figure 3. Summary of species records within a 2km radius of the site.

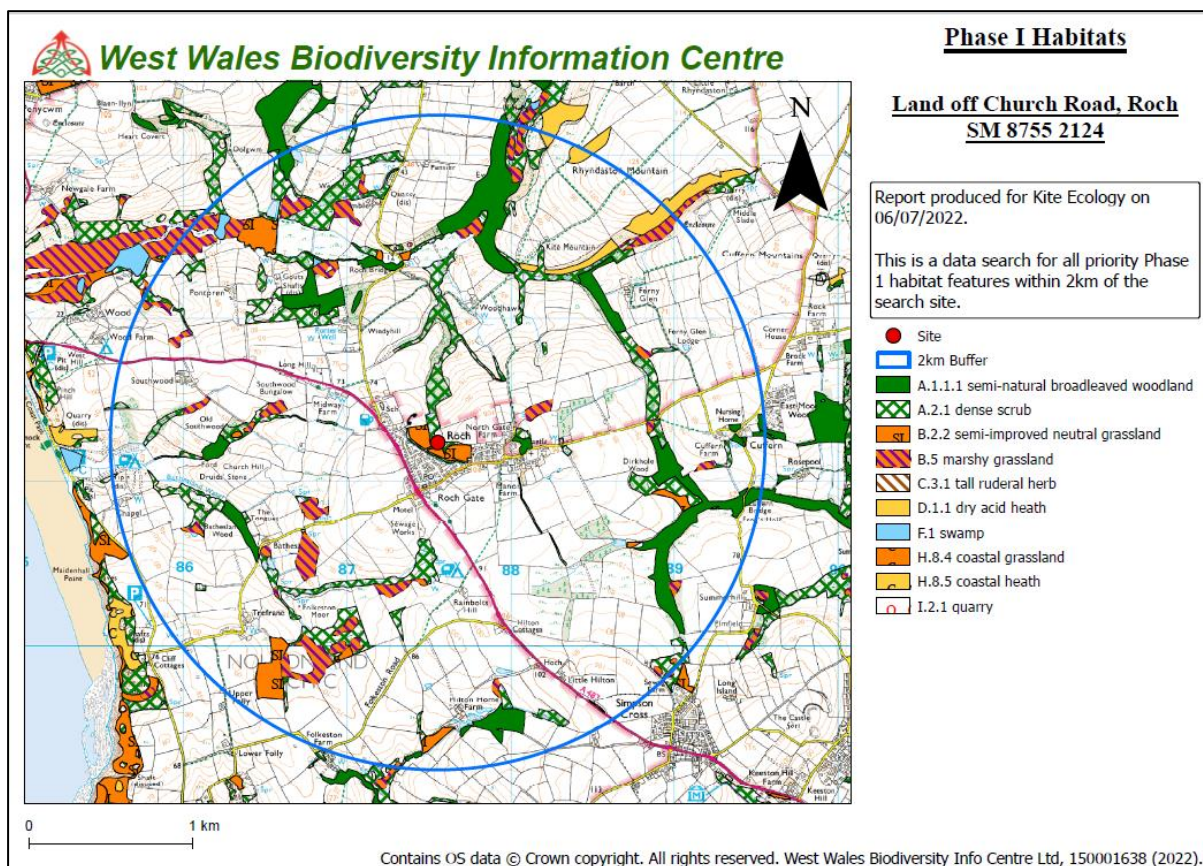


Figure 4. Summary of known habitats within a 2km radius of the site.

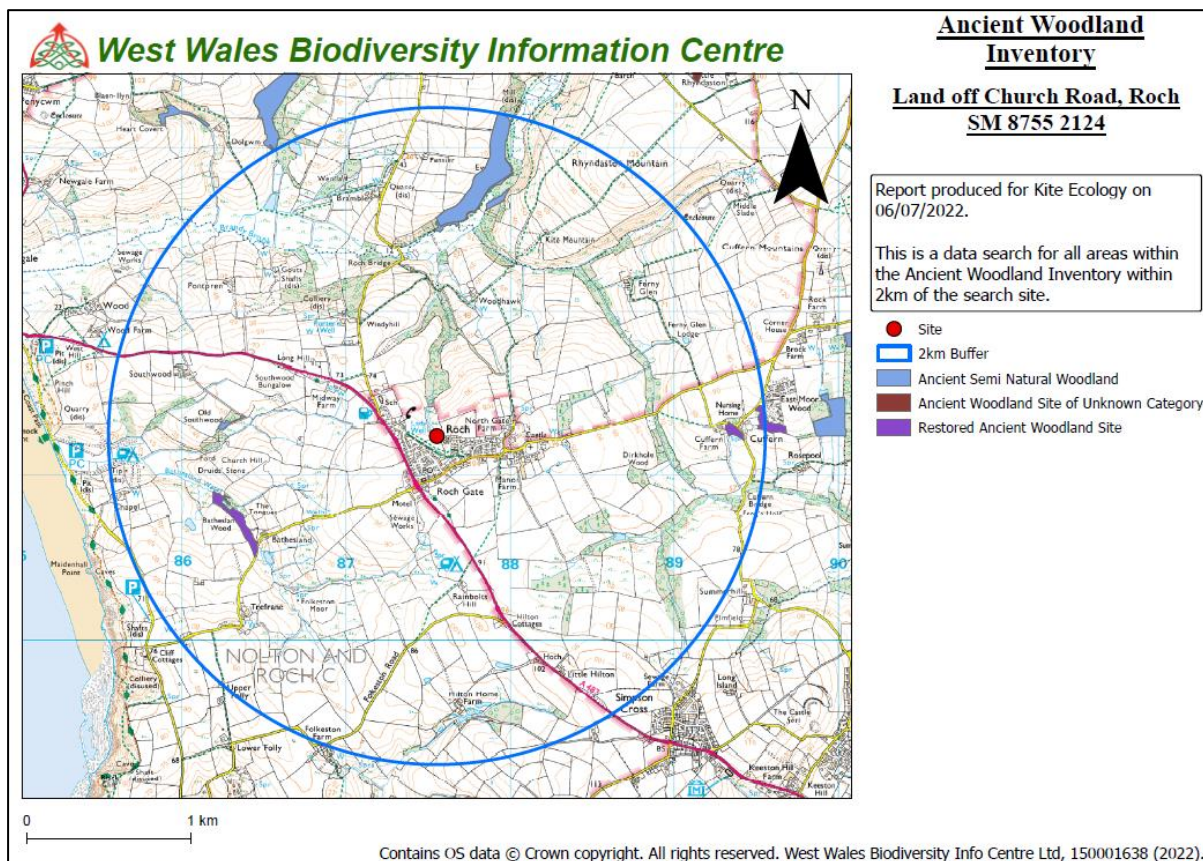


Figure 5. Map highlighting ancient woodland within 2km of the site.

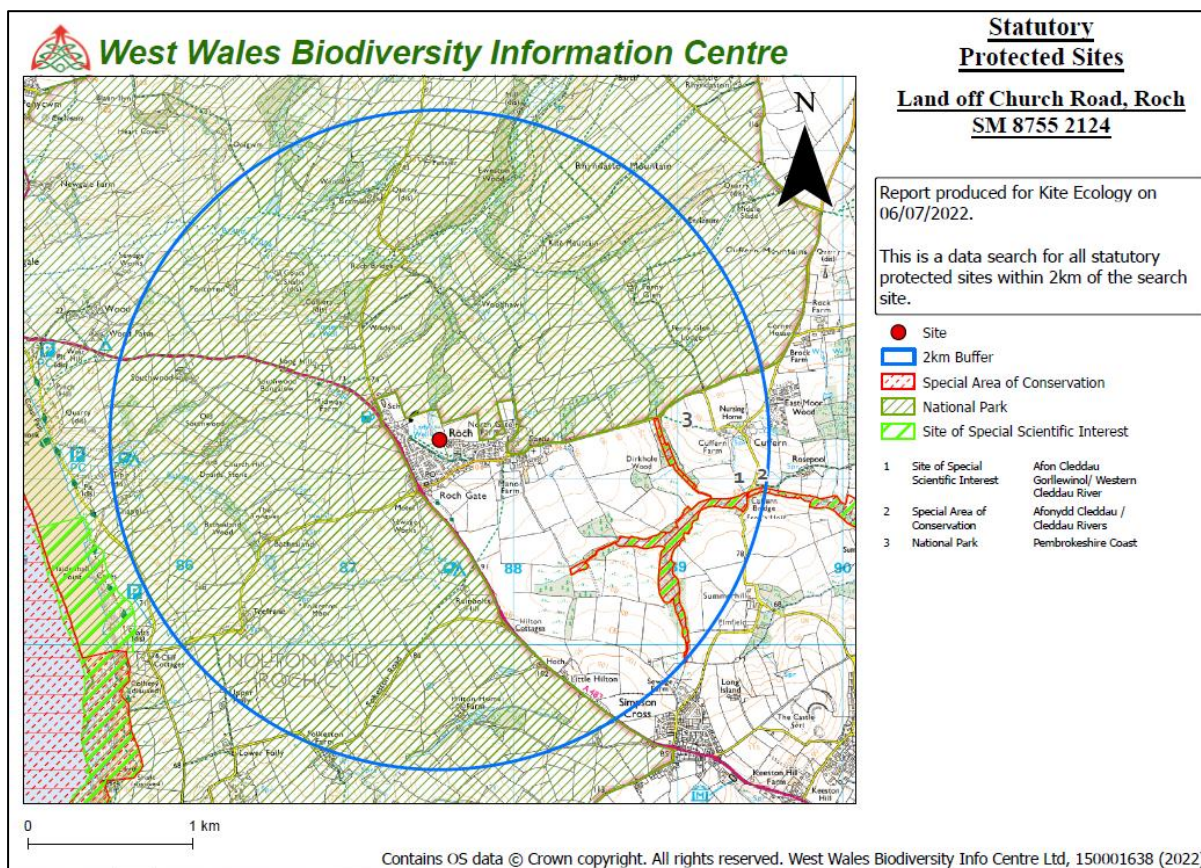


Figure 6. Map highlighting the designated sites in relation to the survey area.

3.2.2 Aerial photographs

3.2.2.1 Google Earth was used to identify any important landscape features surrounding the site.

3.2.2.2 Set to the north of the village of Roch, the site has existing houses to the north, east and west. The scrubby vegetation to the north east of the site continues northwards, linking with woodland. Prior to its clearance in November 2021, the boundary vegetation running along the north west to south east border also provided links to the surrounding habitat. The site in relation to the surrounding habitat is shown on Figure 7.



Figure 7. Aerial photograph of the site in relation to surrounding land use.

4 Habitats

4.1 Survey methodology

A Phase 1 habitat survey was carried out following the standard field methodology set out in the *Handbook for Phase 1 Habitat Survey – A Technique for Environmental Audit*, Joint Nature Conservation Committee (2010).

4.2 Results

4.2.1 Hedgerows

There is a hedgerow running along the north western to south eastern boundary, beyond a post and wire fence that includes hawthorn, blackthorn, gorse and holly. Until November 2021, the hedgerow appeared to have had minimal maintenance, however in late October/early November 2021 this vegetation was cleared by Pembrokeshire County Council as it was growing on an old footpath (there is an additional bridleway further to the west, beyond a hedge bank). While the cleared vegetation was off the site boundary, some of the boundary vegetation was also cut down (Figure 8). The hedgerow and vegetation after clearance is shown in Figure 9.



Figure 8. Cut vegetation along north western to south eastern boundary.



Figure 9. Hedgerow running from north west to south eastern boundary cleared during November 2021.

4.2.2 Grassland

The main section of the site is dominated by semi improved grassland including Cocksfoot, Yorkshire fog, false oat grass. There are occasional patches of *Juncus species*, particularly in the centre of the northern section of the site. Bramble (Figure 10). There are informal pathways through this vegetation which appear to be used by local walkers.



Figure 10. Main section dominated by bramble and rank grassland (photograph taken from the western boundary facing eastwards).

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4.2.3 *Scrub*

There is an area of dense scrub in the north eastern corner. This section follows the course of a small valley which runs northwards off site. The scrub extends into the site almost centrally. The vegetation includes sycamore, hawthorn, blackthorn, willow, bracken, gorse and bramble.



Figure 11. Dense scrub in north eastern corner.

4.3 **Summary of findings**

All habitats are summarised on Figure 12.

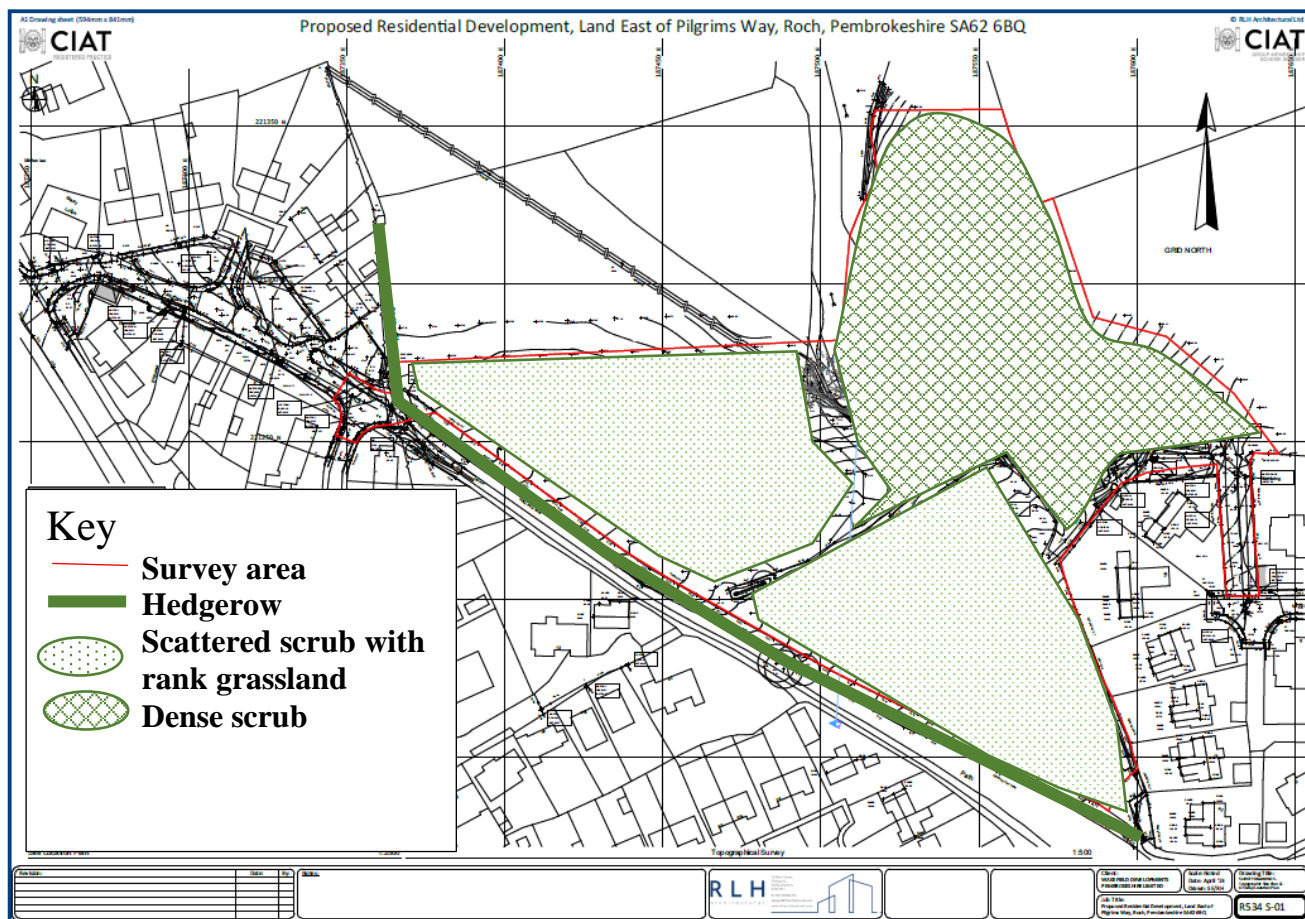


Figure 12. Phase 1 habitat map.

4.4 Limitations

The site is extensive and while every effort has been made to cover the whole area, it is possible small patches of habitat may have been missed.

4.6 Discussion

The clearance of the site will inevitably lead to the loss of the semi-improved grassland and scrubby vegetation.

4.7 Recommendations

4.7.1 Any planting should utilise locally sourced, native species in all gardens and landscaping. A new hedgerow is to be planted along the northern boundary to provide a natural screen between the site and surrounding land. This will utilise locally sourced native species.

4.7.2 Management

- only cut each hedge every 2 years; this reduces maintenance and labour costs, creates a bushier hedge for wildlife and allows flower and berry production in the intervening years.
- hedges with slow growing species, such as hawthorn, can be cut on a 3 year cycle.
- do not cut back to the same height repeatedly, raising the cutting height each time will avoid placing the hedge under stress and allow it to regenerate more vigorously.

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- cut hedges to a variety of shapes and sizes; “A” shaped hedges provide good stock proofing and shelter, create song posts for birds and enable hedgerow trees to develop if left untopped.
- leaving 1-2 metre (or wider) verges of tall grass by hedges provides nesting habitat for birds and protects hedgerows from pesticide or fertiliser spray drift.
- hedges can be trimmed, laid and coppiced from September to February but try and cut as late in the winter as possible so wildlife can take advantage of the nuts and berries produced in the autumn.

5 Badgers

5.1 Survey methodology

The site, and where possible, a radius of 30 metres from the site boundary were regularly searched for badger setts and other evidence during the survey period between August 2019 and August 2020. Sett entrances are recognised by entrances c.300mm wide and c.200mm high and tend to have large accumulations of earth outside. Other signs searched for included 'snuffle holes' (holes dug by badgers when searching for invertebrates), 'latrines' (small pits in which badgers deposit their faeces) and 'day nests' (nests of bedding material made by badgers for sleeping above ground).

5.2 Results

No evidence of badgers was found on site and no badgers or their activity was encountered during the bat transect surveys.

5.3 Legislation

The Protection of Badgers Act 1992 fully protects badgers and their setts and makes it an offence to either intentionally or recklessly kill, injure or take a badger, to cruelly ill-treat a badger or to interfere with a badger sett. Under section 10(1)(d) of the Protection of Badgers Act 1992, Natural Resources Wales has the authority to issue licences to interfere with a badger sett for the purpose of development, as defined by Section 55(1) of the Town and Country Planning Act 1990.

5.4 Limitations

The scrub in the northern corner was in some places, impenetrable. It is possible that badger activity (particularly setts) may have been missed in this area.

5.5 Discussion and recommendations

A pre- work check for any new badger activity (particularly setts) is recommended due to the ability of badgers to create new setts in a very short period of time. Such checks should be completed at least two weeks in advance of works.

5.6 Mitigation

The mitigation detailed for bats will also benefit badgers by preserving habitat to ensure commuting corridors are retained.

6 Bats

6.1 Survey methodology

6.1.1 Transects

A transect route was walked monthly for during July to October 2021 and May to June 2022. The route covered as much of the site as possible, taking approximately 1 hour and 45 minutes to complete. Due to the dense, scrubby nature of the vegetation, only one lap of the route could be completed per night. The transect did not include the dense and steep section to the east as this was deemed unsafe to walk around at night. The direction of the transect varied between the surveys to avoid temporal bias. The surveyor used either an Echometer Touch or Anabat Walkabout. The transect route is shown on Figure 13. All surveys were undertaken on days when the weather conditions were well within the acceptable parameters for bat surveying. Dates the transects were completed on with the weather conditions during each survey are summarised in Appendix 1. Where possible, bat calls are identified to species level. However, species of the genus *Myotis* have been grouped together as their calls are similar in structure and have overlapping call parameters making identification to species level problematic.



Figure 13. Transect route.

6.1.2 Static detector surveys

An Anabat Express detector was placed at the location shown on Figure 14. The detector was placed centrally in the site to determine activity over it. The weather conditions during deployment are summarised in Appendix 2. Where possible, bat calls are identified to species level. However, species of the genus *Myotis* have been grouped together as their calls are similar in structure and have overlapping call parameters making identification to species level problematic. Due to the relatively low number of bat calls recorded each night, all calls have been included and graphed

to show the number of calls per species per month to directly compare the use of the site by each species over the survey period.



Figure 14. Location of static detector.

6.2 Results

6.2.1 Transect surveys

Soprano pipistrelle bats were most frequently recorded species during the transect surveys with common pipistrelle the second most frequently recorded. Brown long eared Myotis and noctule were occasionally recorded. The highest level of bat foraging and commuting activity for all recorded bat species was along the site boundary and edge of the scrubby vegetation in the centre of the site. The highest number of bat records was during October. This is most likely attributed to bats foraging prior to hibernation. The bat activity recorded during each transect is summarised on Figures 15 to 21. The species recorded during the transects include:

- Soprano pipistrelle
- Common pipistrelle
- Noctule
- Brown long eared
- *Myotis*



Figure 15. Summary of bat transect activity recorded during July 2021.



Figure 16. Summary of bat transect activity recorded during August 2021.



Figure 17. Summary of bat transect activity recorded during September 2021.



Figure 18. Summary of bat transect activity recorded during October 2021.



Figure 19. Summary of bat transect activity recorded during April 2022.



Figure 20. Summary of bat transect activity recorded during May 2022.



Figure 21. Summary of bat transect activity recorded during June 2022.

6.2.2 Static detector survey

Common pipistrelle, soprano pipistrelle, brown long eared, *Myotis*, noctule, greater horseshoe *Rhinolophus ferrumequinum* and lesser horseshoe *Rhinolophus hipposideros* were all recorded during the static detector survey. Common pipistrelle were the most frequently recorded, with individual passes of greater and lesser horseshoe bats recorded on an occasional basis. The most number of calls were recorded in June 2022, with April 2022 recording the least amount of calls. The data is summarised in Figures 22 to 28.

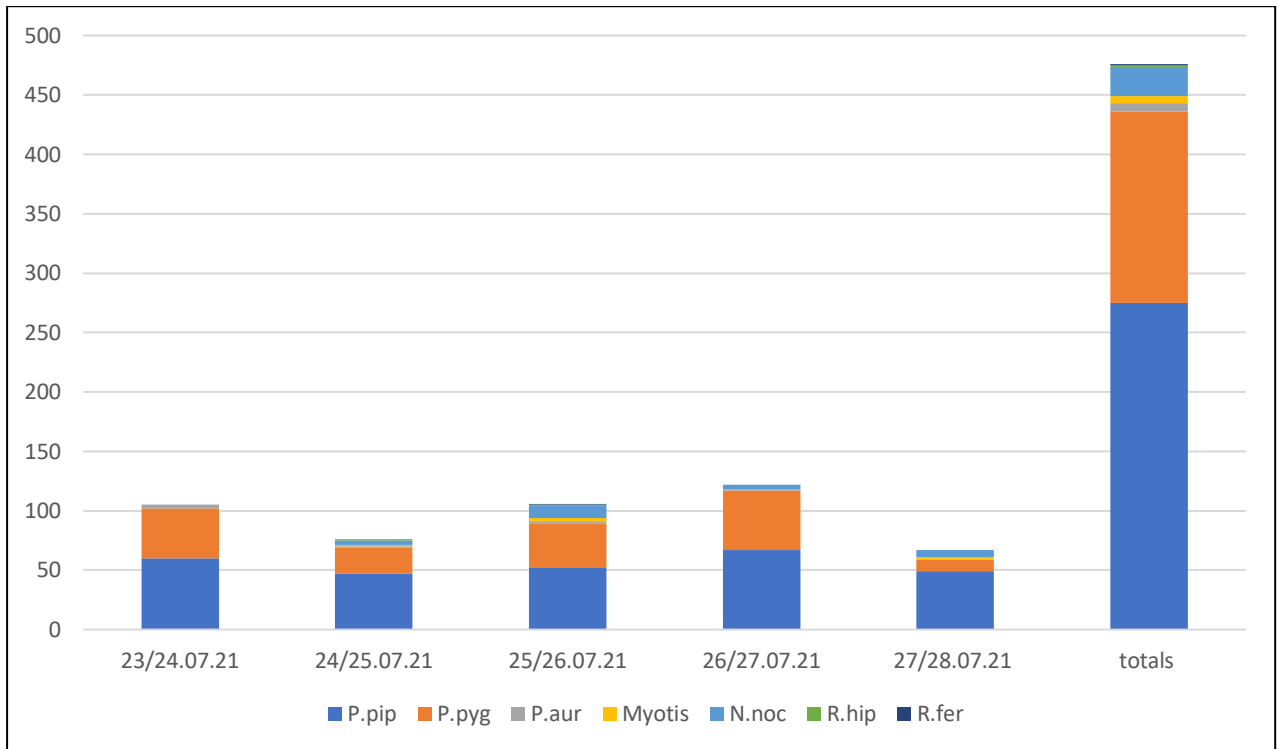


Figure 22. Summary of the static detector survey from July 2021.

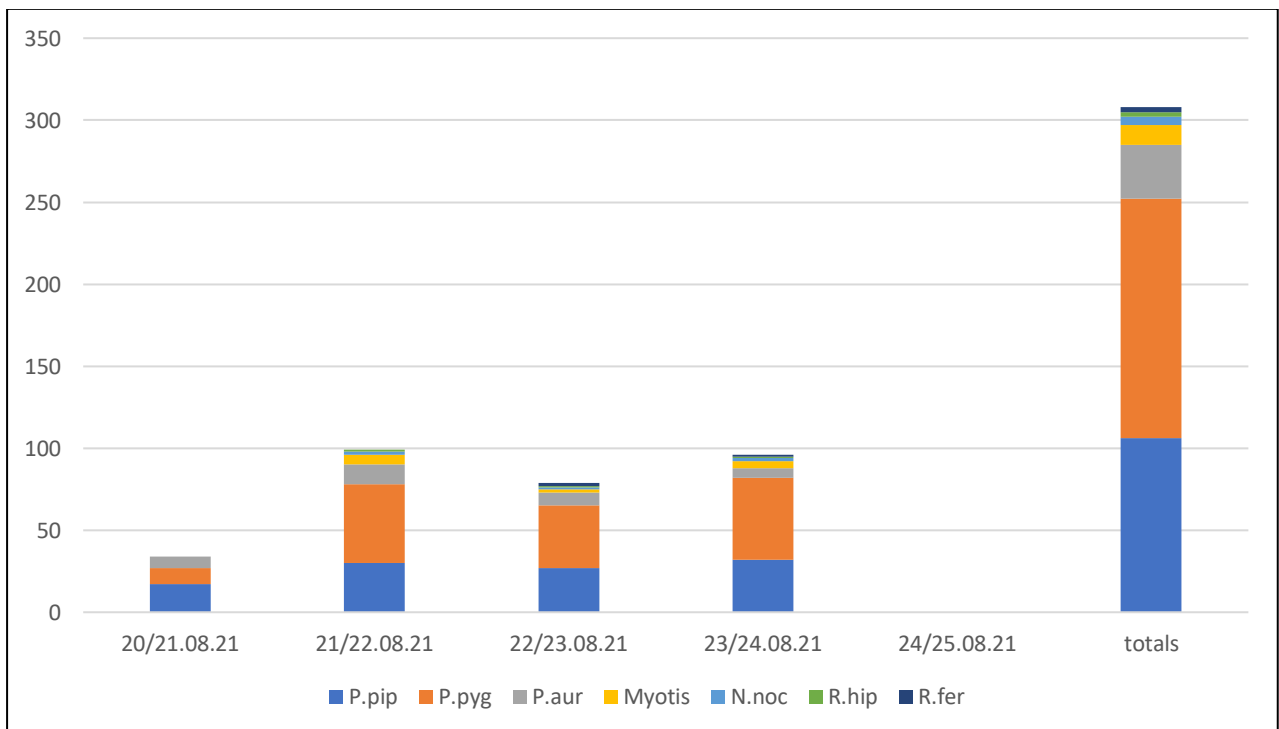


Figure 23. Summary of the static detector survey from August 2021.

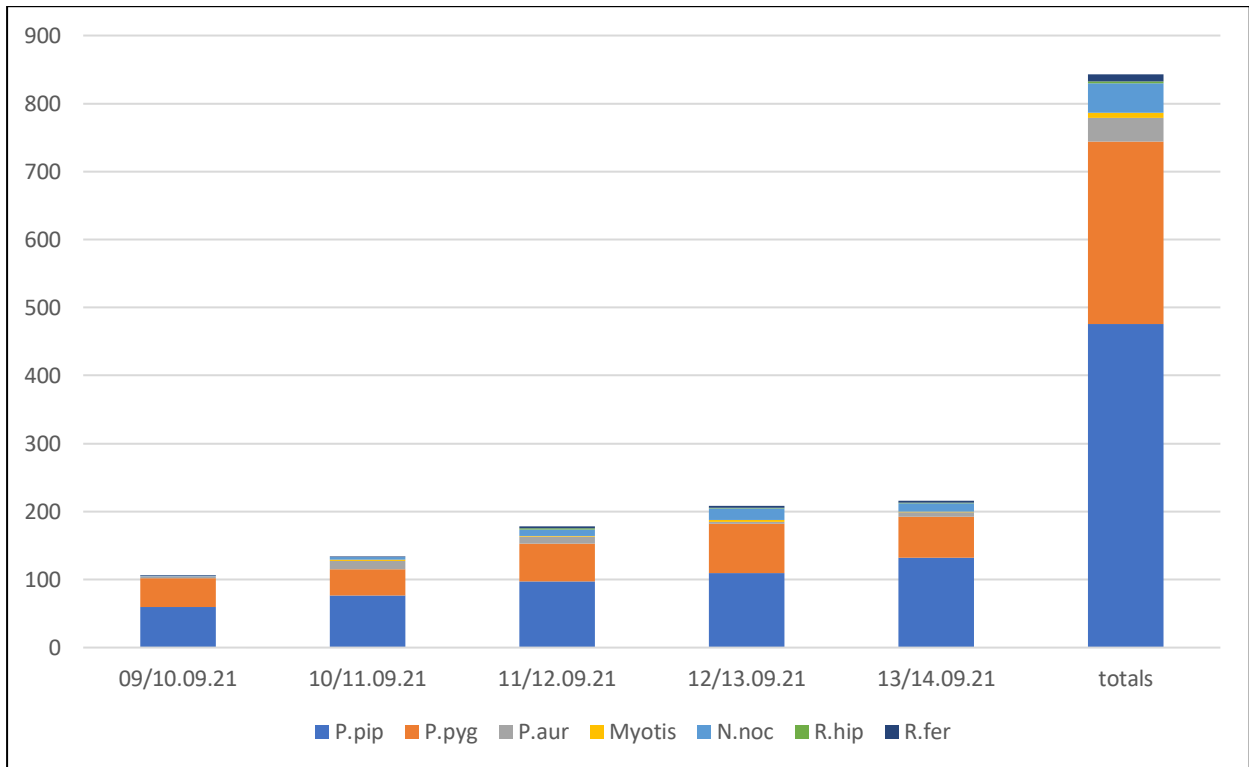


Figure 24. Summary of the static detector survey from September 2021.

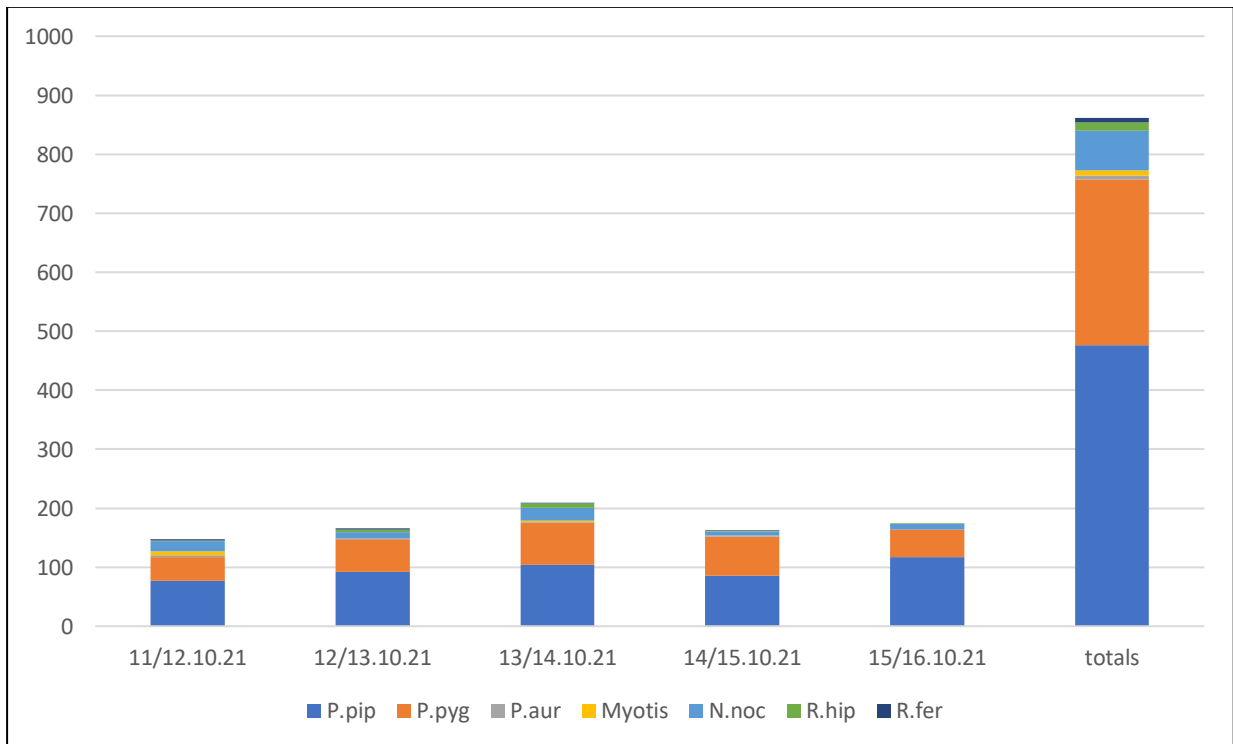


Figure 25. Summary of the static detector survey from October 2021.

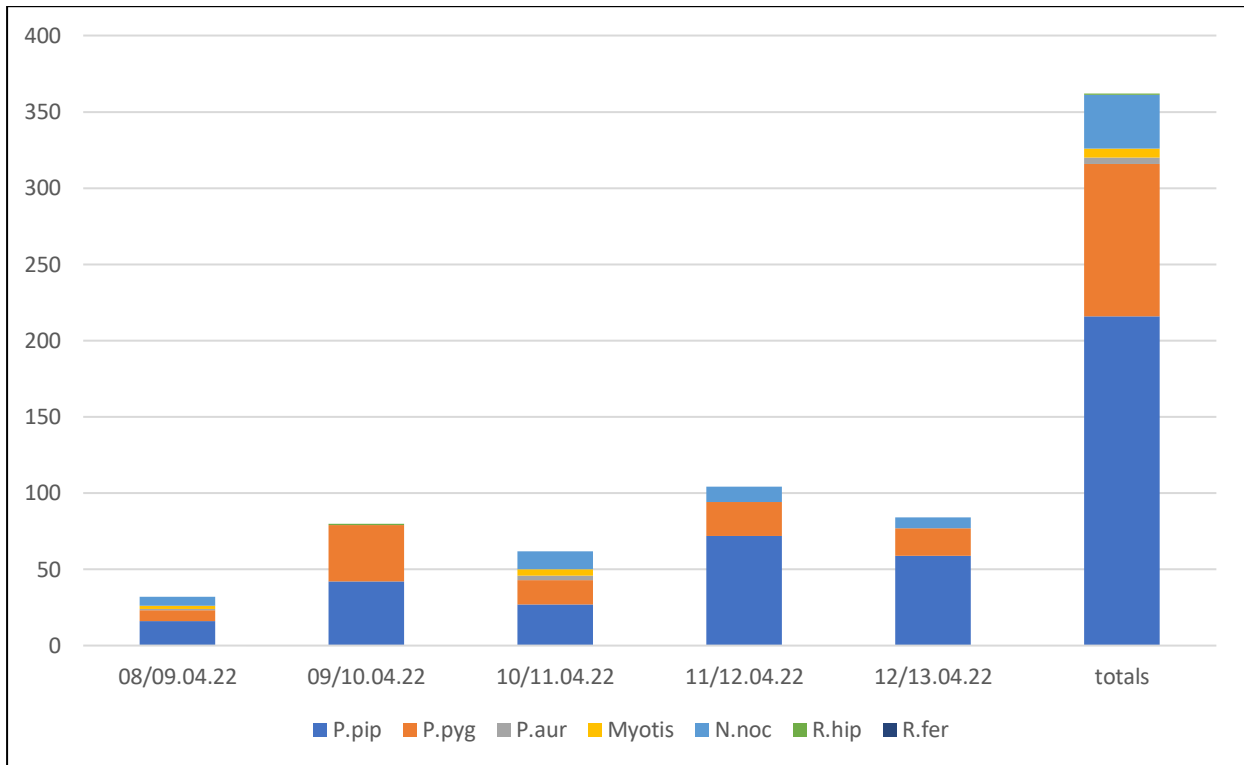


Figure 26. Summary of the static detector survey from April 2022.

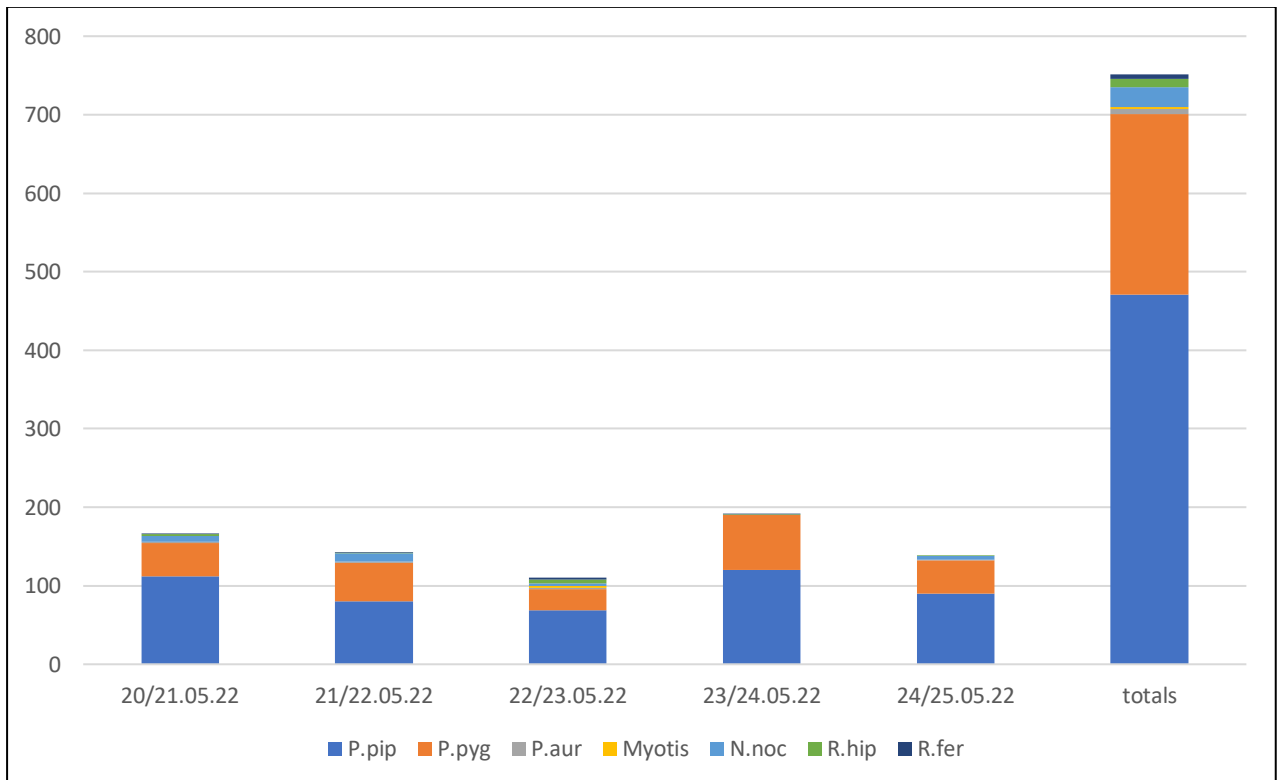


Figure 27. Summary of the static detector survey from May 2022.

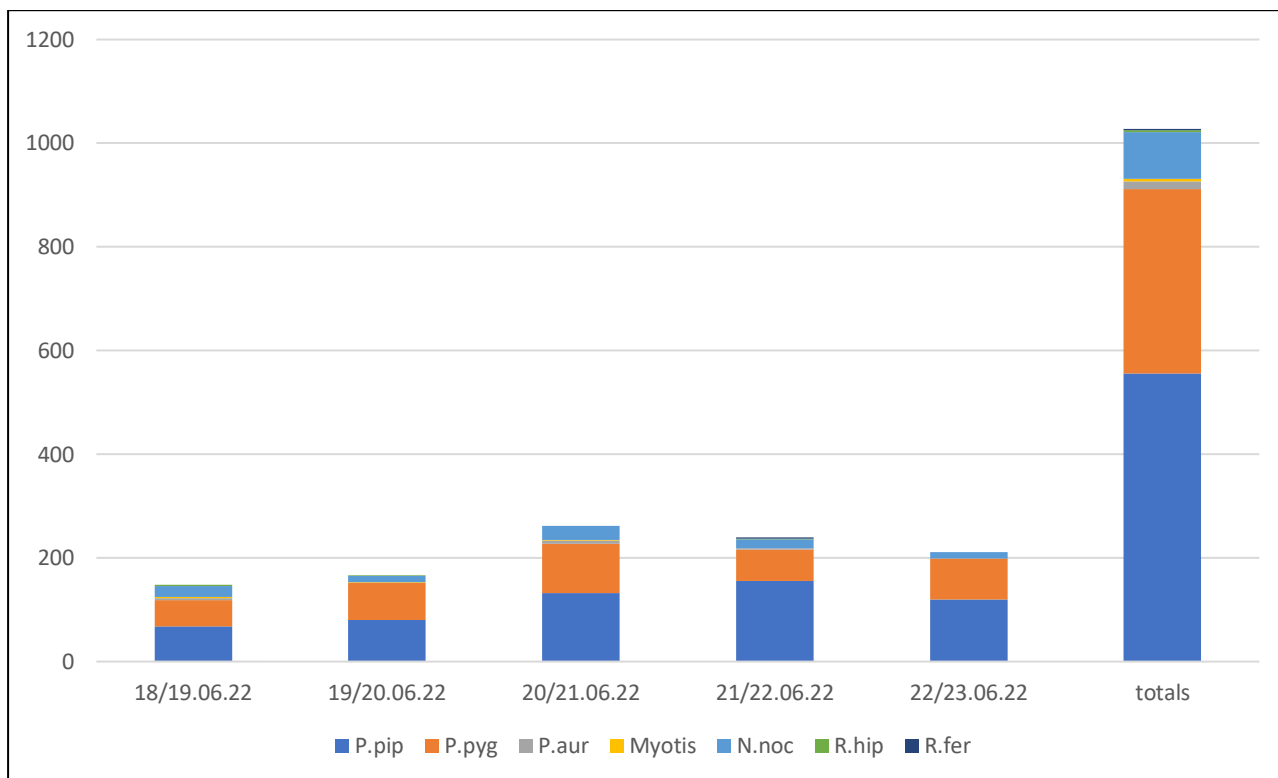


Figure 28. Summary of static detector survey from June 2022.

6.4 Limitations

6.4.1 Transects

Due to steep topography and dense scrub, the eastern section of the site was not included in the transect route as it was deemed too dangerous to be surveying at night.

6.4.2 Static detector survey

The detector failed on the night of 24/25th August 2022 meaning that only four nights of data was recorded rather than the usual five consecutive nights. As this was the only night of failure for the whole survey period, this is not considered significant.

6.5 Legislation

6.5.1 Bats and their roosts are afforded a high level of protection under the Conservation of Habitats and Species Regulations 2017 (as amended) (the 'Habitats Regulations'), the legislation means that it is an offence to:

- Deliberately capture, injure or kill a wild bat;
- Deliberately disturb wild bats; 'disturbance of animals includes in particular any disturbance which is likely:
 - (a) to impair their ability —
 - (i) to survive, to breed or reproduce, or to rear or nurture their young; or
 - (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate;
 - or
 - (b) to affect significantly the local distribution or abundance of the species to which they

belong.’ and

- Damage or destroy a breeding site or resting place used by this species.

6.5.2 Protection is also afforded under the Wildlife and Countryside Act 1981 (as amended) with respect to disturbance of animals when using places of shelter, and obstruction of access to places of shelter.

6.5.3 Due to the high level of protection afforded to bats and their habitat, mitigation for this species is governed by a strict licensing procedure administered by Natural Resources Wales (normally, `planning permission must be obtained before a licence can be sought). Licencing is subject to three tests, as defined under the Habitats Regulations, these must also be applied by the planning authority before granting permission for activities affecting bats. For permission to be granted the following criteria must be satisfied:

- The proposal is necessary ‘to preserve public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment’;
- ‘There is no satisfactory alternative’; and
- The proposals ‘will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range’.

6.5.4 Certain species of bats including the barbastelle, Bechstein’s, noctule, brown long-eared, common pipistrelle, soprano pipistrelle, greater horseshoe and Lesser horseshoe are also listed as Priority Species under Section 7 of the Environment (Wales) Act 2016. Under Section 7 of the Environment (Wales) Act 2016, Welsh Ministers must take all reasonable steps to maintain and enhance the living organisms and types of habitats included on any list published under this section and encourage others to take such steps.

6.6 Discussion

A total of 7 species of bats were recorded during the bat surveys. The transect and static surveys recorded all 8 species of bat in each month that the detector was deployed. The number of bat calls recorded appears relatively low, suggesting that while the bats do feed on site, it is not a core feeding area. The habitat around the site (woodland to the north) may provide more suitable foraging opportunities than those on site.

6.7 Recommendations

6.7.1 *Trees*

There are no trees on site large enough or that had any features suitable for use by roosting bats.

6.7.2 *Lighting*

Many species of bats, but particularly greater horseshoe, lesser horseshoe and brown long eared are sensitive to artificial lighting and will actively avoid heavily lit areas. Careful consideration must also be given to all lighting around the site (including spill from windows). A lighting strategy (including plan) will be designed and implemented to ensure there is no impact on the bats or the features used by the bats.

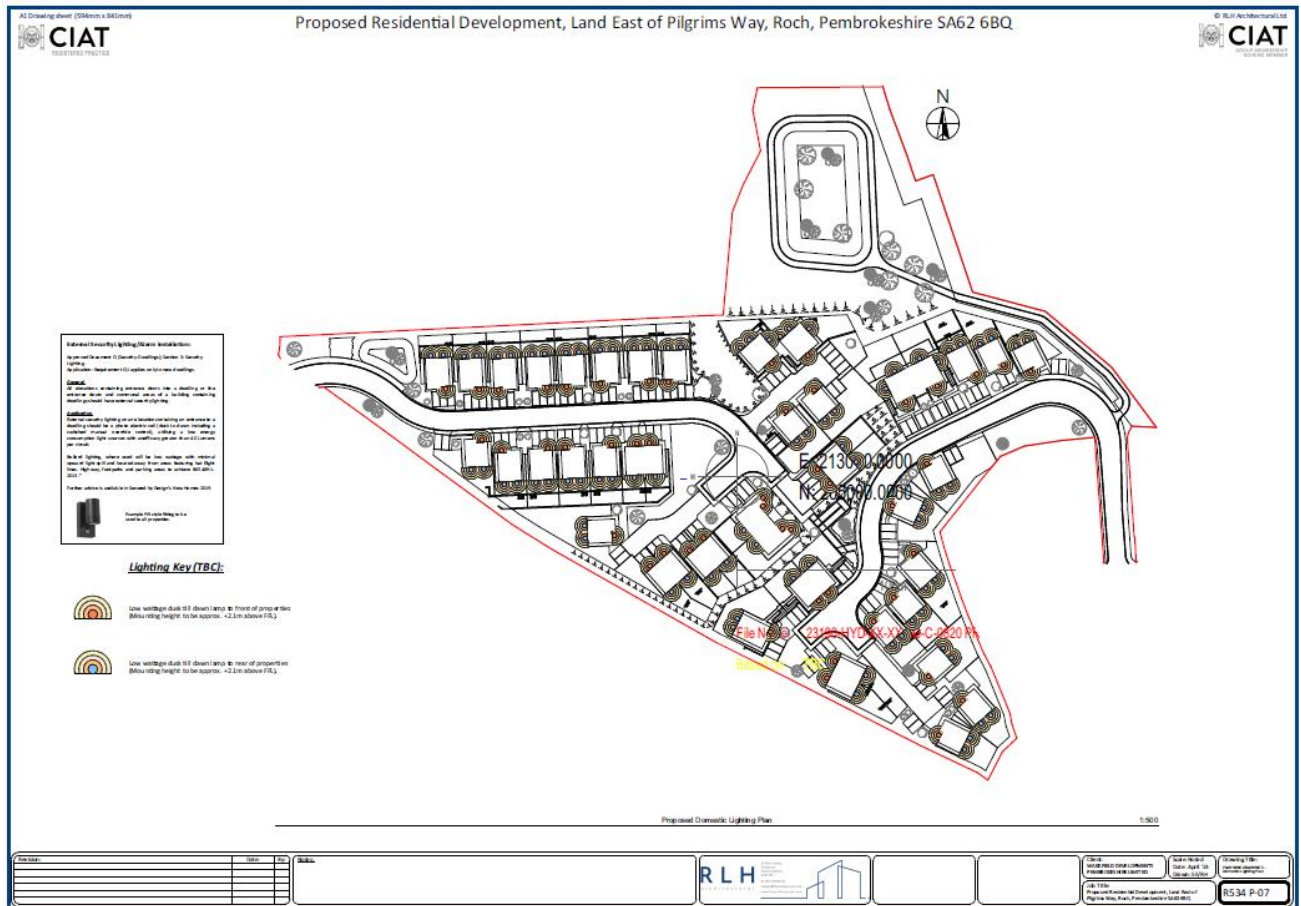


Figure 29. Proposed lighting plan.

6.8 Mitigation

- 6.8.1 To mitigate for the loss of the habitat on site, a hedgerow is to be included along the new northern boundary. This will provide additional foraging opportunities as well as acting as a commuting route along the site.

6.9 Enhancements

To enhance the roosting opportunities on site, an integrated bat box will be included in at least 20% of the properties. In this instance, an integrated eco crevice bat box (Figure 30) or similar design would be most appropriate as these are designed to be built into the fabric of the building. Bat boxes should be sited as high up on a building as possible but, avoid being positioned over windows or doors.



Figure 30. Example of an integrated bat box.

7 Dormice

7.1 Survey methodology

7.1.1 Tube and box survey

7.1.1.1 Fifty dormouse tubes were installed on site on 21st July 2021. The tubes were installed at roughly 15m intervals rather than the recommended 20m due to restricted locations on site to install them. They were attached to a range of species including hawthorn, sycamore, gorse, willow and blackthorn. Their distribution on site is shown on Figure 31.



Figure 31. Placement of tubes around the site.

7.1.1.2 Tubes and boxes were checked in October and November 2021, in March 2022 to ensure the tubes were suitable for use in 2022 and in June 2022 under suitable weather conditions. The deployment of the tubes over this time ensured sufficient points (<20) were gained to demonstrate likely absence in accordance with the best practice guidelines as set out in the Dormouse Conservation Handbook (2006). The points refer to an index of probability, with points given for each month that the tubes are in place. The potential points gained for each month of deployment are summarised in Table 1.

Table 1. Index of probability of finding dormice present in nest tubes in any one month (taken from the Dormouse Conservation Handbook, 2006).

Month	Index of Probability
April	1
May	4
June	2
July	2

August	5
September	7
October	2
November	2
Total	25

7.2 Results of tube survey

No nests attributed to dormice were found in any of the tubes or boxes. Wood mouse nests were found during the checks. Following the October check, the vegetation along the north western to south eastern boundary was cut back by the local authority, following the route of a footpath. This meant seven of the tubes were either destroyed or knocked to the ground, so were replaced during the November 2022 check (discussed in Section 4.2 and shown in Figures 8 and 9). As the tubes were replaced so quickly the points were still gained for deployment in November 2021. During the check in March 2022, all tubes were in place. During the final check in June 2022, only 24 tubes were located. Over 9 man hours were spent trying to re-locate the tubes, but no evidence of them could be found. A number of the tubes that were located were found to have been removed and re-attached so it is likely that the missing tubes had been removed by a third party. However, as 24 of the tubes were located half the number of points for the months of May and June could be added to the total score meaning that a total of 21.5 points were gained (points summarised in Table 2). As over 20 points were gained based on the number of tubes deployed over the time period, this figure still gives confidence in a negative result.

Table 2. Number of points gained on site

Month	Possible points available	No tubes deployed	Actual points gained
July 2021	2	50	2
August 2021	5	50	5
September 2021	7	50	7
October 2021	2	50	2
November 2021	2	50	2
April 2022	1	25	0.5
May 2022	4	25	2
June 2022	2	25	1
Total	25	-	21.5

7.3 Limitations

A high number of tubes (25%) were not found on conclusion of the survey in June 2022. Taking this into consideration using the index of probability, the overall score has been reduced to 21.5 which is still higher than the score of 20 required to have confidence in a negative result.

7.4 Legislation

The dormouse is strictly protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation and Habitats and Species Regulations 2010. The deliberate and reckless capturing, disturbing, injuring and killing of

dormice is prohibited, as is damaging or destroying their breeding site or resting places. Licences are available from Natural Resources Wales to allow actions that would otherwise be unlawful.

7.5 **Discussion**

While no evidence of dormice was recorded during the surveys and there are no known records within a 5km radius of the site. Dormouse records in Pembrokeshire are concentrated to the north and south of the county, but this may be due to lack of survey effort rather than a lack of presence.

8 Birds

8.1 Survey methodology

Any bird species seen or heard on site during the surveys were recorded.

8.2 Results

Blackbird, blue tit, bullfinch, buzzard, carrion crow, chaffinch, dunnoek, great tit, house sparrow, house martin, jackdaw *Corvus monedula*, magpie, pied wagtail, robin, rook, song thrush, starling, swallow, tawny owl, woodpigeon and wren were all seen or heard on site. Much of the habitat on site was suitable for nesting birds, including the scrub.

8.3 Legislation

Under the Wildlife and Countryside Act 1981 (as amended) all wild birds are protected from killing and injury, and their nests and eggs protected from taking, damage and destruction whilst in use. Additional protection is extended to species listed under Schedule 1 of the Act, meaning it is also an offence to disturb these species at or near the nest, or whilst they have dependent young.

8.4 Discussion

The site contained a range of habitats with suitability for supporting breeding birds.

8.5 Recommendations

Any required vegetation clearance takes place outside of the breeding bird season (considered March to August inclusive) to avoid disturbance/destruction of any active nests. Where it is not possible to clear vegetation outside of the breeding bird season. Vegetation suitable to support nesting birds that will be affected by the works will be checked by an ecologist no more than 24 hours prior to commencement of the works. Any nesting birds identified must be left to fledge before works can commence.

8.6 Enhancements

A range of bird boxes including house martin nest boxes will be included on at least 20% of the new properties. Bird boxes must be positioned immediately beneath the eaves and avoid being located above windows or doors. All boxes must be clearly marked up on plans.

9 Reptiles

9.1 Survey methodology

A data search was commissioned from the Local Records Centre and informal surveys were completed while on site.

9.2 Results

The site is very overgrown and tussocky so has the potential to be used by common species of reptile, particularly slow worm.

9.3 Summary of findings

Grass snake and slow worm have been recorded within the 2km data search radius and are likely to utilise the site.

9.4 Legislation

Common lizard, slow-worm, adder and grass snake are protected under the Wildlife and Countryside Act 1981 (as amended) which makes it illegal to intentionally kill or injure these animals.

9.5 Limitations

Formal reptile surveys were not completed, so data is restricted to known records informed by the data search and informal sightings while completing other surveys on site.

9.6 Discussion

Reptiles were not encountered during the surveys, but there are records of both grass snake and slow worm within 2km of the site.

9.7 Recommendations

The presence of common species of reptiles will be assumed on site and work completed under a working brief as set out in Section 9.8 below.

9.8 Mitigation

9.8.1 *Prior to works commencing*

All contractors involved in the scheme must be given a copy of this working brief, with a copy retained on site for the duration of the project.

9.8.2 *Cutting of vegetation*

- Grassland and scrubby vegetation on the development site will be cut to 10cm above ground height using hand tools (this includes the use of hand strimmer's and brush cutters). The vegetation must not initially be cut to ground level, or the risk of animal mortality would be high. Cut material will be hand raked to the sides of the area and then removed from the site.
- The prepared area should then be left as such for at least three days prior to a further strimming or cutting as close to ground level as possible, thus allowing time for any species (if present) to move away.

- Work will proceed working from the centre of the site outwards, again allowing any species (if present) time to move away into the surrounding habitat.
- The area cut must be maintained at a shorter sward height as possible until clearance work commences. Any reptiles which are then found can be captured using gloves and moved to the surrounding habitat.

9.8.3 *Clearance of log and or rubble piles or similar feature*

These must be taken apart by hand (wearing gloves) to ensure no reptiles are amongst them. Where an animal is encountered, it can either be left to move off of its own accord or moved to the surrounding habitat.

9.8.4 *Clearance of turf*

Any turf removal must be completed using an excavator fitted with a toothed bucket. Any reptiles encountered must either be allowed to move off of their own accord or captured and moved off into the surrounding habitat.

9.8.5 *Timing*

- Clearance work will take place when day-time temperatures are between 16-24°C, i.e. when reptiles and amphibians are alert and mobile and can move out of the area subject to disturbance.
- Vegetation above ground can be cleared during the autumn and winter months (September to March) when reptiles are in hibernation, while the remaining ground-level structures cleared during the subsequent summer months (April to September) when reptiles are active. Potential hibernation sites (e.g. hedge banks, wood piles, rock piles etc) must not be disturbed during the winter period as they may be used by as hibernacula.
- Work areas can be completely cleared of above and ground-level structures during the autumn months of September and October.

10 Additional legislation

10.1 Designated sites

Special Areas of Conservation and Sites of Special Scientific Interest are strictly protected through both European Directives and UK legislation including the conservation and Habitats and Species Regulations 2010.

10.2 Natural Environment and Rural Communities Act 2006

Section 40 of the NERC Act places a 'Biodiversity Duty' on local planning authorities as far as is consistent with the proper exercise of their functions. This replaces Section 74 of the Countryside and Rights of Way Act.

10.3 Technical Advice Notes 5

TAN 5 gives advice to local authorities on development control issues for Special Protection Areas (SPAs), Special Areas of Conservation (SACs), and Sites of Special Scientific Interest (SSSIs). It also covers the selection and designation of non-statutory nature conservation sites, such as local nature reserves, and the protection of species, commons and greens.

10.4 Local Development Plan

Policy 11 (Protection of Biodiversity) of the Pembrokeshire Coast National Park Authority Local Development Plan states that:

'Development that would disturb or otherwise harm protected species or their habitats or the integrity of other habitats, sites or features of importance to wildlife and individual species including Local Biodiversity Action Plan species and habitats will only be permitted where the effects will be acceptably minimised or mitigated through careful design, work scheduling or other measures.'

also of relevance is Policy 15 of the LPD, 'Conservation of the Pembrokeshire Coast National Park', which states that:

Development will not be permitted where this would adversely affect the qualities and special character of the Pembrokeshire Coast National Park by:

- a) causing significant visual intrusion; and/or,*
- b) being insensitively and unsympathetically sited within the landscape; and/or*
- c) introducing or intensifying a use which is incompatible with its location; and/or*
- d) failing to harmonise with, or enhance the landform and landscape character of the National Park; and/or*
- e) losing or failing to incorporate important traditional features.*

11 Summary of recommendations and enhancements

11.1 Habitats

Any planting should utilise locally sourced, native species in all gardens and landscaping. A new hedgerow is to be planted along the northern boundary to provide a natural screen between the site and surrounding land. This will utilise locally sourced native species. The proposed site layout is shown on Figure 32.

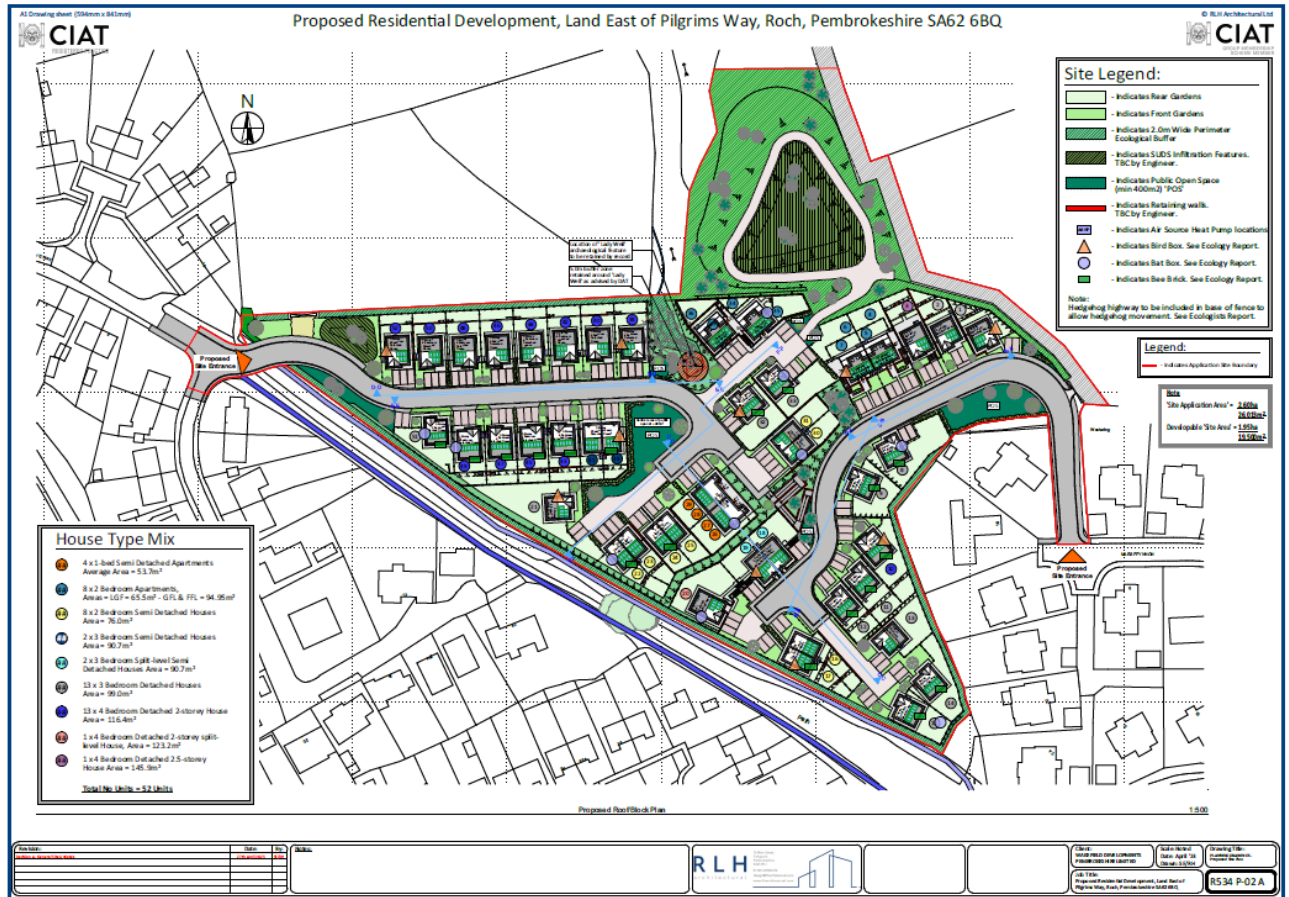


Figure 32. Proposed site layout.

11.2 Badgers

No evidence of badgers was found on site.

11.3 Bats

At least 7 bat species were recorded during the survey period. However, records were relatively low during both the transect and static surveys. Common and soprano pipistrelle bats were the most commonly recorded species, with greater and lesser horseshoe bats only recorded during the static survey and limited to very occasional passes. There are no trees or building on site to support roosting bats, so no direct impacts are envisaged. Boundary habitat is to be retained around the site to ensure foraging and commuting corridors are maintained. A sensitive lighting strategy will be designed which will avoid shining lighting directly onto retained the surrounding and minimises light spill onto retained habitat.

11.4 Birds

Any required vegetation clearance takes place outside of the breeding bird season (considered March to August inclusive) to avoid disturbance/destruction of any active nests. Where it is not possible to clear vegetation outside of the breeding bird season. Vegetation suitable to support nesting birds that will be affected by the works will be checked by an ecologist no more than 24 hours prior to commencement of the works. Any nesting birds identified must be left to fledge before works can commence. A range of bird boxes including house martin nest boxes will be included on at least 20% of the new properties. Bird boxes must be positioned immediately beneath the eaves and avoid being located above windows or doors. All boxes must be clearly marked up on plans.

11.5 Dormice

No dormice were recorded on site and there are no records within 2km of the site so no recommendations or enhancements are required for this species.

11.6 Reptiles

Grass snake and slow worm have also been recorded within a 2km radius of the site so are also likely to be found on site. The presence of common species of reptiles will be assumed on site and work completed under a working brief.

11.7 Insects

To enhance the site for insects, it is recommended that 'bee bricks' be included in the scheme. Bee bricks are used in the place of a standard brick or block to create habitat for solitary bees. The bricks include cavities to allow the solitary bees to lay their eggs. The brick is sealed on the rear so the bees can only utilise the brick itself rather than the building. The bricks are best situated on a south facing wall at a minimum height of 1m. An example is shown in Figure 33.



Figure 33. Example of a bee brick.

11.8 Hedgehogs

One of the reasons for a decline in hedgehogs is a loss of habitat and fragmentation of habitat. As hedgehogs have been recorded in the area, it would be beneficial if the boundary hedgerows could be retained as much as possible and new planting included so providing additional corridors around the site and surrounding habitat. Any property

fences should include 'hedgehog highways', where a 15cm by 15cm hole is cut in the base of any fences to allow hedgehogs to move between gardens, so increasing their access to foraging and nesting sites. An example of such a 'hedgehog highway' is included in Figure 34.



Figure 34. Hedgehog highway included in base of fence to allow hedgehog movement.

12 Conclusions

While there was no evidence of protected species on site, there are records in the area for a number of mobile species which may on occasion utilise the site. It is considered unlikely that the development would impact on the biodiversity of the area, particularly if the recommendations of this report are included in the scheme.

13 **References**

Andrews, H. 2018. Bat roosts in trees. A guide to identification and assessment for tree-care and ecology professionals. Pelagic Publishing.

Bat Conservation Trust and Institute of Lighting Professionals. 2018. Bats and artificial lighting in the UK. Bats and the Built Environment series. Guidance Note 08/18

Bright, P., Morris, P. and Mitchell Jones, T. The dormouse conservation handbook. 2nd Edition. English Nature.

Collins, J. 2016. Bat Surveys for Professional Ecologists. Good Practice Guidelines. 3rd Edition. Bat Conservation Trust.

Garland L & Markham, S. (2007) Is important bat foraging and commuting habitat legally protected? (self published)

Stone, E.L., Jones, G., Harris, S. (2009). Street lighting disturbs commuting bats. *Curr. Biol.* 19, 1123–1127.

Stone, E.L., Harris, S., Jones, G. (2015a). Impacts of artificial lighting on bats: A review of challenges and solutions. *Mammal. Biol.* 80, 213-219.

Appendix 1

Weather conditions during the transect surveys

Date	Sunset	Time	Temp.	Cloud cover	Wind speed	Wind direction	Rainfall	Other information
30.07.2021	2112							
	Start	2110	16°C	0%	3	WNW	Dry	-
	End	2314	15°C	0%	3	WNW	Dry	-
20.08.2021	2033							
	Start	2030	14°C	100%	2-3	NW	Dry	-
	End	2210	12°C	100%	2-3	NW	Dry	-
14.09.2021	1937							
	Start	1940	14°C	0%	0-1	SE	Dry	-
	End	2120	12°C	0%	0-1	SE	Dry	-
12.10.2021	1833							
	Start	1830	10°C	10%	2-3	NW	Dry	-
	End	2010	8°C	10%	2-3	NW	Dry	-
13.04.2022	2012							
	Start	2010	11°C	100%	3-4	SE	Dry	-
	End	2200	9°C	100%	4	SE	Drizzle	-
20.05.2022	2112							
	Start	2115	13°C	50%	3	W	Dry	-
	End	2300	13°C	50%	3	W	Dry	-
23.06.2022	2142							
	Start	2140	14°C	100%	3	SW	Dry	-
	End	2315	13°C	100%	3	SW	Dry	-

Appendix 2

Average nightly weather conditions during the static detector surveys

Month	Date	Temp.	Cloud cover	Wind speed	Wind direction	Rainfall	Other information
July 2021	23/24.07.2021	16°C	25%	1	W	Dry	-
	24/25.07.2021	13°C	25%	2	W	Dry	-
	25/26.07.2021	14°C	70%	1-2	NW	Dry	-
	26/27.07.2021	11°C	20%	3	NW	Dry	-
	27/28.07.2021	12°C	100%	3-4	NW	Dry	-
August 2021	20/21.08.2021	14°C	100%	3	NW	Showers	-
	21/22.08.2021	14°C	100%	3	NW	Showers	-
	22/23.08.2021	16°C	0%	0-1	SW	Dry	-
	23/24.08.2021	15°C	50%	0-1	SW	Dry	-
	24/25.08.2021	15°C	50%	0-1	SW	Dry	-
September 2021	09/10.09.2021	15°C	100%	2	SW	Light showers	-
	10/11.09.2021	15°C	100%	2	SW	Dry	-
	11/12.09.2021	13°C	50%	2-3	SW	Dry	-
	12/13.09.2021	12°C	50%	1-2	SW	Persistent	-
	13/14.09.2021	13°C	70%	2-3	SW	Showers	-
October 2021	11/12.10.2021	8°C	0%	4	NW	Dry	-
	12/13.10.2021	10°C	50%	5-6	NW	Dry	-
	13/14.10.2021	10°C	100%	8	W	Showers	-
	14/15.10.2021	11°C	60%	3-4	SW	Dry	-
	15/16.10.2021	8°C	50%	3-4	SW	Dry	-
April 2022	08/09.04.2022	3°C	90%	1-2	SE	Dry	-
	09/10.04.2022	3°C	70%	1-2	SE	Dry	-
	10/11.04.2022	8°C	70%	1	SE	Dry	-
	11/12.04.2022	9°C	70%	1	SE	Dry	-
	12/13.04.2022	9°C	100%	1	SE	Rain	-
May 2022	20/21.05.2022	14°C	100%	3	W	Drizzle	-
	21/22.05.2022	14°C	50%	2-3	SW	Showers	-
	22/23.05.2022	13°C	100%	2-3	W	Dry	-
	23/24.05.2022	13°C	100%	4	W	Occasional shower	-
	24/25.05.2022	13°C	50%	4	SW	Dry	-
June 2022	18/19.06.2022	10°C	60%	1-2	SE	Dry	-
	19/20.06.2022	11°C	70%	1-2	SE	Dry	-
	20/21.06.2022	12°C	100%	1-2	SE	Dry	-
	21/22.06.2022	13°C	70%	3	SW	Rain	-
	22/23.06.2022	14°C	100%	2-3	SE	Rain	-

