RPS

BAT ASSESSMENT REPORT

Plas Coch Campus, University of Wrexham

RPS

December 2018

Our Ref: ECO00246

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The material presented in this report is confidential. This report has been prepared for the exclusive use of Glyndwr University and shall not be distributed or made available to any other company or person without the knowledge and written consent of Glyndwr University or RPS.
To achieve the study objectives stated in this report, we were required to base our conclusions on the best information available during the period of the investigation and within the limits prescribed by our client in the agreement.
No investigative method can completely eliminate the possibility of obtaining partially imprecise or incomplete information. Thus, we cannot guarantee that the investigations completely defined the degree or extent of e.g. species abundances or habitat management efficacy described in the report.

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1 Executive Summary

RPS Planning and Development Ltd was instructed by Glyndwr University to carry out a Preliminary Roost Assessment and subsequent bat activity surveys of Plas Coch campus to inform a planning application for the redevelopment of the existing buildings on site. The report provides ecological information to submit with planning application.

Table 1:Summary of recommendations

Habitats / Species	Recommendations	Optimal Timings
Bats	Licence application to Natural England (NE) to facilitate the works. Inspection of T1 if works are to pose potential disturbance to roosting bats.	Full planning permission is required prior to applying for a NE licence. Prior to demolition of garages.
Birds	No disturbance of nesting birds.	During works.

CONTENTS

1 EXECUTIVE SUMMARY 4

2 INTRODUCTION AND BACKGROUND 7

2.1 Purpose and Scope of this Report 7
2.2 Proposed Site Plans 7
2.3 Site Context and Location 7
2.4 Updated Habitat Survey 7
2.5 Legislation and Planning Policy 8

3 METHODOLOGY 9

3.2 Limitations 10

4 RESULTS 11

4.1 Previous Site Surveys 11
4.2 Preliminary Bat Roost Assessment 11
4.3 Updated Habitat Survey 13
4.4 Nocturnal Bat Surveys 13
4.5 Specific Internal Inspection of Feature 13

5 DISCUSSION 15

5.1 Bats 15
5.2 Nesting Birds 15

6 RECOMMENDATIONS AND MITIGATION 16

6.1 Bats 16
6.2 Birds 22

7 REFERENCES 23

FIGURES

Figure 1: Site Location Plan 7
Figure 2: B05 26
Figure 3: B06 26
Figure 4: B07 26
Figure 5: B08 27
Figure 6: B09 27
Figure 7:B10 27
Figure 8: B11 27
Figure 9: Feature on T1 27
Figure 10: B01 showing soffit feature 28
Figure 11: Soffit feature from which bat emerged 28
Figure 12: Internal roof structure of B01 28

TABLES

Table 1:Summary of recommendations 4
Table 2: Criteria for bat roost potential in buildings / trees 9
Table 3: Table of survey details 10
Table 4: Building descriptions and summary 11

APPENDICES

Appendix 1: Phase 1 Plan 24

Appendix 2: Nocturnal Survey 25
Appendix 3: Site Photos 26
Appendix 4: Example Tier 2 Audit Form 29

2 Introduction and Background

2.1 Purpose and Scope of this Report

RPS Planning and Development Ltd (RPS) were instructed by Glyndwr University to undertake a preliminary roost assessment and subsequent bat activity surveys of six buildings at the Plas Coch campus, Wrexham. In addition, a single nocturnal survey was also conducted on the student halls building (B01) towards the western site boundary (as recommended in the initial report RPS, 2017).

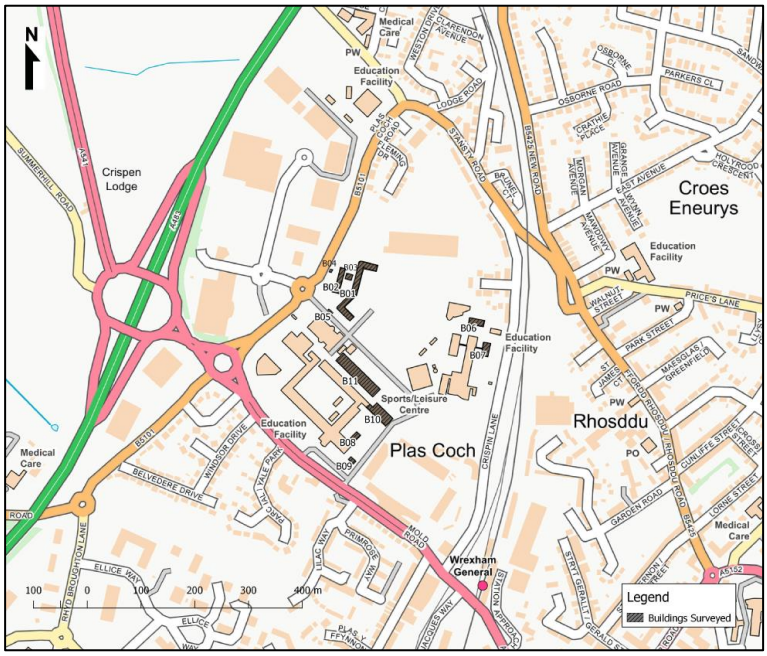
2.2 Proposed Site Plans

Under current proposals, eleven of the buildings on site are to be demolished with areas proposed for re-development.

2.3 Site Context and Location

The site is located the north-westerly outskirts of Wrexham, Ordnance Survey (OS) central grid reference SJ 327 511. The site comprises multiple university buildings including sports centers and associated facilities, student union bar and student accommodation. Under current proposals 11 of the buildings on site are to be demolished as part of a redevelopment project for the site. The immediate land use comprises residential and commercial as illustrated on Figure 1.

Figure 1: Site Location Plan



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(greyed buildings represent those surveyed in 2017 & 2018)

Online resources show the wider landscape comprises residential development with a large area of farmland. The university is not considered to be well linked the wider environment given the lack of connecting features such as tree lines, hedgerows and rivers.

2.4 Updated Habitat Survey

The initial preliminary ecological appraisal was conducted in 2017, the results of which are still considered valid. None of the habitats recorded at the site were considered to have changed since the initial survey with the additional areas comprising the same habitats types described in the 2017 report (see Appendix A for updated Phase 1 plan). See Section 4.2.

2.5 Legislation and Planning Policy

2.5.1 General

Articles of British wildlife and countryside legislation, policy guidance and both Local and National Biodiversity Action Plans (BAPs) are referred to throughout this report. Their context and application is explained in the relevant sections of this report. The relevant articles of legislation are:

- The National Planning Policy Framework (NPPF, 2018);
- ODPM Circular 06/2005 (retained as Technical Guidance on NPPF 2018);
- Local planning policies (Derbyshire Dales District Council);
- The Conservation of Habitats and Species Regulations 2017;
- The Wildlife and Countryside Act 1981 (as amended);
- National Parks and Access to the Countryside Act 1949;
- The Countryside and Rights of Way Act 2000;
- The Natural Environment and Rural Communities Act 2006;
- Local Biodiversity Action Plan for Wrexham.

Under the National Planning Policy Framework 2018 the presence of any protected species is a material planning consideration. The Framework states that impacts arising from development proposals must be avoided where possible or adequately mitigated/ compensated for and that opportunities for ecological enhancement should be sought.

2.5.2 Bats

All UK species of British bats are fully protected under *The Conservation of Habitats and Species Regulations* 2017 (as amended). The Regulations prohibit:

- Intentionally, recklessly or deliberately kill, injure or take a bat;
- The deliberate disturbance of any bat species in such a way as to be significantly likely to affect:
    - Their ability of to survive, hibernate, migrate, breed, or rear or nurture their young; or;
    - The local distribution or abundance of that species.
- Damage or destruction of a breeding site or resting place (roost);
- The possession or transport of bats or any other part of.

Bats are also protected under the *Wildlife and Countryside Act 1981* (as amended) through their inclusion in Schedule 5. Under the Act, they are protected from:

- Intentional or reckless disturbance (at any level);
- Obstruction of access to any place of shelter, breeding or rest;
- Selling, bartering or exchange of these species, or parts of.

Seven British bat species are listed as Species of Principal Importance (SPI) under the *Natural Environment and Rural Communities (NERC) Act* 2006. These are barbastelle *Barbastella barbastellus*, Bechstein's *Myotis bechsteinii*, noctule *Nyctalus noctula*, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared *Plecotus auritus*, greater horseshoe *Rhinolophus ferrumequinum* and lesser horseshoe *Rhinolophus hipposideros*.

3 Methodology

3.1.1 Daytime Bat Assessment

Six buildings on site were visually inspected externally and internally for bat roost suitability. Suitable entry / exit points for bats such as lifted tiles and crevices were noted together with any evidence of bat presence such as droppings or feeding remains.

Following standard best practice methodology (Collins, 2016), each building was then classified either as confirmed roost, high, medium, low or negligible potential (see Table 2), which informs the need for and survey effort of any nocturnal survey required.

Table 2: Criteria for bat roost potential in buildings / trees

Roost potential	Description	Surveys required* - Buildings	Surveys required* - trees
Confirmed	Evidence of bats found during initial daytime inspection.	Three surveys comprising dusk / dawn, one must be a dawn survey between May to September with at least two of the surveys between May and August.	
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	Three surveys comprising dusk / dawn, one must be a dawn survey between May to September with at least two of surveys between May and August.	
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	Two surveys comprising dusk / dawn, one must be a dawn survey between May to September with at least one of surveys between May and August	
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.	One survey required between May to August	No further surveys required. Precautionary Method of works recommended.
Negligible	Negligible habitat features on site likely to be used by roosting bats.	No further surveys are required	

**Unless it is a confirmed roost, additional surveys are required of buildings and/or trees to assess presence / likely absence of a roost. The number of surveys are indicative to give confidence in a negative result, i.e. where no bats are found, confidence in a result can be taken.*

3.1.2 Nocturnal Bat Surveys

During the initial assessment, three buildings were assessed as having **Low** potential to support roosting bats. The nocturnal bat surveys were carried out during September 2018 with either two or four surveyors positioned around the buildings to sufficiently monitor bat activity. Surveyors

used Anabat SD2 or Bat Logger bat detectors to record bat calls for further sonogram analysis. Table 2 summaries the survey effort, dates, times, surveyors and weather conditions.

Table 2: Table of nocturnal survey details

Survey type	Building Number	Date	Timing	Weather condition	Bat surveyors
Dusk emergence survey	B06	17-09-2018	19:08-20:53 (sunset = 19:23)	No rain, 5/8cc, wind B3, 20˚C	Phillipa Mudd, Amy Tose, Amy Sherwin, Katie Farmer
Dusk emergence and dawn re-entry	B10	24-09-2018 25-09-2018	18:51-20:36 (sunset=18:51) 05:33-07:18 (sunrise=07:03)	No rain, 1/8cc, wind B1, 15˚C No rain, 1/8cc, B1, 5˚C	Phillipa Mudd and Amy Tose
Dusk emergence survey	B01	25-09-2018	18:49-20:34 (sunset=19:04)	No rain, 7/8cc, wind B2, 15˚C	Phillipa Mudd, Rose Poston-Saynor, Amy Tose, Amy Sherwin

3.2 Limitations

3.2.1 Desk Based Assessment

Online resources and previous site reports (RPS, 2017) were consulted to establish records for bat species in the area. RPS cannot vouch for the accuracy of online resources and cannot be held liable for any error(s) in the online data or third-party data used for the purpose of this report.

3.2.2 Survey

It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no investigation could ensure the complete characterisation and prediction of the natural environment.

3.2.3 Accurate Lifespan of Ecological Data

The majority of ecological data remain valid for only short periods due to the inherently transient nature of the subject. The survey results contained in this report are considered accurate for one years, notwithstanding any considerable changes to the site conditions.

4 Results

4.1 Previous Site Surveys

A preliminary bat roost assessment was conducted on five buildings at the campus in 2017 (RPS, 2017). The buildings were considered to have the same potential in 2017. The surveys concluded that buildings 2-5 (B02-B05) had negligible suitability for roosting bats and therefore required no further surveys. Building 1 (B01) was considered to have the following features suitable for roosting bats:

- Enclosed loft void (heated), including potential access points through gaps in soffit box and ventilation mesh;
- Gaps in ridge tiles/mortar – crevices directly underneath and/or direct access into loft space
- Gap in brickwork under eaves on east elevation – suitable for either crevice dwellers or direct access into loft space

As such, the building was classed as having Low suitability for roosting bats and a single nocturnal survey was recommended. This survey was conducted in September 2018 the results of which are discussed below.

4.2 Preliminary Bat Roost Assessment

Six buildings on site were inspected for bat roost suitability in July 2018. The results of which are shown in Table 3 below.

Table 3: Building descriptions and summary

Building Ref	Description	Potential Bat Roosting Features	Evidence of Bats	Bat Roosting Suitability
B06	B06 comprised a single storey, flat roofed, brick-built building with metal frame doors and a combination of metal and wooden framed single glazed windows. Internally the building had a false ceiling with no loft voids present and no gaps recorded along the roof.	Gaps were recorded under the barge boards at the back of the building where the material had warped. Due to the height of the features it was not possible to inspect them further.	No evidence of bats was noted at the time of the survey.	**Low**
B07	B07 comprised a single storey, flat roofed, brick-built building with wooden framed doors and windows. Internally the building had a plasterboard roof with skylights. No loft void was present. No features were recorded along the walkway.	A cobwebbed crevice was recorded in the courtyard between the lean to shelter and the brick wall. The crevice was shallow and didn't lead further into the building.	No evidence of bats was recorded at the time of the survey.	**Negligible**

B08	B08 comprised a single storey, flat roofed, brick-built building with UVPC windows and wooden framed doors. The roof external was felted with skylights present. Internal access was not available at the time of the survey. No features leading into any potential loft voids were recorded.	A single area of missing mortar was noted in the brickwork above the door lintel. The crevice was fully inspected with no evidence of bats.	No evidence of bats was recorded at the time of the survey.	**Negligible**
B09	B09 comprised a brick-built double garage with wooden ply wood above the roller shutter doors. The building had a flat roof with a parapet and gutter. Internally the building was of breeze block construction with no loft void present.	None recorded.	No evidence of bats was recorded at the time of the survey.	**Negligible**
B10	B10 comprised a two storey, brick-built building with no internal second floor. UPVC windows and wooden doors were present, with roller shutter doors recorded to the north of the building. The external roof was felted with sections of flat and pitched roof.	A number of features were recorded along the building such as cracks in the mortar and cracks in the facias board along the south east pitched roof section.	No evidence of bats was noted at the time of the survey.	**Low**
B11	B11 comprised both single and two storey sections of brick and concrete construct. The buildings were flat roofed and externally felted with skylights. Wooden doors and UPVC windows were present with loading doors on the north west and south west aspects. The roof internally comprised either suspended ceiling or was open to the concrete roof.	A gap was recorded in the brick work but was heavily cobwebbed and fully inspected.	No evidence of bats was recorded at the time of the survey.	**Negligible**

No evidence of bats was recorded during any of the bat building assessment, however potential roost features were recorded on B06 and B10 during the survey. As such, these buildings were classed as having **Low** roosting potential for bats. In line with the BCT guidelines (2016) a single nocturnal survey of B06 and B10 were recommended and undertaken. In conjunction with these surveys, a single survey of B01 was conducted based on the recommendations of the previous report (RPS, 2017).

Previous reports were consulted to assess bat species presence within 2km of the site. Records were returned for five species of bats, with the closest record being common pipistrelle, 700m NNE of the site. Other species recorded included soprano pipistrelle *Pipistrellus pygmaeus*, noctule bat *Nyctalus noctula*, myotis bat *Myotis sp.* and brown long-eared bat *Plecotus auritus*.

4.3 Updated Habitat Survey

A single tree (T1 see Appendix A) surveyed in the 2018 walkover was considered to have suitable roosting feature for bats. This tree was located outside of the survey area but was directly adjacent to the garages proposed for demolition. As such, recommendations for works near the tree have been made. The recommendations and mitigation detailed in the 2017 remain valid and are outlined in this report.

4.4 Nocturnal Bat Surveys

Nocturnal bat surveys were undertaken on three of the buildings on site. The results of the surveys are outlined below:

B01: Dusk survey (25-09-2018)

Sunset 19:04, survey start time 18:49, survey end time 20:34.

A large bat was recorded emerging from the soffit at the north western corner of the student halls. No echolocation was detected in the field or on automated devices for this emergence.

Activity commenced at **19:21** with an unidentified bat emerging from the soffit above the third-floor kitchen window. Commuting was recorded during the survey; however, activity levels were considered low. Both soprano pipistrelles (calls recorded at **19:51** and **20:10**) and common pipistrelles (recorded at **20:16**) were noted during the survey. Activity was concentrated to the north-western corner of the site.

B06: Dusk survey (17-09-2018)

Sunset: 19:23, survey start time: 19:08, survey end time 20:53.

Two noctule calls were recorded during the survey the first being at **20:01** and the second being at **20:54**. No other activity was recorded. It should be noted that security lighting on along the west side of the building was turned on at **19:44**.

B10: Dusk survey (24-09-2018)

Sunset 18:51, survey start time 18:51, survey end time 20:36.

No bats were recorded visually or by static detection during the survey.

B10: Dawn survey (25-09-2018)

Sunrise 07:53, survey start time 05:33, survey end time 07:18

No bats were recorded visually or by static detection during the survey.

4.5 Specific Internal Inspection of Feature

Following the emergence recorded on 25th September 2018, a specific inspection was carried out in order to establish the feature the bat had emerged from and to record any evidence of bats such as droppings, staining or feeding remains[1]. The survey was conducted by Stuart Thomas[2] and assisted by Phillipa Mudd. The survey found that there was a suitable gap in the wooden soffit box from which a bat would be able to access the loft void directly above the north western section of the building, however no staining, which would suggest routine use, was recorded.

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[1] Please note that this survey was in addition to the 2017 bat building assessments (RPS, 2017) and was used to establish the feature and evidence in the vicinity of the emergence only.

[2] Licence number: 69143:OTH:CSAB:2015

The internal loft void comprised machine cut beams with bitchumastic membrane present. The membrane was in generally good condition and well-sealed with the only gaps recorded around the window areas on each side. No insulation was present within the void. No evidence of bats such as droppings or feeding remains were recorded during the internal loft inspection. The soffit was inspected internally using an endoscope from the gaps around the window. No evidence of bats such as droppings or feeding remains were recorded within the soffit box however a full inspection was not possible due to the position of the feature.

5 Discussion

5.1 Bats

During the dusk emergence conducted on B01 towards the north of the site (see Appendix 1) a large bat was observed emerging from the north west aspect of the building. Following a specific inspection of the area, a suitable access point was recorded in the soffit above the third-floor kitchen window with access leading into the roof void. During the inspection no evidence of bats such as droppings, feeding remains or staining was recorded.

Based on the preliminary roost assessment, the nocturnal survey and the additional roost inspection the following considerations have been made:

- The site is considered to support very low levels of common pipistrelle, soprano pipistrelle and Noctule activity;
- The student halls building (B01) supports a **transitory/occasional roost** for a single unidentified bat species.

Using guidance provided by Wray et al (2012), the site was assessed as being of importance on a local level for foraging and commuting bats, however the survey data suggests very low populations (five bat calls recorded over four surveys). It is also considered that the foraging and commuting habitat present at the site is of low value for bats and is limited to small sections of gappy treelines in a well-lit environment. In conjunction, no evidence to suggest a maternity roost or regular roosting was recorded in B01 during the two consecutive years of internal inspections.

Under the legislation (refer to Section 2) any works (including disturbance) that could affect a bat or bat roost as described can only be permitted under licence. Such licences, known as European Protected Species Mitigation (EPSM) Licence are issued by Natural Resources Wales (NRW).

To proceed with the proposed development full planning permission would need to be granted by the local authority and a licence granted by Natural Resources Wales. The licence application can only be made once full planning permission has been granted.

No bats were recorded emerging from B06 or B10 during the surveys. It is considered that buildings 2-11 do not currently support roosting bats, however given the confirmation of a roost on site, a sensitive demolition approach is advised.

A single tree (T1) located outside of the site boundary was considered to have suitable roosting features for bats. As such, recommendations for safe works near the tree have been made.

5.2 Nesting Birds

Habitats recorded at the site such as trees, hedgerow, scrub and buildings are considered to offer suitable nesting habitat for a range of bird species. Nesting birds, their nests, eggs and dependent young and are fully protected under the Wildlife and Countryside Act 1981, which prohibits their damage or destruction. As such, suitable mitigation to protect nesting birds during the development should be implemented as described in this report and the previous site report (RPS, 2017).

It should be noted that there would be no constraints regarding the clearance of grassland or hardstanding within the site to this regard.

6 Recommendations and Mitigation

6.1 Bats

A single tree was recorded outside the site boundary, adjacent to the garages (B11) proposed for demolition. Where the works are considered to pose a negative impact to the tree from noise, vibrations or lighting, the tree should be inspected via endoscope to establish the presence / likely absence of roosting bats prior to the works. Where bats are found to be roosting, delays to the works may be incurred and the method of works altered.

A bat was recorded emerging from the soffit on the north west aspect of the student accommodation building (B01). The bat was noted as being a larger bat species, emerging early on in the survey (19.21, 17 minutes after sunset). As such, it is considered the bat be either Nyctalus sp. or Serotine. All three species have been recorded roosting in buildings, although this is less common for Noctule, however Serotine and Leisler are considered less widespread in Wales than Noctule.

As a bat was recorded emerging, a European Protected Species Licence (EPSL) will be required in order to allow the works on this section of the building to be carried out lawfully.

The EPSL requires a method statement and associated plans and mapping; a reasoned statement may be required; however, this element of the process is undertaken by the client.

As the species of bat recorded roosting at the site is unconfirmed, it is considered the mitigation strategy implemented as part of the EPS licence must take in to consideration and implement suitable roosting features for a range of bat species within the new development. This would involve the addition of bat boxes suitable for a variety of bat species within the site. This view is taken in consideration of Section 6(1) of the Environment (Wales) Act 2016 which states:

Section 6 (1) A public authority must seek to maintain and enhance biodiversity in the exercise of functions in relation to Wales, and in doing so promote the resilience of ecosystems, so far as consistent with proper exercise of those functions.

In complying with Section 1, the local authority must take in to account the resilience of the ecosystem. In this case, considering the importance of the species on site in relation to the wider ecosystem structure and functioning. This, in consideration with Article 2.2 of The Habitats Directive (Council Directive 92/43/EEC) means the development must strive to maintain or restore, at a favourable conservation status, species of a community interest.

NRW issues a license under Regulation 55 of the Habitats Regulations to allow works to be conducted lawfully if the following tests are met:

- preserving public health or public safety or other imperative reasons of over-riding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment;
- that there is no satisfactory alternative;
- that the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status (FCS) in their natural range.

With regard to favourable conservation status, under regulation 53 of the Habitats Regulations, a derogation from the offences listed under Regulation 41 may be granted for specific purposes and subject to criteria stated in regulation 53(9):

> *'The relevant licensing body must not grant a licence under this regulation unless they are satisfied—*
>
> *(a) that there is no satisfactory alternative [for the developer]; and*
>
> *(b) that the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.'*

NRW is the relevant licensing body in Wales for the purposes of Regulation 53. With regard to FCS, Article 1(i) of the Habitats Directive explains that:

> *'conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within the territory referred to in Article 2;*
>
> *The conservation status will be taken as 'favourable' when:*
>
> *— population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and*
>
> *— the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and*
>
> *— there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.'*

It is therefore considered by NRW that the conservation status has four components: population; range; habitat; and future prospects. These components have been addressed below:

Population

The results of the data collected during four surveys conducted around the site suggest that the use of the site by local bat populations is very low given the low number of bat calls detected. In conjunction, no field signs of bats were recorded during either of the internal inspections of the roost area meaning it is likely the roost supports very small numbers of occasionally roosting bats. No evidence of breeding was recorded over the two years of internal inspections suggesting the roost is not currently used as a maternity roost. In looking at the evidence, it suggests the site is not of high importance to the local bat population and the mitigation suggested as part of the license would indeed provide an enhancement to the overall value of the site for bats. Therefore, the development will not have a significant impact on the population of bats using the site and will not stop any species in the area 'maintaining itself on a long-term basis as a viable component of its natural habitats'.

Range

Given the nature of the site itself and its location within a predominantly urbanised setting, the site is considered to be of low value local bat populations. The site is considered to lack well developed foraging and commuting routes to support large numbers of bats, with poorly established links to the wider environment. The roost identified on site was considered to be of limited value with no signs of frequent use or of occupation by large numbers of bats. It is considered the mitigation implemented as part of the license could stand to increase the value of the site for foraging bats by increasing the roosting potential at the site by providing suitable features for a range of bats. Therefore, it is considered the development will not be decreasing the range of local bat populations, particularly if the mitigation implemented is situated in areas where the chance of the boxes being found by bats is increased by installing them close to treelines, in areas of lighting suitable for bats (BCT, 2018).

Habitat

Significant loss of suitable bat habitat as a result of the development is not anticipated. The habitats on site are not considered to be of significant value to bats, with the trees around the site expected to be retained and none of the other vegetation considered to provide suitable habitat for bats. The addition of a variety of bat boxes within the site will also act as a habitat enhancement for local bat species utilising the site, providing increased suitable roosting opportunities for local bat species. In conjunction, the NPPF 2018 considers all developments should be minimising impacts on biodiversity and providing net gains in biodiversity where possible. As such, requirements for foraging and commuting bats will be taken into consideration in the final detailed landscape design for the site. It is therefore considered the development will

not have a detrimental impact to the maintenance of local, regional or national bat populations or a detrimental impact to the favourable conservation status of bat UK species.

An appraisal undertaken by Waring (2011)[3] highlighted the significance of problems resulting from non-compliance with method statements for bat mitigation and compensation. As a result of this, NRW introduced a compliant audit process whereby the audit process is proportionate to the scheme and risk of impacts posed by the works. In this instance, the proposed works are considered to be of a larger scheme of higher risk or greater complexity and as such, more detailed information is required in order to demonstrate that the developer has complied with the details of the method statement. It is considered a Tier 2 audit be necessary, in which the developer will be responsible for appointing an ecologist to undertake the internal audit. It should be noted that the ecologist appointed should not be or have been directly involved in the works on site. The ecologist will be responsible for the following:

- *defining appropriate (key) performance indicators that will inform an inspection, utilising the NRW audit template*
- *determining the minimum number of assessment visits required to demonstrate compliance*
- *defining what documentation, including logs, will be required to inform inspections; and*
- *progressing remedial or contingency actions identified during audit*
- *reporting back to the developer and NRW*

An example table has been included in Appendix 4 identifying key performance indicators associated with the proposed development.

Where and EPSL is granted, the conditions contained therein successfully implemented and adhered to. This Licence must be acquired prior to any re-development works commencing.

Failure to adhere to the mitigation conditions attached with any EPSL may result in a breach of the licence and the licence being revoked, making the development activities unlawful. Where a licence application is not successful, the proposed works cannot progress until a licence is successfully in place.

Outline Mitigation Strategy

The outline mitigation strategy for the demolition of B01 details methods by which to protect bats during the works and provides an appropriate level of mitigation to compensate the loss of the existing roost site.

Construction Phase Mitigation and Compensation:

6.1.1 Prior to the commencement of any building demolition works at the site, bat roost boxes will be installed under the instruction of, or by a NRW licensed bat ecologists working in accordance with the manufacturers requirements. The following guidance should be observed when installing bat boxes:

- Each roost box will be sited at least 12 feet above ground and where practicable, between 15 feet and 20 feet high, as this greater height will attract more species, particularly higher-flying bats such as noctules.
- The boxes will be placed on trees not in overly exposed positions. Entrances will be directed to face south west to south east, so sun falls on them for part of the day, this may entail removing shading branches above the boxes.
- The boxes will be sheltered from strong winds.

[3] Waring, P. (2011) Snowdonia Bat Mitigation Pilot Project. Snowdonia National Park Authority. Penrhyndeudraeth.

- The boxes are more likely to be utilised if well connected by suitable habitat such as hedgerows or woodland edge, to food sources (insects), such as hedgerows, woodland parcels, areas of rough grassland and waterbodies
- Bat boxes will be installed prior to the commencement of demolition works so that any bats captured during the demolition process, can be relocated (within 2 hours) to the boxes to minimise the duration of disturbance

The bat boxes will act as an alternative roosting site for any bats potentially displaced or captured during the demolition works. Roost boxes should be installed in suitable locations such as mature trees with good connectivity or retained buildings as close to the existing roost as possible. Where boxes cannot be installed on mature trees or retained buildings, a pole mounted bat box should be used. Any of the bat boxes described below can be pole-mounted, however a specifically designed pole mounted roost box has also been included.

The roost boxes installed at the site should be suitable for the species of roosting and potentially roosting bats recorded at the site. It is considered the bat recorded emerging from the building was either Nyctalus sp. or Serotine, with low numbers of pipistrelle species recorded commuting across the site. As such the following bat boxes have been recommended:

- Schwegler Bat Box 2FN – a larger box with both a wide access slit at the base and an access hole on the underside. This box is particularly successful in attracting larger species of bats.
- Bat Hibernation Box 1FW – Suitable for clinging and crevice dwelling bat species and ensures safe hibernation of bats as well as nursery roosts and colony formation in the summer.
- 1WQ Schwegler Summer & Winter Bat Roost - suitable for larger and smaller bat species and is designed for the safe hibernation of bats in the winter as well as for roosting and raising young.
- Eco Rocket Bat Box – This can be purchased either for crevice dwelling species or cavity dwelling species and does not have to be mounted on a tree or building.

The recommended bat boxes above are considered to cover multiple eventualities that, although considered unlikely, may occur at the site. Three of the boxes recommended are suitable for both large and small bat species of crevice dwelling or cavity dwelling species, with two of the boxes recommended capable of supporting large numbers of bats and hibernating bats. It is considered that a mix of three bat boxes i.e. two Schwegler Bat Box 2FN and one Bat Hibernation Box 1FW, would provide more than sufficient mitigation for the roost being lost. It is also considered that the number and mix of bat boxes would act as an enhancement to the existing bat roosting habitat at the site. All bat boxes should remain in situ following the completion of the demolition works.

The initial demolition works to the building should be timed to avoid the peak bat activity period of the summer months (May to August inclusively). Although considered unlikely, there is potential for bat species to be hibernating within the building. Therefore, works to demolish the building should be avoided when temperatures fall below 5°C as this could result in bats being brought out of hibernation, which can result in death effect due to the lack of food resources and the energy expenditure to arouse from torpor. During the initial demolition, hibernation surveys will be undertaken to establish evidence of hibernating bats (droppings within wall cavities). In the event hibernating bats are found, it is considered the selection of bat boxes which include two types of hibernation box would provide sufficient replacement habitat for any lost as a result of the demolition.

Features on/in the building of known/potential value to bats such as soffit boxes and lead flashing will be removed under the supervision of a licenced ecologist in order to help prevent injury or death to any bats that might be roosting. The works will include:

- checks of features of known/potential value by a licensed bat ecologist prior to the commencement of demolition works; and
- supervision of the removal of features of known/potential value, using hand tools.

The remaining demolition works will not commence until the bat licenced ecologist has confirmed that no bats are likely to be present and gives permission to commence.

Any bat(s) located by the bat licensed ecologist prior to or during soft-felling or building demolition works will be captured by hand by the bat licensed ecologist who will then temporarily transfer the bat(s) into a suitable holding bag (i.e. bags supplied by the British Trust for Ornithology, as described in Mitchell-Jones and McLeish (2004). Only bats of the same species will be temporarily placed together in a bag and bats of different species will be kept in separate bags. Bags will not be placed on the ground, instead they will be hung or held suspended. Bats will be taken in their holding bags to pre-installed bat roost boxes located closest to the building from which they were captured. The captured bats will then be carefully placed by the bat licensed ecologist into an appropriate box for their species. Different species will not be placed into the same bat box. If necessary, additional boxes will be installed. Bats will not be left in temporary holding bags for any longer than two hours; due to the limited number of bats likely to be present and the proximity of the receptor sites (or roost boxes), it is likely that bats will be released from the holding bag within minutes of capture or immediately after capture. If an unexpected species is located, which does not typically take to an artificial bat box, it will be temporarily held for the day by the bat licensed ecologist to later be released at dusk in a suitable location close to where it was captured. In the unlikely event that a dead bat is located, or a bat dies whilst in captivity, in accordance with and as described in Mitchell-Jones and McLeish (2004), the body of the dead bat will be sent to the Animal Health Veterinary Laboratories Agency (AHVLA) for testing for rabies. If a bat is found to be injured it will be cared for by the licensed ecologist/other registered carer, until in a suitable condition for re-release. The bat will then be re-released into a suitable location at dusk or placed in an appropriate bat box as close to the site of capture as possible. If considered necessary by the licensed ecologist, injured bats may also be humanely euthanised by the licensed ecologist.

Although the licence application only applies to B01, it is considered that as a precautionary measure, buildings with features identified as suitable for roosting bats such as cracks or crevices should be inspected with an endoscope prior to being demolished. Where inspection is not possible, a soft strip of suitable features can be applied. In the unlikely event a roosting bat is found within one of the buildings not currently supporting a roost, the bat can be safely moved to one of the bat boxes on site.

Bats are adept to foraging in low light intensities, therefore it is considered the following guidance for the reduction of impacts caused by the lighting of bat roost/foraging/commuting features, in line with the Bat Conservation Trust (BCT 2018) should be adhered to during the construction phase:

- No direct illumination of any new or existing roost entrances, whether bat boxes or features on trees;
- Individual lamps should be hooded and directed where needed to avoid unnecessary light spillage – luminaires have been chosen to minimise light spillage and direct light onto the playing surface;
- The area affected by light spill should be considered, taking into account height of lighting columns and lighting angle – the impacts of light spillage modelled at 1.8m height has been considered;
- The use of asymmetric beam floodlights to reduce horizontal spill – as second point above; and

- Low level lighting such as LED's are preferable as they reduce the levels of light spillage (Stone, 2013).

Design recommendations for wildlife friendly lighting is included in the *Statement on the impact and design of artificial light on bats* produced by the Bat Conservation Trust (BCT) in 2011. This includes:

- Do not "over" light. This is a major cause of obtrusive light and is a waste of energy. Use only the minimum amount of light needed for safety. There are published standards for most lighting tasks, adherence to which will help minimise upward reflected light.
- Eliminate any bare bulbs and any light pointing upwards. The spread of light should be kept near to or below the horizontal.
- Use narrow spectrum bulbs to lower the range of species affected by lighting.
- Use light sources that emit minimal ultra-violet light. Insects are attracted to light sources that emit ultra-violet radiation.
- Reduce light-spill so that light reaches only areas needing illumination. Shielding or cutting light can be achieved through the design of the luminaire or with accessories, such as hoods, cowls, louvers and shields to direct the light.
- Reduce the height of lighting columns. Light at a low level reduces ecological impact. However, higher mounting heights allow lower main beam angles, which can assist in reducing glare.
- For pedestrian lighting, use low level lighting that is directional as possible and below 3 lux at ground level.
- Use embedded road lights to illuminate the roadway and light only high-risk stretches of roads, such as crossings and merges, allowing headlights to take up the slack at other times.
- Limit the times that lights are on to provide some dark periods for wildlife.
- Use lighting design computer programs and professional lighting designers to predict where light spill will occur.

It is considered that any lighting scheme proposed for the site should be submitted for review by an ecologist prior to implementation in order to ensure no negative impacts to roosting, foraging and commuting bats be incurred as a result of the lighting proposed.

Post Construction Monitoring

Following the completion of works, a post construction check should be carried out to ensure all mitigation is in place as per the method statement. As the site is considered to be of low conservation status in line with the Bat Mitigation Guidelines (2004), minimal monitoring at the site is considered necessary. As such, it is considered a single monitoring visit be conducted the year following the completion of works on site. The monitoring should include an inspection of all mitigation features installed at the site (where possible) and a single emergence survey conducted during the peak survey season (May-August). During the monitoring visit signs of bat presence will be recorded. A condition assessment of the bat roosts will also be made during the monitoring visit so that should there be any damage or deterioration of roost conditions maintenance work can be instructed. Where mitigation is found to be missing this should be replaced on a like-for-like basis.

6.2 Birds

Any demolition or site clearance activities which would affect suitable nesting bird habitat within the site should be conducted outside of the nesting bird season (March – August inclusively) to avoid disturbance of any active bird nests which may be present. Where this is not possible, the works should be preceded by a nesting bird check conducted by a suitably qualified ecologist to determine if any active nests are present. In the event an active nest is recorded, all works in the area will need to stop and a suitable 'no-work' buffer zone implemented around the nest until all chicks have fledged. Works can only commence once given the all clear from an ecologist.

7 References

Bat Conservation Trust and Institution of Lighting Professionals, 2018. *Bats and Artificial Lighting in the UK: Bats and the Built Environment Series*. https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/

British Standards Institution, 2013. BS 42020:2013 *Biodiversity. Code of practice for planning and development*. Milton Keynes: BSI.

Chartered Institute of Ecology and Environmental Management, 2017. *Guidelines for Preliminary Ecological Appraisal.* 2nd ed. Winchester: CIEEM.

Chartered Institute of Ecology and Environmental Management, 2013. *Competencies for Species Survey in Britain and Ireland.* Winchester: CIEEM.

Chartered Institute of Ecology and Environmental Management, 2017. *Guidelines for Ecological Report Writing.* Winchester: CIEEM.

Collins, J. (ed.), 2016. *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn.). London: The Bat Conservation Trust.

Department of Communities & Local Government, 2018. *National Planning Policy Framework,* London: DCLG.

English Nature, 2004. Bat Mitigation Guidelines. Peterborough: Status, Design and Advertising.

Mitchell-Jones, A.J, & McLeish, A.P. Ed., 2004. *3rd Edition Bat Workers' Manual*, 178 pages b/w photos, softback, ISBN 1 86107 558 8.

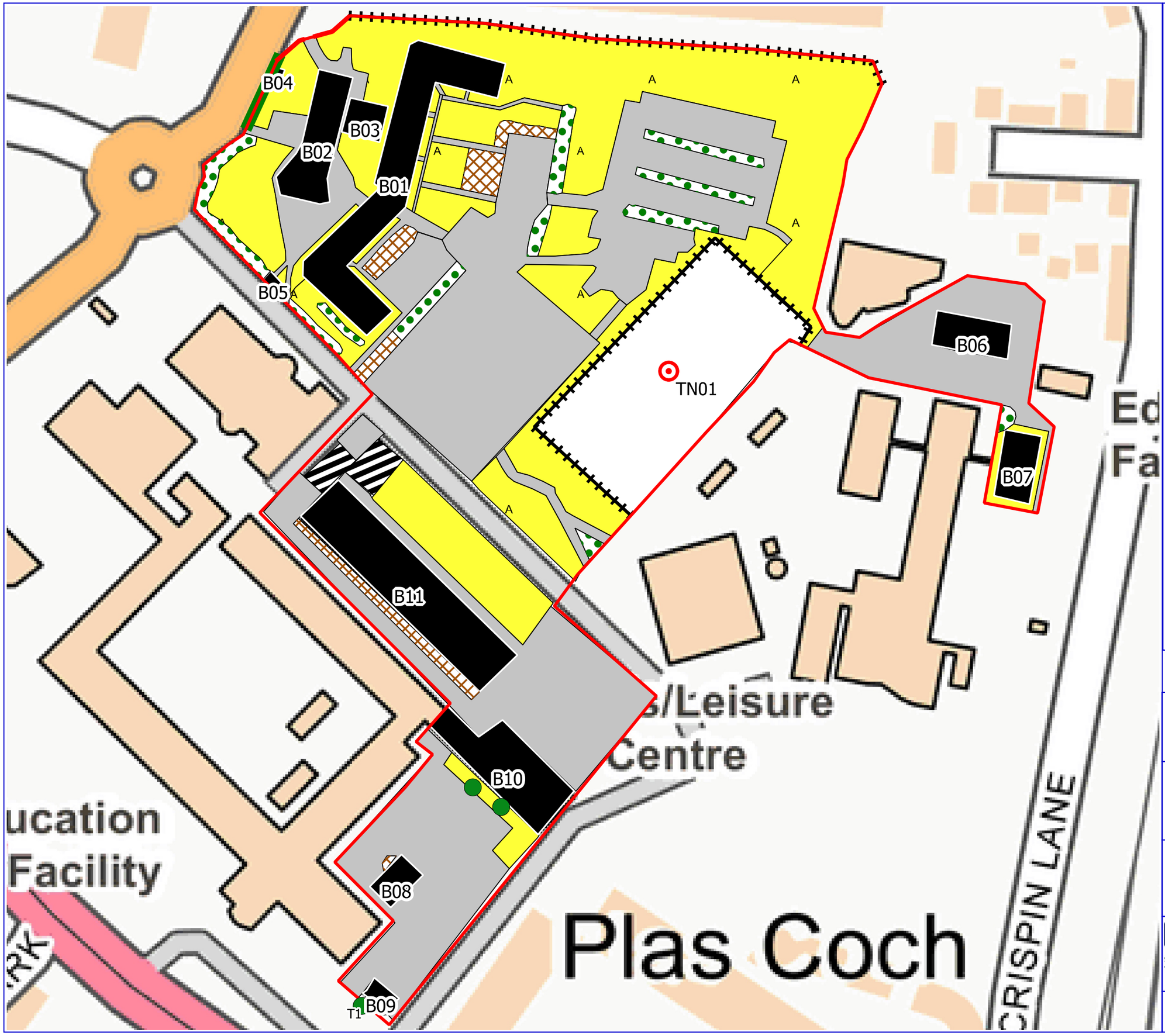
Office of the Deputy Prime Minister, 06/2005. *Government Circular: Biodiversity and Geological Conservation - Statutory Obligations and their impact within the planning system.* London: ODPM.

RPS (2017). *Glyndwr University Plas Coch, Wrexham, Preliminary Ecological Appraisal Report*. Unpublished report, Document Ref OXF10388/01, RPS, Derby, Derbyshire.

The Conservation of Habitats and Species Regulations 2017. Planning Act 2008, Regulation 110.

The Environment (Wales) Act 2016. Legislation.gov.uk. https://www.legislation.gov.uk/anaw/2016/3/contents

Wray et al. (2010) Bulletin of the Institute of Ecology and Environmental Management. In Practice 70, 23-25.



Legend

- Site Boundary
- Broad-leaved scattered trees
- Amenity grassland
- Introduced shrub
- Buildings
- Hardstanding
- Artificial turf
- Intact hedge - species-poor
- Fence
- Wall
- Buildings (not surveyed)
- Scattered trees
- Target Note

Original Scale	Drawn
1:1400 @ A3	November 2018

Project title

ECO00246 Glyndwr University

Drawing title

Appendix 1: Phase 1 Habitat Plan

Client

Glyndwr University

RPS
St Paul's House, Enterprise Way, Jubilee Business Park, Stores Road, Derby DE21 4BB
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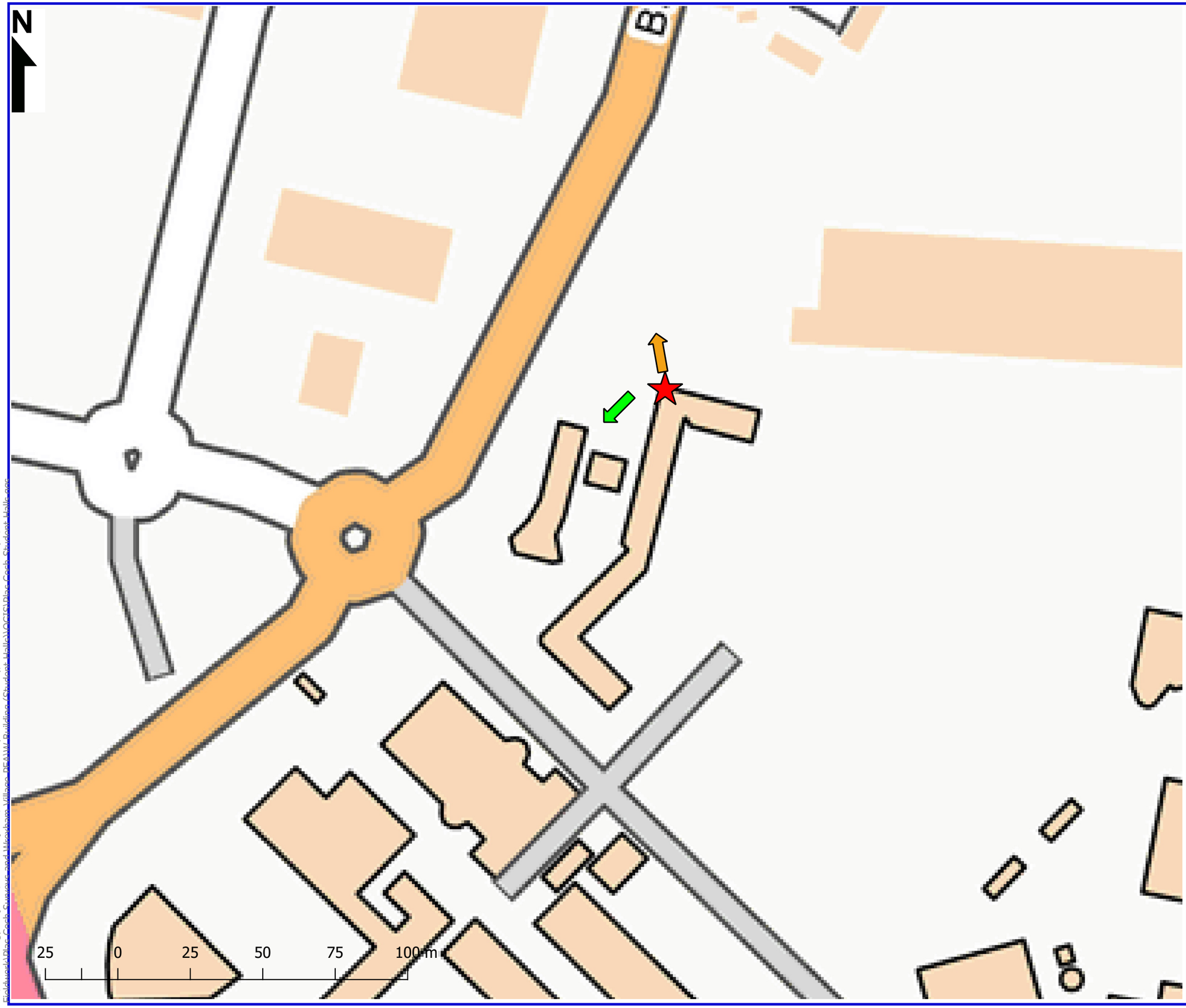
Drawing Number	Rev
ECO00246_01 (Plas Coch)	0



Legend

- Emergence point
- Pipistrelle sp. pass
- Unknown bat emergence

Date Drawn November 2018	Date Reviewed November 2018
Drawn By RP-S	Reviewed By PM

Project Title
ECO00246 Glyndwr Universtity, Gatewen Road

Drawing Title
Bat survey results 25.09.18

Client
Day Architecture

Issue Appendix B	Revision V1

Scale
1:1250 @A3

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P:\Clear Ecology Projects\Current Projects\A ECO00246 Glyndwr University, Wrexham Additional surveys\4. Data &

Appendix 3: Site Photos

Figure 2: B05

Figure 3: B06

Figure 4: B07

Figure 5: B08

Figure 6: B09

Figure 7:B10

Figure 8: B11

Figure 9: Feature on T1

Figure 10: B01 showing soffit feature

Figure 11: Soffit feature from which bat emerged

Figure 12: Internal roof structure of B01

Example licence compliance audit report for Plas Coch

Natural Resources Wales licence reference number:		Site name:	
		Site grid reference:	
Name of licence holder:		Name of developer if different from licence holder:	
Name of ecological consultant:		Date/s of audit (dd/mm/yy):	
Date licence issued (dd/mm/yy):	Date licence expired:	Licence implemented between (dd/mm/yy)	
		From:	To:

No	Performance Indicator	**Evidence Required** - this list should be adapted to reflect the agreed method statement.	Pass (Yes/No), Comments	What action is required as a result of findings?
General				
1	The licensee will advise NRW Species Officer of the start date for the works prior to works commencing.	Written or electronic documentation with notification of start of works.		
2	NRW bat licence is held by the bat licenced ecologist on site during the works period and is available for inspection by any authorised persons on demand.	Licence is available for inspection on site.		

3	A suitably experienced licensed ecologist will be appointed and retained during the life time of this licence to provide on-site advice.	Letter, contract or other document outlining the appointment of an ecologist for the lifetime of the project.		
4	Prior to the start of any works on site, all site workers will be inducted by the project ecologist. This induction will cover the legal status of the species, the method of working and, action to be taken if protected species are encountered.	Log book confirms contractors fully inducted.		
5	Preparation and implementation of a biosecurity risk assessment as detailed in E.5 of the method statement	Biosecurity risk assessment is available for inspection. Log of biosecurity measures is available for inspection and shows that they have been implemented. Field observation shows that biosecurity measures are in place e.g. foot washes / vehicle cleaning / limited access routes / awareness by all on site.		
	No agent of the licensee shall act under licence unless they are in possession of a letter signed by the licensee	**All relevant accredited agents have copies of licence holder's letter of authorization. Licence holder's letter is available for inspection.**		

	appointing them by name as the duly accredited agent of the licensee for the purposes of this licence, and shall carry with them the said letter and a copy of this licence and shall produce them to any police constable or employee of the Natural Resources Wales or other authorised person on demand			
E.1 Bat disturbance, capture and exclusion				
6	Bat roost boxes installed.	Log and field observations confirm correct boxes installed in suitable locations and bat licenced ecologist directed and signed off work.		
7	Soft-strip under direct instruction and overseen by licenced ecologist. Bats captured and translocated to bat boxes by licenced ecologist or taken for ex situ care if required. Dead or injured bats dealt with appropriately.	Suitable log maintained by licenced ecologist and is available for inspection within 48hrs. Log includes: ▪ a record of all works carried out; ▪ locations, numbers and types of bat boxes installed; ▪ time of bat box installation;		

		▪ species, sex, age and condition of bats captured (e.g. signs of parasites, injury etc.); ▪ numbers of bats captured; ▪ time in handling bag; ▪ confirmation different species transported in different holding bags; ▪ receptor site (i.e. bat roost box); if any requirement to pass to a handler for monitoring/temporary homing ex-situ (e.g. due to injury or an unexpected species that does not take to an artificial bat box), measures required and name of handler, date of soft strip.		
8	Action taken if bats found during the course of work	Log detailing ▪ number and species of bats found and location ▪ actions undertaken if animals found		
F and H Post-development site safeguard				
9	Implementation of roost site / bat habitat management / maintenance and monitoring as detailed in F.1 and F.2 of the method statement	If audit undertaken during development phase: ▪ Habitat/site management plan demonstrates measures are in place to ensure ongoing maintenance of roost site/s and management of habitat (retained, modified and newly created) post-development and rectifying errors &/or ineffective mitigation including: ▪ responsibility for and funding for roost site maintenance and management		

		▪ maintenance and retention of existing bat habitat features ▪ monitoring the condition of new planting schemes including irrigation when appropriate, replacement of material that has failed within 2 months with new planting of the same species and size If audit undertaken post development: ▪ log or report demonstrate roost site management plan has been implemented ▪ site management works are maintaining the ecological functionality of the mitigation/ compensation site		
10	**Any other points to note/comments from auditor:**			

Auditor name and organisation	Signature	Date