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Land at Yr Hen Llaethdy,
Aberfan

**2023 Addendum to
Preliminary Ecological
Appraisal (PRC2001)**

Document Ref: RC-EA2303-P01

ISSUE	REVISION	STAGE	DATE	PREPARED BY	APPROVED BY	SIGNED
1	-	DRAFT	21 Jun 2023	BF	ESH	

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ABSTRACT

Ecoleg LLP were commissioned to provide an update of an ecological appraisal of a parcel of land to inform a planning application for a single dwelling and garage (P/20/0113). Baseline ecological conditions were previously established in July 2020 by Ecoleg LLP. As such, this update report and addendum should be read in conjunction with the original report (ref: PRC2001, Ecoleg 2020).

The updated walkover in June 2023 identified several minor changes to the previously established ecological baseline in July 2020. Overall ecological conditions of the site remain largely comparable with exception to reassessment of southern boundary as defunct species rich hedgerow, light establishment of grasses, management of encroaching ruderal plants and scattered scrub growth, and work undertaken on the adjacent, off-site property and in the intervening period.

Similarly, recommendations for the site remain the same, with exception to the requirement of bat surveys before works to retained trees in western end of hedgerow, a reptile mitigation strategy as part of any landscape or ecological enhancement management plan ahead of full planning approval. The hedgerow should be retained as part of any planning application as it represents the habitat of greatest ecological value within the context of the site. Similarly to the previous report, the lower tier of the site still represents the most suitable area for development, in line with neighbouring properties. Given the slight reduction in scrubby habitats as part of future development, additional bird boxes on retained boundary trees will compliment the continued management of the southern boundary hedgerow which is species rich, albeit juvenile.

1. INTRODUCTION

Background

- 1.1. Ecoleg LLP undertook a preliminary ecological appraisal (PEA) in support of a planning application (P/20/0113) for a single detached dwelling and garage in Aberfan in 2020. Given the intervening period, response from the county ecologist and further consultation with the planning local authority (LPA) via email, an update of baseline ecological conditions and review of the original PEA (Ecoleg, 2020) was required.
- 1.2. Ecoleg LLP was commissioned to review the original PEA, update the walkover survey and assess any ecological changes, material or otherwise, which require consideration as part of the planning application.
- 1.3. The application site is located adjacent to Ty Alfa Yr Hen Llaethdy, Kingsley Terrace, Aberfan. The site is centred at grid reference ST0721899385 and covers approximately <0.05ha. There has been no change to the extents or size of the site as noted during the 2023 walkover.

Scope

- 1.4. Extended Phase I Habitat Survey, which includes assessment of ecological features on and adjacent to the site, potentially suitable for protected or otherwise notable species. Review of previous consultation documents and original PEA.

Aims

- 1.5. Ascertain any changes to the previously identified ecological constraints and opportunities related to the construction of a detached dwelling and garage. This report provides recommendations based on the updated findings, survey conclusions and consultation with the LPA in the intervening period.

2. METHODOLOGY

- 2.1. Baseline ecological conditions at the site were established via a combination of desk-based consultation and Extended Phase 1 Habitat survey, in July 2020. To update the baseline conditions at the site in 2023 a repeat walkover survey was conducted along with a review of existing documents related to the planning application including the previous report.

Desk Study

- 2.2. An updated review of existing reports, planning documents and consultations with the LPA was undertaken in June 2023. An updated review of publicly available data sources such as MAGIC MAP was also carried out in 2023 and compared to the existing data search undertaken via South East Wales Biodiversity Records Centre (SEWBRc) as part of the desk study in 2020.
- 2.3. Given the size of the site, character of the proposals (which remain unchanged) and the updated desk study efforts (see 2.2), a second data search via SEWBRc was not considered to provide enough additional information, material to the planning application. Therefore it was not repeated in this instance. Results of the original desk study can be found in section 3 of the existing report (Ecoleg, 2020). Results of the updated desk-based consultation are set out in section 3.1 - 3.2 of this report.

Extended Phase I Habitat Survey

- 2.4. An updated site walkover was undertaken on 08/06/2023 by a suitably experienced ecologist¹. Habitats considered to have potential to support rare, protected or otherwise notable species of flora and fauna were noted, as were any direct signs of these species (e.g. Eurasian badger *Meles meles* setts and latrines) and any incidence of invasive weed species (e.g. Japanese knotweed *Reynoutria japonica*) were noted.

Bat Roost and Nesting Birds Assessment

- 2.5. Any structure or tree, potentially affected by the proposals, were assessed from the ground using high powered torch and close-focusing binoculars, to identify Potential Roost Features (PRFs). Possible access/entry points into the structure or tree and any direct evidence (e.g. droppings, nest material etc) of bats and/or nesting birds were noted.
- 2.6. Structures and trees were categorised in relation to the bat roosting features (BCT, 2016). The categories are as follows:
- **Known or confirmed roost** - Evidence of roosting bats present
 - **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.

¹ Associate member of C.I.E.E.M. and I.E.S. with 8 years of professional ecology experience including habitat assessments and preliminary ecological appraisals (PEAs)

- **Moderate** – A structure or tree with one or more potential roost sites that could be used by multiple bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status.
- **Low** – A structure or tree with one or more potential roost sites that could be used by individual bats opportunistically.
- **Negligible** – Negligible habitat features on site likely to be used by roosting bats

Constraints

- 2.7. Biological records obtained from third parties and presented in the desk study do not represent a full and complete species list for the area. The records are mostly provided by individuals on an *ad-hoc* basis, often meaning there are areas of deficiency in the data. If species records are not present it may be as a result of the area being under surveyed and as such no records have been returned, lack of species should therefore not be disregarded.
- 2.8. Ecological surveys are limited to factors which affect the presence of plants and animals, such as time of year, migration patterns and behaviour. With summer survey visits it is possible that certain species may have been overlooked or under-recorded during the assessment as optimal survey periods vary from species to species.
- 2.9. No significant constraints to access or effective survey effort were identified during the walkover.

3. RESULTS

Desk Study

- 3.1. Consultation with SEWBRc confirmed several non-statutory designated sites within the search radius in 2020, which was consistent with the updated review of publicly available information in 2023. The 2020 data search also confirmed several protected species records, still considered to be relevant and are set out in section 3 of the original report (Ecoleg, 2020).
- 3.2. Responses to the application by LPA ecologists and emails have been reviewed as part of the updated desk study. Responses made on 5th August 2020 refer to bare ground, reptiles, retained habitats, lighting and enhancements. These items are considered further in this report (see sections 3 & 5).

Update Phase I Habitat Survey

- 3.3. Type and extent of habitats recorded in June 2023 at the candidate site, are largely comparable to what was surveyed in July 2020, with exception to bramble and ruderal community encroachment, which dominated the western upper level of the site. Some colonisation of grasses beginning to outcompete some historic woodland type flora is starting to cover disturbed and bare ground areas. Updated phase 1 habitat map can be found in Appendix II.

Landscape and management

- 3.4. Some vegetation management was undertaken by the client at the time of update survey under ecological supervision. A prior check for nesting birds was undertaken by a professional ecologist and a directional, phased and sensitive strimming methodology (similar to requirements of any reptile mitigation strategy required for a full planning application) was employed using hand-tools only, east to west toward the connecting habitats. Retention of the southern woody boundary and its functional integrity also formed part of the measures of managing the encroaching vegetation.
- 3.5. During the intervening period some ground work had been undertaken on the adjacent, off-site plot immediately to the north. This included the installation of a low retaining wall at the adjacent property and a post and wire fence bounding the north of the candidate site to separate the plots.

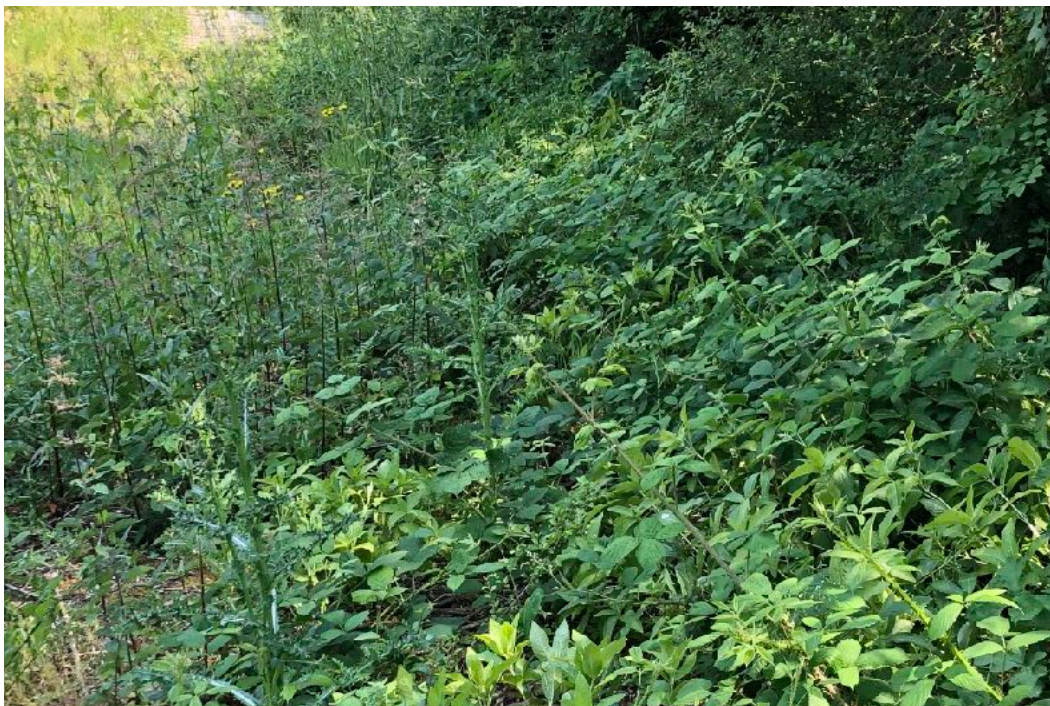


Figure 1. Tall ruderal and scattered scrub vegetation dominating the site, particularly in the west. Image taken from the west, looking east.

Scattered scrub and Tall Ruderal

- 3.6. At the time of survey (16/06/2023), there was no additional species noted not previously found in 2020. Species composition remained comparable to the previous survey (Ecoleg, 2020). However, the overall extent of the habitat has increased, becoming the dominant habitat across the site, particularly in the western / upper level.

Hedgerows and trees

- 3.7. Trees noted on the adjacent plot to the north remained as reported in the previous 2020 walkover. Although a couple of additional juvenile woody species were noted infilling the existing southern boundary hedgerow, historically forming part of a wooded area. Bringing the total number of species recorded to six (see Table 1. and Figure 2.). Whilst the spread of the species was over 30m of hedgerow length and juvenile in age, it will be considered species rich for the purposes of this development.

Table 1 - Hedgerow species list

Common name	Species name
Ash	<i>Fraxinus excelsior</i>
Hazel	<i>Corylus avellana</i>
Willow	<i>Salix sp.</i>
Dog Rose	<i>Rosa canina</i>
Blackthorn	<i>Prunus spinosa</i>
Hawthorn	<i>Crataegus monogyna</i>



Figure 2. Species rich hedgerow bounding the south of site. Woody vegetation was mature or juvenile

Bare ground and disturbed ground

- 3.8. Several patches of bare and disturbed ground persisted, particularly in the east of site on the lower level and the steep embankment (see Figure 3.). The extent of this habitat was comparable to the previous survey undertaken, albeit slightly more noticeable given the recent lack of rain.

Species-poor semi improved grassland

- 3.9. Whilst some grassy patches existed in 2020 intervening management and time has allowed colonisation and development of a less patchy grassland, towards the eastern end of the upper tier where it has escaped ruderal and scrub encroachment. It has now been mapped as a more significant ecological feature (See map in Appendix II). Species included red fescue, yorkshire fog *Holcus lanatus*, annual meadow-grass *Poa annua*, ribwort plantain *Plantago lanceolata*, creeping buttercup, bristly ox-tongue *helminthotheca echioides*, cut-leaved cranesbill *Geranium dissectum*. In terms of the proposal, this habitat is not considered to hold great intrinsic ecological value within the context of the site.

Invasive and non-native species

- 3.10. Similarly to the previous walkover in 2020, no evidence of any plant species listed under Schedule 9 of the Wildlife and Countryside Act (1981) (as amended) was noted during the survey.



Figure 3. Bare ground showing at the steepest section of site separating the lower eastern end of the plot from the upper western end. Image taken looking west.

Buildings and temporary structures

- 3.11. No buildings exist on site as before. The caravan and miscellaneous building materials have been removed from the lower eastern section since the last walkover (Ecoleg, 2020). A single storage container remains on site, next to a small area (approx 16m²) of hard standing/parking spots on which the caravan once stood.

Fauna

- 3.12. In general, the opportunities for protected or notable species, and the potential for on site habitats to support these, remained comparable to what was identified during the initial walkover (Ecoleg, 2020). Changes of note relate to roosting bat opportunities and the assumption of reptile presence. These changes are considered in the subsequent sections of this report.
- 3.13. As previously discussed (Ecoleg, 2020), badger, dormouse *Muscardinus avellanarius*, otter *Lutra lutra*, barn owl *Tyto alba*, water vole *Arvicola amphibius* or great crested newt *Triturus cristatus*, are not considered further in this report due to the lack of evidence for their presence and/or lack of onsite opportunities and extremely low likelihood of being impacted by the proposals.

Roosting bats

- 3.14. No buildings or trees of significant bat potential were noted on site. However growth of ivy on retained ash trees in southern boundary hedgerow now obscure the stems slightly. A small rot hole and damaged/split limb on a retained oak tree in adjacent to the south west

corner of site was also noted during the update survey. From the ground, the potential roost features (PRFs) on the oak, represented some potential to support roosting bats, at least individuals on an irregular basis (see Figure 4. And target notes in Appendix II)

Foraging and commuting bats

- 3.15. The southern hedgerow retains it's function as a commuting link with foraging opportunities for bats and forms the main item of value on the site. Adjacent trees in the neighbouring plot to the north also persist along with a similar function for foraging and commuting along the western boundary. Use of these habitats and the western extent of the plot by foraging and/or commuting bats cannot be precluded.



Figure 4. Small rot hole due to decay of missing limb in a retained oak tree on the south west boundary corner of site. No significant cavity, feature considered Low Potential to support roosting bats.

Birds

- 3.16. Some additional species, to those seen or heard during the original survey (see section 3.22 of Ecoleg, 2020) were identified in June 2023. These included wren *Troglodytes troglodytes*, robin *Erithacus rubecula*, blue tit *Cyanistes caeruleus* and great tit *Parus major*.

Reptiles

- 3.17. With exception to some encroachment of scrub and ruderal vegetation, the conditions and extents of habitat at the site remained comparable to the previous walkover (Ecoleg, 2020). Reptile presence is still considered unlikely with the risk of harm to reptiles from the proposals extremely low. However, following responses from the LPA including ecology comments from Matt Davies (dated 05th August 2020), the precautionary measure of

assuming presence of at least individuals on an irregular basis would be appropriate within the context of the site at the outline planning stage.

Invertebrates

- 3.18. On site conditions remain unchanged with regard to potential impacts to invertebrates. The food plants of the small pearl-bordered fritillary *Boloria selene* (self-heal *Prunella vulgaris* and trefoil *Lotus corniculatus*) were still present on site in June 2023 and are likely to persist in the western part of the site in the absence of any proposed drastic landscape management changes. Anecdotally, mason bees and mining bees have been doing well this year (2023), where other insect families have not (e.g. hoverflies) due to the extended warm and dry conditions early summer. Some evidence (such as small holes) existed of the aforementioned solitary bees using the bare ground embankment on site (Figure 3.). However, under the current proposals, significantly adversely impacting available opportunities for invertebrates is unlikely and as such they will not be considered further in this report.
- 3.19. In the event that significant landscape changes to the western portion of site be made for full planning at a later date, it should be noted that some additional opportunities for invertebrates do exist, e.g. with the partial retention and enhancement of the bare-ground embankment. As mentioned, this is not considered necessary at outline stage or under the current proposals.

4. LEGISLATION

Overview

- 4.1. Developers must ensure the construction and operational activities for the proposed scheme comply with the national nature conservation legislation and with regional and local biodiversity policies.
- 4.2. The following legislative and planning policy context has been used to inform the assessment of the relative ecological value of the site, potential constraints to development and recommendation for enhancements.

Wildlife and Countryside Act 1981 (as amended)

- 4.3. The main pieces of legislation regarding the protection of species and habitats in Wales and England are the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (as amended). These pieces of legislation provide a range of protection for many species, and also create protected sites (including Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs) and Special Areas of Conservation (SACs)). Activities which have the potential to harm protected species must be appropriately considered and mitigated, as must those with the potential to impact on protected sites. In some instances, activities occurring some distance from a designated site have the potential to cause adverse effects and must be considered within an impact assessment.
- 4.4. Bats are also afforded protection within England and Wales under the Wildlife and Countryside Act 1981 (as amended); Countryside and Rights of Way Act 2000; Natural Environment and Rural Communities Act 2006. Bats are also afforded protection locally via the Merthyr Tydfil Local Biodiversity Action Plan.
- 4.5. All wild birds are protected under the 1981 Act. It is an offence to take, damage or destroy the nest or eggs of any wild bird while it is in use or being built. Schedule 1 species are afforded additional protection from disturbance whilst breeding.

Planning Policy Wales (2018)

- 4.6. This document sets out the land use planning policies of the Welsh Government with Chapter 6 dealing with Distinctive and Natural places which covers Biodiversity and Ecological Networks. The advice contained within PPW is supplemented for some subjects by Technical Advice Notes (TAN's), with TAN 5 addressing Nature Conservation & Planning.
- 4.7. TAN 5 identifies a number of key principles, which the town and country planning system in Wales should consider. Those relevant are detailed below:
 - Work to achieve nature conservation objectives through a partnership between local planning authorities, Natural Resources Wales (NRW), voluntary organisations, developers, landowners and other key stakeholders;
 - Integrate nature conservation into all planning decisions looking for development to deliver social, economic and environmental objectives together over time;

- Ensure that the UK's international obligations for site, species and habitat protection are fully met in all planning decisions;
- Look for development to provide a net benefit for biodiversity conservation with no significant loss of habitats or populations of species, locally or nationally;
- Promoting approaches to development which create new opportunities to enhance biodiversity, prevent biodiversity losses, or compensate for losses where damage is unavoidable. Minimising or reversing the fragmentation of habitats and improving habitat connectivity through the promotion of wildlife corridors;
- Local planning authorities should seek to protect trees, groups of trees and areas of woodland where they have natural heritage value or contribute to the character or amenity of a particular locality;
- The presence of a species protected under European or UK legislation is a material consideration when a local planning authority is considering a development proposal which, if carried out, would be likely to result in disturbance or harm to the species or its habitat.

Environment (Wales) Act, 2016

- 4.8. Part 1 of the Environment Act Wales' came into force in May 2016 and sets out the approach to planning and managing natural resources at a national and local level with a general purpose linked to statutory 'principles of sustainable management of natural resources' defined within the Act.

Section 6 - Biodiversity and resilience of ecosystems duty

- 4.9. Section 6 of the Act places a duty on public authorities to 'seek to maintain and enhance biodiversity' so far as it is consistent with the proper exercise of those functions. In so doing, public authorities must also seek to 'promote the resilience of ecosystems'.

Section 7 - Biodiversity lists and duty to take steps to maintain and enhance biodiversity

- 4.10. This section lists living organisms and types of habitat in Wales which are considered of key significance to maintaining and enhancing biodiversity in relation to Wales. The Welsh Ministers are required to take all reasonable steps to maintain and enhance the living organisms and types of habitat included in any list published under this section and encourage others to take such steps.

Local Planning Policy

- 4.11. The council's current planning policies are set out in the Merthyr Tydfil County Borough Council Replacement Local Development Plan up 2016 - 2031. The following policies from the LDP are of relevance to the proposed development based on the existing ecological conditions described above.

Policy EnW1: Nature Conservation and Ecosystem Resilience

- 4.12. Development proposals will be required to promote the resilience of ecosystems. In particular, proposals will be required to maintain and enhance biodiversity interests unless it can be demonstrated that:
1. The need for the development clearly outweighs the biodiversity value of the site; and
 2. The impacts of the development can be satisfactorily mitigated and acceptably managed through future management regimes.

Policy EnW2: Internationally and Nationally Protected Sites and Species

- 4.13. Development likely to have an adverse effect either directly or indirectly on the conservation value of an internationally or nationally designated site, including the area, structure and function of designated features, will only be permitted where it is demonstrated that:
1. There is no suitable alternative to the proposed development; and
 2. It can be demonstrated that the benefits from the development clearly outweigh the special interest of the site; and
 3. Appropriate compensatory measures are secured; or
 4. The proposal contributes to the protection, enhancement and positive management of the site.
- 4.14. Development proposals likely to affect protected species will only be permitted where it is demonstrated that:
1. The population size, range, distribution and long-term prospects of the species will not be significantly adversely impacted;
 2. There is no suitable alternative to the proposed development;
 3. The benefits of the development clearly outweigh the adverse impacts on the protected species; and
 4. Appropriate, avoidance, minimisation, mitigation, compensation and enhancement measures are provided.

Policy EnW3: Regionally Important Geological Sites, Sites of Importance for Nature Conservation, Local Nature Reserves and Priority Habitats and Species

- 4.15. Development proposals likely to have an adverse impact on Regionally Important Geological Sites, Sites of Importance for Nature Conservation, Local Nature Reserves, or Priority Habitats and Species will only be permitted where it can be demonstrated that:
1. The need for the development clearly outweighs the conservation value of the site;

2. Adverse impacts on nature conservation features or geological features can be avoided;
3. Appropriate and proportionate mitigation and compensation measures can be provided;
and
4. The development maintains and where possible enhances biodiversity and geodiversity interests.

Policy EnW4: Environmental Protection

4.16. Development proposals will be required to demonstrate they will not result in an unacceptable impact on people, residential amenity, property and / or the natural environment from either:

- Pollution of land, surface water, ground water and the air;
- Land contamination;
- Hazardous substances;
- Land stability;
- Noise, vibration, dust, odour nuisance and light pollution; or
- Any other identified risk to public health and safety.

5. CONCLUSIONS & RECOMMENDATIONS

- 5.1. In general, the conditions at the site are largely comparable with no significant or material changes to the types and extents of existing habitats, or opportunities and constraints related to protected species.
- 5.2. Therefore, conclusions of this report are similar to those of the previous report (Ecoleg 2020), which should still be considered valid with exception to those explicitly mentioned below. Overall, based on the intended compliance with the recommendations set out below and in the original report (Ecoleg 2020), it is considered unlikely that the proposals will impact existing ecological features adversely in the mid to long term within the context of the site.

Flora

Priority habitats

- 5.3. One section 7 environment (Wales) act 2016 priority habitat was associated with the application site itself. For the purposes of the proposal, the southern hedgerow should be considered immature, defunct, but species rich. This is a change from the previous report although does not significantly change anything for the current outline proposal. The relevant recommendations are set out in section 5.11-5.12. Given the recommendations are adhered to - as intended by the client - a benefit in the medium term is considered likely, within the context of the site.

Scattered scrub and tall ruderal

- 5.4. Increased in extent across the western part of site in particular. Management of this habitat to allow colonisation of local grasses and herbaceous grassland species may form part of any landscape plan where additional benefit is required. Clearance of this vegetation should be undertaken as per any written and agreed reptile mitigation strategy ahead of full planning permission.

Fauna

Roosting bats

- 5.5. Three ash trees and an oak tree showed limited potential from the ground. All trees in the southern boundary are to be retained. No works to these trees are to be undertaken as part of the development without further bat survey. Given the relevant mitigation and enhancement recommendations are adhered to - as intended by the client - the risk to adversely impacting roosting bats is extremely unlikely. A small potential benefit following successful incorporation of bat boxes as part of the development is likely for roosting bats, within the context of the site.

Commuting/foraging bats

- 5.6. No significant changes to opportunities for commuting/foraging bats was identified. Any additional lighting associated with the development of the application site should be sensitive to commuting and foraging bats, in particular it should ensure that no increase in current levels of illumination would arise with respect to this hedgerow – i.e. it should

remain a dark corridor. An advice sheet relating to bats and street lighting is included in Appendix IV.

- 5.7. Given the recommendations relating to lighting and hedgerows are adhered to - as intended by the client - adverse impact to foraging bats is extremely unlikely. A small, indirect potential benefit related to the hedgerow enhancement as it matures, is likely in the medium and long term within the context of the site.

Nesting birds

- 5.8. Habitats suitable for nesting birds was mostly limited to boundary vegetation. No suitability for ground-nesting birds was identified during the walkover. All birds, their nests and eggs are protected by law (wildlife and countryside act 1981 - as amended). To avoid damaging nesting birds, their nests and/or eggs, it is recommended that vegetation clearance be undertaken outside of the main bird nesting season (typically March - September inclusive). In so doing it is considered that an adverse impact to these species is very unlikely. Where it is not practicable to avoid nesting bird season, any vegetation clearance will needed to be immediately preceded by a thorough check for nesting birds by an ecologist (up to 48hrs prior).

Reptiles

- 5.9. While unlikely and following response from LPA ecologist, the irregular presence of common reptiles at the site cannot be precluded. Therefore, it is assumed that low numbers of common reptiles could be present on site. Given the low suitability of site, assumed low numbers and connecting habitat to the south and west, a reptile mitigation strategy is considered appropriate mitigation as part of any full planning application, to avoid risk of harming/killing reptiles.
- 5.10. A sensitive clearance strategy would include directional cutting over two phases using hand tools during the active season (typically April - September inclusive) to allow reptiles to disperse into adjacent habitats to the north and west. Localised enhancements would include creation of brash piles as hibernaculum using the arisings from the sensitive clearance. Details of these mitigation strategies could be set out and secured via an ecological protection and enhancement plan or similar (e.g. Landscape and ecological management plan).

Mitigation

- 5.11. Factors that suitably minimise the adverse impacts, which would occur (in their absence) due to the proposals include:
- Preparation of an ecological protection and enhancement plan or similar ahead of full planning approval.
 - Preparation of reptile mitigation strategy ahead of full planning approval
 - Retention of the existing southern boundary hedgerow as part of the proposals to support bats, birds, invertebrates, reptiles and other local wildlife.
 - Use of appropriate lighting so as not to disturb wildlife

- Sensitive vegetation clearance strategy (e.g. avoid nesting bird season March-August inclusive)

Enhancement

5.12. Several opportunities for enhancements have been identified by the client, desk study and associated surveys. These include:

- Infill planting, 'gapping-up' and general maintenance of existing hedgerows as part of any management plan ahead of full planning approval
- Installation of bird and bat boxes
- Creation of brash piles and hibernaculum for local reptiles

Compensation

5.13. Where ecological features are likely to be lost as a result of the proposals, compensatory measures should be taken where avoidance and mitigation is not practicable or sufficient. In this case it is considered that avoidance, mitigation and enhancement measures are sufficient and compensatory measures are not required.

6. REFERENCES

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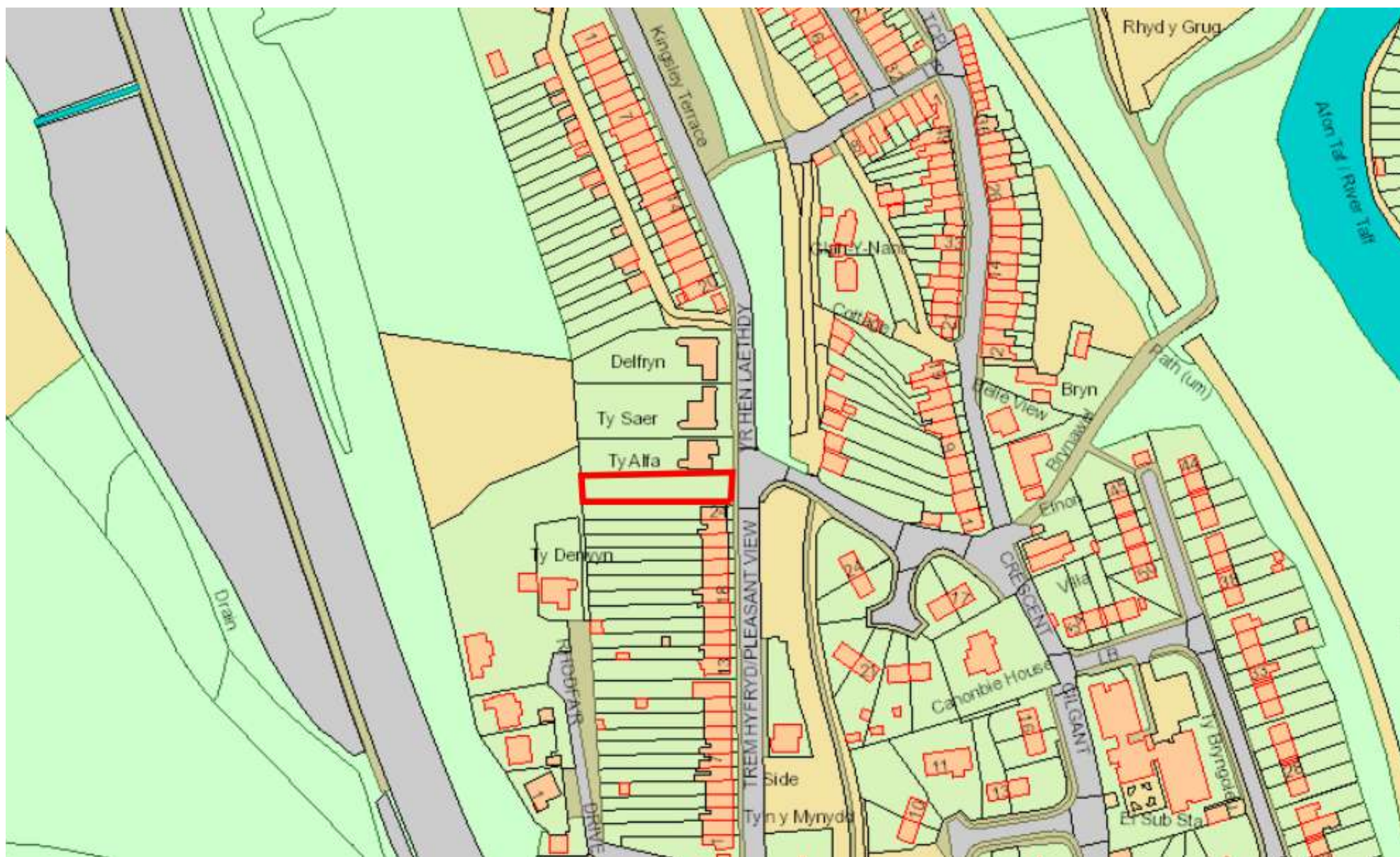
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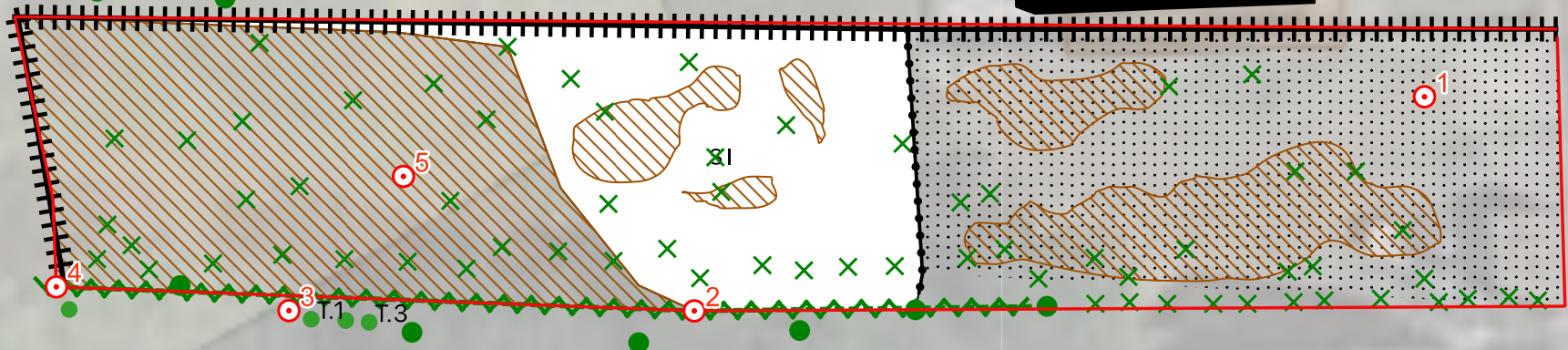
APPENDICES

Appendix I - Site Location & Proposed Plan



Appendix II - Phase I Habitat Map & Target Notes

- Target Notes
- Site Boundary
- J2.4 Fence
- J2.2.1 Defunct Species-rich Hedgerow
- Bat Potential
 - Low
 - J3.6 Buildings
- A3.1 Scattered Broad-leaved Trees
- J2.8 Earth Bank
- A2.2 Scattered Scrub
- C3.1 Tall Ruderal
- B6 Poor Semi-improved Grassland
- J4 Bare Ground



Ron Carpenter
LAND AT YR HEN LLAETHDY

Phase 1 Habitat Map

EA2303/D01

BF

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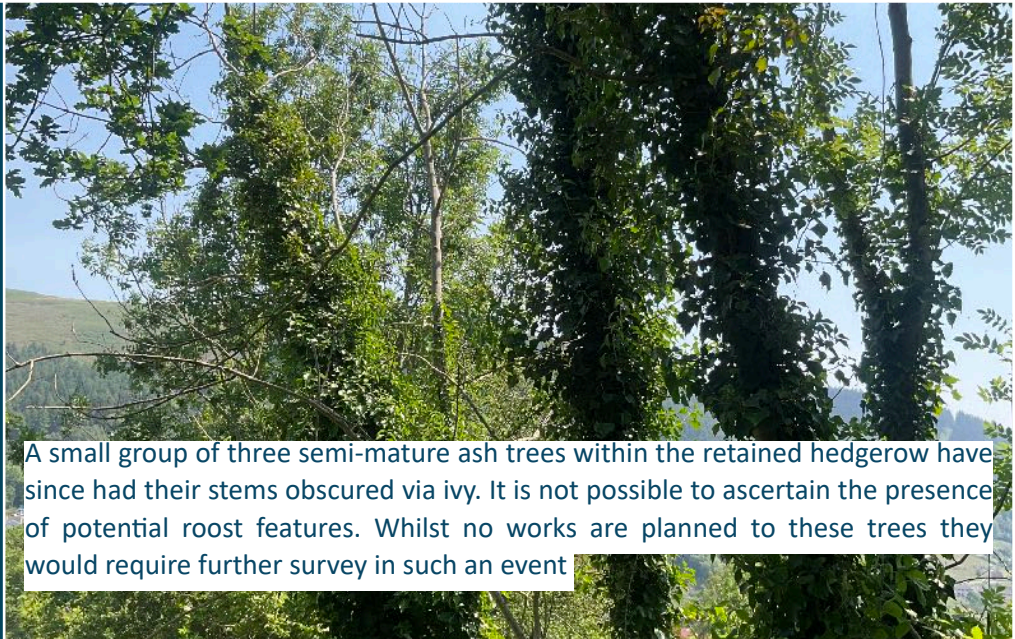
20 June 2023



Target Note	Description/Comment
Birds seen/heard: Wren, Robin, Wood Pigeon, Blackbird, Magpie, Carrion Crow	
1 - Temporary Structures	 Caravan and miscellaneous items have been removed and/or tidied since 2020. Only a storage container remains. sensitive clearance of patchy ruderal, scattered scrub and grasses undertaken under supervision
2 - Defunct species rich hedgerow	 Defunct immature species rich hedgerow containing six species of woody plants including ash, hazel, willow, dog rose, blackthorn and hawthorn. Hedgerow to be retained and subject to localised enhanceement, management and protection from light spill

-3-

Ivy covered
ash trees



A small group of three semi-mature ash trees within the retained hedgerow have since had their stems obscured via ivy. It is not possible to ascertain the presence of potential roost features. Whilst no works are planned to these trees they would require further survey in such an event

-4-

Immature
oak tree -
bat
potential



Oak tree due to be retained located in the south west corner of site within the hedgerow. Contains two potential roost features, namely a split limb (pictured) and a rot hole (see figure x). no significant cavity or evidence of use by bats identified

-5-

Ruderal and
b r a m b l e
encroachme
nt



Appendix III - Bats & Lighting

3. Mitigation of artificial lighting impacts on bats

This section provides a simple process which should be followed where the impact on bats is being considered as part of a proposed lighting scheme. It contains techniques which can be used on all sites, whether a small domestic project or larger mixed-use, commercial or infrastructure development. It also provides best-practice advice for the design of the lighting scheme for both lighting professionals and other users who may be less familiar with the terminology and theory.

The stepwise process and key follow-up actions are outlined in the flowchart overleaf, and are followed throughout the chapter.

The questions within this flow chart should be asked as early as possible, so that necessary bat survey information can be gathered in advance of any lighting design or fixing of overall scheme design.

Effective mitigation of lighting impacts on bats depends on close collaboration from the outset between multiple disciplines within a project. Depending on the specific challenges this will almost certainly involve ecologists working alongside architects and/or engineers; however, lighting professionals and landscape architects should be approached when recommended by your ecologist. This should be done as early in your project as possible in order to ensure mitigation is as effective as it can be and to minimise delays and unforeseen costs.

Step 1: Determine whether bats could be present on site

If your site has the potential to support bats or you are at all unsure, it is highly recommended that an ecologist is appointed to advise further and conduct surveys, if necessary. This information should be collected as early as possible in the design process, and certainly before lighting is designed, so as to avoid the need for costly revisions.

If any of the following habitats occur on site, and are adjacent to or connected with any of these habitats on or off site, it is possible that newly proposed lighting may impact local bat populations:

- Woodland or mature trees
- Hedgerows and scrub
- Ponds and lakes
- Ditches, streams, canals and rivers
- Infrequently managed grassland
- Buildings – pre 1970s or in disrepair

If you are unsure about whether bats may be impacted by your project, and an ecologist has not yet been consulted, sources of information on the presence of bats within the vicinity of your site include the following.

- Local environmental records centres (LERC) – Will provide third-party records of protected and notable species for a fee. Search <http://www.alerc.org.uk/> for more information.
- National Biodiversity Network Atlas – Provides a resource of third-party ecological records searchable online at <https://nbnatlas.org>. Typically this is less complete than LERC data. Please note: Some datasets are only accessible on a non-commercial basis, while most can be used for any purpose, as long as the original source is credited.
- Local authority planning portals – Most local planning authorities have a searchable online facility detailing recent planning applications. These may have been accompanied by ecological survey reports containing information on bat roosts and habitats.
- Defra's MAGIC map – Provides an online searchable GIS database including details of recent European protected species licences and details of any protected sites designated for bat conservation.

The professional directory at the website of the Chartered Institute of Ecology and Environmental Management (www.cieem.net) will provide details of ecologists in your area with the relevant

Step 1

Could bats be present on site?

Consult local sources of ecological information or seek advice from an ecologist

Step 2

Determine the presence of – or potential for – roosts, commuting habitat and foraging habitat and evaluate their importance.

Appoint ecologist to carry out daytime and, if necessary, night-time bat surveys and to evaluate the importance of the site's features and habitats to bats.

Step 3

Avoid lighting on key habitats and features altogether.

No illumination of any roost entrances and associated flightpaths, nor on habitats and features used by large numbers of bats, by rare species or by highly light-averse species.

Step 4

In other locations of value for bats on site, apply mitigation methods to reduce lighting to a minimum.

Spatial design

Building design

Landscaping

Set dark habitat buffers and acceptable lux limits with ecologist guidance

Step 5

Demonstrate compliance with lux limits and buffers.

Lighting professional to prepare final lighting scheme design and/or lux calculations or undertake baseline light surveys as necessary. Post-completion bat and lighting monitoring may be required.

skills/experience. The early involvement of a professional ecologist can minimise the likelihood of delays at the planning stage (if applicable) and ensure your project is compliant with conservation and planning legislation and policy.

It should be noted that the measures discussed in this document relate only to the specific impacts of lighting upon bat habitat features on or adjacent to the site. If loss or damage to roosting, foraging or commuting habitat is likely to be caused by other aspects of the development, separate ecological advice will be necessary in order to avoid, mitigate or compensate for this legally and according to the ecologist's evaluation.

Step 2: Determine the presence of – or potential for – roosts, commuting habitat and foraging habitat and evaluate their importance

Your ecologist will visit the site in order to record the habitats and features present and evaluate their potential importance to bats, and the likelihood that bats could be affected by lighting both on and immediately off site. This may also include daytime building and tree inspections. On the basis of these inspections further evening surveys may be recommended, either to determine the presence of roosts within buildings and/or trees or to assess the use of the habitats by bats by means of a walked survey. Such surveys may be undertaken at different times during the active season (ideally May to September) and should also involve the use of automated bat detectors left on site for a period of several days. The surveys should be carried out observing the recommendations within the Bat Conservation Trust's Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016).

The resulting report will detail the relative conservation importance of each habitat feature to bats (including built structures, if suitable). The ecologist's evaluation of the individual features will depend on the

specific combination of contributing factors about the site, including:

- The conservation status of species recorded or likely to be present
- Geographic location
- Type of bat activity likely (breeding, hibernating, night roosting, foraging etc)
- Habitat quality
- Habitat connectivity off-site
- The presence of nearby bat populations or protected sites for bats (usually identified in a desk study)

The evaluation of ecological importance for each feature is most commonly expressed on a geographic scale from Site level to International level, or alternatively in terms of that feature's role in maintaining the 'favourable conservation status' of the population of bats using it.

The ecologist should set out where any key bat roost features and/or habitat areas (ie flightpath habitat and broader areas of foraging habitat) lie on a plan of the site or as an ecological constraints and opportunities plan (ECOP) together with their relative importance. The ECOP and report can then be used to help guide the design of the lighting strategy as well as the wider project.

Step 3: Avoid lighting on key habitats and features altogether

As has been described in 'Artificial lighting', above, there is no legal duty requiring any place to be lit. British Standards and other policy documents allow for deviation from their own guidance where there are significant ecological/environmental reasons for doing so. It is acknowledged that in certain situations lighting is critical in maintaining safety, such as some industrial sites with 24-hour operation. However in the public realm, while lighting can increase the perception of safety and security, measureable benefits can be subjective. Consequently, lighting design should be flexible and be able to fully take into account the presence of protected species

and the obligation to avoid impacts on them.

Sources of lighting which can disturb bats are not limited to roadside or external security lighting, but can also include light spill via windows, permanent but sporadically operated lighting such as sports floodlighting, and in some cases car headlights. Additionally, glare (extremely high contrast between a source of light and the surrounding darkness – linked to the intensity of a luminaire) may affect bats over a greater distance than the target area directly illuminated by a luminaire and must also be considered on your site.

It is important that a competent lighting professional is involved in the design of proposals as soon as potential impacts (including from glare) are identified by the ecologist in order to avoid planning difficulties or late-stage design revision. Your lighting professional will be able to make recommendations about placement of luminaires tailored to your specific project.

Where highways lighting schemes are to be designed by the local planning authority (LPA) post-planning, an ecology officer should be consulted on the presence of important bat constraints which may impact the design and illuminance in order for the scheme to remain legally compliant with wildlife legislation.

Where adverse impacts upon the 'favourable conservation status' of the bat population using the feature or habitat would be significant, an absence of artificial illumination and glare, acting upon both the feature and an appropriately-sized buffer zone is likely to be the only acceptable solution. Your ecologist will be best placed to set the size of such a buffer zone but it should be sufficient to ensure that illumination and glare is avoided and so the input of a lighting professional may be required. Further information on demonstrating an absence of illumination via lux/illuminance contour plans is provided in Step 5.

Because different species vary in their response to light disturbance (as discussed in section 1 'Bats'), your ecologist will be able to provide advice tailored to the specific conditions on your project, however examples of where the no-lighting approach should be taken in particular include:

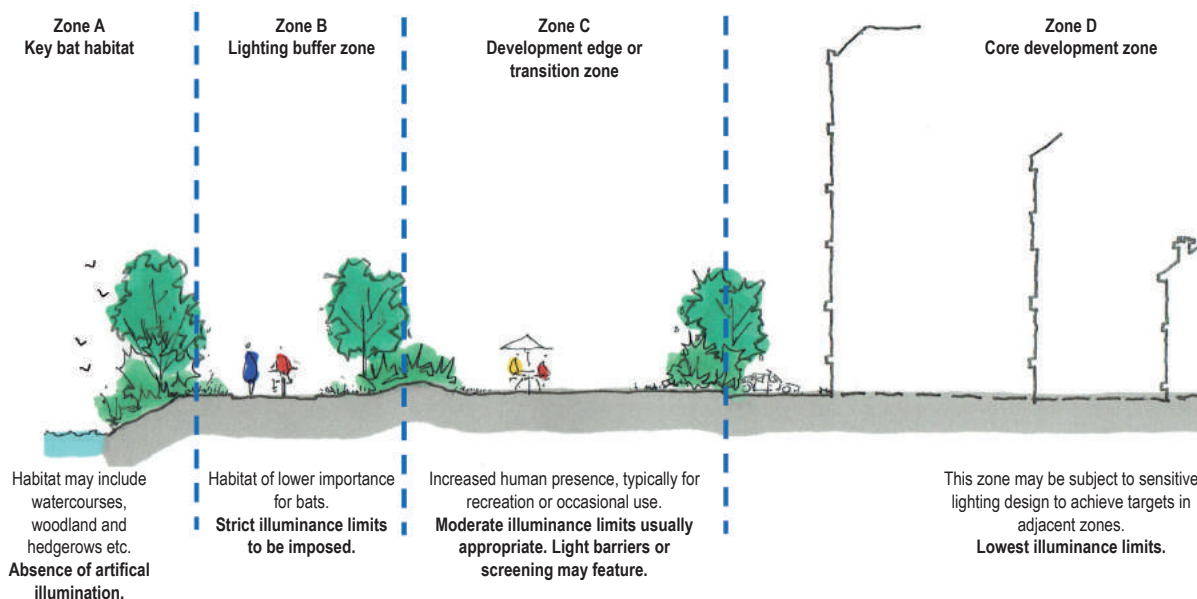
- Roosting and swarming sites for all species and their associated flightpath/commuting habitat.
- Foraging or commuting habitat for highly light-averse species (greater and lesser horseshoe bats, some *Myotis* bats, barbastelle bats and all long-eared bats).
- Foraging or commuting habitat used by large numbers of bats as assessed through survey.
- Foraging or commuting habitat for particularly rare species (grey long-eared bat, barbastelle, small *Myotis*, Bechstein's bat and horseshoe bats).
- Any habitat otherwise assessed by your ecologist as being of importance to maintaining the 'favourable conservation status' of the bat population using it.

Completely avoiding any lighting conflicts in the first place is advantageous because not only would proposals be automatically compliant with the relevant wildlife legislation and planning policy, but they could avoid costly and time-consuming additional surveys, mitigation and post-development monitoring. Furthermore, local planning authorities are likely to favour applications where steps have been taken to avoid such conflicts.

Step 4: Apply mitigation methods to reduce lighting to agreed limits in other sensitive locations – lighting design considerations

Where bat habitats and features are considered to be of lower importance or sensitivity to illumination, the need to provide lighting may outweigh the needs of bats. Consequently, a balance between a reduced lighting level appropriate to the

Example of illuminance limit zonation



ecological importance of each feature and species, and the lighting objectives for that area will need to be achieved.

It is important to reiterate the legal protection from disturbance that bats receive under the Wildlife and Countryside Act 1981, as amended. Where the risk of offences originating from lighting is sufficiently high, it may be best to apply the avoidance approach in Step 3.

Advice from an ecologist and lighting professional will be essential in finding the right approach for your site according to their evaluation. The following are techniques which have been successfully used on projects and are often used in combination for best results.

Dark buffers, illuminance limits and zonation

Dark buffer zones can be used as a good way to separate habitats or features from lighting by forming a dark perimeter around them. Buffer zones rely on ensuring light levels (levels of illuminance measured in lux) within a certain distance of a feature do not exceed certain defined limits. The buffer zone can be further subdivided into zones of increasing illuminance limit radiating away from the feature. Examples of this application are given in the figure above.

Your ecologist (in collaboration with a lighting professional) can help determine the most appropriate buffer widths and illuminance limits according to the value of that habitat to bats (as informed by species and numbers of bats, as well as the type of use).

Appropriate luminaire specifications

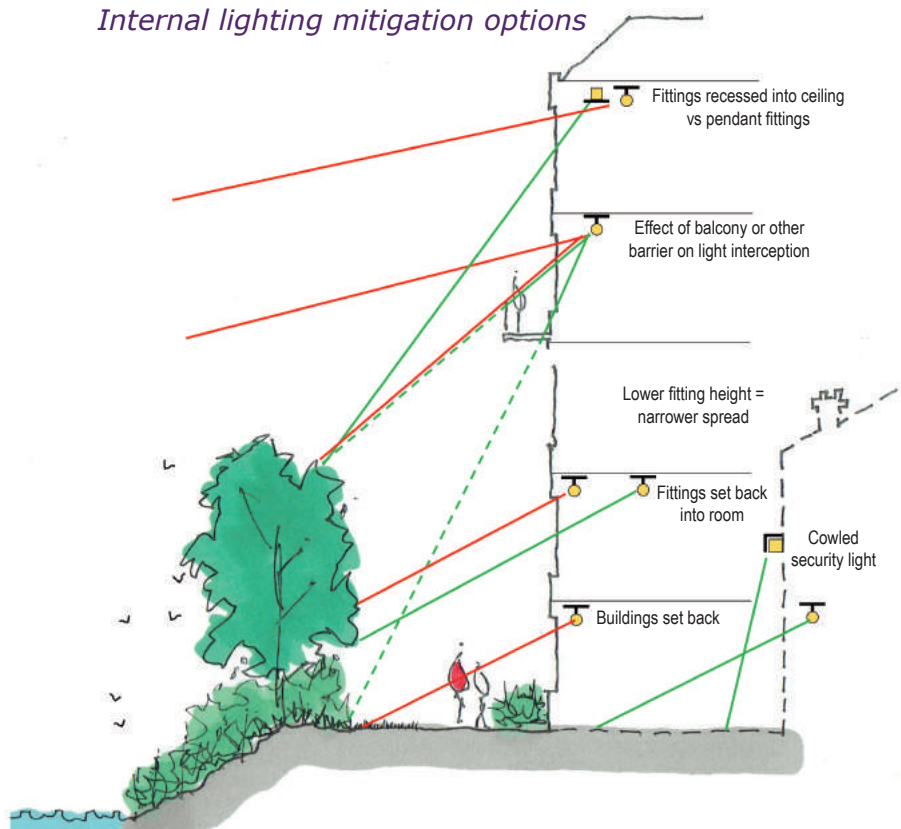
Luminaires come in a myriad of different styles, applications and specifications which a lighting professional can help to select. The following should be considered when choosing luminaires.

- All luminaires should lack UV elements when manufactured. Metal halide, fluorescent sources should not be used.
- LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.
- A warm white spectrum (ideally <2700Kelvin) should be adopted to reduce blue light component.
- Luminaires should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2012).
- Internal luminaires can be recessed where installed in proximity to windows to reduce glare and light spill. (See figure overleaf.)
- The use of specialist bollard or low-level downward directional luminaires to

retain darkness above can be considered. However, this often comes at a cost of unacceptable glare, poor illumination efficiency, a high upward light component and poor facial recognition, and their use should only be as directed by the lighting professional.

- Column heights should be carefully considered to minimise light spill.
- Only luminaires with an upward light ratio of 0% and with good optical control should be used – See ILP Guidance for the Reduction of Obtrusive Light.
- Luminaires should always be mounted on the horizontal, ie no upward tilt.
- Any external security lighting should be set on motion-sensors and short (1min) timers.
- As a last resort, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed.

Internal lighting mitigation options



- Taller buildings may be best located toward the centre of the site or sufficiently set back from key habitats to minimise light spill.
- Street lights can be located so that the rear shields are adjacent to habitats or optics selected that stop back light thereby directing light into the task area where needed.

Sensitive site configuration

The location, orientation and height of newly built structures and hard standing can have a considerable impact on light spill (see figure above for examples of good internal lighting design). Small changes in terms of the placement of footpaths, open space and the number and size of windows can all achieve a good outcome in terms of minimising light spill on to key habitats and features.

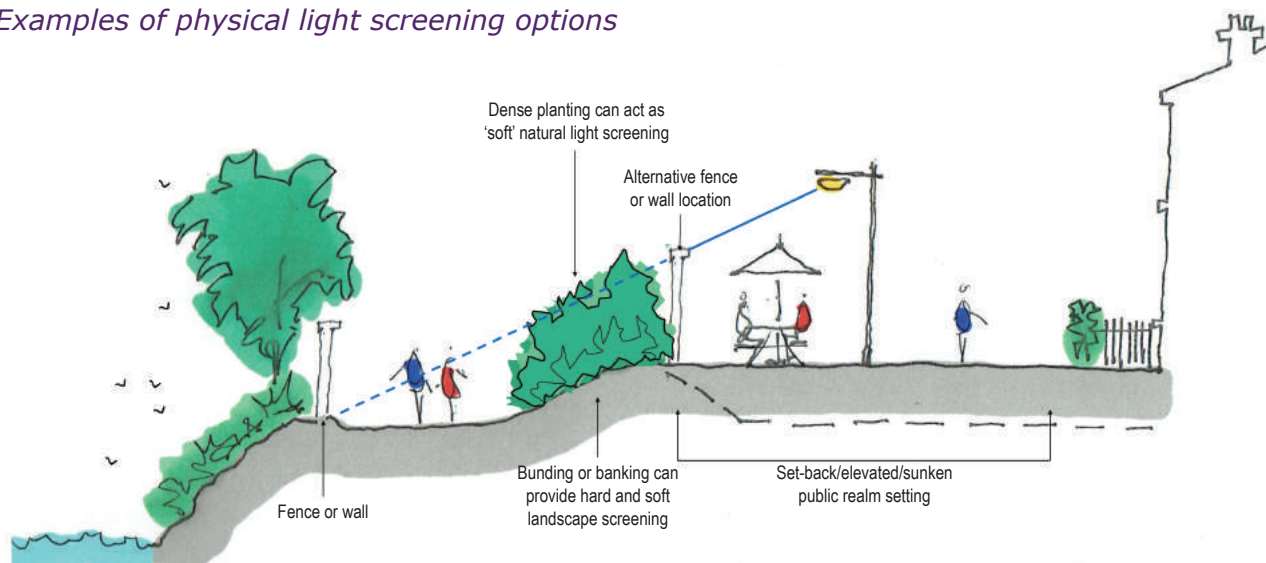
- It may be possible to include key habitats and features into unlit public open space such as parks and gardens.
- Buildings, walls and hard landscaping may be sited and designed so as to block light spill from reaching habitats and features.

Screening

Light spill can be successfully screened through soft landscaping and the installation of walls, fences and bunding (see figure overleaf for example of physical light-screening options). In order to ensure that fencing makes a long-term contribution, it is recommended that it is supported on concrete or metal posts. Fencing can also be over planted with hedgerow species or climbing plants to soften its appearance and provide a vegetated feature which bats can use for navigation or foraging.

The planting of substantial landscape features integrated to the wider network of green corridors such as hedgerows, woodland and scrub is encouraged by

Examples of physical light screening options



planning policy and would make a long-term positive contribution to the overall bat habitat connectivity and light attenuation. A landscape architect can be appointed to collaborate with your ecologist on maximising these natural light screening opportunities.

It should be noted that newly planted vegetation (trees, shrubs and scrub) is unlikely to adequately contribute to light attenuation on key habitats for a number of years until it is well established. Sufficient maintenance to achieve this is also likely to be required. Consequently, this approach is best suited to the planting of 'instant hedgerows' or other similarly dense or mature planting, including translocated vegetation. In some cases, it is appropriate to install temporary fencing or other barrier to provide the desired physical screening effects until the vegetation is determined to be sufficiently established.

Given the fact that planting may be removed, die back, or be inadequately replaced over time it should never be relied on as the sole means of attenuating light spill.

Glazing treatments

Glazing should be restricted or redesigned wherever the ecologist and lighting professional determine there is a likely significant effect upon key bat habitat and features. Where windows and glass

facades etc cannot be avoided, low transmission glazing treatments may be a suitable option in achieving reduced illuminance targets.

Products available include retrofit window films and factory-tinted glazing. 'Smart glass', which can be set to automatically obscure on a timer during the hours of darkness, and automatic blinds can also be used but their longevity depends on regular maintenance and successful routine operation by the occupant, and should not be solely relied upon.

Depending on the height of the building and windows, and therefore predicted light spill, such glazing treatments may not be required on all storeys. This effect can be more accurately determined by a lighting professional.

Creation of alternative valuable bat habitat on site

The provision of new, additional or alternative bat flightpaths, commuting habitat or foraging habitat could result in appropriate compensation for any such habitat being lost to the development. Your ecologist will be able to suggest and design such alternative habitats although particular consideration as to its connectivity to other features, the species to be used, the lag time required for a habitat to sufficiently establish, and the provision for its ongoing protection and maintenance should be given.

Dimming and part-night lighting

Depending on the pattern of bat activity across the key features identified on site by your ecologist, it may be appropriate for an element of on-site lighting to be controlled either diurnally, seasonally or according to human activity. A control management system can be used to dim (typically to 25% or less) or turn off groups of lights when not in use.

It should be noted that these systems depend on regular maintenance and a long-term commitment for them to be successful. Additionally, part-night lighting should be designed with input from an ecologist as they may still produce unacceptably high light levels when active or dimmed. Part-night lighting is not usually appropriate where lights are undimmed during key bat activity times as derived from bat survey data. Research has indicated that impacts upon commuting bats are still prevalent where lighting is dimmed during the middle of the night at a time when illumination for human use is less necessary (Azam et al, 2015). Thus this approach should not always be seen as a solution unless backed up by robust ecological survey and assessment of nightly bat activity.

Step 5: Demonstrate compliance with illuminance limits and buffers

Design and pre-planning phase

It may be necessary to demonstrate that the proposed lighting will comply with any agreed light-limitation or screening measures set as a result of your ecologist's recommendations and evaluation. This is especially likely to be requested if planning permission is required.

A horizontal illuminance contour plan can be prepared by a suitably experienced and competent lighting professional (member of the Chartered Institution of Building Services Engineers (CIBSE), Society of Light and Lighting (SLL), Institution of

Lighting Professionals (ILP) or similar to ensure competency) using an appropriate software package to model the extent of light spill from the proposed and, possibly, existing luminaires. The various buffer zone widths and illuminance limits which may have been agreed can then be overlaid to determine if any further mitigation is necessary. In some circumstances, a vertical illuminance contour plot may be necessary to demonstrate the light in sensitive areas such as entrances to roosts.

Such calculations and documentation would need to be prepared in advance of submission for planning permission to enable the LPA ecologist to fully assess impacts and compliance.

Because illuminance contour plots and plans may need to be understood and examined by non-lighting professionals such as architects and local planning authority ecologists, the following should be observed when producing or assessing illuminance contour plans to ensure the correct information is displayed.

- A horizontal calculation plane representing ground level should always be used.
- Vertical calculation planes should be used wherever appropriate, for example along the site-facing aspects of a hedgerow or façade of buildings containing roosts to show the illumination directly upon the vertical faces of the feature. Vertical planes can also show a cross-sectional view within open space. Vertical planes will enable a visualisation of the effects of illumination at the various heights at which different bat species fly.
- Models should include light from all luminaires and each should be set to the maximum output anticipated to be used in normal operation on site (ie no dimming where dimming is not anticipated during normal operation).
- A calculation showing output of luminaires to be expected at 'day 1' of operation should be included, where the luminaire and/or scheme Maintenance Factor is set to one.

- Where dimming, PIR or variable illuminance states are to be used, an individual set of calculation results should accompany each of these states.
- The contours (and/or coloured numbers) for 0.2, 0.5, 1, 5, and 10 lux must be clearly shown as well as appropriate contours for values above these.
- Each contour plan should be accompanied by a table showing their minimum and maximum lux values.
- Where buildings are proposed in proximity to key features or habitats, plots should also model the contribution of light spill through nearby windows, making assumptions as to internal luminaire specification and transmissivity of windows. It should be assumed that blinds or curtains are absent or fully open although low-transmittance glazing treatments may be appropriate. Assumptions will need to be made as to the internal luminaire specification and levels of illuminance likely to occur on 'day 1' of operation. These assumptions should be clearly stated and guided by the building/room type and discussions between architect, client and lighting professional. It is acknowledged that in many circumstances, only a 'best effort' can be made in terms of accuracy of these calculations.
- Modelled plots should not include any light attenuation factor from new or existing planting due to the lag time between planting and establishment and the risk of damage, removal or failure of vegetation. This may result in difficulties in the long term achievement of the screening effect and hamper any post-construction compliance surveys.
- The illuminance contour plots should be accompanied by an explanatory note from the lighting professional to list where, in their opinion, sources of glare acting upon the key habitats and features may occur and what has been done/can be done to reduce their impacts.

N.B. It is acknowledged that, especially for vertical calculation planes, very low

levels of light (<0.5 lux) may occur even at considerable distances from the source if there is little intervening attenuation. It is therefore very difficult to demonstrate 'complete darkness' or a 'complete absence of illumination' on vertical planes where some form of lighting is proposed on site despite efforts to reduce them as far as possible and where horizontal plane illuminance levels are zero. Consequently, where 'complete darkness' on a feature or buffer is required, it may be appropriate to consider this to be where illuminance is below 0.2 lux on the horizontal plane and below 0.4 lux on the vertical plane. These figures are still lower than what may be expected on a moonlit night and are in line with research findings for the illuminance found at hedgerows used by lesser horseshoe bats, a species well known for its light averse behaviour (Stone, 2012).

Baseline and post-completion light monitoring surveys

Baseline, pre-development lighting surveys may be useful where existing on- or off-site lighting is suspected to be acting on key habitats and features and so may prevent the agreed or modelled illuminance limits being achieved. This data can then be used to help isolate which luminaires might need to be removed, where screening should be implemented or establish a new illuminance limit reduced below existing levels. For example, where baseline surveys establish that on- and off-site lighting illuminates potential key habitat, improvements could be made by installing a tall perimeter fence adjacent to the habitat and alterations to the siting and specification of new lighting to avoid further illumination. Further information and techniques to deal with modeling pre-development lighting can be found in ILP publication PLG04 *Lighting Impact Assessments* due to be published late 2018.

Baseline lighting surveys must be carried out by a suitably qualified competent person. As a minimum, readings should be

taken at ground level on the horizontal plane (to give illuminance hitting the ground), and in at least one direction on the vertical plane at, for example, 1.5m or 2m above ground (to replicate the likely location of bats using the feature or site). The orientation should be perpendicular to the dominant light sources or perpendicular to the surface/edge of the feature in question (such as a wall or hedgerow) in order to produce a 'worst case' reading. Further measurements at other orientations may prove beneficial in capturing influence of all luminaires in proximity to the feature or principal directions of flight used by bats. This should be discussed with the ecologist.

Baseline measurements should be taken systematically across the site or features in question. That is, they will need to be repeated at intervals to sample across the site or feature, either in a grid or linear transect as appropriate. The lighting professional will be able to recommend the most appropriate grid spacing.

Measurements should always be taken in the absence of moonlight, either on nights of a new moon or heavy cloud to avoid artificially raising the baseline. As an alternative, moonlight can be measured at a place where no artificial light is likely to affect the reading.

As all proposed illuminance level contours will be produced from modelled luminaires at 100% output, baseline measurements need to be taken with all lights on and undimmed, with blinds or screens over windows removed. Cowls and other fittings on luminaires can remain in place.

Where possible, measurements should be taken during the spring and summer when vegetation is mostly in leaf, in order to accurately represent the baseline during

the principal active season for bats and to avoid artificially raising the baseline.

The topography of the immediate surrounding landscape should be considered in order to determine the potential for increased or decreased light spill beyond the site.

Post-construction/operational phase compliance-checking

Post-completion lighting surveys are often required where planning permission has been obtained on the condition that the proposed lighting levels are checked to confirm they are in fact achieved on site and that the lighting specification (including luminaire heights, design and presence of shielding etc) is as proposed.

All lighting surveys should be conducted by a suitably qualified competent person and should be conducted using the same measurement criteria and lighting states used in the preparation of the illuminance contour plots and/or baseline surveys as discussed above. It may be necessary to conduct multiple repeats over different illumination states or other conditions specific to the project.

Results should always be reported to the LPA as per any such planning condition. A report should be prepared in order to provide an assessment of compliance by the lighting professional and a discussion of any remedial measures which are likely to be required in order to achieve compliance. Any limitations or notable conditions such as deviation from the desired lighting state or use of blinds/barriers should be clearly reported. Ongoing monitoring schedules can also be set, especially where compliance is contingent on automated lighting and dimming systems or on physical screening solutions.

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