



Tree survey for bat potential at:-

Land at Ty'n –Y- Caeau, Margam, Port Talbot, SA13 2NW.

25/11/2020

*A European Protected Species Licence will NOT be required
for this development to be undertaken.*

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Executive Summary

At the end of November 2020, I & G Ecological Consulting were commissioned to undertake an appraisal of a small number of trees, predominately situated on the north east boundary of an area of land approximately 1.4 hectares in size bordering Margam Road (A48) (see Fig. 1). The land is currently unused but was previously a large garden with specimen trees for a large residence. The site is situated on the outskirts of the village of Margam, in the administrative county of Neath Port Talbot. The immediate surrounding areas consist of industrial areas, pastoral fields and small patches of woodland. The land within the site boundary consists predominately of improved and semi-improved Grassland, bounded by tree-lines/overgrown hedges.

No bat roosts or typically used features were found and all trees were thoroughly surveyed using endoscopes, monoculars and thermal imaging cameras thus, no bats will be adversely affected by the proposed development. The trees surveyed can be seen within the site plan (appendix 5) where Ash species all showed varying degrees of Ash Dieback (*Hymenoscyphus fraxineus*). The ash trees proximal to the proposed dedicated “bat house” should be sectionally felled and all wood allowed to “rest” for a minimum of 24 hours before removing from site. A standing deadwood was seen in the north-western end of the site, if possible (within H&S constraints) this should remain and enhanced as in the text below as it may be more attractive to bats, birds and invertebrates.

A thorough scoping of the trees were undertaken and no use by bats or nesting birds was found, primarily due to the lack of age of the trees and therefore lack of size and exploitable features.

On the 25th November 2020, I&G Ecological Consulting Ltd undertook a daytime bat scoping survey of the trees. The weather conditions present at the site were conducive to bat activity and no characteristic chittering (from bats using trees) could be heard and no stains or potential were identified.

This report confirms the findings of these surveys, completed in accordance with current best practice (Collins, J. (Ed.) 2016) and conducted by experienced, licensed ecologists and experienced assistants. Access was available to all parts of the site.

The site is not surrounded by optimal bat habitat and is not adjacent to, or within 2km of, any sites which are designated for their bat interest. There are however bats utilising the main building on site and other sites nearby.

As part of the scoping survey undertaken by I&G Ecological Consulting Ltd, no bats or their signs were found at the site. All trees surveyed had no suitable features present. There are other trees in close proximity to this site that may offer roosting potential should a bat be seeking a place of shelter and protection.

There are therefore currently no bats using the trees, they receive no ecological protection under wildlife legislation and there are no ecological constraints to the proposed works.

We recommend that as part of the development plans for the site, bat measures (see page 7) are included to compensate for the potential loss of roosting opportunity and to provide site enhancement.

3 Kent style bat boxes will be erected within trees to the south of the site once works are complete. One open fronted and one “standard / holed” bird box are also to be erected along the western boundary. Supplementary planting has also been recommended to increase the ecological functionality and resilience of the site.

Due to the lack of bat interest and the low risk of encountering any bats, the development should proceed as planned, but with due care and vigilance.

There were no signs of owl activity.

An EPS licence will not be necessary for this development to proceed.

Care during felling

1. Work to stop immediately if in the unlikely event that bats are encountered during any works and I&G to be called for advice and guidance.

A note on Bat Surveys

Bats are the only mammal capable of true flight and are notoriously difficult to survey for as they cannot be heard unaided and they are difficult to see due to their nocturnal behaviour. They are also small and can live in the smallest of crevices so may often, as a result of their size, be overlooked.

Bats may also change their resting and feeding places regularly throughout the year depending on the time of year and weather conditions, so other signs of use are also looked for such as their droppings or signs of feeding.

Any sign of use is enough to confirm that the space has “bat interest” and is enough to confirm the importance of the location to bat species. All species as well as their resting places are protected by law and the site is protected even when bats are not present.

They are also longer lived than other mammals of a similar size e.g. Horseshoe bats are known to live for 30-40 years and the other species of bats 15–20 years.

A single bat colony may have several roost sites which it uses throughout the year.

Surveyors

Glyn has over a decades experience in survey skills and has also assisted/worked with many other licensed bat surveyors as well as local bat groups over the past years. He possesses both a Bachelor’s degree (with honours) and Master’s degree in the biological sciences and is a member of the Royal Society of Biology. He also holds a bat licence in England. Natural Resources Wales Licence number S088445/1. Glyn has also worked for EAW, CCW and NRW for the past decade so has a deep understanding of working with and for regulatory and conservation bodies.

Introduction

This report has been produced by I&G Ecological Consulting on behalf of Recycling Plant and Machinery Ltd, who seek planning permission to create a commercial Truck stop and rest area on an area of land measuring 1.42 hectares in the village of Margam. The land is currently periodically mown and subject to less management than it was when the house was inhabited.

Equipment Used and Method of Survey

This report confirms the findings of those surveys, completed in accordance with current best practice (Collins, J. (Ed.) 2016) and conducted by an experienced, licensed ecologist. Access was available to all parts of the site.

The tree scoping survey was undertaken on the 25th November 2020 at 13:00hrs. The survey consisted of a visual inspection of the trees for:

- Staining around holes, caused by natural oils in the bats fur.
- Stains beneath a hole, caused by bat urine.
- Scratch marks around a hole, caused by bat claws.
- Bat droppings beneath a hole.
- Audible squeaking from within a hole, especially on hot days or at dusk.
- Insects (especially flies) around a hole.
- Evidence of bat use, including droppings, feeding remains, staining and scratching around possible roost exit and entry points.
- Potential bat features such as holes, splits and flaking bark.
- General condition of the trees.

The potential of the trees for bats were classified into one of the following categories:

- High Roosting Potential – Trees with significant potential containing a large number of suitable features or features present appear optimal;
- Medium Roosting Potential – Trees with roosting features appearing less suitable;
- Low or No Roosting Potential – Trees with few if any features suitable for roosting.

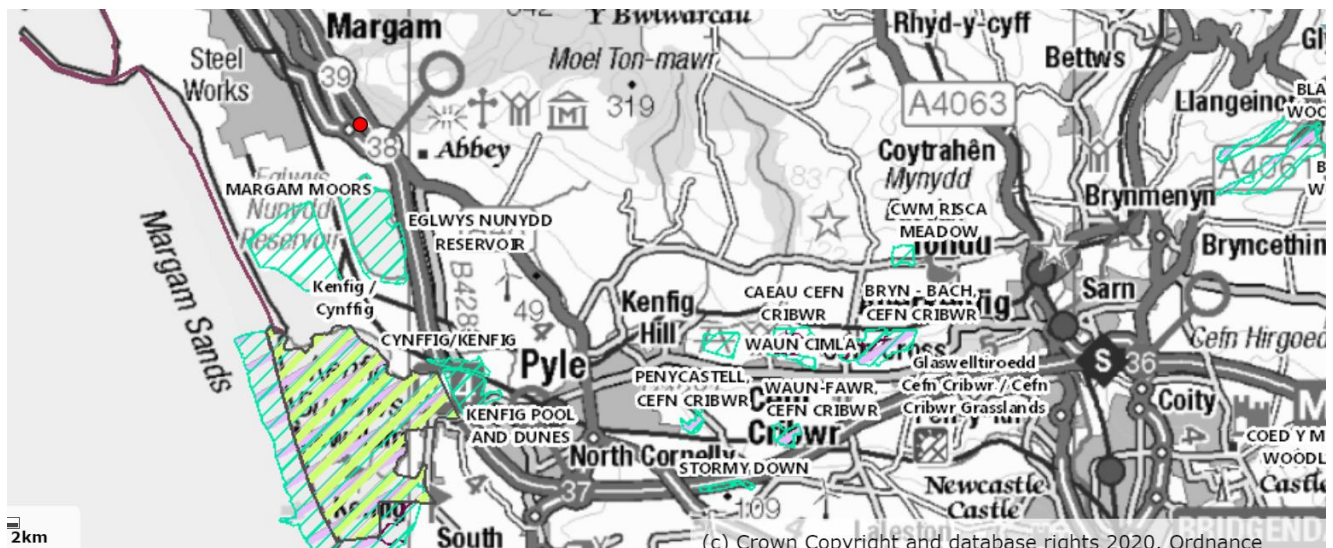
Endoscopes, high powered torches, a high resolution thermal imaging camera and a close-focussing monoculars were used when necessary to aid the surveyor's assessment.

Location of Property and Description (Characteristics)

Grid Reference: SS 79287 86416

The site is located in the village of Margam 11km to the south of Neath and only 1.2km away from the Steel Works to the west. The immediate surrounding areas consist of industrial parks, pastoral fields and small woodlands, not the most optimal bat-scape but there is fair connectivity between sheltered feeding sites. The connectivity extends right up to the area being surveyed.

Figure 1: Aerial view of the proposed development site at Ty'n Y Caeau, Margam (from Apple Maps). The site has been regularly mown and maintained for some years.



The map above shows the site (red spot), the nearest SSSI is Eglwys Nunydd Reservoir 1km to the south and Kenfig beyond this (neither of which were cited for bats). (from Magic Maps).

Results

- The site visit (Scoping Survey) was used to identify all potential access and egress points for bats on the trees and identify crevices and possible dwelling places. No signs of bat activity were found.
- A pre-survey search revealed that the trees sit in an area favourable for foraging and commuting bats. With some connectivity to small areas of broadleaf woodland to the south and along the unmanaged hedgerow to the west to a larger woodland.
- All trees selected for felling had none of the features commonly used by bats for roosting purposes. The trees along the north eastern boundary with the A48 – either side of the present access point were young, thin and quite healthy.
- There were two decorative Acer species, one on either side of the entrance gateway which will probably also need felling to facilitate site access, these were also young, healthy and devoid of “bat features” or PRF’s (Potential Roost Features).
- The plot is not within or adjacent to any designated sites for their bat interest.
- From the data provided by WWBIC for our report of this site: 44 entries for Bats exist: (*Pipistrelle* species, *Myotis* species, Lesser and Greater Horseshoe, Brown long-eared, Natterer’s, Brandt’s, Whiskered) closest record being 77m from the site *Pipistrellus pipistrellus*. Other animal species seen on site during the survey include blue tits x 1 (*Cyanistes caeruleus*) . Robin x1 (*Erithacus rubecula*) and tree sparrow x 2 (*Passer montanus*).
- Margam Country Park and The Castle is only 0.5km away and is also known to have Rhinolophid interest within its cellars and 10 other species using the verdant site.

Discussion

During our survey we found no evidence of bats or bat activity associated with any of the trees along the site boundaries. Ash trees were examined closely and any trees that may need to be felled to facilitate safe site access. It’s likely that the Ash tree adjacent to the proposed “bat house” will need to be felled as it has significant areas of dieback and is not in good health. This will need to be sectionally felled.

All trees that are the “main” subject of this report had no features of interest to bats, where crevices, rot holes or dense epiphytic growth were found, these were explored and thermally scanned for life signs. The scrubby, young trees at the site entrance to the north-east had no bat potential but passerine birds were utilising all boundaries for perching and foraging. One standing dead wood was noted that would be ideal to retain for bird and bat use, this can be seen in the appendix section. The trees at the entrance of the site were surveyed 5-6 metres to the north and south of the present entrance both thermally and in within the visible spectrum.

In preparing this report I&G have applied the principle of ‘proportionality’ i.e. that the extent of mitigation and compensation/enhancement is proportionate to the predicted degree of risk to ecology (BS42020) and have also applied a precautionary approach.

Limitations of Survey

All potential for bats was thoroughly investigated and any typical bat signs such as droppings and staining were searched for, the trees were fully accessible.

As a precaution we recommend that if there's a period of 18 months - 2 years or more between when the survey was completed and when the work commences that a further survey or scoping survey should be undertaken to ensure that the situation regarding bats has not changed since the time of the last survey.

Recommendations and Mitigation

Work is to stop immediately if in the unlikely event that bats are encountered during any felling work and I&G to be called for advice and guidance.

2x Kent Style bat boxes will be erected in trees to the north of the site and 2 to the south. 1 open fronted bird box and one standard ("holed") bird box to be erected to the western boundary. There are already recommendations for a dedicated bat house as well as affixing a Beaumaris crevice box internally. The rear window will be boarded up and the doors closed. The rear building has signs that somebody has been rough sleeping there. Further thermal surveys and a scoping survey has been undertaken of this building with zero bat signs found. This is possibly due to the fact that it is bright internally, especially when the doors are open and as there are some fresh signs of rough sleeping.

Where total felling can be avoided it should be and if trees can undergo crown lifting and crown / limb reduction, this is the ideal. The young, thin trees at the entrance offer no roosting opportunity for bats and can be felled safely.

Where hedging for site boundaries is needed to be augmented for screening and nature, please follow the species recommendations below.

Ecosystem Resilience and compensation

Ecosystem resilience at the site, along with biodiversity enhancement will be achieved by replacing any felled ash with large (5 year old plus) saplings of native species and where possible, they should also be locally sourced. Species that provide food for overwintering birds and mammals should be considered, such as Mountain Ash [Rowan] (*Sorbus aucuparia*), Oak (*Quercus robur*), Hawthorn (*Crataegus monogyna*) as well as Elder (*Sambucus nigra*). This planting as well as installing bat and bird boxes as outlined above will provide excellent site enhancement and afford greater ecosystem resilience.

Notes

Bats could be present all year round, especially if making casual use of the site. If bats are encountered I&G should be consulted and advice sought. Natural Resources Wales (Tel. 0300 065 3000) will also be able to help.

Method Statement

Below, we outline a description of how work may be undertaken on site that will ensure bats are not harmed during any building works.

1. **If in the unlikely event that any bats are discovered during any works** then the licensed ecologist must be informed and **all work stopped until a licensed bat ecologist is on site and the bats no longer at risk of harm**. Natural Resources Wales can also be approached for advice.

Any works may be undertaken following the points below:

Timing - All work should be undertaken outside the bird breeding season (mid-march to August), any nests found should be confirmed vacant before any works are undertaken.

The Felling Work – All felling work can be carried out at any time but with due care (no nests were seen during survey and any subsequently found will be confirmed absent before works). I & G recommend sectional felling of the trees and lowering the branches to the ground. All the cut sections should be left on site for at least 24 hours to allow any bats that may be using the trees to find other roosting sites. Sectional felling of any standing deadwood is to be undertaken too.

Conclusion

There is presently no bat interest in the trees. If the recommendations are followed and bat boxes are erected on site, a dedicated bat house created along with thoughtful planting and the creation of a pond and other enhancements the surrounding area will likely become more attractive to bats seeking protection and shelter. These measures will also greatly enhance the ecological functionality of the site.

Current lighting plans for the site are not known but should any be proposed they must ensure that exterior lighting is kept to a minimum, avoiding facing any tree/hedge boundary and bat house to prevent any adverse impacts on bats. In particular, external lighting around the recommended enhancements must be carefully designed to avoid any impact upon bats.

Where external lighting is necessary, this should utilise a number of key design points to limit any impact, as follows:

- Low level lighting pointed towards the ground; LED bulbs to be used of 2700 Kelvin and below (Warm White light and not daylight);
- Use of light shields and hoods to direct the light downwards and prevent vertical and horizontal light spill; and
- Use of passive infrared (PIR) motion sensors on timers to ensure lights only come on when necessary.

Appendix 1: An introduction to bat surveys

A note on bat surveys

- ✧ All bats and their roosts, irrespective of the number of bats, species, and whether bats are present or not, are fully protected by the Conservation of Habitats and Species Regulations 2017 and the Wildlife and Countryside Act 1981 (as amended). Bats are the only mammal capable of true flight. They are notoriously difficult to survey for as they cannot be heard unaided and are difficult to see due to their nocturnal behaviour. They are also small and can live in the smallest of crevices, so may often be overlooked because of their size.
- ✧ Wales has relatively high numbers of most of the species that occur in Britain; the rural landscape with its abundance of wooded areas, river valleys and hedgerows means that buildings are commonly used as roosting sites by bats. This is particularly the case for older buildings (typically with stone walls and clay tile roofs) that are located close to good feeding areas, on the edge of settlements, or that are rarely disturbed.
- ✧ Bats may also change their resting and feeding places regularly throughout the year, depending on the time of year and weather conditions. Thus, other signs of use are also looked for such as their droppings or signs of feeding.
- ✧ To gain an understanding as to how bats are using a building, a survey may also involve dusk and/or dawn observations which may need to be repeated at different times throughout the year.
- ✧ The search buffers implemented as part of the survey are considered to more than adequately cover the predicted zone of influence of the proposed development. The reasons for the site designations have also been considered when discussing potential impacts on the biodiversity of these sites. If the sites are designated for their bat or bird interest, this will be mentioned.
- ✧ Survey methodologies are implemented as appropriate, based on the surveyors' assessment of the site features and with particular reference to the advice in Bat Surveys for Professional Ecologists: Good practice guidelines, 3rd edition (Collins, J. (Ed.), 2016) & The Bat Workers' Manual, 3rd edition. (Mitchell-Jones, A.J., & McLeish, A.P. (Ed.), 2004). Reports are written with reference to the CIEEM (2015) Guidelines as well as BS42020.
- ✧ A PRA visit (scoping survey) is used to identify all potential access and egress points for bats in the building, and to identify crevices and possible dwelling places. Internal and external inspections are aided using powerful binoculars and close-focussing monoculars, as well as ladders, high powered Cree flashlights and head-torches. We also have thermal imaging cameras and night vision devices at our disposal as well as full spectrum photographic cameras which can photograph a bat in complete darkness with an infrared flash. Exploitable crevices are also endoscoped with either a hand-held digital scope or a smart phone compatible scope. Digital thermometers and hygrometers are also at our disposal.
- ✧ The survey consists of a visual inspection of the interior and exterior of the building for evidence of bat use, including droppings, smells, feeding remains, staining, and scratching around roost exit and entry points. Potential features conducive (but not necessarily predictive) to bat presence include voids in the stonework, wooden beams, any associated rot holes, gaps behind soffits or within walls and fascia boards, raised tiles, any raised render, and any sufficiently large crevices. The general condition of the building is examined, including the structure of the roof, condition of walls, the potential for disturbance, and the position of the building in relation to connectivity to good bat habitat.

- ✧ If positive bat signs are discovered, or the construction style suggests cryptic bats *may* be present, an Anabat SDII or Anabat Express is deployed within the space of the building surveyed. These commonly record all bats from within and to the exterior of a building as they have extremely sensitive microphones so clusters of calls or high frequency of calls over short periods that are repeated (not just a vocal (Chatty) bat passing the microphone once on a foraging /socialising expedition) may indicate a presence within the building. Supporting evidence is then needed to make a decision, such as bats seen during surveys, droppings and feeding signs as well as building suitability for a given species
- ✧ The outcomes have been used to specify whether further surveys are required, or to establish the need for, and extent of, any mitigation or compensation measures required as part of the proposed works.
- ✧ If positive signs of bat activity are found then it will be necessary to assess whether a licence is needed at all (damage and disturbance to the roost and harm to bats can be avoided through thoughtful and planned working practices), or whether a licence is recommended as damage, disturbance or harm are unlikely to be avoided.

Appendix 2: Overview of the legislation

- ✧ All bats and their roosts, irrespective of the number of bats, species, and whether bats are present or not, are fully protected by the Conservation of Habitats and Species Regulations 2017 and the Wildlife and Countryside Act 1981 (as amended).
- ✧ There is a risk that works could result in the damage or destruction of a bat roost or roosts, the disturbance of bats, and the potential killing or injury of bats, sufficient survey effort (where indicated) helps to minimise this risk.
- ✧ All wild birds, their nests, eggs and dependent young are afforded protection under the Wildlife and Countryside Act 1981 (as amended), with the bird nesting season generally from 1st March until 31st August.

Technical Advice Note (TAN) 5 (Welsh Government, 2009) specifically provides advice about how the land use planning system should contribute to protecting and enhancing biodiversity and geological conservation. The TAN provides advice for local planning authorities on the key principles of positive planning for nature conservation; nature conservation and Local Development Plans; nature conservation in development management procedures; development affecting protected internationally and nationally designated sites and habitats; and development affecting protected and priority habitats and species.

Under Section 2.4 within the TAN 5, 'when deciding planning applications that may affect nature conservation local planning authorities should':

- ✧ Pay particular attention to the principles of sustainable development, including respect for environmental limits, applying the precautionary principle, using scientific knowledge to aid decision making and taking account of the full range of costs and benefits in a long- term perspective;
- ✧ Contribute to the protection and improvement of the environment, so as to improve the quality of life and protect local and global ecosystems, seeking to avoid irreversible harmful effects on the natural environment;
- ✧ Promote the conservation and enhancement of statutorily designated areas and undeveloped coast;
- ✧ Ensure that appropriate weight is attached to designated sites of international, national and local importance;
- ✧ Protect wildlife and natural features in the wider environment, with appropriate weight attached to priority habitats and species in Biodiversity Action Plans;
- ✧ Ensure that all material considerations are taken into account, and decisions are informed by adequate information about the potential effects of development on nature conservation;
- ✧ Ensure that the range and population of protected species is sustained;
- ✧ Adopt a step-wise approach to avoid harm to nature conservation, minimise unavoidable harm by mitigation measures, offset residual harm by compensation measures and look for new opportunities to enhance nature conservation; where there may be significant harmful effects local planning authorities will need to be satisfied that any reasonable alternative sites that would result in less or no harm have been fully considered.
- ✧ Bats are listed under Schedule 5 and 6 of the Wildlife and Countryside Act 1981 and protected under sections 9 and 11 (as amended by the Countryside and Rights of Way (CROW) Act 2000).
- ✧ The Environmental Damage (Prevention & Remediation) Regulations 2009 – A protected species and its habitat are protected under this legislation as well as others.
- ✧ The Conservation of Habitats and Species Regulations 2017 – (regulation 43) fully protects all bats and their roosts, making it **an offence to deliberately kill, injure or capture** (take) bats; to

deliberately *disturb bats*; *damage or destroy bat roosts* or resting places (this is considered an 'Absolute Offence' as damage and destruction may detrimentally effect the Continuous Ecological Functionality of that roost/resting place); possess or transport a bat or any part of a bat; sell (or offer for sale) or exchange bats or parts of bats.

✧ For any offence to occur a derogation or **European Protected Species (EPS) licence** must be gained from Natural Resources Wales. To gain an EPS Licence, they must be satisfied that;

i. granting the licence would not be detrimental to the Favourable Conservation Status (FCS) of the populations of species concerned within its natural range;

ii. the derogation (licence) is in the public interest of Health and Safety or for other reasons of over-riding public interest, including those of a socio-economic nature or will have a benefit of primary importance to the environment; and

iii. there is no satisfactory alternative to the derogation which would allow the described development to proceed but which would avoid or reduce, the need for any adverse impact to the species.

Bats are also protected by;

✧ Appendix III of the Bern Convention.

✧ Appendix II of the Bonn Convention (including the Convention's Agreement on the conservation of Bats in Europe).

✧ Natural Environment and Rural Communities Act 2006 (in England).

✧ The Environment (Wales) Act 2016: specifically, Sections 6 (*places a duty upon Local Authorities to enhance biodiversity and the **resilience of ecosystems***) and 7 (*Creating local biodiversity lists and a duty to take steps to **maintain and enhance biodiversity***). Planning Policy 10th Edition further emphasises these obligations.

✧ All bats are listed in Annex IV of The Conservation of Habitats and Species Regulations 2012 and are therefore designated as *European Protected Species*. These *protected* species are afforded enhanced protection and more stringent licensing provisions than those protected by the Wildlife and Countryside Act (WACA) alone. There are also biodiversity obligations to be met within the Well-being of Future Generations (Wales) Act 2015 [WFG] and the seven Well-being goals which include an emphasis on socio-economic resilience as well as protecting culture, heritage and the Welsh language. One Act does not take precedence over the other.

Appendix 3: Types of bat roost and survey timings

As the mitigation guidelines state: The presence of a significant (important) bat roost... can normally be determined on a single visit at any time of year; providing that the entire structure is accessible and that any signs of bat activity have not been removed by others. The table below shows the applicability of survey methods. The table has been reproduced from Bat Mitigation Guidelines (table 5.2) (2004).

Season	Roost type	Inspection	Bat detectors and emergence counts
Spring (Mar – May)	Building	Suitable (signs, perhaps bats)	Limited, weather dependent
	Trees	Difficult (best for signs before leaves appear)	Very limited, weather dependent
	Underground	Suitable (signs only)	Static detectors may be useful
Summer (June – August)	Building	Suitable (signs and bats)	Suitable
	Trees	Difficult	Limited: use sunrise survey
	Underground	Suitable (signs only)	Rarely useful
Autumn (September – November)	Building	Suitable (signs and bats)	Limited, weather dependent
	Trees	Difficult	Rather limited, weather dependent; use sunrise survey?
	Underground	Suitable (signs, perhaps bats)	Static detectors may be useful
Winter (December – February)	Building	Suitable (signs, perhaps bats)	Rarely useful
	Trees	Difficult (best for signs after leaves have gone)	Rarely useful
	Underground	Suitable (signs and bats)	Static detectors may be useful

The table below shows the recommended survey timings and is reproduced from the Good Practice Guidelines (table 7.1) (3rd Edition, 2016). This is for presence/absence surveys to give confidence in a negative result for structures (also recommended for trees but unlikely to give confidence in a negative result).

Low roost suitability	Moderate roost suitability	High roost suitability
May to August (structures) No further surveys required (trees)	May to September ^a with at least one of the surveys between May and August ^b	May to September ^a with at least two of the surveys between May and August ^b

^a September surveys are both weather and location dependent. Conditions may become more unsuitable in these months, particularly in more northerly latitudes, which may reduce the length of the survey season.

^b Multiple survey visits should be spread out to sample as much of the recommended survey period as possible; it is recommended that surveys are spaced at least two weeks apart, preferably more, unless there are specific ecological reasons for the surveys to be closer together (for example, a more accurate count of a maternity colony is required but it is likely that the colony will soon disperse). If there is potential for a maternity colony then consideration should be given to detectability. A survey on 31 August followed by a mid-September survey is unlikely to pick up a maternity colony. An ecologist should use their professional judgement to design the most appropriate survey regime.

The table below shows the recommended minimum number of surveys to be carried out according to roost potential. It is reproduced from the Good Practice Guidelines (table 7.3) (3rd Edition, 2016).

Low roost suitability	Moderate roost suitability	High roost suitability
One survey visit. One dusk emergence or dawn re-entry ^a (structures). No further surveys required (trees)	Two separate survey visits. One dusk emergence and a separate dawn re-entry survey ^b	Three separate survey visits. At least one dusk emergence and a separate dawn re-entry survey. The third visit could be either dusk or dawn ^b

^aStructures that have been categorised as low potential can be problematic and the number of surveys required should be judged on a case-by-case basis (as noted in section 5.2.9 of the guidelines). If there is a possibility that quiet calling, late-emerging species are present then a dawn survey may be more appropriate, providing weather conditions are suitable. In some cases, more than one survey may be needed, particularly where there are several buildings in this category.

^b Multiple survey visits should be spread out to sample as much of the recommended survey period (see table 7.1 above) as possible; it is recommended that surveys are spaced at least two weeks apart, preferably more. A dawn survey immediately after a dusk one is considered only one visit.

Roosts required by bats

Hibernation sites (hibernacula). Sheltered areas with relatively stable winter temperatures.

Underground cavities, caves, mines, cellars, hollow trees and cavities and crevices in buildings or similar structures are examples.

Nursery roosts (maternity roosts). Places usually warm, where adult females of a colony gather to give birth and rear their young. These are often traditional sites with a history of such use and include roof voids, walls, soffit boxes, hollows and cracks/splits in trees and cavities in bridges and similar structures.

Night roosts/feeding perches. Places where bats may gather at night away from the day roost after initial feeding. These places are often quite exposed and may not be suitable for day roosting. They are often recognisable by deposits of droppings and insect remains.

Intermediate/dispersal roosts. Sites where small numbers of bats may gather after hibernation before taking up residence in the nursery roost. Bats may return to these sites after dispersal from the nursery roost and before entering hibernation.

Mating/male roosts. Places that an individual male may defend from other males and to which he will attempt to lure females. These will include small holes/cavities in trees, stonework, caves, mines and buildings.

Access, size of roost space and structure

- *Crevise-dwelling bats* (such as Soprano pipistrelles) can crawl into roosts via small gaps in the range of 15–20mm high by 20–50mm wide. The roost area should maintain a crevice of this approximate size gap that the bats can roost between. The area this roost provision covers can be small but about 1m² would be useful for summer nursery roosts. The height of entry can be from 2–7m.
- *Roof-void dwelling bats* require similar dimensions to access the roost but typically need timber joists or beams on which to roost. The height of entry can be from 2–7m.
- *Bats needing a flying area* require the same access dimension as mentioned above, 15– 20mm (h) x 20–50mm (w) situated over 2m in height. The roosting area should not be trussed, to allow flight, and should ideally (wherever possible) be of similar dimensions to the roost being replaced.
- *Horseshoe bats* need a larger access so that they can fly (instead of crawl) directly into the roost. Lesser horseshoe bats need an access of 300mm (w) x 200mm (h), while greater horseshoe bats need 400mm (w) x 300mm (h). As above, the roosting area should not be trussed, to allow flight, and should again (where possible) be of similar dimensions to the roost being replaced.

Appendix 4: List of surveyors

Surveyor	Licence	Experience/background
Mr Glyn Lloyd-Jones	Bats	Glyn has significant experience in survey and presentation skills and has also assisted/worked with many other licensed bat surveyors as well as local bat groups over the past years. He possesses both a Bachelor's degree (with honours) and Master's degree in the biological sciences and is a member of the Royal Society of Biology. He also holds a bat licence in England. He has also undertaken many badger, tree and herpetofaunal surveys. Natural Resources Wales Licence number S085044/1.
Mr Iestyn Evans	Bats	Iestyn has extensive experience in conservation, habitat improvement and management and has also worked with and assisted other licensed bat workers for many years. He has also helped with local bat group surveys and assisted in data gathering for the Beacon for Bats project undertaken by the Vincent Wildlife Trust. Iestyn has also assisted the Glamorgan Bat Group and will also help supervise and mentor members of the newly incarnated Carmarthenshire Bat Group. Natural Resources Wales Licence number S086081/1.
Miss Ceri Daugherty	Bats	Ceri worked at Team Leader level within the SNCO for Wales for many years, dealing with customers and negotiating with landowners. She also has practical conservation management experience as both a Countryside Ranger and a conservation volunteer. She possesses a Master's degree in Environmental Impact Assessment and a Bachelor's degree (with honours) in the natural sciences. She is a member of the Carmarthenshire Bat Group. Natural Resources Wales Licence number S086102/1.
Mr Pete Watts	Trainee	Peter provides survey support with his keen eye for detail and vigilance. He has accompanied I&G Ecological Consulting Ltd on many surveys and is becoming a valuable and experienced surveyor.
Mr Greg Evans	Trainee	Greg attends dusk and dawn surveys to provide extra monitoring for possible entry and exit points for bats. He is currently building his experience in this area and is a keen amateur natural historian with an enthusiasm and affinity for bats.
Mr Mike Jones	Assistant	Whenever we need extra assistance in observing and recording bat activity on buildings, Mike provides an excellent and reliable service
Ms Jody Evans	Assistant	Whenever we need extra assistance in observing and recording bat activity on buildings, Jody provides an excellent and reliable service.
Ms Sharon Doherty	Assistant	Whenever we need extra assistance in observing and recording bat activity on buildings, Sharon provides an excellent and reliable service.
Ms Wendy Larcombe	Assistant	Wendy has an Honours degree in Environmental Biology and over 17 years' experience working in the field of conservation, including as a Planning Ecologist and as a freelance Ecologist. She has a wide range of experience, both paid and voluntary which includes extended Phase 1 habitat surveys, building assessment for bats, bat/barn owl surveys, summer roost counts (Gower), and winter roost counts (Black Mountains). She has undertaken a range of training including bat ecology and surveying and is a valued member of the team.

Appendix 5: Site plan



The plan above shows the proposed site layout as well as the trees surveyed for bats the two Ash trees (circled in Green – adjacent to the proposed bat house) had varying degrees of ash dieback disease (*Hymenoscyphus fraxineus*) present. The trees circled in red at the site entrance were young, healthy and presented with negligible bat potential. The orange circle indicates the approximate location of the standing deadwood which is to be retained if possible. This deadwood could also be further enhanced by attaching 1x Vincent pro and 1x kent bat box (facing in different directions).

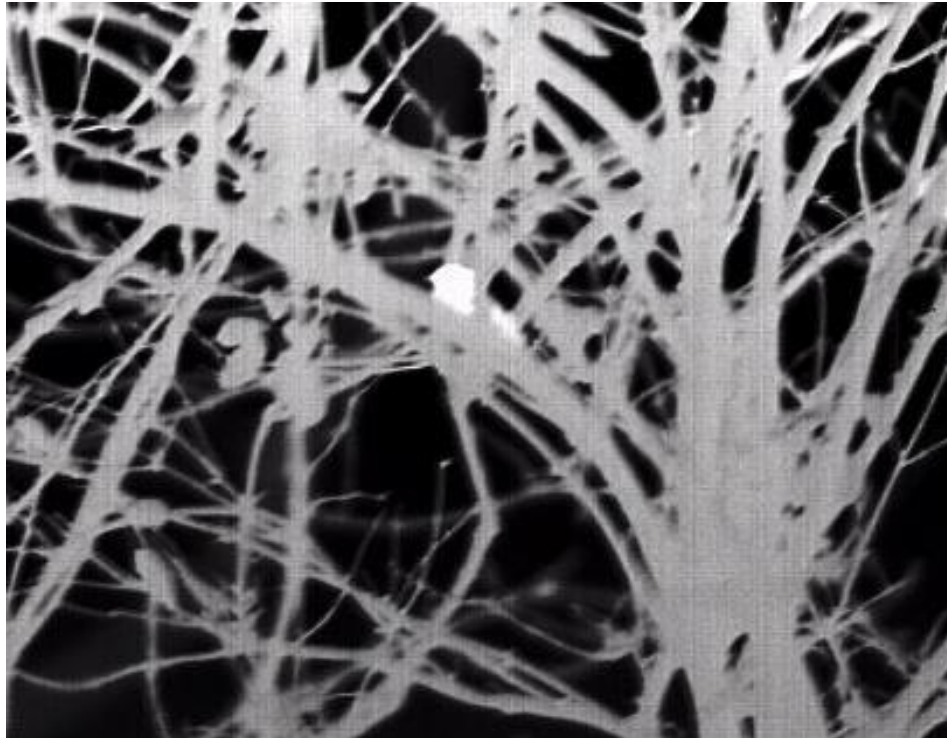
Appendix 6: Site survey images



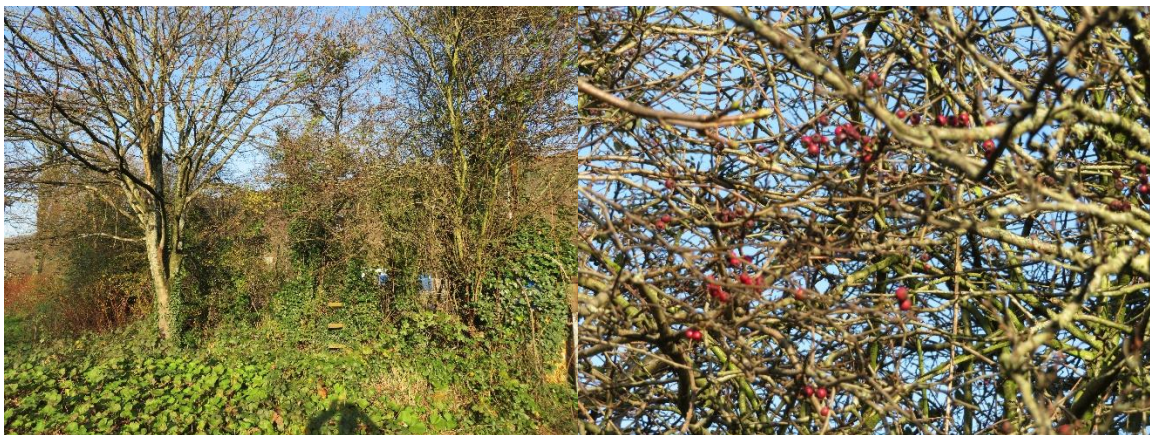
The image above shows the line of trees either side of the main entrance, they're thin young and present negligible bat potential.



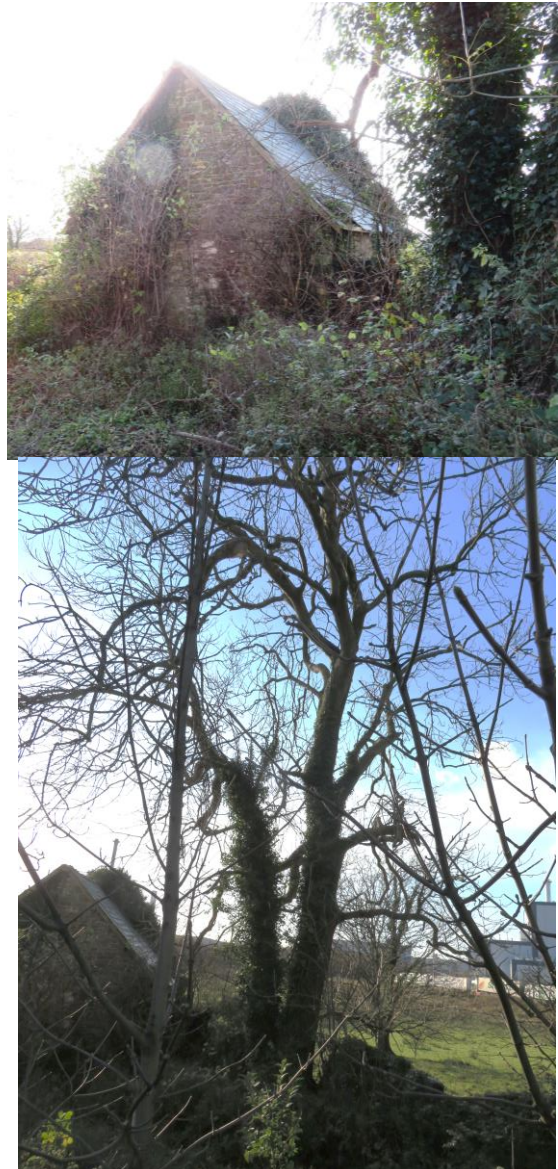
The Acer sp. Trees at the north and south of the present site entrance. Neither had bat potential and both were healthy. The denser epiphytic growth of ivy on the southern Acer was thin and offered no shelter.



Thermal image of one of the Robins seen using the line of trees near the entrance.



The boundary trees to the northeast (north of the entrance gate) showing hawthorn (*Crataegus Monogyna*) and blackthorn (*Prunus spinosa*). The hedgeline is thin and patchy.



Images of the mainly young Ash trees, all showing varying degrees of decay – due to Ash Dieback. The bark was mainly smooth and no branch scars nor rot holes were present. Where epiphytic growth of ivy was present, it was thin and would offer little in the way of shelter and refuge.



A thermal scan of the tree revealed a perching passerine bird.



Images of the standing deadwood which should be retained if possible as this may prove attractive to bats, birds and invertebrate prey. You can see the unofficial truck park beyond.

Appendix 7: Roost compensation & enhancement measures

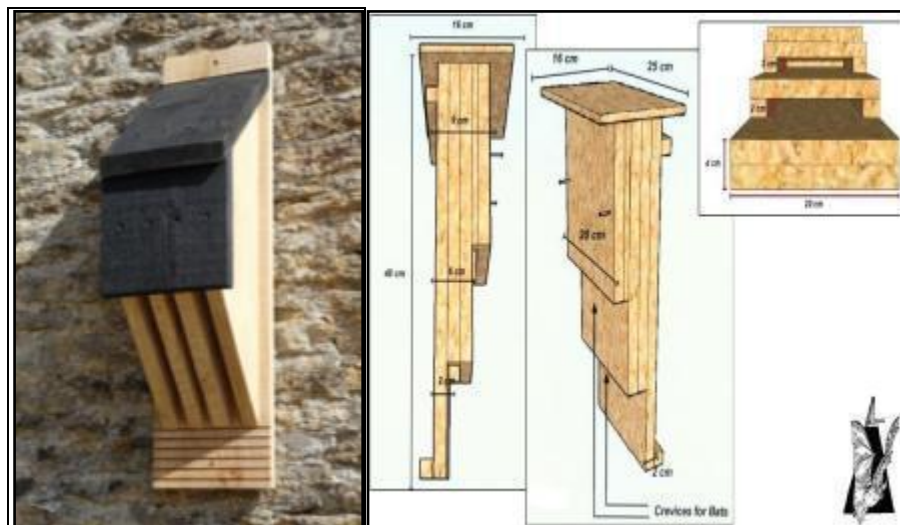


Top: From left to right, the in-wall Schwegler 1FR, the tree mounted 1FF and the multi season 1WQ. The bottom image shows the 1FR in situ.



Middle: The Beaumaris bat box is made entirely from Woodstone, a robust material comprising concrete and wood fibres. This means that, not only does the box have excellent insulating properties maintaining a more consistent temperature throughout the year, it also provides excellent protection from predators. The Beaumaris box has a single narrow cavity which makes it suitable for crevice roosting bats. The interior of the box has a rough surface for bats to cling to and the front of the box features a subtle but attractive imprint of a bat in flight. It is suitable for attaching to external walls and available in two sizes: Midi and Maxi.

Bottom: The Vincent Pro bat box (left) and the Kent Bat Box (right)



Appendix 8: Birds and the Law

Apart from a few game and 'pest' species, almost all birds are afforded some level of statutory protection under the WACA (1981). The vast majority of British birds and their nests are protected from reckless harm or damage, killing or injury. This protection is also extended to their eggs and young. The **Barn Owl** and other rare species are afforded extra enhanced protection against disturbance whilst nesting as they are designated a *Schedule 1 species* in the WACA. This protection is extended to the animal and their nest only while the nest is in use, the site itself is not protected per se once nesting behaviour has ceased and is no longer occupied by eggs or young. Best practice indicates that sites that are important for rarer species (e.g. Barn Owl) should be retained in a favourable condition for that species or provision of a suitable alternative be made (e.g. Owl Box etc) as the species and nesting site may be detrimentally affected by the proposed development.

The Barn Owl is a species for special consideration where any old agricultural building is concerned as it is considered a nationally declining species, a 'Red Data Bird' and is also cited on the 'Amber List' of Birds of Conservation Concern both within Wales and the wider UK. This species as well as another two out of the five known species of owl normally resident in the British Isles regularly use buildings / barns as nesting sites.

Appendix 9: Potential Roost Features in trees.

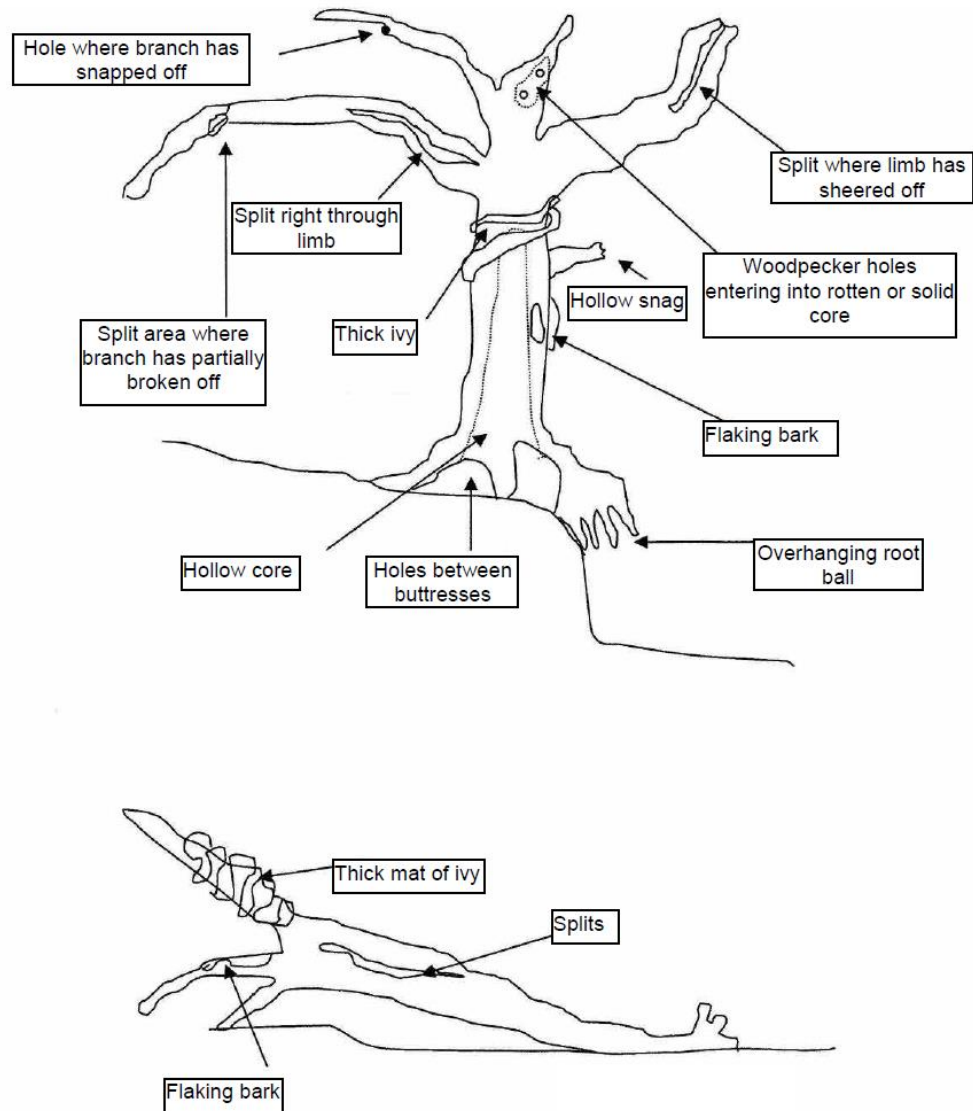
Tree classification for bat potential

HIGH POTENTIAL	MEDIUM POTENTIAL	LOW POTENTIAL
WOODPECKER HOLES	FEW SMALL CRACKS OR CREVICES	NO CRACKS/CREVICES
CRACKS/CREVICES	LOW IVY COVER	NO FLAKING BARK
LOOSE OR FLAKING BARK	DEADWOOD IN CANOPY OR STEM	LOW/NO IVY COVER
MEDIUM – DENSE IVY COVER		
DEADWOOD IN CANOPY OR STEM		
SNAGGED BRANCHES		
HOLLOW STEM OR LIMB		
HOLE B/T BUTTRESSES/HOLLOW CORE		

Showing survey considerations when examining trees.

Tree category and description	Stage 1 Initial survey requirements	Stage 2 Further measures to inform proposed mitigation	Stage 3 Likely mitigation
Known or confirmed roost	Follow SNCO guidance and these guidelines wherever possible, to establish the extent to which bats use the site. This is particularly important for roosts of high risk species and/or roosts of district or higher importance and above		The tree can be felled only under EPS licence following the installation of equivalent habitats as a replacement.
Category 1* Trees with multiple, highly suitable features capable of supporting larger roosts	Tree identified on a map and on the ground. Further assessment to provide a best expert judgement on the likely use of the roost, numbers and species of bat, by analysis of droppings or other field evidence. <i>A consultant ecologist is required</i>	Avoid disturbance to trees, where possible. Further dusk and pre-dawn survey to establish more accurately the presence, species, numbers of bats present and the type of roost, and to inform the requirements for mitigation if felling is required.	Felling would be undertaken taking reasonable avoidance measures' such as 'soft felling' to minimise the risk of harm to individual bats.
Category 1 Trees with definite bat potential, supporting fewer suitable features that category 1* trees or with potential for use by single bats	Tree identified on a map and on the ground. Further assessed to provide a best expert judgement on the potential use of suitable cavities, based on the habitat preferences of bats. <i>A consultant ecologist required</i>	Avoid disturbance to trees, where possible. More detailed, off the ground visual assessment. Further dusk and pre-dawn survey to establish the presence of bats, and if present, the species and numbers of bats and type of roost, to inform the requirements for mitigation if felling is required.	Trees with confirmed roosts following further survey are upgraded to Category 1* and felled under licence as above. Trees with no confirmed roosts may be downgraded to Category 2 dependent on survey findings
Category 2 Trees with no obvious potential, although the tree is of a size and age that elevated surveys may result in cracks or crevices being found; or the tree supports some features which may have limited potential to support bats.	None. <i>A consultant ecologist is unlikely to be required</i>	Avoid disturbance to trees, where possible. No further surveys.	Trees may be felled taking reasonable avoidance measures. Stop works and seek advice in the event bats are found, in order to comply with relevant legislation.
Category 3 Trees with no potential to support bats	None. <i>A consultant ecologist is not required unless new evidence is found</i>	None.	No mitigation for bats required.

Showing categorisation of trees according to their features (Good Practice Guidelines) 2012.



Billington (2003)

Showing the many features exploited by bats

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Advice in this report is based on the judgement of I&G Ecological Consulting and the interpretation of data gathered during the course of their survey on the property named in this document.

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