T1

C01

Mitigation measures:

- Prior to the start of works, a toolbox talk will be given to everyone involved in the project and a log of this will be kept.
- Timings of works will be dependent on the specific work being undertaken;full details will be provided in the bat licence application, however, in general, work in the adit and general repointing works to avoid winter months (November – February), when bats may be in hibernation, it is likely that an ecologist must inspect the hole with an endoscope prior to it being filled in, or a survey undertaken immediately prior to the planned works.
- There is potential for birds to be nesting on or within the Machine Shop and also within holes and crevices within the stone work across the site. If works were to be conducted within bird nesting season (from March to September inclusive) then a thorough search for any nesting birds should take place immediately prior to the commencement of works. If any active nest is recorded then all works to that section would have to cease until the chicks have fledged. It is an offence to intentionally take, damage or destroy the nest of any wild bird whilst it is in use or being built with unlimited fines and/or imprisonment.
- It is recommended that the swift boxes on the northern wall of the PatternShop are taken down before nesting season, which is March to September (inclusive) and put back up once the works are complete.

Enhancements:

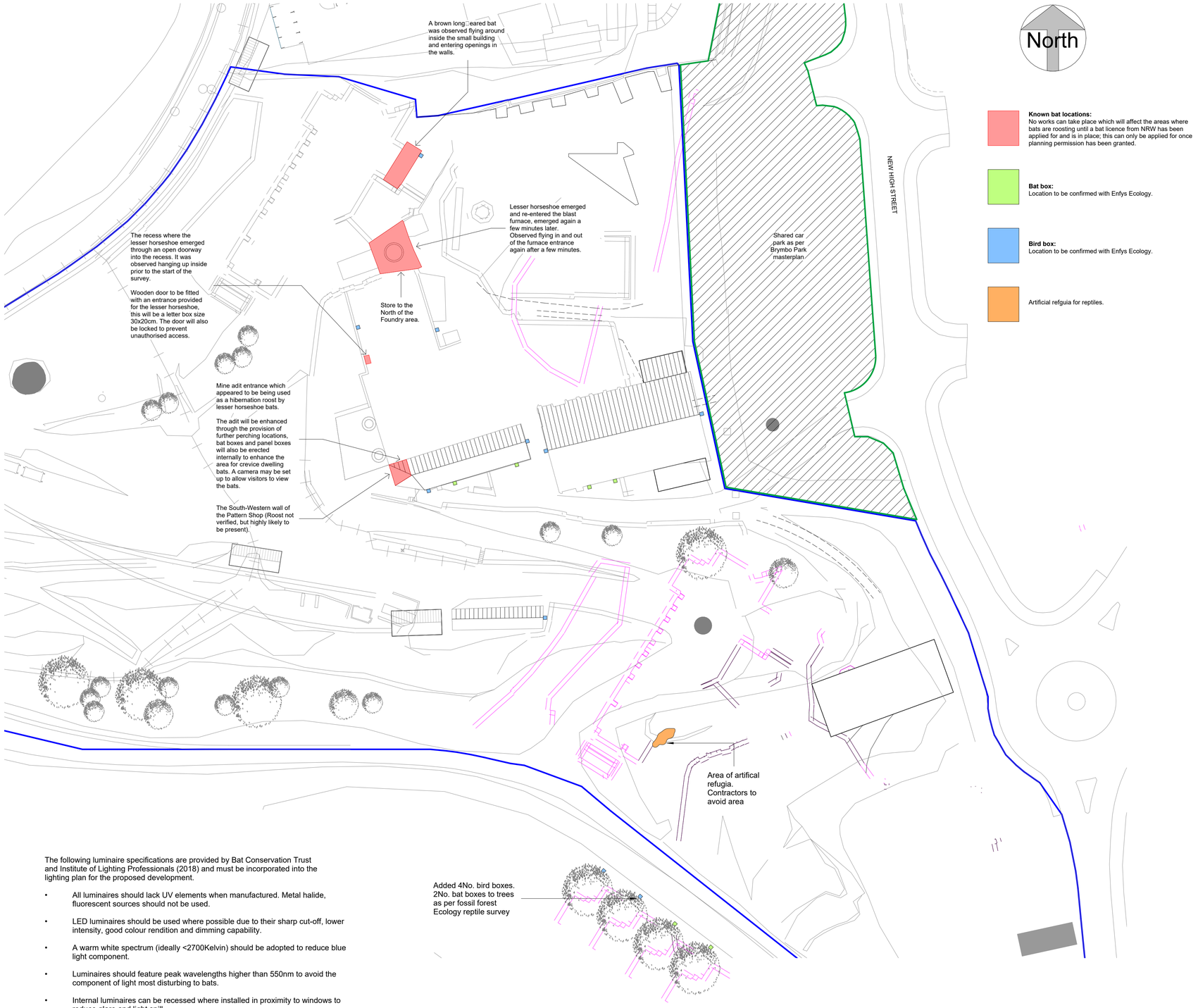
- Some crevices in the stonework should be retained, or created where possible, for crevice dwelling bats. Crevices will only be left where the natural crevice continues to a minimum depth of 10cm. The crevices should be 18-25mm x 50mm in size and this can be created by inserting a piece of timber of this size into the gap, tilting downwards for drainage. After pointing, the timber can then be removed creating roosting points.
- Suitable crevices left unsealed can also provide potential for nesting house sparrows, and bird boxes can be erected in the area to provide extra nesting opportunities.
- The recess where the lesser horseshoe was observed using as a day roost will be retained for bats and enhanced, interpretation will be provided with regards to bats. A wooden door will be fitted with an entrance provided for lesser horseshoe, this will be a letter box size, 30 x 20cm, this door will be locked to prevent unauthorised access. The adit will also be enhanced through the provision of further perching locations, bat boxes and panel boxes will also be erected internally to enhance the area for crevice dwelling bats. A camera may be set up to allow visitors to view the bats.
- The adit will also be retained for use by bats, as described above a grille will be fitted to ensure the site is secure and no disturbance.
- Four bat boxes will be erected, two on the southern wall of the Machine Shop and two on the southern wall of the Pattern Shop– these boxes can be inbuilt or external woodcrete style boxes.
- A hedge and feature trees are to be planted along the eastern boundary of the site and additional trees planted next to the entrance. This will enhance the site for foraging and commuting bats by creating a connection between the woodland areas to the south and north of the site. No lighting should be focused on this feature as it will deter bats from using it.
- To mitigate for the loss of swallow nesting sites within the Machine Shop and to enhance the site for swallow, swallow nest cups will be put up around the site within appropriate areas. Swallows prefer to nest in covered structures and so to provide nesting opportunities, swallow nest cups should be installed within structures such as the cupola furnaces, or within any of the bricked-up spaces by leaving a gap at least the size of a house brick to allow access. The location of the nest cups must be agreed with an ecologist.
- Bird nest boxes should also be erected– as the project is a community project with volunteers bird boxes could be made as part of the site activities, and erected around the site. A minimum of ten boxes should be made, a mix of open fronted, 28mm hole and 35mm hole boxes.

Lighting:

- Further investigation is required for the use of the adit during winter to inform the lighting required to illuminate the adit for visitors. Lighting on the site will avoid any of the bat mitigation areas (such as the bat boxes and the recess,which will be maintained as bat mitigation). The lighting required onsite will be in the carpark area to the east of the foundry area, general guidance and points to consider when forming the lighting plan are given below and some feature lighting, the position of this lighting will be in discussion with the ecologist.

General Lighting Guidance:

- During the construction phase, works should be avoided within 1 hour of dawn and dusk to avoid disturbance to nocturnal animals (especially during the time when bats are active April– October). If works outside this time are needed, all lighting should be directional and be directed away from the woodland edges to the south and west and any other sensitive areas identified during the emergence surveys.
- There must be no lights focused on individual trees, woodland edge, or the planted hedge along the eastern boundary.
- During the months of October to April, the mine adit entrance and immediate area must remain dark. There must also be a dark corridor running from the mine adit entrance to the tree lines and woodland to the south and west.
- The times during which the lighting is on should be limited to provide some dark periods during the night.



The following luminaire specifications are provided by Bat Conservation Trust and Institute of Lighting Professionals (2018) and must be incorporated into the lighting plan for the proposed development.

- 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.
- Internal luminaires can be recessed where installed in proximity to windows to reduce glare and light spill.
- 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.
- Luminaires should always be mounted on the horizontal, i.e. 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.

General Notes

1. Contractor to verify all dimensions and check level datums on site
2. All of the designs are the sole property of TACP Architects Ltd and may not be used without their written agreement
3. All prints, specifications and their copyright are the property of TACP Architects Ltd
4. Do not scale off drawings
5. All dimensions shall be checked on site before commencment of shop drawings, manufacture and all discrepencies must be reported to TACP Architects Ltd

Revisions

Rev	Date	Description	By	Check
T1	19/12/23	Ecology mitigation works added	LJ	JB
C01	03/09/24	Construction Issue	LJ	JB

Consultants

Client

Brymbo Heritage Trust

Project Title

Stori Brymbo

Drawing Title

Enfys Mitigation Works

Scale	Date	Drawn By	Checked By	Office
1 : 500@A1	30/10/23	LJ	JB	Wrexham

Job Number	Project•Originator•Zone•Level•Type•Role•Number	Revision
17003	BMS-TACP-PS-XX-DR-A-703	C01

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