Bat Survey: Thoulstone Park, Thoulstone, Wiltshire

Client	Mr and Mrs Hughes-Hallett
Reference	T1131.002
Issue	Two
Date	8 June 2022

NATURAL SOLUTIONS

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1. Background

1.1. In 2021, Crossman Associates was commissioned by Mr and Mrs Hughes-Hallett to undertake a schedule of bat surveys and subsequent mitigation strategy to inform the proposed redevelopment of Thoulstone Park, Chapmanslade, Wiltshire.

1.2. The surveys included a comprehensive internal and external inspection of all buildings on site, evening emergence and dawn re-entry surveys of all buildings on site and automated detector surveys.

1.3. During the survey period, the main Clubhouse building was destroyed by fire in December 2021. Surveys of this building prior to the fire are included within this report.

1.4. The objectives of the survey work were to;

- Assess the presence/absence of roosting bats and distribution of foraging and commuting species
- Identify any planning policy or legislative constraints relevant to the proposals
- Provide recommendations for mitigation, compensation or further survey work as appropriate

1.5. All survey work has been undertaken by experienced surveyors and licensed personnel representing Crossman Associates.

Proposals

1.6. Proposals include the maintenance and renovation of the Driving Range Building, which is the subject to this study. A new bat barn with store below will also be construted.

Site description

1.7. The site occupies approximately 60 ha of redundant land that previously functioned as a golf course until its closure in 2002. The site lies approximately 1 km east of the village of Chapmanslade and 4 km north-west of the town of Warminster and is centred on Ordnance Survey grid reference ST 843 482. The site is mainly occupied by grassland with areas of plantation, woodland, scrub, hedgerows, five ponds, ruderals and groups of standard trees.

1.8. Buildings include a Driving Range Building and a driving range shelter.

1.9. The main Clubhouse building was present on site until it was destroyed by fire in December 2021.

Adjoining features

1.10. The site is adjoined to the north-east, east and south by intensive arable farmland. A small area of woodland straddles the northern boundary of the site and parkland bounds the remainder of the north-east boundary. The north-west boundary and part of the south-east boundary are adjoined by main roads; the A3098 (Chalcot Lane) and the A36.

1.11. A hedgerow and tree-lined bridleway runs along the southern boundary of the site and continues to the east.

Wider landscape

1.12. The wider surroundings are very rural and locally dominated by intensive arable farmland on chalk soil. Farmland is characterised by large field units that are divided by an extensive hedgerow network that connects to the site mainly along the north-east and southern boundaries of the site. To the north and west, local farmland is more mixed and contains both arable and pastureland and, in these directions, there is more housing with the villages of Dilton Marsh and Chapmanslade lying within 2 km. Extensive areas of broadleaved woodland lie approximately 500 m west of the site and 500 m south of the site; there is also an extensive plantation approximately 1.6 km to the south.

1.13. There are no rivers or watercourses running through the site or in close proximity to the site; however, there are ponds beyond Chalcot Lane (A3098) to the north of the site within the grounds of Chalcot Park.

2. Methodology

Desktop Study

2.1. The MAGIC website was accessed for information on any statutory site designations that lie within 4km of the site, which are designated for bat species.

2.2. Local and national planning policy and legislation was reviewed for policies and wildlife law relevant to the site.

Surveys

Bat Scoping Survey

2.3. In February 2014, all buildings on site were systematically inspected for the presence and potential for roosting bats. Detailed inspections were made for evidence of roosting including bat droppings, feeding remains, staining and actual bats. Specialist equipment was used where necessary including high luminosity torch, ladder, endoscope and frequency division bat detector. The value of features within the buildings were visually assessed based on presence/absence of any field signs and the bat roosting potential of the buildings, such as presence of access points and crevices. This method aims to provide an indication of the potential value of the structures to bats; however, it cannot definitely state whether bats are using the structures as roost sites or not.

Activity Surveys

Emergence/re-entry survey

2.4. The Clubhouse and Driving Range Building (which have been identified as having suitability for bats) were subject to two evening emergence surveys and a dawn re-entry survey. The surveys focused on areas identified within the initial scoping survey as having suitability for bats. All survey work was undertaken during suitable weather conditions during dry, warm conditions with a minimum temperature of

10°C. The evening emergence surveys commenced at sunset and continued for two hours. The dawn re-entry survey commenced one and a half hours before sunset and continued until sunrise.

Automated surveys

2.5. An automated Anabat bat detector was deployed within the Clubhouse building between 19 August 2021 and 30 August 2021. The detector was positioned within the roof of the building and away from the window so as not to record any external activity.

3. Results

Desktop study

Data Search

3.1. The MAGIC website informed of two local statutory sites within 10km of the site that are designated for bats;

- Mells Valley Special Area of Conservation (SAC) – lies approximately 9 km west of the site and is designated for an internationally important assemblage of greater horseshoe *Rhinolophus ferrumequinum* bat
- Old Ironstone Works Site of Special Scientific Interest (SSSI) – lies approximately 10 km west of the site and designated for nationally important assemblages of greater horseshoe bat and lesser horseshoe *Rhinolophus hipposideros* bat

Legislation

Habitat Regulations

3.2. The Conservation of Habitats and Species Regulations 2010 transpose Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna (Habitats Directive) into English law, making it an offence to deliberately capture, kill or disturb bats. It is also an offence to damage or destroy a breeding site or resting place of a bat (even if the bat is not present at the time).

Wildlife & Countryside Act

3.3. The Wildlife and Countryside Act 1981, as Amended by the Countryside and Rights of Way Act (CRoW) 2000 and the Natural Environment and Rural Communities Act (NERC) 2006, consolidates and amends existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats

(Bern Convention) and Council Directive 79/409/EEC on the Conservation of Wild Birds (Birds Directive), making it an offence to:

3.4. Intentionally kill, injure or take any wild animal listed under Schedule 5 to the Act, which includes bats; intentionally or recklessly damage, destroy or obstruct any place used for shelter or protection of a bat; intentionally or recklessly disturb bats while they occupy a place used for shelter or protection;

Natural Environment & Rural Communities Act

3.5. The NERC Act 2006 places a duty on authorities to have due regard for biodiversity and nature conservation during the course of their operations.

3.6. Seven species of bat (Barbastelle, Bechstein's, greater and lesser horseshoe, brown long-eared, noctule and soprano pipistrelle) are listed as Species of Principle Importance under Sections 41 and 42 of the NERC Act 2006. These species are therefore priority species and government policy is that local planning authorities should consider such species when determining planning applications.

Planning Policy

3.7. National policy guidance is provided by National Planning Policy Framework (NPPF), which sets out the Government' planning policies for England and how they should be applied to planning applications.

Conserving and enhancing the natural environment

- Planning decisions should contribute to and enhance the natural and local environment by:

  a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);

  b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services –

including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;

c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate;

d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and

f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

Field Survey

Bat Scoping Survey

3.8. All buildings on site shown in Figure 2 are described in the table below along with any evidence of bat usage and potential for roosting bats. Photographic reference can be found within the appendices.

3.9. Survey work was undertaken by Alex Crossman and Fairbrass Knowles, both licensed bat workers.

Table 1: daytime bat scoping survey results

Building	Description	Roost suitability
Clubhouse	**The building was destroyed by fire in December 2021. The site was visited in February 2022 to confirm conditions and all that remained of the building was a pile of rubble with no standing walls or voids.** Pre-fire conditions *Exterior* The building is constructed of brick courses at low-level and rendered concrete blockwork elsewhere. The building is an approximately C- shaped with a hipped clay-tiled roof. All external walls appear to be in good condition with all rendering and pointing in place so there are no external features within the structure of the walls except minor subsidence cracks (<5 mm). The building has numerous windows that are mostly boarded-up with chipboard; chipboard is generally well fitted into the frame, but is warped and cracked in places providing potential gaps between the chipboard and the windows behind. Three windows on the first floor have had boards removed and have been smashed providing permanent access into the building.	**Post fire suitability is negligible** Bat roost confirmed prior to fire.

Building	Description	Roost suitability
	The roof the building is lined with wooden soffit boxes, which are floating approximately 25 mm above the tops of the walls leaving a continuous narrow gap between the roof structure and the tops the walls. The soffits are in good condition but due the lack of recent maintenance are warped and occasionally contain small gaps. All soffits contain soffit vents which have holes approximately 10 mm x 10 mm. The roof is clad with flat clay roof tiles, which are mostly in place however a few have slipped. An extension at the east of the building is in poor state of repair where lead flashing has been removed exposing block work behind and a section of the roof has collapsed. The ridge of the building appears in good condition with no obvious gaps or cracks. A small wooden tower protrudes from the top of the roof; this appears to be in good order with no significant gaps or cracks. <u>Interior</u> The building is divided over two floors and has numerous rooms. Due to the chipboard covering all windows, the interior of the building is generally dark but occasional smashed windows provide permanent access and light ingress. Internal doors are vandalised or were open at the time of the survey, so all internal areas are interconnected. The interior of the building has been accessed and has been subject to extensive vandalism. <u>Loft space</u>	

Building	Description	Roost suitability
	The loft of the building is expansive measuring approximately 50 m x 30 m. The roof is supported by a modern truss structure, which is fairly complex creating a cluttered loft space but does not contain any complex carpentry joints such as mortise and tenons. The underside of the roof is clad with bitumastic underlay, which is all in good order with no significant gaps or tears. The underlay goes right up to the ridge and generally covers the ridge beam, but areas of the ridge beam are exposed where the underlay is warped in places. The interior of the loft is fairly draughty due to the presence of soffit vents and these also provide some light leakage into the loft. At the time of the survey the loft hatch was open providing potential access via into the loft space from the interior of the building, which is also accessible via open windows.	
Driving Range Building	<u>Exterior</u> This is a single-story brick building with a pitched clay-tiled roof. All external brick walls are in good condition with no gaps, cracks or voids. The east and west gable of the building is clad with wooden cladding, which is in generally good condition although on the west facing gable the low plank is missing leaving a large void. The pitched roof is clad with flat clay roof tiles that are all in place and appear to be in good order. Similarly all ridge tiles are in place and sealed with mortar and appear to be	**Bat roost confirmed** Thin scattering of dropping attributable to long-eared bats and lesser horseshoe within loft space. Small accumulations of droppings attributable

Building	Description	Roost suitability
	in good order. The roof valley is sealed with lead flashing, which appears to be in good condition with the exception of a small warped section where the roof adjoins a small porch. This building has been boarded-up so all windows and doors are clad with chipboard; chipboard is warped and poorly fitting in some places providing potential gaps between the chipboard and the windows behind. The roof is lined with soffit boxes that are constructed of wood; as with the Clubhouse, soffit boxes are placed above the wall, but the gap is smaller (less than 10mm, but larger gaps exist where carpentry has warped). <u>Interior</u> The building is currently fairly well sealed and is being used as offices and for storage. The loft space the building comprises one single large space and is constructed in the same manner as the Clubhouse as mentioned above.	to *Pipistrelle sp.* underneath wooden cladding on external gable walls.
Driving range shelter	This is a simple metal and timber building, which is open fronted. It consists of metal upright supporting a simple wooden beam structure that supports corrugated metal roof. There are no complex voids or features associated with the building.	Negligible potential

Activity surveys

3.10. The table below details survey findings; raw data and timings can be found within the appendices.

3.11. Surveys were attended by Alex Crossman (licenced), Fairbrass Knowles (licenced), Jen Weaver, Fiona Rundle and Nick Weaver.

Table 1: Bat activity results

Survey date	19 August 2021	29 August 2021	22 September 2021	2 October 2021
Building	Clubhouse (now destroyed by fire)	Driving Range Building	Clubhouse (now destroyed by fire)	Driving Range Building
Survey type	Dawn re-entry	Dawn re-entry	Emergence survey	Emergence survey
Conditions	Start temperature: 11°C End temperature: 11°C Weather summary: dry, clear Wind level (1-12): 2 Sunrise time: 06.22	Start temperature: 20°C End temperature: 20°C Weather summary: dry, clear Wind level (1-12): 3 Sunset time: 06.19	Start temperature: 19°C End temperature: 17°C Weather summary: dry, warm, part cloud Wind level (1-12): 1 Sunset time: 19.09	Start temperature: 17°C End temperature: 15°C Weather summary: dry, clear Wind level (1-12): 1 Sunset time: 18.35
Pre-survey checks	N/A	N/A	2 x lesser horseshoe flying around within ground floor of building. 1 x greater horseshoe flying in roof void 12 x long-eared bats huddled in roof void, north-west corner	N/A

Emergence activity	05.00-05-20: regular long-eared bat activity (between2-4 bats)	05.55: 1 x common pipistrelle re-entered south-facing gable cladding	19.21: 1 x common pipistrelle emergence from north-facing open window	18.53: common pipistrelle emergence from verge, west-facing elevation

Automated survey

3.12. This survey was undertaken of the Clubhouse before it was destroyed by fire in December 2021.

3.13. An automated Anabat bat detector was deployed within the Clubhouse between 19 August 2021 and 30 August 2021. The detector was positioned within the roof of the building and away from the window so as not to record any external activity.

Automated survey results

Species	Total passes	Average passes per night
Long-eared	286	23.8
Lesser horseshoe	130	10
Greater horseshoe	676	56

Evaluation

3.14. Two Driving Range Building has been confirmed as bat roost. The building is neglected but in usable condition and are currently being used for storage.

3.15. The Clubhouse was a confirmed bat roost but was destroyed by fire in December 2021.

3.16. The table below summarises the evaluation of each building:

Table 4: Building evaluation summary

Building	Bat status	Species	Roost type	Conservation status
Clubhouse (destroyed by fire in December 2021)	Confirmed roost	Lesser horseshoe	Day roost	Low
			Night roost	Moderate
		Greater horseshoe	Day roost	Moderate
		Brown long-eared	Day roost	Moderate
		Common pipistrelle	Day roost	Low
Driving Range Building	Confirmed roost	Lesser horseshoe	Maternity	Low
		Brown long-eared	Day roost	Low
		Common pipistrelle	Day roost	Low

Key:

Building destroyed by fire 

Building to be partly demolished 

Common pipistrelles

3.17. Small numbers of common pipistrelle have been recorded emerging from both buildings. The low numbers of bats recorded indicate that the buildings are functioning as a low status non-breeding day roost, probably for lone males or non-breeding females.

3.18. Pipistrelles are crevice-dwelling bats and will utilise various cracks and crevices in new and old buildings; such as behind panelling, under roofing tiles, shutters and eaves and within holes in brickwork, stonework and woodwork.

3.19. The building is not considered to offer optimal opportunities for hibernating bats due to the lack of any significant deep or complex voids within the walls of the buildings.

3.20. Common pipistrelles are widespread and common species throughout the UK. The roost is considered to have a low conservation status due to the low numbers of bats present and commonness of the species present.

3.21. The common pipistrelle bat roost within the former Clubhouse was destroyed by fire in December 2021.

Brown long-eared bats

3.22. Long-eared bat droppings have been recorded in both buildings and DNA analysis has confirmed the presence of brown long-eared bat, which is the commonest long-eared species in the UK.

3.23. Small numbers of droppings and low-levels of activity in the Driving Range Building confirm a non-breeding day roost.

3.24. Higher levels of activity area associates with the form Clubhouse and an internal inspection identified a huddle of 12 bats within the roof void. This number of bats in indicative of a breeding maternity roost.

3.25. Brown long-eared bats are generally crevice-dwelling bats that prefer cracks and crevices between wooden joints or between wooden beams within large open rooms and loft spaces. They will also hang from the ceiling of a roost, particularly when in torpor.

3.26. The brown long-eared maternity roost within the Clubhouse was destroyed by fire in December 2021.

Lesser horseshoe

3.27. Low numbers of bats were recorded in association with both buildings, with a maximum of two bats recorded within the former Clubhouse and a single bat within the former Driving Range Building. A small scattering of droppings in both buildings is indicative of a non-breeding day roost in both.

3.28. Two bats were recorded emerging from the main Clubhouse building and then roosting within the porch at the south of the building. The bats stayed in the porch during nigh time hours, which indicates that this section of the building is functioning as a night roost.

3.29. This species requires large open rooms and loft spaces in which to roost and is often found in old industrial buildings, barns, stable blocks and lofts of large old houses. The site is not considered to offer any hibernation opportunities for this species, which utilise undisturbed caves or similar structures that have a stable temperature.

3.30. The lesser horseshoe bat is rare in the UK and is confined to Wales and western England, where Somerset is a stronghold.

3.31. The lesser horseshoe bat roost within the former Clubhouse was destroyed by fire in December 2021.

Greater horseshoe

3.32. A small number of greater horseshoe bats have been recorded roosting within the former Clubhouse. The number of bats is indicative of a non-breeding day roost.

3.33. The greater horseshoe bat is very rare in the UK and is distribution is limited to the south and south-west of England and Wales.

3.34. This roost was destroyed by fire in December 2021.

4. Recommendations

4.1. The recommendations detailed in the paragraphs below should be followed to ensure that bats are protected during the course of works and any potential harm is mitigated where necessary. This section also details relevant wildlife legislation and provides information on how works can proceed within this legislation.

4.2. The extent and timings of the future development works are not confirmed so the recommendations below are provision and will be updated when required.

Licencing, Mitigation and Compensation

European Protected Species Development Licence

4.3. Bat roosts have been confirmed on site; a European Protected Species Development License (EPSDL) will be required from Natural England to allow the maintenance and renovation of the Driving Range Building.

4.4. The Clubhouse has been destroyed by fire so will not need to be included within the licence.

4.5. The license application can only proceed once full planning permission (or other lawful consent) has been granted and all planning conditions related to bats have been discharged. The license application would need to be supported by detailed survey information and accompanying detailed mitigation strategies and method statements.

Mitigation

4.6. Prior to any works commencing on site, the foreman and key site workers will attend a tool box talk, where a licensed bat ecologist will provide information on the status of bat activity of the site and what action to take if a bat is found. The tool box talk will also include basic information bat ecology and behaviour.

4.7. Prior to works commencing bat boxes including 3 x Schwegler 1FF (or similar) and 3 x Schwegler 2F bat boxes (or similar) will be installed on mature trees on site. These bat boxes will be installed on the south-east and south-west aspect of the trees and will be installed at a height of at least 3 m, within an uncluttered part of the tree, so they are out of reach of potential predators and there is a clear flight path to and from a potential roost.

4.8. One the licence is in place, all demolition, renovation and conversion works to the Driving Range Building can only continue using a precautionary approach under the direct supervision of a licence ecologist or licence ecological clerk of works. The focus of the overseeing work will be on areas of the preferred roosting habitat particularly the external cladding and works to the roof including the removal of tiles, carpentry, soffit boxes and bargeboards and also areas of masonry where there are cracks, voids and areas of missing pointing.

Compensation

<u>New roost design</u>

4.9. It is not considered appropriate or beneficial for the ecological functionality of the existing bat roosts to maintain them in their current location within the Driving Range Building. New species-appropriate bat roosts will be created in a bat barn with store below.

4.10. The new bat barn and store is a rectangular building with the entire roof space given over as a bat roost. The new roost will cater for roof void dwelling bats but will also provide opportunities for crevice dwelling bats and swallows.

4.11. The dimensions of the new bat barn and store is approximately 9.8 m x 4.3 m. The bat roost will consist of an enclosed loft space (bat loft) above a storage area (see Figure).

4.12. The new bat roost within the roof of the bat barn ans store will need to be fully enclosed with a solid tight-fitting floor. The void height will be at least 2 m and the roof will need to be constructed in a traditional manner, avoiding the use of trusses allowing

for an uncluttered flight area. Suitable roof construction methods include purlin and rafter ('cut and pitch') with ceiling ties or an alternative could be the use of attic trusses, which are specifically designed to give a roof void large enough to be used as a room.

4.13. The roof will need to be insulated between the ceiling joists and not between the roof rafters.

4.14. The roof will be covered with either clay tiles or slates. **Metal or composite roof coverings are not suitable. The use of modern breathable membrane beneath the roof tiles should not be used**; instead bitumastic hessian backed slaters felt should be employed.

4.15. A number of inexpensive features will be incorporated within the new roost as follows:

- Cavities and baffles will need to be constructed within the roost to create temperature gradients and further roosting opportunities; this can be achieved by partitioning of the apex with triangular pieces of rough timber (18mm OSB board is ideal) attached to each rafter at the apex. Individual rafters can be sandwiched between two triangular sheets of OSB board; these can hang down approximately 0.5m, creating a cavity approximately 50mm wide and 0.5m deep (see Appendix II for further details).

- A further roosting site will be located within the central part of the roof apex. Referred to as a 'hot box', the design follows the above, but with a floor incorporated on the bottom to create a small chamber; it will be necessary to incorporate an opening within the floor of at least 500mm x 500mm to allow bats easy access. One such structure encompassing approximately 3 to 4 sets of rafters should be sufficient (see Appendix II for further details).

- Further roosting opportunities will be provided by erecting two cavity Kent-style bat boxes in pairs on the internal gable walls; this design is a very simple and can either be made up on site or purchased from NHBS. The

design can be adapted to suit the situation, with varying width and height for this particular roost the design should consist of two chambers per box, with widths of approximately 250mm and a height of 500mm constructed of OSB board (see Appendix II for further details).

Roost access

4.16. An access point will be incorporated to the gable of the new roost and will be a square aperture measuring approximately 500mm x 500mm and will be located approximately 250 mm above the floor level of the roost within the east-facing gable. A turnstile baffle will be fitted to limit light ingress and discourage birds and squirrels from entering the roost.

4.17. An alternative entry / exit will be via a lead arch that will fitted to the exterior roof; these can be made by the roofing contractor or purchased from O'brien lead fabrications (http://www.obrienleadfab.co.uk, telephone 01308 421810). The lead arch should be positioned approximately halfway down the south-facing pitch of the roof.

Replacement bat roosts for crevice-dwelling bats

4.18. A pair of Habibat bat box (type 001) will be installed within the west elevation of the new bat barn and storeo. The Habibat box is shoebox-sized box made of insulated concrete with an internal roost space, which can be incorporated into the fabric of a building as it is being built (refer to appendices)

4.19. A variety of facings can be fitted to suit any existing brick, wood, stonework or rendered finish, rendering the box unobtrusive and aesthetically pleasing. For new build Habibat boxes are built into the fabric of the building, and with correct installation the boxes are very discreet.

4.20. Habibat bat boxes are available direct from http://www.habibat.co.uk/ Telephone number 01642 724626.

Lighting

4.21. The majority of habitats on site are very favourable for foraging and commuting bats due to low level of disturbance from artificial lighting, which is absent from the site. The designed lighting scheme for the proposed master plan should take into account the presence of bats with an aim of maintaining existing lighting levels along key foraging and commuting routes, which are the bridleway, woodland, ponds and treelines. All light should be modern LED-type lights installed on low columns and fitted with louvers, cowls or shields to deflect light downwards and away from habitat features. Lights should be fitted with timers and sensors so that lights are only used when they are needed. All buildings that will be built around boundaries of the site and next to the maintained habitat features will be fitted at the time of construction with low power lights with timers or sensors so that light spill is avoided as much as possible.

4.22. Light readings on site taken at 23:00 on 29 July 2014, which was a clear evening, were as follows;

- Pasture, ponds and other open areas – 2 - 0.05 LUX
- Woodland, tree-lined driveway and footpath (overhung by trees) – 0.001 LUX

4.23. The readings clearly show the differences in light levels between different areas of the site. The aim of the lighting scheme will be to ensure that light levels remain at a comparable level (+/-20%) post development. The lighting scheme will also ensure that areas where retained/new bat roosts are installed and connecting habitats remains dark.

Landscape Planting

4.24. The bat barn and store will be surrounded by new landscape planting that will help to buffer the new roost from any disturbance and will maintain connectivity between the roost and the surrounding countryside.

5. Limitations

5.1. Sections of buildings were sometimes deemed unsafe and were not entered on health and safety grounds.

5.2. This report records wildlife found during the survey and anecdotal evidence of sightings. It does not record any plants or animals that may appear at other times of the year and were therefore not evident at the time of visit.

5.3. This report represents a preliminary assessment only. Recommendations and conclusions are subject to change should further findings significantly differ from those collected from the survey efforts to date.

5.4. The advice contained in this report relate primarily to factual survey results and general guidance only. On all legal matters you are advised to take legal advice.

6. References

Bat Conservation Trust (BCT) *Bats and Lighting in the UK* BCT

English Nature (2001) *Great Crested Newt Mitigation Guidelines.* English Nature

HMSO (1981) *Wildlife and Countryside Act 1981 (and subsequent amendments).* HMSO

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Joint Nature Conservation Committee (JNCC) *Common Standards Monitoring Guidance for Reptiles and Amphibians* (2004) JNCC

Langton, T., Beckett, C. and Foster, J. (2001) *Great Crested Newt Conservation Handbook.* Froglife

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Mitchell-Jones, A.J , & McLeish A.P. (2012) *The Bat Worker's Manual* (4th Edition)

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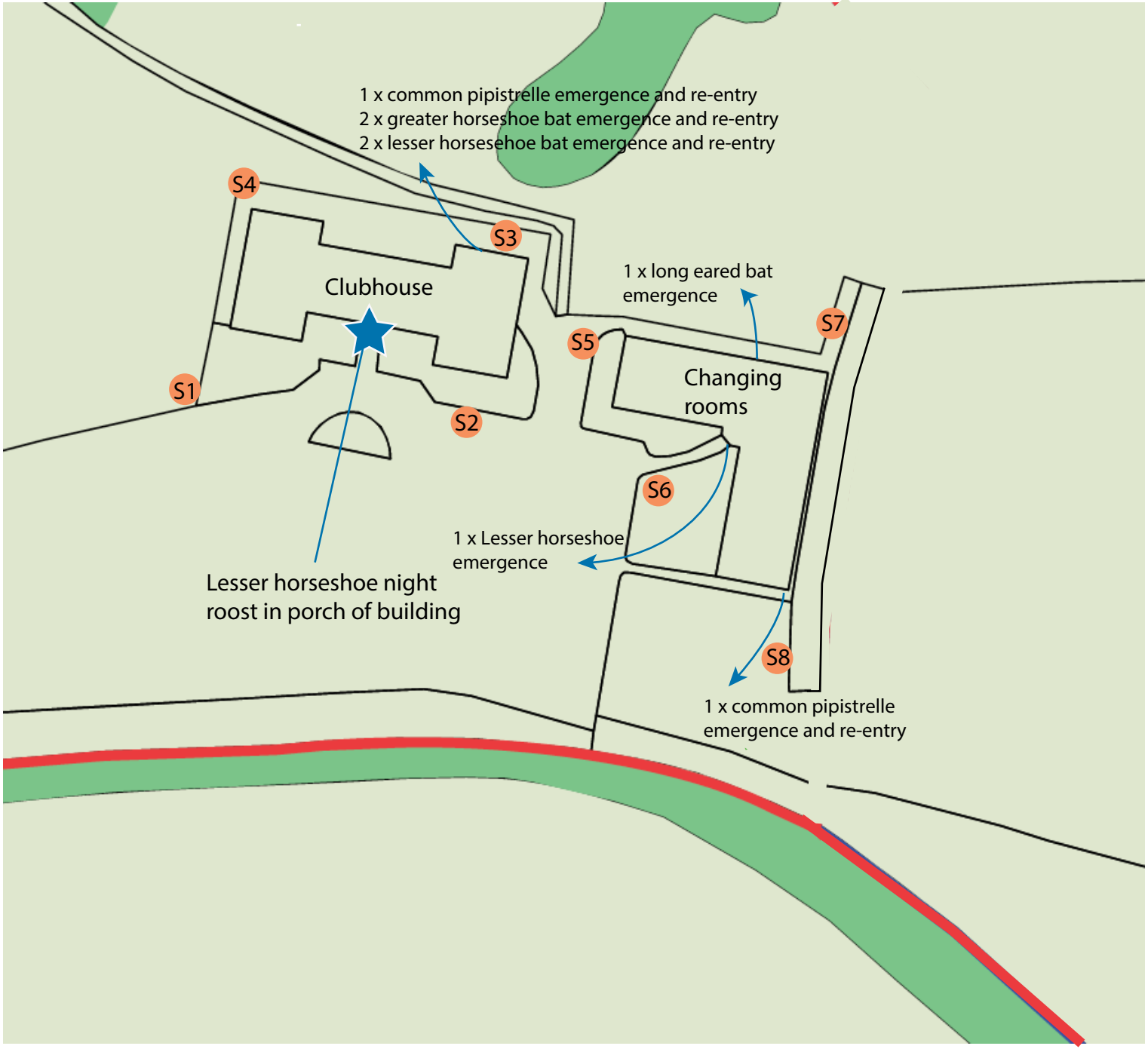
National Biodiversity Network (NBN) Website at www.nbn.org.uk

Stace, C. (1997) New *Flora of the British Isles 2nd Edition.* Cambridge University Press

TSO (2012) *National Planning Policy Framework*

TSO (2006) *Natural Environment and Rural Communities Act* TSO

Appendix I – Site Figures



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Site Boundary

Surveyor locations

Emergence/re-entry flightlines

Client	Mr and Mrs Hughes-Hallett
Title	Emergence\re-entry 2021
Site	Thoulstone Park
Figure	1
Date	6 December 2021
Scale	Not to scale



NOTES

ORIGINAL A1

All levels and dimensions to be checked on site prior to construction / fabrication; report discrepancies immediately.
Do not scale dimensions from this drawings.
This drawing is copyright protected.

REVISION

PLANNING

N

SCALE 1:1250
0 10 20 30 40 50m

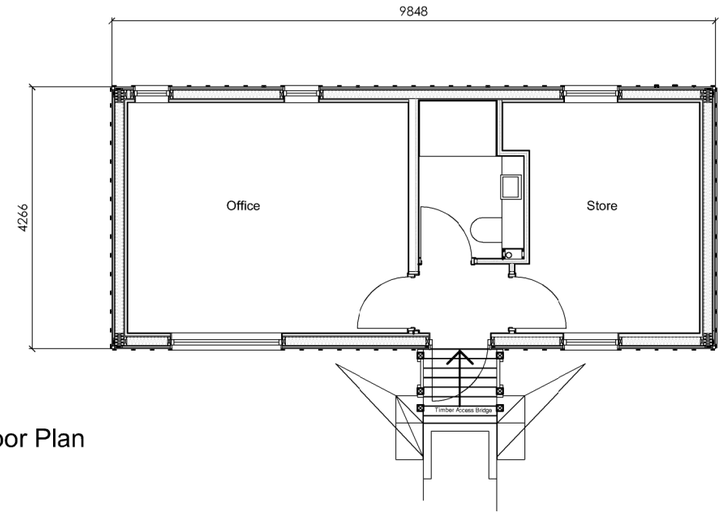
SCALE	DATE	DRAWN	CHECKED
1:1250	19.04.22	SF	

PROJECT
Thoulstone Park
Bat Barn

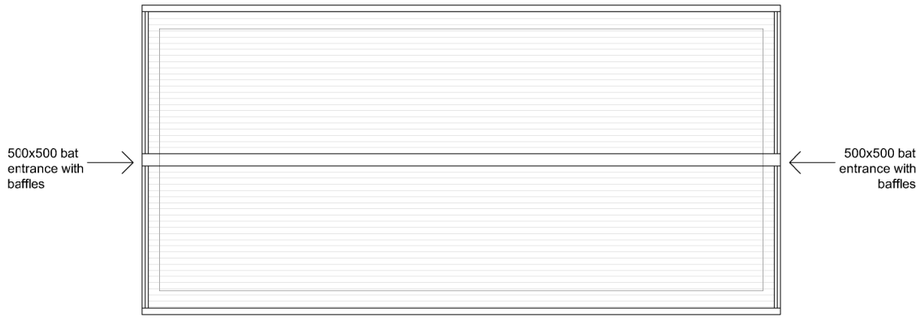
DRAWING
Masterplan
Full Extents

TRAIL ARCHITECTS
12 CARPENTER STREET • PERTH • PH1 5LZ
01738 230360
WWW.TRAILARCHITECTS.CO.UK

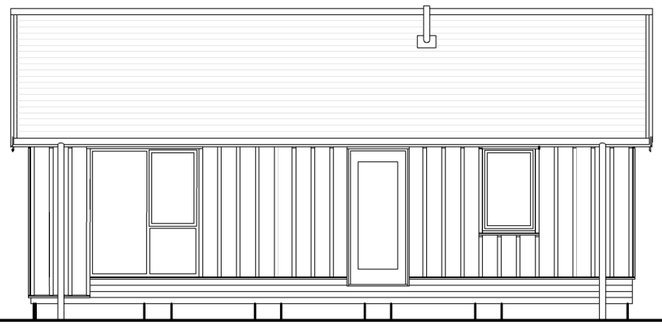
DRAWING No.
16105_BB_PL(90)001



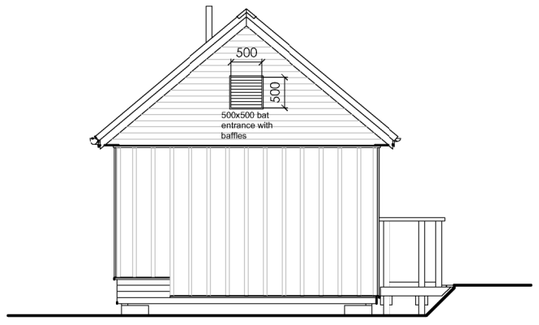
Ground Floor Plan



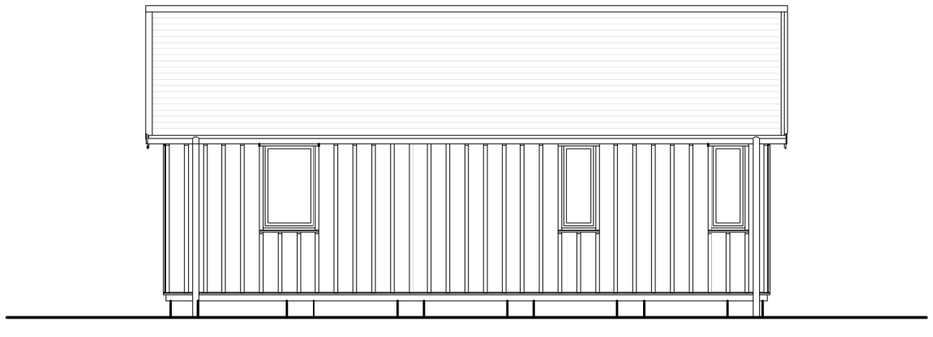
Roof Plan



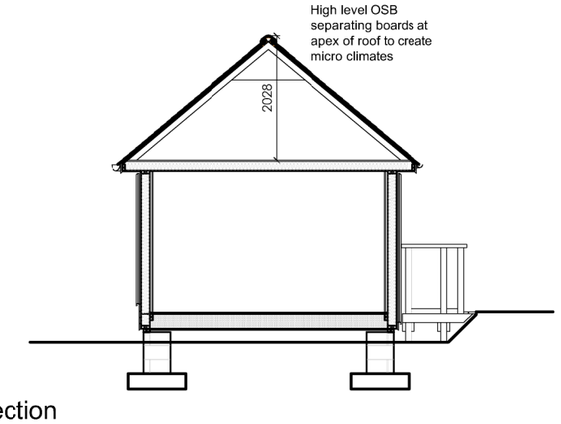
South Elevation



Gable Elevation



North Elevation



Section

NOTES ORIGINAL A3

All levels and dimensions to be checked on site prior to construction / fabrication; report discrepancies immediately.
Only scale for Planning Submissions.
This drawing is copyright protected.

SKETCH

SCALE 1:100

0 1 2 3 4 5m

SCALE	DATE	DRAWN	CHECKED
1:100	13.04.22	SD	

PROJECT

Thoulstone Park
Bat Barn

DRAWING

Plans, Sections and Elevations

TRAIL ARCHITECTS

12 CARPENTER STREET • PERTH • PH1 5LZ

01738 230360

WWW.TRAILARCHITECTS.CO.UK

DRAWING No.

16105_BB_SK010



Example of a fitted 'HOT BOX'
2 number to be fitted



Example of roof partitioning.

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Exaample of a fitted sloping baffle to
the main bat access point



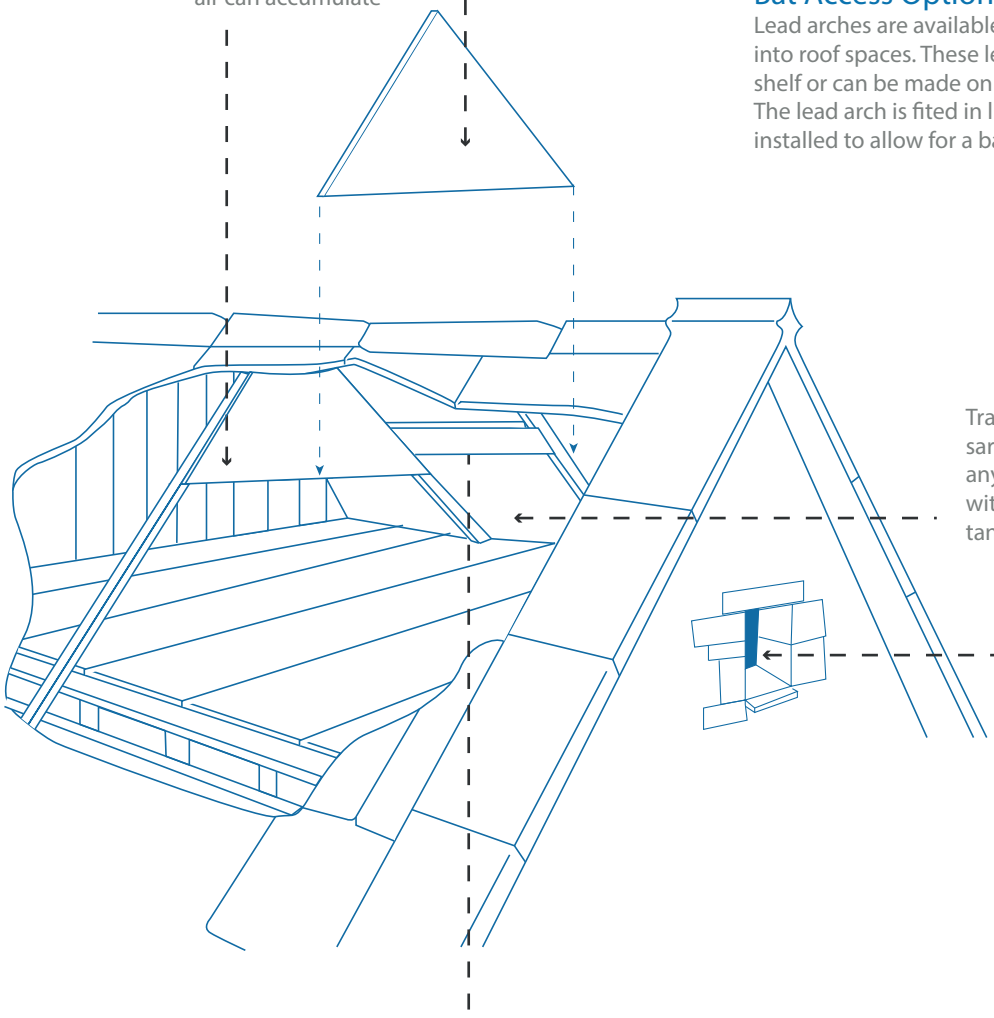
Eample of a 'KENT BAT BOX" fitted within
a bat loft

Client	Trail Design Architecture
Title	Bat roosting features
Site	Thoulstone
Figure	3
Date	03 December 2021
Scale	Indicative

Appendix II –Information Sheets

Bat Loft

BUILT-IN HABITATS Nº 003



Bat Access Option 1

Lead arches are available that allow access for bats into roof spaces. These lead arches are availabe off-the shelf or can be made on site by any experienced roofer. The lead arch is fited in lieu of a roof tile. Two should be installed to allow for a backup entrance/exit.

Traditional Bitumin or hessian sarking allows bats to hang up anywhere within the loft without the risk of becoming tangled.

Bat Access Option 2

An entrance hole should be positioned low down on the wall to allow warm air to accumulate within the loft. The hole should be at least 30 cm x 30 cm and no smaller than 50cm x 50cm when designed to accomodate lesser horse-shoe bats.

To create small crevices within the bat loft: secure wooden planks to the rafters leaving a small (2-2.5cm) gap between the plank and sarking and seal the top using a baton

Bat Loft

Bat lofts are an excellent way to provide habitat for bat species that fly within roost voids before emerging, such as lesser horseshoe and long-eared bats. The size of the loft should be at least 2m in height and 4m wide, although 2.8m x 5m + will further enhance the loft for bats. Entrances to the bat loft should face towards suitable natural habitat and be kept dark.

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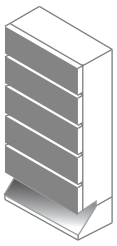
Bat Tubes

BUILT-IN HABITATS N° 004

Woodcrete Bat Tubes

We recommend the use of wood-crete-type bat tubes that are manufactured by Habibat or Schwegler. These are a well known brands so are always accepted as a compensation measure for planning applications and Natural England Licence applications. The tubes also have a low visual impact on the development because they can be built into the exterior wall and then rendered or painted, or in the case of the Habibat, faced with brick or stone.

Recommended bat tubes



Habibat

The great advantage of the Habibat box is that it can be faced with brick, stone or render, so that it blends in and doesn't alter the aesthetic of the build.

Specifications

Height	44 cm
Width	21 cm
Depth	10 cm
Weight	7 kg



Schwegler 1FR & 2FR

There are two similar designs that we use regularly. The 1FR is designed to be used singularly whereas the 2FR has transverse connecting holes (model shown) that allow tubes to be connected together.

Specifications

Height	47.5 cm
Width	20 cm
Depth	12.5 cm
Weight	9.8 kg

How Many to Install

The number of bat tubes to install is dependent on the level of compen-sation or mitigation that is required. Typically one tube is recommended on sites where there are low number of bats and multiple groups of tubes are recommended on sites of high ecological significance.



Location

The tubes should be positioned at least 0.5m below the eave or gable apex to prevent predation by domestic cats. It is also recom-mended that where practical, the tubes are not positioned above windows or doors.

Installation

The tubes should be built into the exterior wall of the building, typically at the gable apex. The tubes should be installed flush with the surrounding wall and can then be rendered or painted with breathable paint if required.

Bat Tubes

Bat tubes are an excellent way to provide discreet and low impact roosting opportunities for certain species of bats that tend to occupy crevices within buildings. They are relatively compact and can be installed flush or beneath a rendered surface and can be painted with an air permeable paint if required.

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Kent bat box

BUILT-IN HABITATS NO. 005

This box is simple to make and is low maintenance - it doesn't need cleaning as bat droppings will fall out of the crevices.

Instructions:

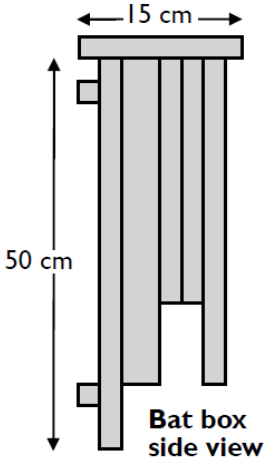
1. Mark wood to length using a pencil and ruler
2. Cut all pieces using a saw
3. Score one side of the back and middle plank pieces using the end of a nail - this is to help the bats grip the wood when they are inside the box
4. Nail the 40 cm battens (thick) on the 50 cm plank
5. Nail the 40 cm plank on the 40 cm battens
6. Nail the 25 cm battens (thin) on the 40 cm plank
7. Nail the 25 cm plank on the 25 cm battens
8. Nail the 15 cm battens on the back
9. Nail the roof on
10. Fix nails and wire to the front

Materials:

Timber should be untreated, rough-sawn, and certified as sustainably sourced by the Forest Stewardship Council (FSC).

You will need:

- 140 cm x 15 cm x 1.5 cm plank
- 110 cm x 2.5 cm x 2.5 cm thick batten
- 50 cm x 2.5 m x 1.5 cm thin batten
- 3.5 cm length galvanised nails (about 40)
- Strong wire (about 50 cm in length)

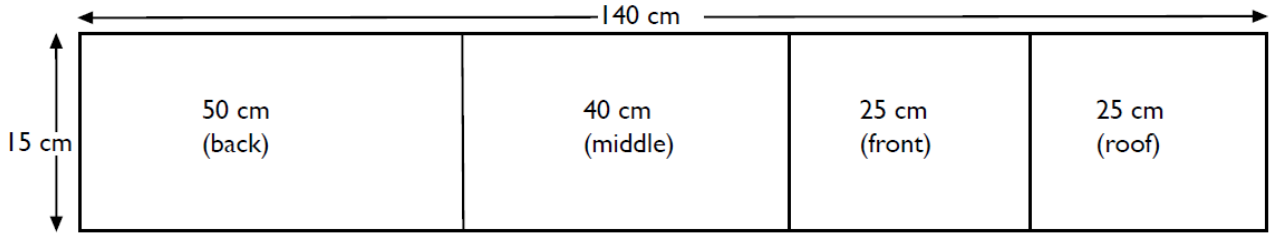


Bat box side view

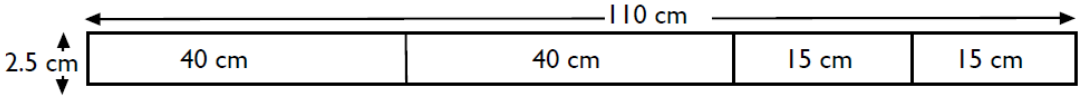


Bat box front view, on garden shed

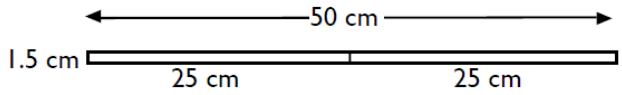
Main plank



Thick batten



Thin batten



Thanks go to the Kent Bat Group, www.kentbatgroup.org.uk, for supplying the design and allowing it to be reproduced. If you see that bats are using your box please let the Kent Bat Group know, contacts on their website.

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