

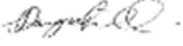
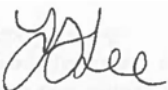
DAVID CLEMENTS ECOLOGY LTD

ST TYDFIL'S HOSPITAL, MERTHYR TYDFIL

BAT SURVEY REPORT

November 2020

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Version No./Stage	v 2.2	Minor amendments Lesser horseshoe mitigation – extra details added.	

SUMMARY

This report has been prepared by David Clements Ecology Ltd (DCE) on the instructions of Chris Wilks of Amity Planning Ltd and refers to land at the former St Tydfil's Hospital, Merthyr Tydfil, South Wales. The site measures approximately 1.86 ha, encompassing three former hospital buildings along with an extensive area of previously cleared land. The former hospital buildings present are currently unoccupied, and appear to have been vacant for some time. The site is located at Ordnance Survey grid reference SO 05168 06342 and lies at approximately 195m AOD. The site is situated within an urban area close to the centre of Merthyr Tydfil.

It is proposed to redevelop the site to accommodate a residential scheme of 70 units comprising a mix of affordable and open market housing. As part of the development, a section of building 1 will be demolished and the grade II listed section retained and converted into six apartments. Buildings 2 and 3 will be demolished to facilitate the wider redevelopment of the site.

The site does not contain or lie immediately adjacent to, any statutory sites of nature conservation interest such as Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs) or Local Nature Reserves (LNRs). The site does not contain or lie immediately adjacent to, any non-statutory sites such as Sites of Importance for Nature Conservation (SINCs).

The site comprises three buildings with an extensive area of hardstanding/rubble from previously cleared land. There are some mature trees within the site and woodland edge that borders the eastern site boundary.

Following an initial building inspection and two flight surveys for bats, it is confirmed that one of the buildings is used by individual common pipistrelle bats in the summer months. Further static detector work in September and October found no bats using the interior of the building over the recording period. A static detector was also deployed at the entrance of an underground gas chamber that extends beneath the site. Some common and soprano pipistrelles were recorded on this static detector; however, owing to the proximity to an existing tree line of the neighbouring local green space, it is possible the recordings arose from nearby commuting bats. A swarming activity survey was undertaken in September. No swarming activity was observed during the survey and bat activity levels were generally very low. Six trees within the site development boundary that has been identified as requiring removal. The trees proposed for removal were found to have low or negligible potential for roosting bats, therefore a precautionary approach is recommended.

The proposed development will result in the loss of buildings 2 and 3, and part of building 1 and the renovation of the retained listed section of building 1. Therefore, a derogation licence from NRW will be required to undertake the part demolition/ part renovation of building 1. Additionally, the development will result in the loss of a small number of trees close to the current buildings and within the site boundary. Therefore, further recommendations with regards to the trees are made.

Additionally, Japanese knotweed was found in very close proximity to the north-easternmost boundary of the site during the surveys.

Appropriate mitigation and enhancement measures are recommended.

1.0 INTRODUCTION

- 1.1 This report has been prepared by David Clements Ecology Ltd (DCE) on the instructions of Chris Wilks of Amity Planning and refers to a parcel of land at the former St Tydfil's Hospital site, in Merthyr Tydfil, South Wales. The site location and context is shown at Plan 1.
- 1.2 The site measures approximately 1.86 ha, encompassing a former hospital site that has largely been cleared with only three buildings remaining and a small number of trees within the site boundary. The premises have been out of use for some time and appear to be subject to high levels of anti-social activity. The site is located at Ordnance Survey grid reference SO 05168 06342 and lies at approximately 195m AOD.
- 1.3 The site is situated within an urban area, to the centre of Merthyr Tydfil town. A block of woodland occurs immediately east of the site. To the immediate north and south of the site, residential development occurs and to the west, further residential development and an area of public green space. In the wider environment, some green space occurs to the east and extensive urban development exists in all directions.
- 1.4 It is proposed to demolish the unlisted portion of building one and to retain and convert the grade II listed portion of building 1 into six apartments. Buildings 2 and 3 will be demolished in their entirety to facilitate the new development. The scheme will deliver 70 dwellings across the site to form a mix of affordable and open market housing, see Appendix 1 for current development plans.
- 1.5 The remainder of this report sets out the results of bat survey work undertaken at the site. It also assesses the likely impact of the proposed works on bats and nesting birds and makes recommendations regarding the mitigation of any potentially adverse biodiversity impacts.

1.6 Designated Sites of Biodiversity Interest

Statutory Sites

- 1.6.1 The site does not contain or lie immediately adjacent to any statutory sites of nature conservation interest such as Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs) or Local Nature Reserves (LNRs). There are no sites designated for bats within 10km of the site. However, a number of such sites occur in the local vicinity:
- Cwm Glo A Glyndyrys, SSSI, 1.2km south-west. Extensive areas of marshy grassland, species-rich neutral grassland and acid grassland, and diverse grassland fungi.
 - Cwm Taf Fechan Woodlands, both SSSI and Local Nature Reserve, 1.9km north-west. Mixed deciduous woodlands with interesting plant communities in flushes around tufa springs, and bryophytes.

Non-Statutory Sites

- 1.6.2 No sites of nature conservation interest such as Sites of Importance for Nature Conservation (SINCs) lie within or immediately adjacent to the site boundary. However, several such sites exist within the local vicinity including the following:
- Afon Taf, Wildlife Site / SINC, 520m west. River and associated habitats, including ancient semi-natural woodland, linear wet woodland, and marshy grassland. Otter present.
 - Cyfarthfa Park, Wildlife Site / SINC, 990m north-west. Semi natural woodland and neutral grassland. Also includes small areas of plantation woodland and scrub and several woodland ponds.
 - Cwm Taf Fechan, Wildlife Site / SINC, 1.1km north-west. Contains Cwm Taf Fechan SSSI. The limestone geology gives rise to limestone woodlands, species-rich calcareous grasslands, species-rich neutral grasslands and calcareous scrub.
 - Cwm Glo, Wildlife Site / SINC, 1.7km south-west. The SINC contains the Cwm-Glo a Glyndyrus SSSI. Extensive areas of marshy grassland, species rich neutral grassland and acid grassland alongside woodland and heath supporting protected, rare and uncommon species including marsh fritillary butterfly, Great Crested Newt, big blue pinkgill, and olive earthtonge.
 - Rhydycar West, Wildlife Site / SINC, 1.3km south-west. Very extensive mosaic of ffridd enclosures supporting complex of semi-upland and lowland habitats. Great crested newt occurs in small pools; noctule and pipstrelle bats have both been recorded. Nationally rare and scarce invertebrates are varied and common throughout the area.
 - Cwm Taf Fields & Cefn Coed Tip, Wildlife Site / SINC, 1.4km west. Linear series of fields between the Afon Taf Fawr and the A470, containing areas of semi natural woodland and a re-vegetated limestone, semi-improved acid grassland, scrub, bracken slopes and dry heathland.
 - Glynmil, Wildlife Site / SINC, 1.5km south-east. Mosaic of semi-upland habitats, mainly comprising acid grasslands, marshy grassland, acid flush, dry heath, bracken slopes, scrub, ancient semi-natural oak woodland and wet woodland dominate.
 - Cwm Taf Fawr, Wildlife Site / SINC, 1.7km north-west. Section of major river tributary of the Afon Taf, including adjacent woodlands. Upper reaches support limestone gorge woodland, with a rich ground flora. The site also includes areas of species-rich calcareous, neutral and acid grasslands. Otter present.
 - Merthyr Common South, Wildlife Site / SINC, 1.8km east. Very extensive upland / semi-upland common along the hill ridge between two major rivers. Includes numerous ponds and streams, extensive outcrops of rock and some disused quarries.

- Y Graig, Wildlife Site / SINC, 2km north-west. Area of ‘ffridd’ habitats mainly dominated by bracken, with patches of acid grassland and dry heath, species-rich neutral and marshy grasslands and areas of wet willow woodland.
- Blaen-canaid, Wildlife Site / SINC, 2km south west. Series of species-rich semi-improved neutral grassland enclosures within large conifer plantation.

1.6.3 Sites of Importance for Nature Conservation (SINCs) are one of a class of non-statutory nature conservation designations which are recognised throughout the UK under a wide range of titles. Such ‘Wildlife Sites’ are so-called ‘third tier’ sites, generally ranked below sites which are of international or national biodiversity significance, but which are considered to have substantive nature conservation value in the sub-national (ie regional or district) context. They are usually designated at the county or county borough level by the relevant local planning authority and are recognised as a planning constraint in the relevant statutory development plan. The framework for the identification and designation of ‘Wildlife Sites’ is set out in various Government documents and is referred to in *Planning Policy Wales* (2017, 9th Edition) and *Technical Advice Note (Wales) 5: Nature Conservation & Planning, 2009*.

2.0 APPROACH AND METHODS

2.1 Survey Methodology

Bats

- 2.1.1 Surveys comprising an initial day time building inspection and two flight surveys were conducted in accordance with current best practise guidance provided by BCT (2016). An initial site inspection was carried out in dry, mild weather conditions during daylight hours on 17th April 2020 by a licenced bat ecologist and an assistant. All accessible areas of the buildings were entered and searched using high-powered lanterns (Clulite FAN1). Other equipment was available as required, including a digital endoscope (Rigid See snake CA350) for the examination of any crevices in the fill of stone walls etc, and ladders to inspect high areas. Interior and exterior searches were made especially for evidence such as bat droppings and feeding remains, as well as for sightings of actual bats (in cracks and crevices etc) and secondary signs such as fur-oil and urine stains, scratch marks etc.
- 2.1.2 The layout and construction of the buildings were recorded, briefly described and characterised, with an estimate being made of the potential attractiveness and suitability for bats with reference to a range of factors including human disturbance, light levels, air movement, exposure, thermal stability and cobwebbing of access points etc.
- 2.1.3 Following the initial site inspection two flight surveys were carried out for each building on the site on the following dates: dusk emergences on the 20th May 2020 and 26th May 2020 and dawn re-entry surveys on the 16th and 23rd June 2020. Four surveyors and an IR camera were stationed around building 1, and two surveyors were stationed around building 2 and a further two surveyors on building 3. All surveyors were equipped with Anabat SD1, SD 2 frequency-division bat detectors or Peersonic RPA3 full spectrum detectors, supplemented by a mixture of Petterson D200 and BatBox duet heterodyne detectors. Bat calls were logged and recorded to SD cards for subsequent analysis using the AnalookW software (Corben, 2006). An Infrared Panasonic hc-w850 camera supplemented with an IR lamp was also used for a dawn survey on building 3. Footage was later analysed in VLC player.
- 2.1.4 Large standard trees were subject to a preliminary ground based survey to assess their potential suitability for use by roosting bats during the site inspection. This survey was carried out from ground level, using close-focusing binoculars, with particular attention being given to the presence of 'potential roosting features' (PRFs) such as those described by Andrews (2018). The trees were individually searched for features which are likely to be attractive to roosting bats such as cavities and rot-holes, splits and cracks, rugose or delaminating bark and dense ivy cover etc, and any such features recorded. The inspected trees were then categorised as follows:

Table 1: Categorisation of trees with respect to bat roosting potential

Occupied by bats	Bats are known to occupy features of the tree, or there is direct evidence of such occupation.	Further detailed survey by bat ecologist required. NRW licence required before any tree works.
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High potential for bat use	Tree has features which appear to be of high suitability for use by bats. Usually large and/or mature trees with numerous and/or well-developed PRFs.	Further surveys by bat ecologist required per BCT (2016) 'high roost suitability'. NRW licence will be required if any bats are found.
Moderate potential for bat use	Tree has features which appear moderately suitable for use by bats. Usually large and/or mature trees with at least some well-developed PRFs.	Further surveys by bat ecologist required per BCT (2016) 'moderate roost suitability'. NRW licence will be required if any bats are found.
Low potential for bat use	Tree has overall low roosting suitability, although some features of low or marginal roosting potential may be present. Trees of suitable age/size to support PRF but no PRF visible from ground.	Inspection by arborist and/or bat ecologist immediately prior to and during tree works. 'Soft-felling' may be advised.
Negligible potential of bat use	Usually young and/or small trees, lacking any obvious features suitable for use by bats.	No further survey required. No constraint to tree works.

2.1.5 One tree to the east of the site was identified as requiring removal by the arborist report. This tree was identified to have some potential roosting features from the ground, as such a further aerial inspection survey was undertaken on the 26th September 2020 by two qualified tree climbers and bat licenced ecologists. The tree was accessed by rope climbing and subject to close inspection search of any features using hand torch and digital endoscope (Rigid Seesnake CA350).

2.1.6 A swarming activity survey was undertaken using two surveyors on the 29th September 2020. The survey was undertaken in accordance with the BCT good practise guidance commencing two hours after sunset and continuing until five hours after sunset. All surveyors were equipped with Anabat SD1, SD 2 frequency-division bat detectors or Peersonic RPA3 full spectrum detectors, supplemented by a mixture of Petterson D200 and BatBox duet heterodyne detectors. Bat calls were logged and recorded to SD cards for subsequent analysis using the AnalookW software (Corben, 2006). The building was also entered at the start and end of the survey by a bat licenced ecologist to look for any evidence of bats in situ.

2.1.7 Static detector surveys were undertaken of the interior of building 1 and an underground gas chamber. Anabat express units were deployed in the interior of the building and the entrance of the gas chamber between September and October 2020 set to record on continuous mode recording to SD card for later analysis using AnalookW software (Corben 2006).

2.2 Data Trawl

2.2.1 In addition to original survey, a data trawl was carried out with the South East Wales Biodiversity Record Centre (SEWBReC) in order to obtain access to any existing ecological information or records from the site. SEWBReC is the main repository for biodiversity and wildlife records in the south-east Wales region. Relevant records are referred to in the text.

2.3 Survey Constraints

- 2.3.1 The recommended time of year to complete ground based visual assessments of trees for bat roosting potential is December – March. However, at the time of the survey, surveyors were able to adequately survey and identify PRFs on the trees on site from the ground; so, this is not considered to have imposed a major constraint on the results.
- 2.3.2 Owing to the locations of buildings 2 and 3 it was not possible to cover the southern elevations of the buildings as these backed on to other properties.
- 2.3.3 Structural issues due to water ingress, materials theft and general dilapidation has impeded an exhaustive search of the building interiors for bats/signs of bats and also limited where the static detectors could be deployed within the interior. However, the two flight surveys on each building, static detector work and swarming activity survey have been undertaken to assess how the building is used by bats.
- 2.3.4 The building has some potential to support hibernating bats, particularly crevice dwelling species in the external and internal walls where there is damage creating crevices. Further hibernation static work has not been recommended in this instance due to the overriding health and safety issues with the levels of vandalism and poor structural integrity of the building which is anticipated to worsen over the winter months. Therefore an alternative precautionary approach is recommended in the recommendations section.

3.0 SURVEY RESULTS

3.1 *Bats*

- 3.1.1 All bats and their roosts require strict protection under the EU Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna (92/43/EEC; the ‘Habitats Directive’), which is implemented in the UK via the Conservation of Habitats & Species Regulations 2017 (the ‘Habitats Regulations’)¹. Some additional protection against disturbance is also conferred under the amended Wildlife & Countryside Act 1981. Bats are listed under the Bern Convention on the Conservation of European Wildlife and Natural Habitats and also under the Agreement on the Conservation of European Bats 1992 (the ‘Eurobats Agreement’), signed within the framework of the Bonn Convention on the Conservation of Migratory Species of Wild Animals 1979.

3.2 *Data Trawl*

- 3.2.1 Three bat roost records are recorded for the St Tydfil’s Hospital site, all recorded in 2011. One of these relates to an unknown bat species where a roost was discovered in a basement with lesser horseshoe-type droppings. The remaining two records pertain to a pipistrelle bat species and a long eared bat species (SEWBRc Ref: 0190-812). SEWBRc and Natural Resources Wales were both contacted for further information regarding these records, however no further information was available. A further record for an unknown species is listed as ‘bat in hospital’ from 2005. A record for a lesser horseshoe bat roosting in a building in close proximity to the site was provided by the LPA ecologist.
- 3.2.2 A further twenty bat roost records were returned in the data trawl within 2km of the site. The closest and most recent record relates to a 2018 record for a soprano pipistrelle, situated approximately 260m from the site for a live sighting of a day roost. Included in the bat roost records are two records for an unknown bat species where roosts were discovered in a tree, situated 1.7km – 1.9km away from the site. A further three records exist for a confirmed tree roost relating to a myotis bat species, located approximately 1.8km from the site. Two historical records exist that are sourced from the ‘Bat Roosts Database South Wales’, however there are no specific details for these records (SEWBRc Ref: 0190-812).
- 3.2.3 There are many records of bats foraging and commuting in the vicinity of the site. The most recent record relates to a pipistrelle bat species which was seen foraging and commuting along a hedge in 2019, located approximately 1.1km away from the site.

¹ The European legislation cited herewith is that which was applicable at the time of survey, but it should be noted that new arrangements have become applicable after 31 Jan 2020 as a result of ‘Brexit’. At the time of writing these comprise a continuance of the current legal and protection arrangements by means of Statutory Instrument No. 579 (*The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations*, 2019) but the longer term arrangements which will apply after the end of the Brexit ‘Transition Period’ are still to be confirmed and may differ in detail from those which previously applied.

Further activity records for brown long-eared bat, noctule bat, serotine, common pipistrelle, soprano pipistrelle, Daubenton's bat, Natterer's bat and other possible myotis species, all occur within 2km of the site (SEWBRc Ref: 0190-812).

3.3 ***Building Inspection and Flight Surveys***

- 3.3.1 For detailed description of the building see Table 1 below and Plan 2. Plans 3 and 4 show the results of the flight surveys.

Dusk Emergence Survey

- 3.3.2 A dusk emergence survey was completed on the 26th May 2020 of buildings 2 and 3. The weather conditions were dry and calm with some cloud. Temperatures were approximately 18°C at the start of the survey and sunset was at 21:16.
- 3.3.3 No bats were seen to emerge from the buildings. Moderate levels of bat activity by common pipistrelle were observed during the survey. No other species were recorded.
- 3.3.4 A dusk emergence of building 1 was undertaken on the 20th May 2020. The weather conditions were dry and clear with some light wind. Temperatures were approximately 19°C at the start of the survey and sunset was at 21: 06.
- 3.3.5 No bats were seen to emerge from the building, however a bat was observed to enter the building, fly through the interior and exit again. Moderate levels of bat activity by common pipistrelle were observed during the survey. No other species were recorded.

Dawn Re-entry Survey

- 3.3.6 A dawn return survey of buildings 2 and 3 was completed on the 16th June 2020. The weather conditions were clear, dry and calm. The temperature was approximately 13°C at the start of the survey and sunrise was at 04:55.
- 3.3.7 No bats were seen to use or enter the buildings. Low levels of soprano and common pipistrelle activity were recorded across the site.
- 3.3.8 A dawn re-entry survey of building 1 was completed on the 23rd June 2020. The weather conditions were cloudy and dry with a light breeze. Temperatures at the start of the survey were approximately 14°C and sunrise was at 04:55.
- 3.3.9 Low levels of common and soprano pipistrelle activity were noted commuting over the site and past the buildings. A single common pipistrelle bat was seen to enter the building at 03:03am through an open window on the southernmost elevation of building 1 (See Plan 4).

3.4 ***Tree Assessment***

- 3.4.1 A ground-based tree assessment was undertaken on the 17th April 2020 by a bat licenced ecologist and one assistant.

3.4.2 A small number of mature trees exist to the south of the site, and a number of trees occur to the east of the site. A large number of trees are located offsite but line the boundaries and lie in close proximity to the site, these offsite trees were not surveyed in detail but those that lie on the boundary and possess bat potential are highlighted on Plan 5.

3.4.3 All four trees to the south support low potential for bats due to their size/age. To the east of the site a number of trees occur, some with moderate to high potential for bats (See Table 2 below and Plan 5). All trees supporting low potential or higher are marked on Plan 5. Many trees exist along the boundary to the west and some to the east that also support roosting potential for bats, these have been highlighted where situated on the site boundary.

Table 2: Bat Tree Assessment

Tree number (see Plan 5)	Species	Bat Potential	Comments
1	Willow sp	Low	Of age/size to support features
2	Leylandii	Low	Of age/size to support features
3	Birch sp	Low	Of age/size to support features
4	Unknown	Low	Of age/size to support features
5	Sweet chestnut	High	Multiple features including knot holes and fluting
6	Beech	Low	Squirrel damage features on stem
7	Beech	Low	Of age/size to support features
8	Sweet chestnut	Moderate	Knot holes
9	Birch	Moderate	Wounds that appear extensive
10	Sycamore	Low	Wounds that don't appear extensive
11	Sycamore	Low	Wounds that don't appear extensive

3.4.4 Tree 6 was identified and recommended for removal by the arborist's report. As such this tree was subject to further aerial inspection survey by two bat licenced and tree climbing and aerial rescue (formerly CS38) qualified surveyors. The close inspection found that none of the wounds identified from the ground were extensive, nor formed cavities or crevices suitable for roosting bat use.

3.5 ***Static Detector Surveys***

3.5.1 Static detectors were deployed in the interior of building 1 and at the entrance of a chamber further north of the building (See table 3 below and Plan 6 for approximate

locations). The static detectors were deployed to record on continuous mode throughout the recording period.

- 3.5.2 No bat calls were recorded on any of the statics deployed within the building interior. Some noise files were recorded in the human accessible areas, this is thought likely to be noise generated by draughts and human activity due to the high levels of anti-social behaviour that have been apparent to be taking place during the night time (and reported by the neighbours). The static detector deployed at the entrance of the gas chamber had common and soprano echolocation calls recorded on several nights of recording. Given the location of the static detector (deployed at the entrance of the chamber in close proximity to a tree line demarcating the boundary of a neighbouring local green space) it is considered possible that these calls could be bats commuting along the tree line rather than roosting within the chamber.

Table 3: Static detector results

Detector Location	Dates deployed	Number of nights captured (in good weather)	Results
Gas chamber	21/09/2020 – 29/09/2020 (8 nights)	7 nights	Common and occasionally soprano pipistrelles recorded on seven nights. Mixture of echolocation and Type D social calls recorded. Majority of calls registered close to sunset.
Listed building ground floor interior	21/09/2020 – 29/09/2020 (8 nights)	7 nights	No bats recorded
Locked room of listed building interior – suspended through hole in exterior wall	21/09/2020 – 29/09/2020 (8 nights)	7 nights	No bats recorded
Extension ground floor interior	29/09/2020 – 12/10/2020 (14 nights)	6 nights	No bats recorded

Table 4: Exterior building descriptions

Building	Description	Evidence of Bats & Nesting Birds	Bat Roosting Potential
Building 1			
	Exterior: The building is a double storey former hospital building which has been vacant for some time. The northern most half is grade 2 listed building. The exterior walls are ashlar in moderate condition, some localised damage and gaps apparent. The roof to the grade listed section is complex with a number of double pitched roofs. The roofs have almost been entirely stripped leaving roof battens and roof lining (in poor condition) largely exposed. A small flat roof section with walls of slate cladding also occurs on the eastern elevation of the grade listed section. Windows are largely missing leaving large openings to the building interior.	No visible signs of roosting by bats observed on the exterior structure on the day of the survey. Blue tit seen emerging from damaged ashlar on the south eastern corner of the building. Many pigeons observed flying in and out of the building via window spaces.	Many features that could be used by bats on the exterior including: damaged slate cladding, damaged stonework, gaps in window lintels. Some potential for hibernation, in damaged stonework. Moderate potential for roosting bats.
	Interior: The former hospital building has been vacant for some time and is in a poor state of condition. Water damage is apparent throughout the interior, damage to the walls has created crevices to wall interiors. Owing to the lack of roof some rooms are well lit and draughty, others are darker and more stable. The building is clearly subject to anti-social behaviour with significant debris apparent in the southern portion of the building. The interior supports plastered walls with tiled floors all in poor condition.	No visible signs of roosting by bats observed within the interior on the day of the survey. Nesting pigeons were apparent with nests containing young chicks found in the building interior.	The interior is in a very poor state, creating many crevices available to roosting bats and access to wall cavities. Moderate potential for roosting bats. Although access suitable for horseshoe species exists in the building it is considered unlikely to be used by horseshoe bats on a regular basis due to the frequent disturbance caused by anti-social behaviour within the building interior.
Building 2			
	Exterior: The building is a double storey former hospital building which has been vacant for some time and currently stands in a state of disrepair. The building is L shaped with a lean-to extension to the west and a flat roof and porchway extension to the north and east elevations. The walls are constructed of ashlar with bath stone dressing. The roof has been stripped out with only the battens and timbers remaining. Doors and window panes are largely missing, the lintels surrounding them are in poor condition.	No visible signs of roosting by bats or nesting birds observed on the exterior structure on the day of the survey.	Features for bats include raised tiles of the lean-to roof extension, gaps in door and window lintels. Some hibernation potential in the lintels. Moderate potential for roosting bats.

	Interior: The interior has largely been stripped out with no floors present and plastered walls in poor condition. Owing to the lack of roof the interior is largely well lit and draughty.	No visible signs of roosting by bats or nesting birds observed in the interior on the day of the survey.	Significant debris in the interior with some potential for use by roosting bats.
Building 3			
	Exterior: A flat roofed single story outbuilding with red brick walls and cement block roof. Walls in moderate condition, with some mortar fillets missing, one area supports significant damage to the brick work permitting access to the wall interior. Big open hole through roof into part of the interior, damaged and open windows and doorways permitting access to the interior. Parts of the building support PVC fascias with gaps beneath. Building subject to vandalism.	No visible signs of roosting by bats or nesting birds observed on the exterior structure on the day of the survey.	Damage to brick and stone walls creating access to wall interiors suitable for roosting bats and hibernating bats. Moderate potential for roosting bats.
	Interior: Interior walls of the eastern most portion of the building are damaged creating gaps and crevices. The building has been vacant for some time and appears subject to anti-social behaviour. A large hole in the roof is apparent from the interior. Parts of the building interior support plastered walls.	No visible signs of roosting by bats observed in the interior structure on the day of the survey. A wren nest was observed in the interior of Building 3.	Interior walls also damaged creating crevices suitable for roosting bats. Moderate potential for roosting bats.

4.0 ASSESSMENT OF DEVELOPMENT IMPACTS

4.1 Bats

- 4.1.1 It is proposed to demolish buildings 2 and 3 and demolish part of building 1 and remove three mature trees within the site and redevelop the land. The redevelopment plans currently comprise the construction of a residential scheme to deliver 70 dwellings. Detailed plans for the development can be found at Appendix 1.
- 4.1.2 The present survey indicates that individual common pipistrelles are using the building for day roosting in the summer months on an adventitious basis. There is also a possibility that the gas chamber north of building 1 may be used by roosting pipistrelles.
- 4.1.3 The redevelopment of the site requires the demolition of the southern portion of building 1 and retention and conversion of the grade II listed northern portion along with site clearance and ground works and removal of six trees. The works will therefore impact bats through disturbance, roost loss and potential injury/death if unmitigated. The works would have a negative impact at the site level only. Any works to the building will require a derogation licence from Natural Resources Wales which will include a detailed method statement and mitigation provisions.

4.2 Nesting Birds

- 4.2.1 The present survey also found evidence of present and past nesting bird activity in buildings 1 and 3.
- 4.2.2 The loss of trees to the development will also result in the loss of bird nesting habitat.
- 4.2.3 All nesting birds are afforded protection under the Wildlife & Countryside Act 1981 (as amended), and therefore the presence of nesting birds must be taken into account when carrying out demolition and conversion works. No further bird surveys are considered necessary, although a precautionary approach to works is advised and replacement of any nesting sites that are destroyed should be mitigated using nest boxes (see Section 5.0 below).

5.0 RECOMMENDATIONS

5.1 Bats

- 5.1.1 The use of the building by bats is confirmed. It will be necessary to obtain a licence from NRW to carry out the works. The obtaining of this licence will require the formulation of a detailed method statement and mitigation provisions. Derogation licences can only be obtained where detailed planning consent is in place and will require the submission of a detailed method statement based on the actual redevelopment/refurbishment details.
- 5.1.2 The demolition works should be undertaken during the autumn (September to October), and should be avoided between the months of November and February when bats are hibernating and unable to move from harm's way. Surface features such as fascias, soffits, ridge tiles and hanging tiles should be carefully dismantled and checks using an endoscope of gaps in walls checked for any signs of roosting bats, before proceeding with the main demolition. The gas chamber will need to be carefully dismantled by a small machine and under supervision of an ecologist to check for any bats during dismantling and prior to any subsequent filling in.
- 5.1.3 In the event that bats are discovered at any time during the works, all works must cease immediately, and further qualified advice sought as a matter of urgency.
- 5.1.4 Mitigation to provide replacement and enhancement roosting places within the new development will be required. It is recommended that a scheme of bat boxes to include Habitat 001 bat boxes (or similar design) for details see Appendix 2, to be rendered into the exterior walls of the new buildings and a bat box suitable for hibernation use to be installed within the ecology upper plateau area of the site. It is recommended that bat boxes are installed as high as possible on the building, ideally at around 4m height and that they are installed on southern and western elevations where possible and/or close to vegetated boundary habitats. Additionally and for the purposes of the licence application process it is recommended that three bats boxes are installed on retained trees within the ecology plateau area, prior to any works taking place to provide alternative roosting provisions during the works (See Appendix 5). Any bats found during the works can be moved to the boxes by a bat licenced ecologist. It is recommended that the bat boxes remain their positions post development to provide enhancement. Additionally, ridge tile access will be created through the renovation of the grade listed building, see Appendix 3 for details. No breathable roof membranes will be used in the new buildings and any buildings supporting bat roost features. Roof lining must be of Type 1F bituminous lining.
- 5.1.5 The majority of the trees on site and around the boundaries are to be retained within the new development. However, six trees to the south west of the site will be lost. These trees were considered to have low or negligible potential for roosting bats, it is recommended that these trees are soft felled ideally in the autumn months (September to October). If this timing is not possible a survey for nesting birds may be necessary during the nesting bird season (March to August). Should any evidence of bird nesting be found the felling works must be suspended until the nesting cycle is completed. This is a statutory requirement. The trees should be inspected by an ecologist immediately prior to soft felling.

5.1.6 Any new lighting scheme within the newly developed site must be designed in liaison with an ecologist and following the advice set out by BCT (2018). No lighting of the adjacent woodland habitats should occur.

5.1.7 It is recommended that enhancement suitable for lesser horseshoe bat be incorporated into the site, if possible. A small scale structure such as the Vincent Wildlife Trust cool tower could be built within the site and sunk 1-2m into the ground to offer hibernation and transitional roosting opportunity to any horseshoe bats in the area, see Appendix 6 for details. The cool tower should be constructed within a small outbuilding style structure of at least 4m long by 2m wide by 2.5m high with either a single pitch or flat roof. An entrance suitable for use by horseshoe bats to the structure should be created on the eastern elevation of the building with minimum dimensions of 400mm height by 600mm wide.

5.2 Nesting Birds

5.2.1 Works affecting the buildings or trees of the site must have regard to the possible presence of nesting birds. The bird nesting season runs approximately between March and August inclusive, and therefore it is recommended that any building work, felling or tree-works are undertaken outside of this period. Undertaking works outside the bird nesting season minimises the risk of causing avoidable harm or disturbance to nesting birds, which is a statutory obligation. If this timing is not possible, however, then the works must be preceded by a survey by an appropriately qualified person to ascertain that no nesting birds are present.

5.2.2 In the event that nesting birds are found to be present during works, all works in the immediate vicinity must cease immediately and appropriate expert advice sought as a matter of urgency. The 'immediate vicinity' would comprise any nesting bird-occupied void in its entirety, plus an area of at least 5m radius around the find site. Nesting birds must not be harmed or disturbed, and should be left undisturbed until the young have fledged. This is a statutory requirement.

5.2.3 As with bats (above) consideration should be given to the incorporation of bird-boxes on the developed site. A scheme of bird boxes suitable for house sparrows and swifts are recommended to be incorporated into the new buildings of the site. The details of the integrated designs to be used can be found at Appendix 2.

5.3 Habitats & Other Protected Species

5.3.1 Japanese knotweed lies in very close proximity to the north east boundary of the site. Although it appears that this is outside of the site boundary, any ground within a 10m radius of a visible stand must be treated as potentially contaminated with root material and dealt with accordingly. The affected area of the site should be fenced off at the outset of works. Ideally, an agreement should be formed with the neighbouring landowner to undertake an eradication programme carried out by specialists. The site

- should be subject to regular monitoring prior to development to determine whether the knotweed has spread into the site boundary.
- 5.3.2 Any retained habitats should be securely fenced off with appropriate temporary fencing (eg ‘Heras’ fencing) at the start of construction work to prevent access and incidental damage by site vehicles, equipment and personnel.
- 5.3.3 All retained trees should be treated in accordance with British Standard BS5837 (2012) *Guidance for the Treatment of Trees in Relation to Construction*. Damage to mature trees, as well as tree and scrub understorey should be avoided wherever possible.
- 5.3.4 Building compounds and storage areas should not be sited on areas of habitat which are to be retained or in the off-site habitats and should be suitably fenced and bunded where they stand adjacent to semi-natural habitats. Similarly, no equipment, machinery or materials should be brought into the retained areas, or stored under retained tree canopies, or ground levels altered within these clearly demarcated zones of protection.
- 5.3.5 Any trees which must be removed as part of the development should be replaced on a like-by-like basis as a minimum with native species which are indigenous to the region, and from stock which is of local (or at least UK) provenance and also contain a good range of wildlife friendly plants (see Appendix 4 for example species).
- 5.3.6 To provide ecological enhancement following the development, consideration should be given to the erection of bat roosting and bird nesting boxes in suitable trees around the site. These should be sited in such a manner that predators such as cats cannot reach them, and be at least 4m (preferably 5m) above ground level. The entrances to bat boxes should not be illuminated at night. Bat boxes should ideally be of ‘woodcrete’ construction (such as those manufactured by Schwegler Ltd), since these are much more robust and longer-lived than traditional wooden boxes and require less after-maintenance. Further examples are given at Appendix 5.
- 5.3.7 The services of an appropriately qualified and licensed ecologist should be available on an ‘on-call’ basis throughout the development in order to deal promptly with any protected species or other ecological matters which may arise during the clearance and construction works.
- 5.3.8 Any new fencing installed within the new development should have 13cm by 13cm squares cut out of the base or a continuous 13cm tall gap running along the bottom of the fence to allow the passage of hedgehogs and other small mammals.
- 5.3.9 Any excavations should be suitably fenced off at night to prevent any wildlife falling and becoming trapped.
- 5.3.10 Small numbers of common reptiles are likely to be present within the site, please refer to the reptile mitigation strategy for mitigation measures related to reptiles.
- 5.3.11 A compliance check will be undertaken by the retained ecologist to check that all compensation/enhancement features have been satisfactorily installed.

6.0 REFERENCES

Andrews, H (2018) *Bat Roosts in Trees: A guide to identification and assessment for tree-care and ecology professionals.* Pelagic Publishing, Exeter.

Bat Conservation Trust (BCT 2016) *Bat Surveys for Professional Ecologists. Good Practice Guidelines, 3rd Edition.* Bat Conservation Trust, London.

Bat Conservation Trust (BCT 2018) *Bats and Artificial Lighting in the UK Guidance Note. Bats and the built environment series.* Bat Conservation Trust, London.

Chartered Institute of Ecology and Environmental Management (2013) *Guidelines for Preliminary Ecological Appraisal.* CIEEM, Winchester.

APPENDIX 2: INTEGRATED BAT AND BIRD BOX DESIGNS

Taken from Habibat.co.uk



Habibat 001 Bat Box Bespoke Facing

- Other Options -

Dimensions: 215 mm wide x 440 mm high x 102 mm deep

Material: Concrete plus facing product

Weight: approximately 7 kg

001 Facing Options:

Unfaced for Render Finish with red/blue or buff plinth

Standard Finish in smooth red, blue or buff brick

Bespoke Finish in a material of your choice

The Habibat Bat Box is a large, solid box made of insulating concrete which provides an internal roost space, and can be seamlessly integrated into the fabric of a building as it is built or renovated. Suitable for most species commonly found in the UK, this single chambered unit features an integrated V system to increase the surface for bats to roost against, whilst allowing them to move around.

The Habibat Bat Box can be faced with a number of products to suit the design build. This includes, brick, block, stone, wood or a rendered finish, ensuring the box is unobtrusive and aesthetically pleasing. There are a choice of 3 plinth colours available: smooth blue, smooth red, or buff.

This box is made to order with a choice of finishes.

Habibat 003 Swift Box

A bird box designed specifically for Swifts which can be integrated into your design build.

The Habibat 003 Swift Box is a solid box made of insulating concrete which provides an internal roost space, and can be seamlessly integrated into the fabric of a building as it is built or renovated. The access hole in specifically design to accommodate swifts.



The Habibat 003 Swift Box can be faced with a number of products to suit the design build. This includes, brick, block, stone, wood or a rendered finish, ensuring the box is unobtrusive and aesthetically pleasing.

This box is made to order with a choice of finishes, featuring the 003 style for seamless integration into your project.

Habibat Terraced Sparrow Box

Colour: Unfaced

Dimensions: 440mm x 215mm x 150mm

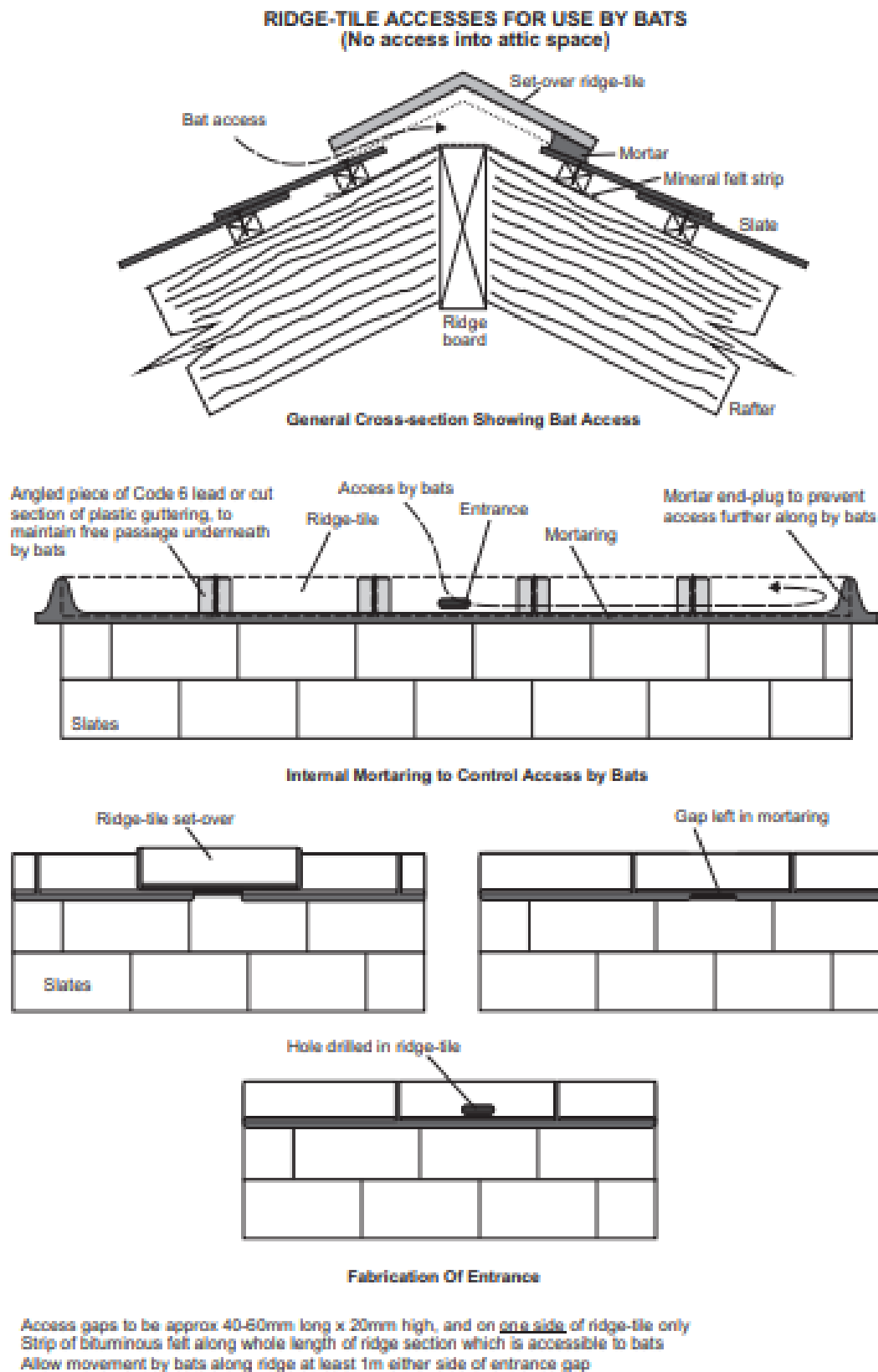


The Habibat Terraced Sparrow Box is a solid box made of insulating concrete which provides an internal roost space, and can be seamlessly integrated into the fabric of a building as it is built or renovated. The access hole in specifically design to accommodate sparrows.

The Habibat Terraced Sparrow Box can be faced with a number of products to suit the design build. This includes, brick, block, stone, wood or a rendered finish, ensuring the box is unobtrusive and aesthetically pleasing.

This box is made to order with a choice of finishes, and can be provided unfaced for rendering.

APPENDIX 3: Ridge Bat Access



APPENDIX 4: LANDSCAPING SPECIES

Trees and shrubs

All planting stock should be of native species which are indigenous to the region and will be of Welsh or at least UK, provenance.

Trees/shrubs

<i>Quercus robur</i> and/ or	Pedunculate oak
<i>Quercus petraea</i>	Sessile oak
<i>Fraxinus excelsior</i>	Ash
<i>Acer campestre</i>	Field maple
<i>Corylus avellana</i>	Hazel
<i>Crataegus monogyna</i>	Common hawthorn
<i>Betula pendula</i>	Silver birch
<i>Cornus sanguinea</i>	Dog wood
<i>Ilex aquifolium</i>	Holly
<i>Malus sylvestris</i>	Crab apple
<i>Prunus avium</i>	Wild cherry
<i>Prunus spinosa</i>	Blackthorn
<i>Rosa canina</i>	Common dog-rose
<i>Sorbus aucuparia</i>	Rowan
<i>Taxus baccata</i>	Yew
<i>Viburnum opulus</i>	Guelder rose
<i>Euonymus europaeus</i>	Spindle
<i>Sambucus nigra</i>	Elder

Planting should be carried out using 600mm bare-rooted transplants in spiral plastic guards (rabbit/vole protection) where appropriate. Standard tree aftercare should be applied.

Climbers

<i>Clematis vitalba</i>	Traveller's-joy
<i>Lonicera periclymenum</i>	Honeysuckle
<i>Solanum dulcamara</i>	Bittersweet
<i>Tamus communis</i>	Black bryony

Wildlife friendly plants for formal landscaping

The species listed below are primarily non-native species, which are commonly found in gardens and formal landscape areas. Those native species included are aesthetically pleasing and suitable for formal planting schemes.

Woody Species

Bodnant viburnum (<i>Viburnum x bodnantense</i>)	Lilac (<i>Syringa vulgaris</i>)
Californian lilac (<i>Ceanothus</i> spp.)	Mahonia (<i>Mahonia</i> spp.)
Firethorn (<i>Pyracantha</i> spp.)	Mock orange (<i>Philadelphus</i> spp.)
Laurustinus (<i>Viburnum tinus</i>)	Serviceberry (<i>Amelanchier canadensis</i>)
Japanese quince (<i>Chaenomeles japonica</i>)	White jasmine (<i>Jasminum officinale</i>)

Herbs

Alpine rock-cress (<i>Arabis alpina</i>)	Orpine (<i>Sedum telephium</i>)
Angelica (<i>Angelica archangelica</i>)	Perennial cornflower (<i>Centaurea montana</i>)
Annual honesty (<i>Lunaria annua</i>)	Perennial honesty (<i>Lunaria rediviva</i>)
Aubretia (<i>Aubretia deltoidea</i>)	Perennial sunflower (<i>Helianthus decapetalus</i>)

Autumn Stonecrop (<i>Sedum</i> 'Purple Emperor')	Phlox (<i>Phlox paniculata</i>)
Borage (<i>Borago officinalis</i>)	Poached-egg plant (<i>Limnanthes douglasii</i>)
California poppy (<i>Eschscholtzia californica</i>)	Purple coneflower (<i>Echinacea purpurea</i>)
Canadian Fleabane (<i>Erigeron canadensis</i>)	Purple-top vervain (<i>Verbena bonariensis</i>)
Candytuft (<i>Iberis sempervirens</i>)	Red campion (<i>Silene dioica</i>)
Christmas rose (<i>Helleborus niger</i>)	Red valerian (<i>Centranthus ruber</i>)
Common mallow (<i>Malva sylvestris</i>)	Rosemary (<i>Rosmarinus officinalis</i>)
Common poppy (<i>Papaver rhoeas</i>)	Sage (<i>Salvia officinalis</i>)
Cosmos (<i>Cosmos bipinnatus</i>)	Shrubby Veronica (<i>Hebe recurva</i>)
Evening primrose (<i>Oenothera biennis</i>)	Snapdragon (<i>Antirrhinum majus</i>)
Wood forget-me-not (<i>Myosotis sylvatica</i>)	Soapwort (<i>Saponaria officinalis</i>)
French marigold (<i>Tagetes</i> spp.)	Spear mint (<i>Mentha spicata</i>)
Globe thistle (<i>Echinops ritro</i>)	Spring crocus (<i>Crocus chrysanthus</i>)
Great mullein (<i>Verbascum thapsus</i>)	Sunflower (<i>Helianthus annuus</i>)
Grecian windflower (<i>Anemone blanda</i>)	Sweet alyssum (<i>Lobularia maritime</i>)
Heart-Leaf Ice-plant (<i>Aptenia cordifolia</i>)	Sweet bergamot (<i>Monarda didyma</i>)
Hollyhock (<i>Althaea rosea</i>)	Sweet rocket (<i>Hesperis matronalis</i>)
Hyssop (<i>Hyssopus officinalis</i>)	Sweet William (<i>Dianthus barbatus</i>)
Ice plant (<i>Sedum spectabile</i>)	Tickseed (<i>Coreopsis</i> spp)
Lacy phacelia (<i>Phacelia tanacetifolia</i>)	Tobacco plant (<i>Nicotiana affinis</i>)
Late Michaelmas-daisy (<i>Aster x versicolor</i>)	Wallflower (<i>Cheiranthus cheiri</i>)
Lavender (<i>Lavandula angustifolia</i> .)	Winter aconite (<i>Eranthis hyemalis</i>)
Lenten rose (<i>Helleborus orientalis</i>)	Yellow alyssum (<i>Alyssum saxatile</i>)
Ox-eye daisy (<i>Leucanthemum vulgare</i>)	Yellow loose-strife (<i>Lysimachia vulgaris</i>)
Marjoram (<i>Origanum vulgare</i>)	

Sources: *Plants for wildlife friendly Gardens* (Natural England), *Planting Gardens for Birds* (RSPB), *Gardening for Bats* (Bat Conservation Trust) and *Starting a Butterfly Garden* (School Garden Company).

APPENDIX 5: BIRD AND BAT BOXES FOR TREES

EXAMPLES OF NON-INTEGRATED BIRD BOXES FOR TREES AND BUILDINGS

Suspended Designs



Schwegler 1B
General box



Schwegler 2H open-front
'robin' box



Schwegler 5
'large owl' box



Schwegler 1CGA
'small owl' box



Schwegler 20
'starling' box



Schwegler 28 'kestrel' box



Schwegler 5KL 'nuthatch' box

Surface-mounted Designs



Schwegler 1MR general box



Vivara Pro open-front
'robin' box



Vivara Pro ova open-front
'robin' box



Vivara Pro 'starling' box



Vivara Pro 28/32mm
general box



Vivara Pro 28/32mm
oval general box

EXAMPLES OF SURFACE-MOUNTED BAT BOXES

Tree-mounted boxes



Schwegler 2F General Box



Schwegler 1FD Nursery Box



Schwegler 1FS Nursery Box (Large)



Schwegler 1FW Winter Box
(Very large box)



Schwegler 2FN
Noctule Box



Schwegler 2F DFP
Daubenton's Bat Box



Miramar General Box

Tree or building-mounted boxes



Schwegler 1FF General Box



Schwegler 1FQ Decorative Box



Schwegler 1FFH General Box



Vivara Woodstone Low Profile Box



NHBS Cavity Box
(Brown Long-Eared Bat Box)



NHBS Crevice Box

APPENDIX 6: VINCENT WILDLIFE TRUST ‘COOL TOWER’ DESIGN

The Lesser horseshoe ‘Cool Tower’ Lesser horseshoe bats, like all bats living in temperate regions, require a range of micro-environments in a roost, including an area where they can go into torpor in times of inclement weather, poor insect availability or as their body condition, age or sex dictates. ‘Cool rooms’ may also be used in times when the temperature inside the roost is too hot. Sites that lesser horseshoe bats generally use in summer have a range of conditions readily available, usually in the roof voids of a large house or farm building. In some cases, smaller sites are chosen where at least a part of the roost temperature is influenced by an independent heat source, for example a central heating boiler or heating exhaust flue. In these circumstances, the remaining section of the building is generally cooler. The loss of many roost sites has been well documented in Britain. Those that are not lost completely are sometimes adapted to accommodate bats in a smaller section of the building. In these sites, it is likely that the range of micro-climates has also been restricted. At a large country house in west Dorset, a bat colony was evicted from the main house and took up residence in a tiny outbuilding known as The Potting Shed. Being less than four metres long, two metres wide and only two and a half metres tall at the highest point, the single elevation slate roof offered little in the way of temperature range. The bats could only roost on the underside of the roofing felt; no roosting habitat was available lower in the building, where it would be a few degrees cooler. The following figures suggest a way of offering bats an opportunity to roost at different ‘altitudes’. It has proved to be very successful: within a few days bats began to use the structure, and although there are only around 30 animals in the colony, there is an accumulation of droppings 50-75mm deep on each ‘floor’. Despite the lowest floor/ceiling being just 450mm from the ground, it is extensively used. Colin Morris, Vincent Wildlife Trust updated February 2017

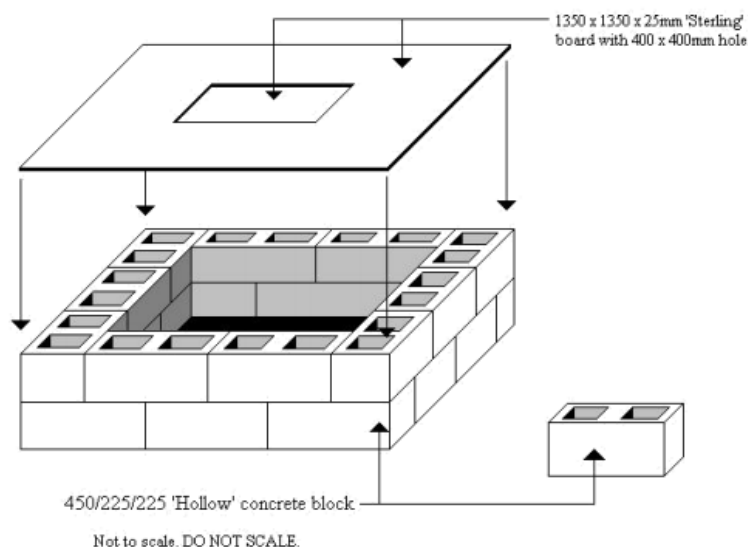


Fig 1. BASE. The floor/ground need to be flat and level. Sterling board has been suggested as it has a ‘rough’ surface, enabling lesser horseshoe bats to grip. In the ‘original’ tower I fitted nylon netting to the underside of the boarding.

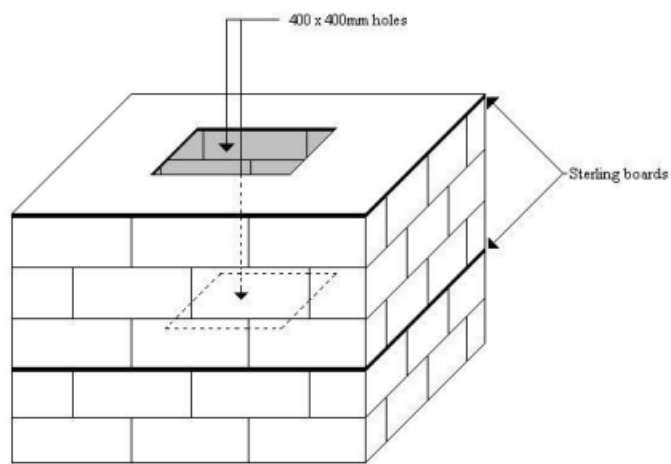


Fig 2. CENTRAL SECTION. 400x 400mm holes cut centrally through boarding

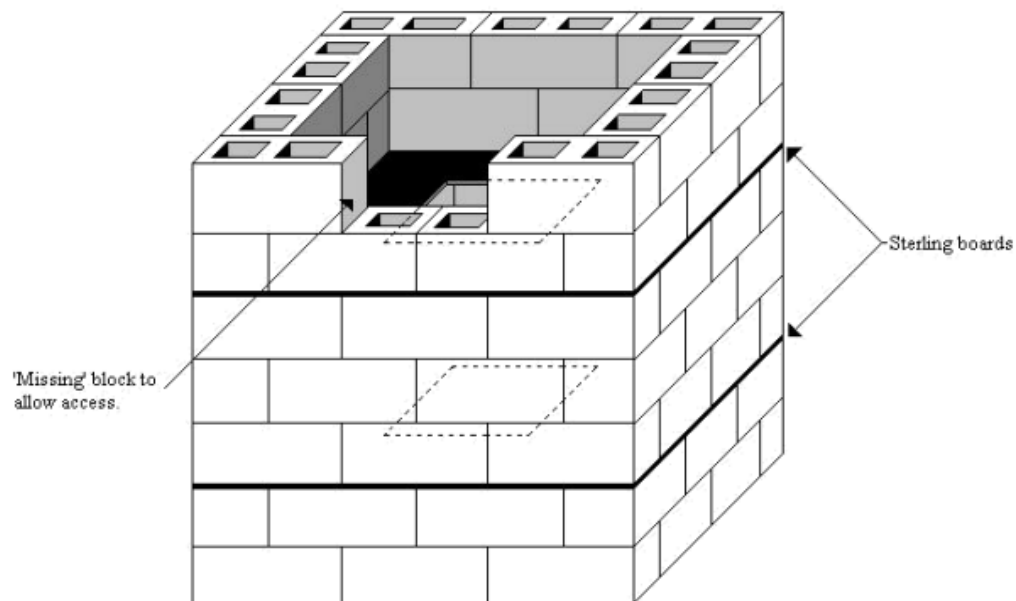


Fig 3. UPPER SECTION. Showing 'missing' block to allow bats access

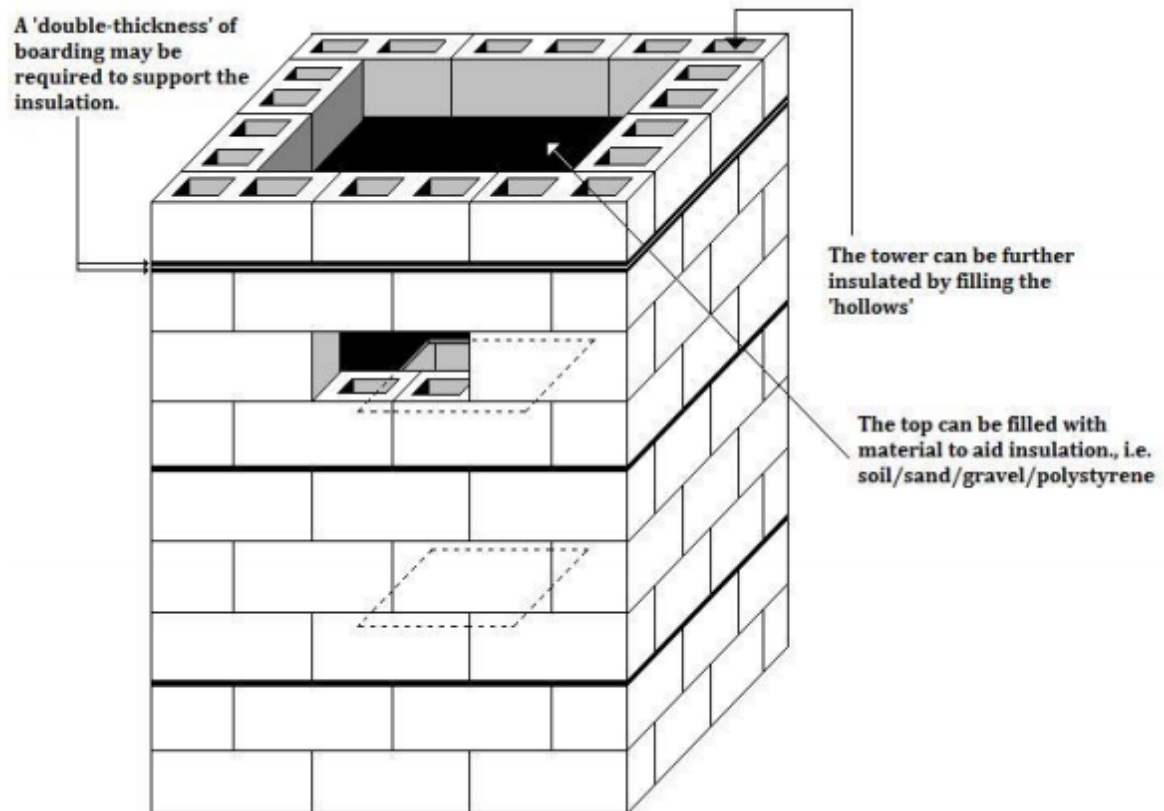


Fig 4. FULL TOWER. Insulation can be increased by filling the hollow sections and covering the roof with suitable material ie soil/sand/gravel/polystyrene

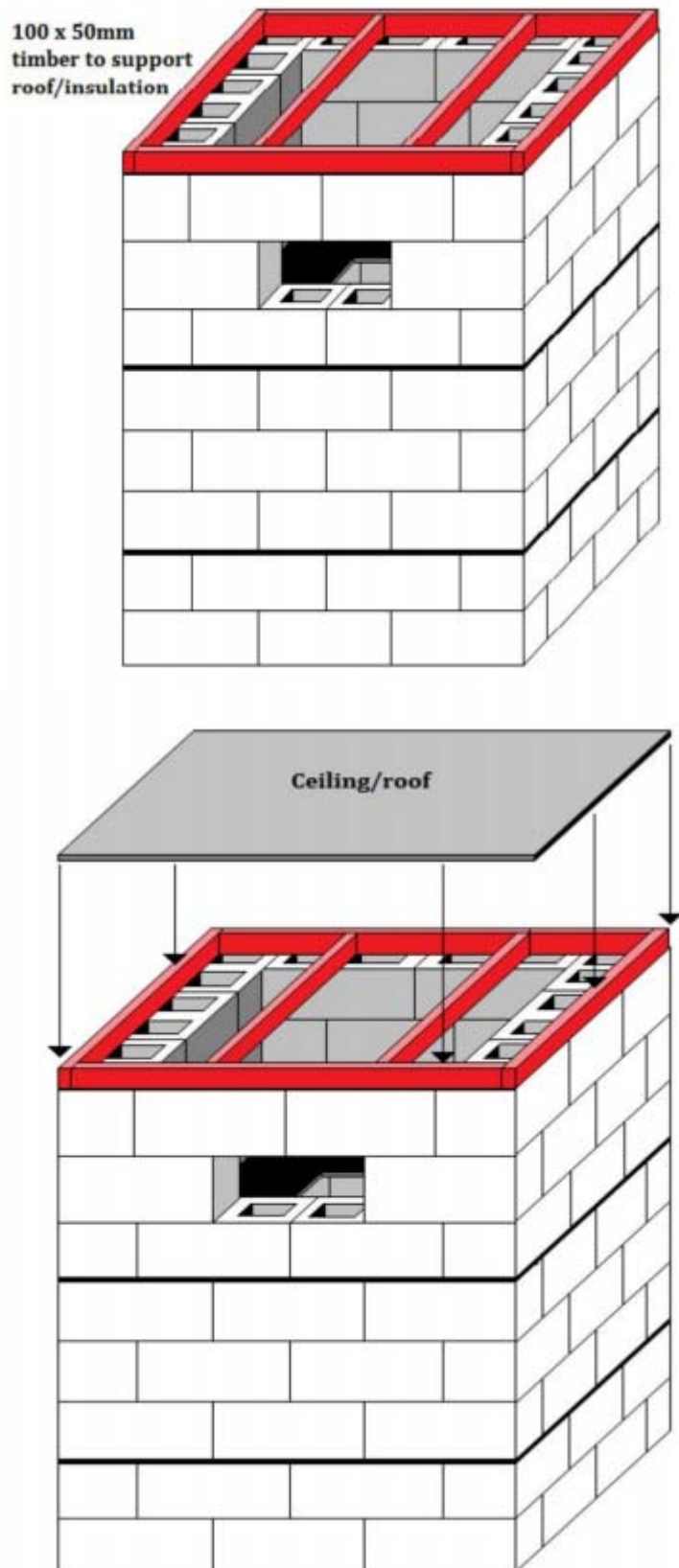


Fig 5. Alternative ceiling/roof support using 100 x 50mm timber.

Fig 6: Alternative roof/ceiling construction using 100 x 50mm timbers.

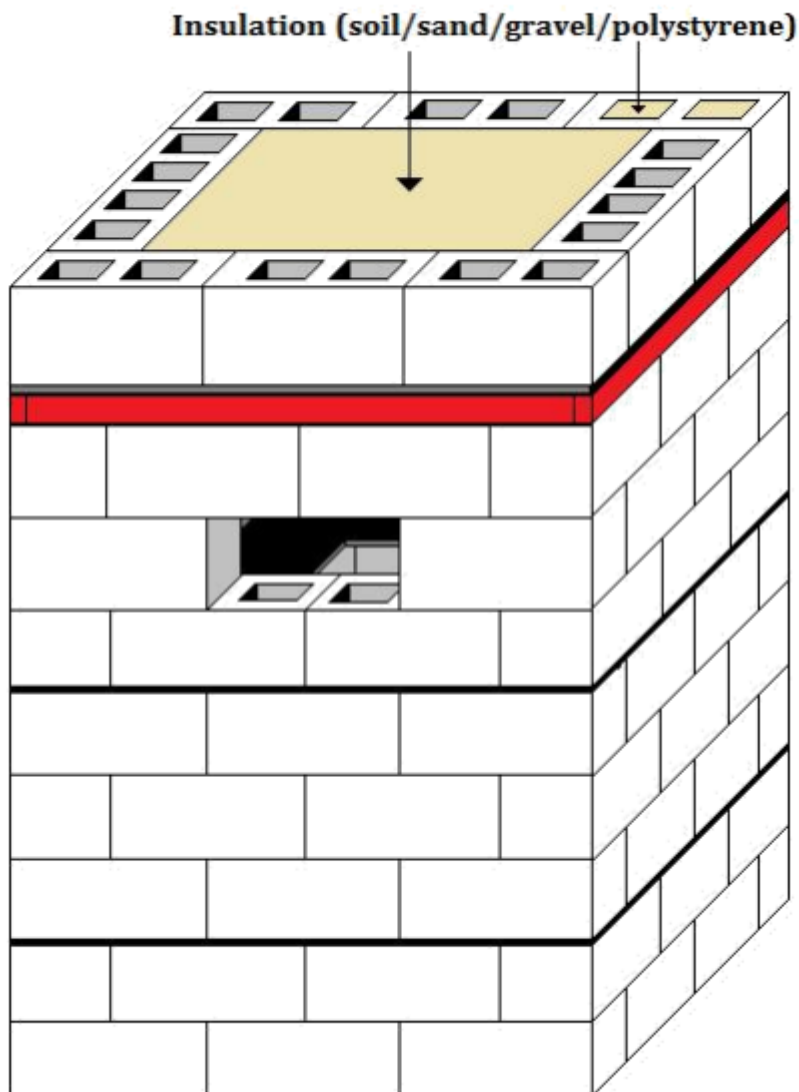


Fig 7. Tower with timber supported ceiling/roof and insulation

PHOTOGRAPHS OF SITE (April 2020)



Western elevation of building 1



Western elevation of building 1



Western elevation of building 1, grade listed section



View of part of western elevation



Large open window on the western elevation



Interior of building 1



Interior of building 1, water damage



Damage to ceiling, interior of building



Water damage in building 1 interior



Interior of building 1



Damage to exterior stone work on western elevation



Northern elevation of building 1

	
Southern elevation of building 1 with damage to exterior stone work	Open window areas on western elevation of building 1
	
Damaged slate clad flat roof extension on western elevation	Boarded up window with gaps
	
Exterior stone work damage, blue tit seen exiting during building inspection on south east corner of building 1.	Western elevation of building 2

	
Northern elevation of building 2	Gaps in window lintels on northern elevation of building 2
	
Gaps in lintel on northern elevation of building 2	Northern and eastern elevations of building 2
	
Interior of building 2	Northern and western elevations of building 3

	
Gaps in northern elevation of building 3	Gaps in northern elevation of building 3
	
Gaps in interior wall stone work in building 3	Birds nest in interior of building 3
	
Northern and eastern elevations of building 3	Sweet chesnut tree with PRF



Tree on boundary with PRF



Gaps under PVC fittings on northern extension of building 1

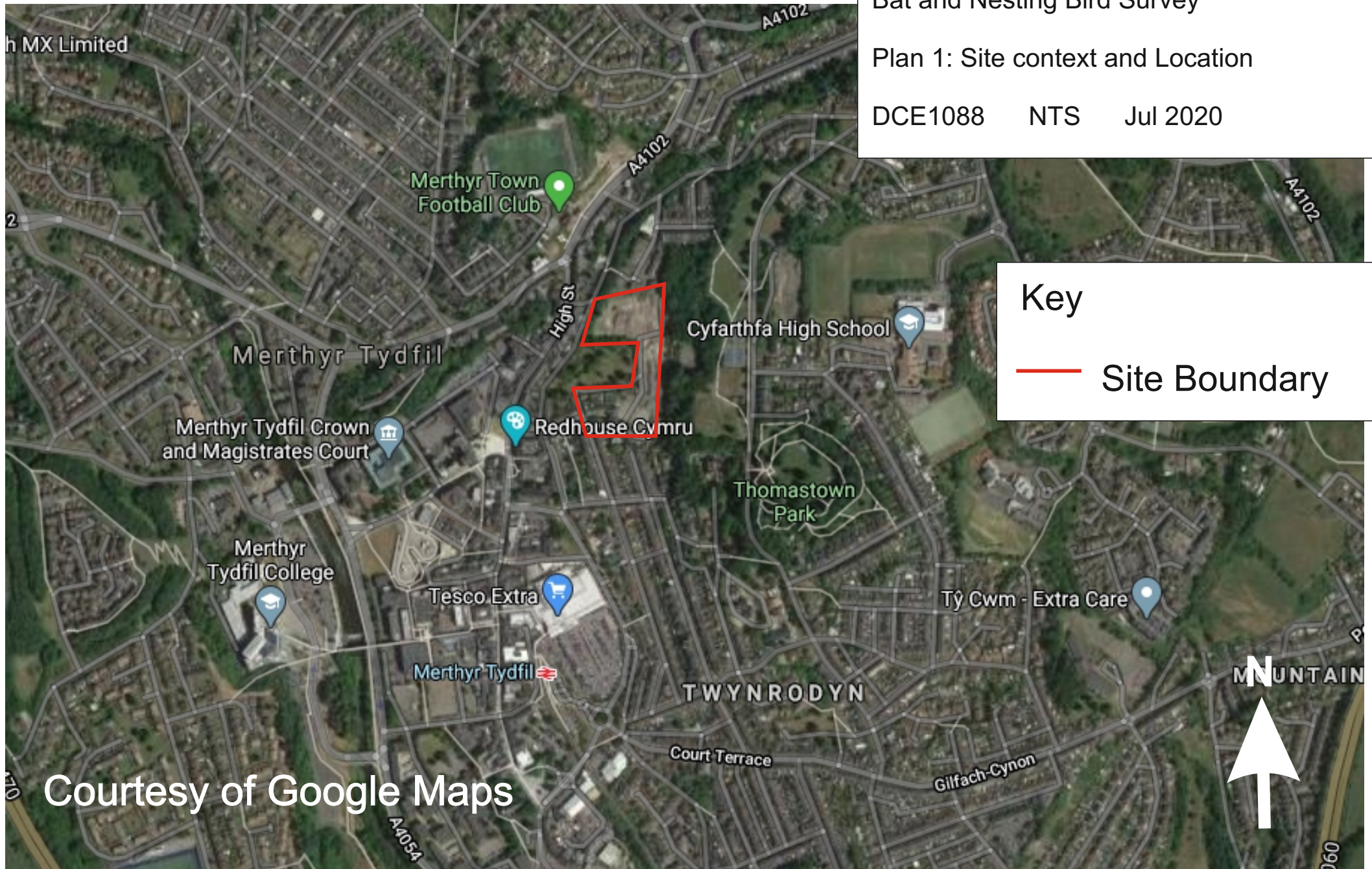


Damage to external stone work on northern extension of building 1

St Tydfil's Hospital, Merthyr
Bat and Nesting Bird Survey

Plan 1: Site context and Location

DCE1088 NTS Jul 2020



Key

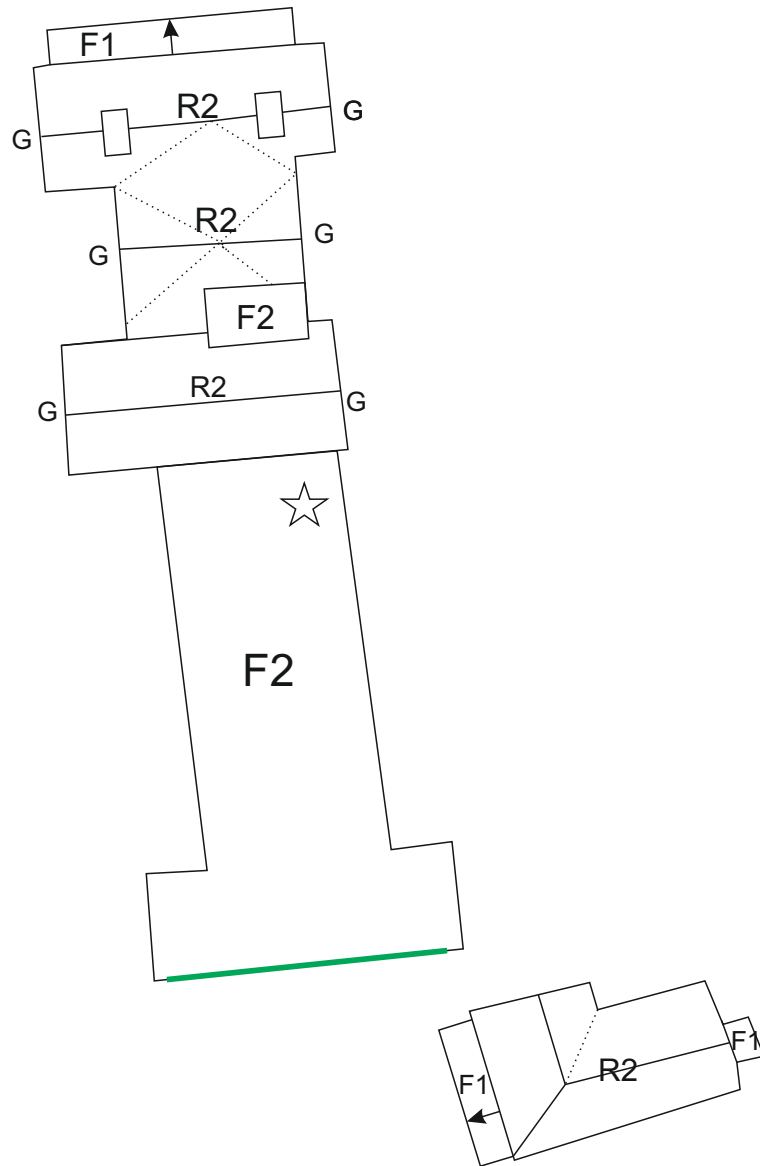
— Site Boundary

Courtesy of Google Maps

St Tydfil's Hospital, Merthyr
Bat and Nesting Bird Survey

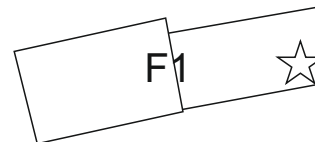
Plan 2: Building Inspection Results

DCE1088 NTS Jul 2020



Key

- ☆ Bird nests
- Ivy
- F Flat roof (storey number)
- G Gable
- R Ridge (storey number)
- Chimney
- ... Valley



St Tydfil's Hospital, Merthyr
Bat and Nesting Bird Survey

Plan 3: Flight Survey Dusk Emergence Results
(20th May 2020 & 26th May 2020)

DCE1088

NTS

Jul 2020

Key



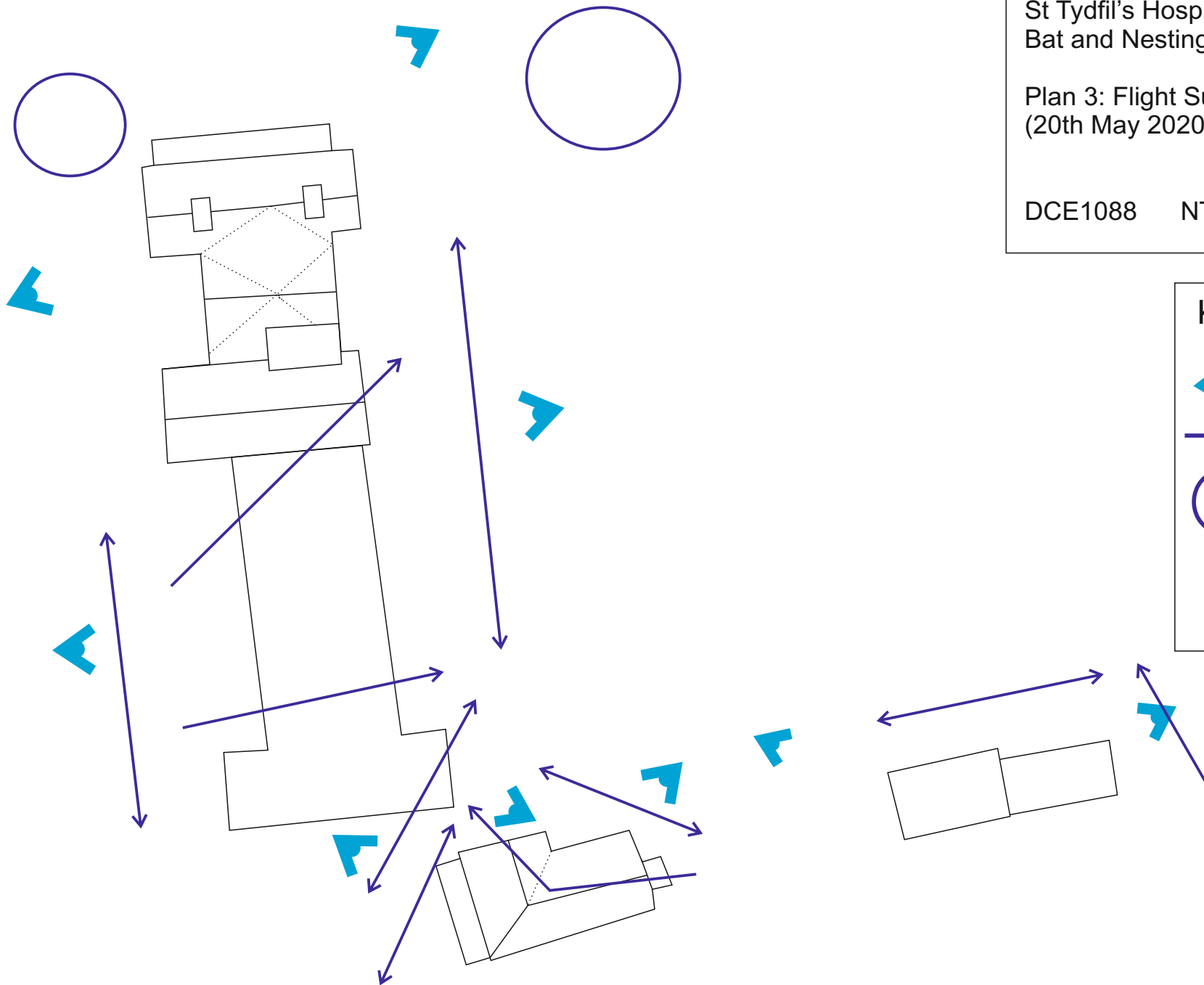
Surveyor position



Flight line
(common pipistrelle)



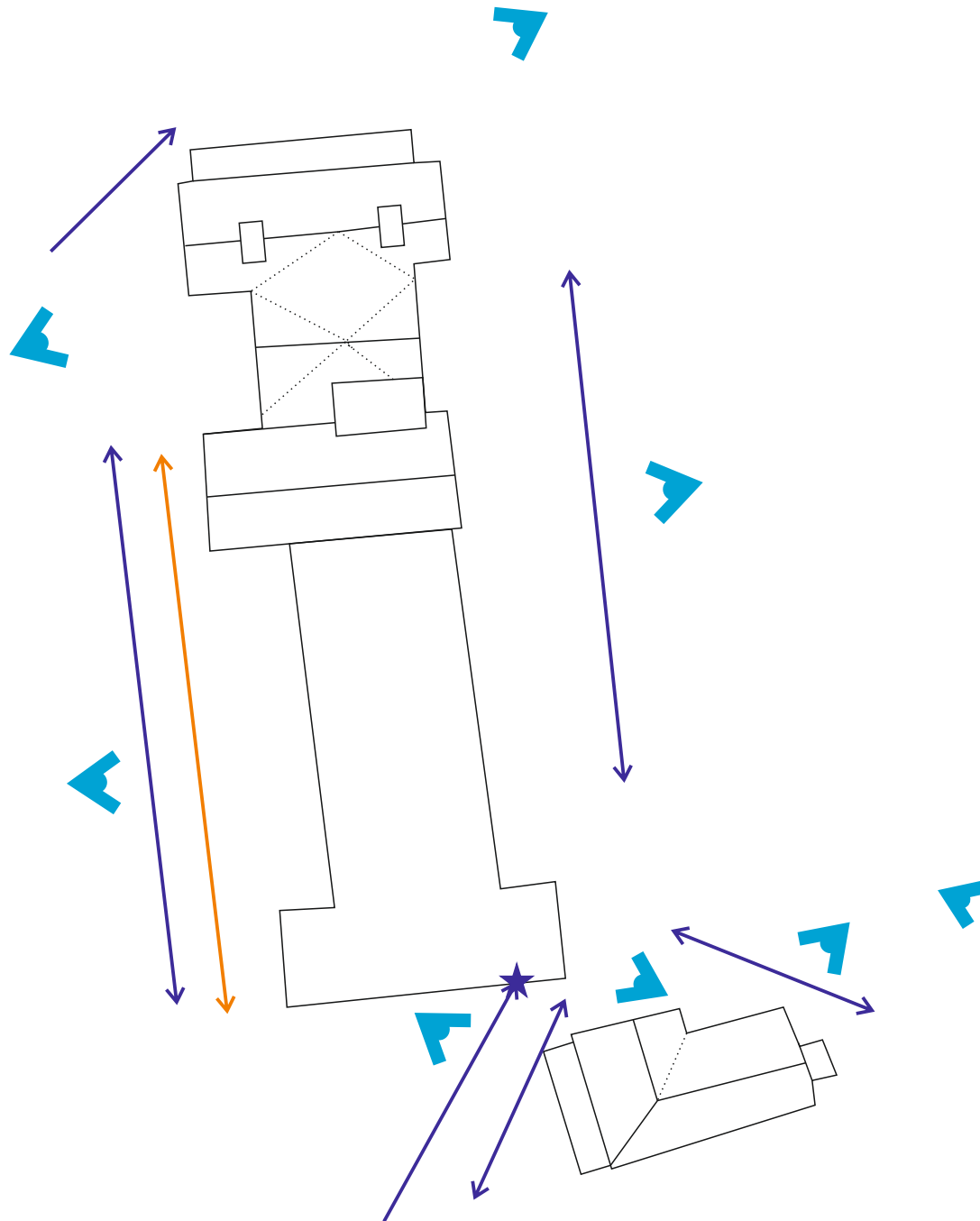
Foraging area
(common pipistrelle)



St Tydfil's Hospital, Merthyr
Bat and Nesting Bird Survey

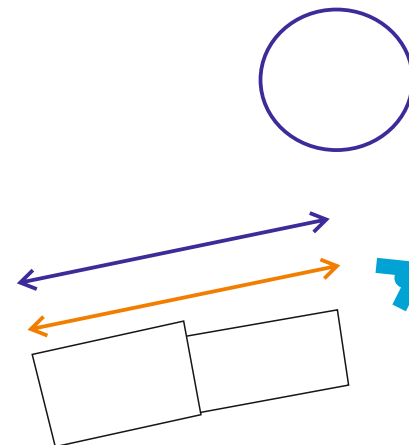
Plan 4: Flight Survey Dawn Reentry Results
(16th June 2020 & 23rd June 2020)

DCE1088 NTS Jul 2020



Key

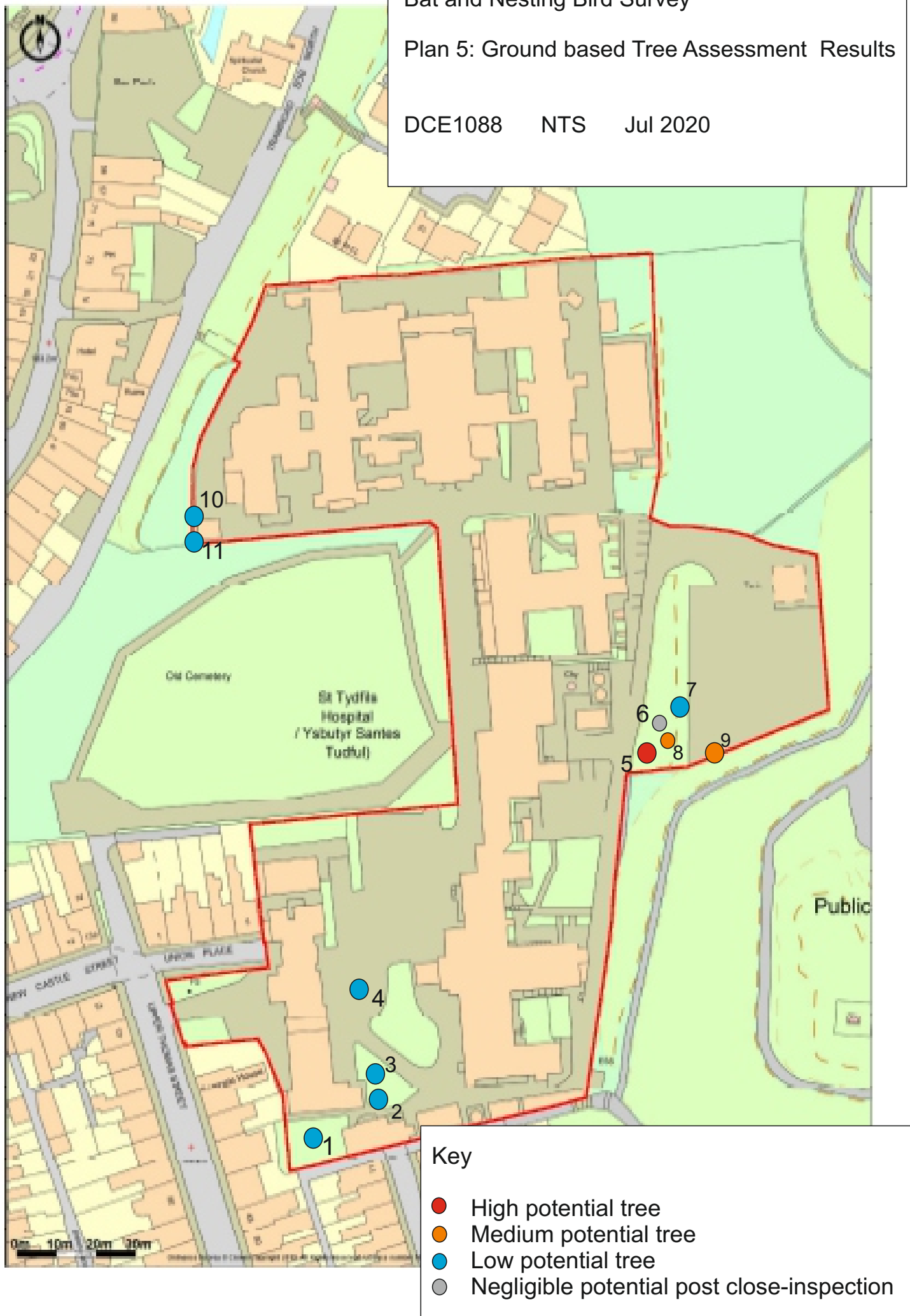
-  Surveyor position
-  Flight line
(common pipistrelle)
-  Foraging area
(common pipistrelle)
-  Flight line
(soprano pipistrelle)
-  Common pipistrelle
entry point



St Tydfil's Hospital, Merthyr
Bat and Nesting Bird Survey

Plan 5: Ground based Tree Assessment Results

DCE1088 NTS Jul 2020



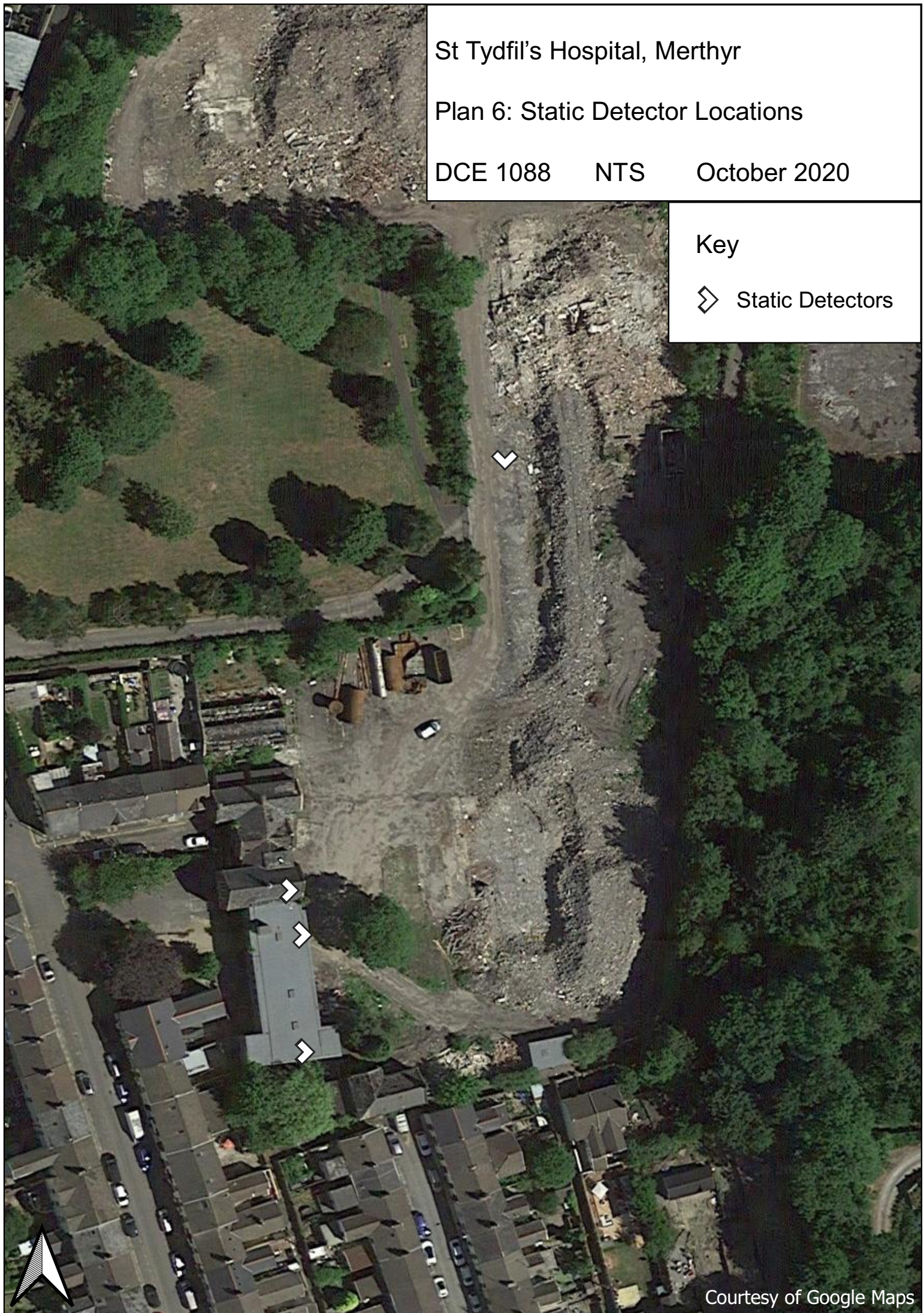
St Tydfil's Hospital, Merthyr

Plan 6: Static Detector Locations

DCE 1088 NTS October 2020

Key

➤ Static Detectors



Courtesy of Google Maps