Bat Emergence Survey Report

Tess Square and Butts Close Hybrid Scheme, Marnhull

October 2023

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Non-technical Summary

Phlorum was commissioned by Chapman Lily Planning to carry out a series of bat activity (emergence/re-entry) surveys for three barns and a disused well at Tess Square and Butts Close Hybrid Scheme, Marnhull, prior to development. The bat surveys were carried out between August and September 2023. The bat survey follows on from a Preliminary Ecological Appraisal (PEA) and concurrent preliminary roost assessment for bats and this report should be read in conjunction with the PEA report (Phlorum 2023).

Current proposals are for a commercial centre at land off Church Hill, to be known as Tess Square, and a residential development at land off Butts Close, to be known as Butts Close. The survey area extended over approximately 13.5 hectares (ha). The bat emergence surveys focused on buildings 2 (B2), 3 (B3) & 4 (B4) (the barns in the south of the northern area of the site) and the disused well in the southern area of the site.

The main findings of the survey are as follows:

- The level of general bat activity varied across the site. The highest levels of activity were recorded around buildings 2 & 3. The lowest levels of activity were recorded by the disused well.
- No bats were seen to emerge from or re-enter building 4 or the disused well. It is therefore considered that roosting bats were likely absent from these structures. No licence is required for the development works for these structures; however, it is recommended that a precautionary approach to works is adopted due to the presence of potential roosting features.
- A low number of common pipistrelles (*Pipistrellus pipistrellus*) and soprano pipistrelles (*Pipistrellus pygmaeus*) were recorded emerging from building 2. A low number of common pipistrelles and brown long-eared bats (*Plecotus auritus*) were recorded emerging from building 3. These buildings are therefore considered to support day roosts for low numbers of pipistrelle and long-eared bats. These are assessed as roosts of low conservation importance. It is recommended that works to building 2 and building 3 are carried out under a European Protected Species Mitigation Licence (EPSML), which can be obtained once planning permission has been granted. Alternative roosting provision should be installed prior to the start of works to these buildings.

Further information regarding mitigation and site enhancement is provided in the recommendations section of the report.

1. Introduction

Background

1.1 Phlorum Limited was commissioned by Chapman Lily Planning to carry out a series of bat activity (emergence/re-entry) surveys in relation to the Tess Square and Butts Close Hybrid Scheme at land off Church Hill and Butts Close, Marnhull (hereafter referred to as "the site") prior to development.

1.2 The bat surveys follow on from a Preliminary Ecological Appraisal (PEA) and concurrent preliminary roost assessment for bats, and this report should be read in conjunction with the previous PEA report (Phlorum 2023).

1.3 It is understood that current proposals are for a commercial centre at land off Church Hill, to be known as Tess Square, and a residential development at land off Butts Close, to be known as Butts Close.

1.4 During the initial preliminary roost assessment, the three barns in the south of the northern site (land off Church Hill) were assessed as having low potential for roosting bats, and the disused well in the southern field (land off Butts Close) was assessed as having low potential for roosting bats. It was therefore recommended that activity surveys be undertaken for the barns and well to assess whether or not bats are using the structures.

1.5 This report provides an assessment of the status of bats within the site, providing information on their presence/likely absence and distribution. Potential impacts of the proposed development are identified and measures to mitigate the effects of the proposed development on bats are discussed in outline.

Site Description

1.6 The site is located at land off Church Hill and land off Butts Close, Marnhull. The site is situated in a rural location in the village of Marnhull, Sturminster Newton, and predominantly comprises agricultural fields. The site area is split across two locations, separated by New Street and its associated properties. The northern site area (for Tess Square) includes part of the agricultural fields adjacent to Church Hill and Burton Street, as well as Marnhull Pharmacy and barns to the south of the fields. The southern site area (for Butts Close) includes a single agricultural field that is enclosed by Butts Close, New Street, Schoolhouse Lane, and Chippel Lane. The surrounding area predominantly comprises agricultural land and residential properties.

1.7 The site comprised buildings (u1b5), developed land; sealed surface (u1b), cereal crop (c1c), modified grassland (g4), ruderal/ephemeral (c 17 and s 17), fen marsh and swamp (f2), hedgerow (h2a), hedgerow with trees (h2a 190), scattered trees (c 11 and g 11), other rivers and streams (r2b), and bramble scrub (h3d).

1.8 The National Grid Reference for the centre of the northern site area (Tess Square) is ST 78019 18944 and for the centre of the southern site area (Butts Close) is ST 78008 18471. The survey area extended over approximately 13.5 hectares (ha).

2. Methodology

Data Search

2.1 Records for bats within a 2km radius of the site were obtained from the Local Records Centre (DERC, 2023) as part of the Preliminary Ecological Appraisal.

Review of Bat Building Inspection (Preliminary Roost Assessment)

2.2 A bat building inspection (Preliminary Roost Assessment) was carried out as part of the Preliminary Ecological Appraisal (Phlorum, 2023). A review of this document was carried out to guide the activity surveys and ensure appropriate coverage.

Personnel

2.3 The surveys were led by Billie Clifford and Shazz Hooper, ecological consultants each with a minimum of two years' professional survey experience.

Dusk Emergence Surveys

2.4 Dusk emergence surveys were carried out on the:

- 9th August 2023, 24th August 2023, and 7th September 2023 for the **barns**; and
- 14th August 2023 for the **disused well**.

2.5 A combination of Bat Box Duet heterodyne detectors and Echo Meter Touch 2 Pro detectors were used for the surveys.

2.6 Night vision aids (NVAs) were used for the second and third surveys for the barns. These comprised Sony FDR-AX53 camcorders partnered with infrared LED lights, to enable the buildings to be viewed with clarity despite low light levels. Continuous video was recorded for the duration of the surveys, allowing footage to subsequently be analysed for details. Due to the use of NVAs, which both enable surveyors to identify emergences at very low light levels and roost locations to be accurately pinpointed through review of the footage, it was considered that carrying out a series of dusk emergence surveys, as opposed to incorporating dawn re-entry surveys, would provide sufficient survey effort to reliably assess the roosting status of the buildings.

2.7 During the surveys, surveyors were strategically positioned around the barns and well to ensure coverage of all potential roosting features and/or potential routes of ingress/egress. The positions of the surveyors for each site are shown in the bat survey maps in Appendix A.

2.8 The evening surveys commenced at least 15 minutes before sunset and lasted for at least two hours after sunset. Prior to sunset, heterodyne bat detectors were tuned to below 30 kHz to listen for any potential pre-emergence social calls and noctules, which occasionally leave their roosts before sunset, tuning the detectors up to 45 kHz to pick up on general pipistrelle activity.

2.9 All surveys followed standard protocols and accepted standards (Mitchell-Jones and McLeish, 2004; Collins, 2016).

Roost Characterisation

2.10 Where a potential bat roosting feature or confirmed roost was identified, the surveyor assessed how these could be used by bats throughout the year, in accordance with Natural England (2015):

- day roost - where individual bats, or small groups of males, rest or shelter in the day, but rarely on summer nights;
- night roost - where bats rest or shelter at night, but rarely during the day;
- feeding roost - where bats rest at night between feeding sessions, but rarely during the day;
- hibernation roost - where bats are found during winter;
- transitional or occasional roost - where bats gather at a temporary site before and after hibernation;
- mating site - where males and females gather from late summer to early winter;
- maternity roost - where babies are born and raised until they're independent;
- satellite roost - where breeding females roost close to the main nursery colony in the breeding season; and
- swarming site - where bats gather in large numbers from late summer to autumn.

Constraints

Data Search Constraints

2.11 It is important to note that, even where data is held, a lack of records for a defined geographical area does not necessarily mean that there is a lack of ecological interest; the area may be simply under-recorded.

Bat Survey Constraints

2.12 Bats are mobile animals which can move roost sites both within and between years. It is possible that surveys carried out in August and September may miss roosts occupied earlier or later in the year.

3. Results

Data Search

3.1 The data search returned records (from the past 15 years) for at least six different species of bat within 2km of the site, including from the genera pipistrelle (*Pipistrellus*), long-eared (*Plecotus*), myotis (*Myotis*), horseshoe (*Rhinolophus*), serotine (*Eptesicus*), and noctule/ Leisler's (*Nyctalus*).

Review of Preliminary Roost Assessment

3.2 A Preliminary Roost Assessment was carried out as part of the Preliminary Ecological Appraisal (Phlorum, 2023) for all buildings and the well on site.

3.3 Two of the buildings (buildings 1 (B1) & 5 (B5)), and the trees around the site (with the exception of the large ash tree near the pharmacy) were assessed as having negligible potential to support roosting bats, due to a complete absence of potential roosting features. It was therefore recommended that no further survey work was required for these structures.

3.4 The large ash tree near the pharmacy was assessed as having low potential to support roosting bats, however it is understood that this tree is to be unimpacted by the proposed development. It was therefore recommended that no further survey work was required, unless plans change and the tree is to be impacted by any development.

3.5 The remaining three buildings (buildings 2 (B2), 3 (B3) & 4 (B4)) and the disused well were considered to have potential to support roosting bats and further survey work was recommended.

3.6 The assessments of and recommendations for each of these structures were as follows:

- **Buildings 2, 3 & 4:** Three large barns to that had historically been used as chicken sheds. They were in a state of disrepair and composed of wood and concrete. Each was on concrete block foundation that was raised off ground level. The buildings were all open internally with no roosting features present. However, the areas below, in the void created by the raised block work, created a chamber which had stacked material. The area below the three barns had low potential for roosting bats. It was therefore recommended that a single emergence/re-entry survey be carried out in the peak season for bat surveys (May to August inclusive).

- **Disused well:** Although unlikely to contain suitable roosting features, a full internal inspection of the disused well was not possible, therefore it was considered to have low potential for roosting bats. It was recommended that a single emergence/re-entry survey be carried out in the peak season for bat surveys (May to August inclusive).

Survey Results

Overview

3.7 The surveys for the barns (buildings 2, 3 and 4) were carried out during August 2023 and September 2023.

Building 2

3.8 During the first survey, one bat was seen re-entering the doors on the northern side of building 2. Two bats were seen emerging from the shrubbery at the east of the northern side of building 2, and three bats were seen re-entering here.

3.9 During the second survey, one bat was seen to re-enter the door on the southern side of building 2. One bat was seen to emerge from under the pipe at the east of the northern side of building 2.

3.10 During the third survey, one bat was seen emerging and re-entering the door on the southern side of building 2. One bat was seen to emerge from the shrubbery on the north of the eastern side of building 2.

3.11 The emerging bats comprised common pipistrelles (*Pipistrellus pipistrellus*) and one soprano pipistrelle (*Pipistrellus pygmaeus*). Overall, there was a high level of bat activity recorded at the site. Common pipistrelle was the most frequently recorded species.

Building 3

3.12 During the first survey, two bats were seen to emerge from under the pipe at the north of the eastern side of building 3. Two bats were seen to emerge from through the doors on the northern side of building 3, and three bats were seen re-entering here.

3.13 During the second survey, three bats were seen to emerge from the southern side of building 3.

3.14 During the third survey, one bat was seen emerging and re-entering the southern side of building 3.

3.15 The emerging bats comprised common pipistrelles and one brown long-eared bat (*Plecotus auritus*). Overall, there was a high level of bat activity recorded at the site. Common pipistrelle was the most frequently recorded species.

Building 4

3.16 No bats were seen to emerge from or re-enter building 4.

Disused Well

3.17 The survey for the disused well was carried out during August 2023. No bats were seen to emerge from the well. Overall, there was a low level of bat activity recorded at the site. A total of five bat species were recorded at the site which included Leisler's bat (*Nyctalus leisleri*), noctule (*Nyctalus noctula*), common serotine (*Eptesicus serotinus*), common pipistrelle, and myotis (*Myotis spp.*). No bats were seen for the duration of the survey. Common pipistrelle was the most frequently recorded bat species.

3.18 Bat survey maps are provided for each site in Appendix A and full survey data is provided in Appendix C. Further details of the survey results are provided below.

Buildings 2, 3 & 4 (Barns)

First Dusk Emergence Survey: 9th August 2023

3.19 Sunset was at 20:42hrs and the temperature at the start of the survey was 19°C, falling to 14°C at the end of the survey. The weather was clear, dry, and still.

3.20 In total at least seven bat species were recorded during the survey. These were common pipistrelle, soprano pipistrelle, noctule, brown long-eared bat, Leisler's noctule, myotis, and common serotine.

3.21 The first bat pass was recorded at 21:02hrs which was a foraging common pipistrelle. Based on the time of the first passes, it can be assumed that roosts may be close by for these species. The last pass was recorded at 22:34hrs which was a noctule that was heard but not seen. There was an overall high level of bat activity recorded during the survey. The most frequently recorded species was common pipistrelle. Bat activity was recorded throughout the whole duration of the survey.

3.22 The full survey data can be found in Appendix C.

Building 2

3.23 Two emergences and four re-entries were recorded during the survey. These were all common pipistrelles seen from the south-facing aspect.

3.24 At 21:04hrs, a common pipistrelle re-entered the doors on the northern side of building 2. At 21:08hrs, a common pipistrelle emerged from the shrubbery at the west of the northern side of building 2. At 21:10hrs, a common pipistrelle re-entered the shrubbery at the west of the northern side of building 2. At 21:25hrs, a common pipistrelle emerged from the shrubbery at the west of the northern side of building 2. At 21:32hrs, a common pipistrelle re-entered the shrubbery at the west of the northern side of building 2. At 21:48hrs, a common pipistrelle re-entered the shrubbery at the west of the northern side of building 2.

Building 3

3.25 Four emergences and three re-entries were recorded during the survey. These were common pipistrelles and one brown long-eared bat. These were all seen from the south-facing aspect.

3.26 At 21:08hrs, a common pipistrelle re-entered the doors on the northern side of building 3. At 21:10hrs, a common pipistrelle emerged from the doors on the northern side of building 3. At 21:27hrs, a common pipistrelle emerged from the pipe at the north of the eastern side of building 3. At 21:31hrs, a common pipistrelle was seen to re-enter the doors on the northern side of building 3. At 21:35hrs, a brown long-eared bat re-entered the doors on the northern side of building 3. At 21:38hrs, a common pipistrelle emerged from the pipe at the north of the eastern side of building 3. At 21:41hrs, a common pipistrelle emerged from the doors on the northern side of building 3.

Building 4

3.27 No bats were seen to emerge from or re-enter building 4.

Second Dusk Emergence Survey: 24th August 2023

3.28 Sunset was at 20:12hrs and the temperature at the start of the survey was 18°C, falling to 16°C at the end of the survey. The weather was clear, dry, and still.

3.29 The survey focused on buildings 2 and 3 only, since no evidence of roosting bats was found at building 4 during the first survey.

3.30 In total eight bat species were recorded during the survey. These were common pipistrelle, soprano pipistrelle, noctule, common serotine, brown long-eared bat, Nathusius' pipistrelle (*Pipistrellus nathusii*), Leisler's noctule, and myotis.

3.31 The first bat pass was recorded at 20:27hrs which was the common pipistrelle emergence from building 3. Based on the time of the first passes, it can be assumed that roosts are close by for these species. The last pass was recorded at 22:10hrs which was a common pipistrelle which was heard but not seen. There was an overall high level of bat activity recorded during the survey. The most frequently recorded species was common pipistrelle. Bat activity was recorded throughout the whole duration of the survey.

3.32 *Building 2*

3.33 One emergence and one re-entry was recorded during the survey. These were all common pipistrelles and were seen from the north- and south-facing aspects.

3.34 At 20:27hrs, a common pipistrelle re-entered the door on the southern side of building 2. At 20:43hrs, a common pipistrelle emerged from the pipe on the east of the northern side of building 2.

3.35 *Building 3*

3.36 Three emergences were recorded during the survey. These were all common pipistrellles and were seen from the south-facing aspect.

3.37 At 20:27hrs, a common pipistrelle emerged from the southern side of building 3. At 20:29hrs, a common pipistrelle emerged from the southern side of building 3. At 20:31hrs, a common pipistrelle emerged from the southern side of building 3.

Third Dusk Emergence Survey: 7th September 2023

3.38 Sunset was at 19:42hrs and the temperature at the start of the survey was 23°C, falling to 21°C at the end of the survey. The weather was clear, dry, and still.

3.39 The survey focused on buildings 2 and 3 only, since no evidence of roosting bats was found at building 4 during the first survey.

3.40 In total at least nine bat species were recorded during the survey. These were noctule, common pipistrelle, common serotine, brown long-eared bat, soprano pipistrelle, Nathusius' pipistrelle, myotis, Leisler's noctule, and greater horseshoe.

3.41 The first bat pass was recorded at 19:35hrs which was a noctule that was heard but not seen. Based on the time of the first passes, it can be assumed that roosts are close by for these species. The last pass was recorded at 21:40hrs which was a brown long-eared bat which was heard but not seen. There was an overall high level of bat activity recorded during the survey. The most frequently recorded species was common pipistrelle. Bat activity was recorded throughout the whole duration of the survey.

3.42 *Building 2*

3.43 Two emergences and one re-entry were recorded during the survey. These were one common pipistrelle and one soprano pipistrelle. These were seen from the north- and south-facing aspects.

3.44 At 20:07hrs, a soprano pipistrelle emerged from the shrubbery on the north of the eastern side of building 2.

3.45 At 20:25hrs, a common pipistrelle was seen to emerge and re-enter multiple times from the door on the southern side of building 2.

3.46 *Building 3*

3.47 One emergence and one re-entry was recorded during the survey. These were common pipistrelle and were seen from the south-facing aspect.

3.48 At 20:25hrs, a common pipistrelle was seen to emerge and re-enter multiple times from the southern side of building 3.

Disused Well

First Dusk Emergence Survey: 14th August 2023

3.49 Sunset was at 20:33hrs and the temperature at the start of the survey was 16°C, falling to 15°C at the end of the survey. The weather was dry and still with some clouds.

3.50 In total five bat species were recorded during the survey. These were common pipistrelle, noctule, Leisler's noctule, myotis, and common serotine.

3.51 No bats were seen to emerge from the well for the duration of the survey.

3.52 The first bat pass was recorded at 20:10hrs which was a Leisler's noctule that was heard but not seen. Based on the time of the first passes, it can be assumed that roosts are close by for this species. There was an overall low level of bat activity recorded during this survey. The last pass was recorded at 21:55hrs which was a common pipistrelle that was heard but not seen. The most frequently recorded species was common pipistrelle. No bats were seen for the duration of the survey.

3.53 The full survey data can be found in Appendix C.

4. Discussion and Recommendations

Discussion

4.1 The level of general bat activity varied across the site. The highest levels of activity were recorded around buildings 2 & 3. The lowest levels of activity were recorded by the disused well.

4.2 A total of at least nine bat species were recorded on the site during the emergence surveys. These were Leisler's noctule, common serotine, noctule, common pipistrelle, myotis, brown long-eared bat, soprano pipistrelle, Nathusius' pipistrelle, and greater horseshoe bat. Common pipistrelle was the most frequently recorded species.

Building 2 (Barn)

4.3 It is considered that building 2 (barn) supports a day roost used by low numbers of common pipistrelles and soprano pipistrelles. Two emergences and four re-entries (all common pipistrelles) were recorded on the first survey. One emergence and one re-entry (of two common pipistrelles) was recorded on the second survey. Two emergences (of one common pipistrelle and one soprano pipistrelle) and one re-entry (of one common pipistrelle) were recorded on the third survey. The emergences and re-entries were recorded from five locations in total. The emergence locations are shown in the photographs below.

Figure 1: One emergence was seen from the shrubbery on the north of the eastern side of the building (left circle) during the third survey. One emergence was seen from beneath the drainpipe on the northern side of the building (right circle) during the second survey. One re-entry was seen from the doors on the northern side of the building during the first survey. Two emergences and three re-entries were also seen from the shrubbery at the

right of the photograph, but this was on the western side of the building (unphotographed). This was during the first survey.

Figure 2: On the southern side of the building, one emergence and two re-entries were seen from the door during the second and third surveys.

4.4 Low numbers of both common and soprano pipistrelles were recorded emerging from building 2. Based on the locations of the recorded emergences and the roosting preferences of pipistrelle species, is it considered that the bats were most likely utilising crevices in the interior and exterior of the building for roosting.

4.5 This roost is considered to be of 'low conservation importance'.

4.6 It is understood that building 2 is to be demolished. Due to the presence of a bat roost, a mitigation licence for bats will be required for these works. Further details are provided below.

Building 3 (Barn)

4.7 It is considered that building 3 (barn) supports a day roost used by low numbers of pipistrelles and brown long-eared bats. Four emergences (all common pipistrelles) and three re-entries (of common pipistrelles and one brown long-eared bat) were recorded on the first survey. Three emergences (of two common pipistrelles) were recorded on the second survey. One emergence and one re-entry (of one common pipistrelle) was recorded on the third survey. The emergences and re-entries were recorded from three locations in total. The emergence locations are shown in the photographs below.

Figure 3: At the southern side of the building, four emergences and one re-entry were seen from the damaged, open part of the structure. These were during the second and third surveys. At the northern side of the building (unphotographed), two emergences and three re-entries were seen from the doors during the first survey. Two emergences were also seen from the pipe at the north of the western side of the building (unphotographed) during the first survey.

4.8 Both common and soprano pipistrelles were recorded emerging from building 3. Based on the locations of the recorded emergences and the roosting preferences of pipistrelle species, is it considered that the bats were most likely utilising crevices in the interior of the building, as well as crevices and shrubbery on the exterior of the building for roosting. A brown long-eared bat was also recorded re-entering building 3. Based on the location of the recorded re-entry, it is considered that the bat was most likely utilising crevices in the interior of the building for roosting.

4.9 This roost is considered to be of 'low conservation importance'.

4.10 It is understood that building 3 is to be demolished. Due to the presence of a bat roost, a mitigation licence for bats will be required for these works. Further details are provided below.

Building 4 (Barn)

4.11 No bats were seen to emerge from any features during the survey. It is considered that roosting bats are likely absent from building 4.

4.12 Based on the findings of this survey a European Protected Species Mitigation (EPSM) licence **will not be required**.

4.13 A precautionary approach to the removal of any potential bat roost features is recommended. A suitably experienced ecologist should oversee the start of the works and discuss the stages of the proposed works with the on-site contractors. The ecologist may then return to the site to oversee certain stages of the works as considered necessary. If during the precautionary works a bat is found, then the ecologist needs to be informed and all work stopped until it has been assessed. If a roost is confirmed, then a bat EPSM licence may be required before the work commences.

Disused Well

4.14 No bats were seen to emerge from any features during the survey. It is considered that roosting bats are likely absent from the well.

4.15 Based on the findings of this survey a European Protected Species Mitigation (EPSM) licence **will not be required**.

4.16 A precautionary approach to the removal of any potential bat roost features is recommended. A suitably experienced ecologist should oversee the start of the works and discuss the stages of the proposed works with the on-site contractors. The ecologist may then return to the site to oversee certain stages of the works as considered necessary. If during the precautionary works a bat is found, then the ecologist needs to be informed and all work stopped until it has been assessed. If a roost is confirmed, then a bat EPSM licence may be required before the work commences.

Recommendations

Construction Phase

Buildings 2 and 3

4.17 It is considered that buildings 2 and 3 (barns) each support a day roost used by small numbers of pipistrelle and brown long-eared bats. Both common and soprano pipistrelles were confirmed to be roosting in building 2. Common pipistrelles and brown long-eared bats were confirmed to be roosting in building 3. The bats appeared to be roosting in several different locations across both buildings, with emergences from multiple locations.

4.18 It is considered that the roosts in each building are of **'low conservation importance'**. Feeding, day, night and transition roosts are all considered 'low conservation status roosts' for the common and widespread species of bats in the UK.

4.19 A European Protected Species Mitigation Licence (EPSML) must be obtained from Natural England prior to the demolition of buildings 2 and 3. The licence will include a detailed method statement including working methods and mitigation/compensation.

4.20 Licences can only be applied for once planning permission has been granted. A visit to the site must have been carried out by an ecologist within three months of applying for the licences to re-inspect the buildings and check conditions remain the same. Licence applications should also include bat survey data from the most recent survey season.

4.21 All work on, or removal of, a potential roosting feature at buildings 2 and 3 should be carried out under the licence. Potential roosting features for these buildings were associated with the shrubbery and pipes on the exterior of the buildings, and this is where bat roosts have been identified. It is also considered that bats are using the interior of the buildings to roost, however it was not possible to determine the exact location of these interior roosts.

4.22 It is recommended that works on these buildings are carried out outside of the hibernation period, when bats are considered least vulnerable. The hibernation period is taken to run between mid to late November and mid-March, weather dependant.

4.23 Alternative roosting provision should be installed prior to the commencement of works on buildings 2 and 3. This could comprise bat boxes, suitable for pipistrelles and brown long-eared bats, being installed on nearby trees.

4.24 The designs should include external or integrated bat boxes on the new buildings at Tess Square, to provide continued roosting opportunities at this location post-development.

Building 4 and the Disused Well

4.25 A precautionary approach to works at building 4 and the disused well should be adopted in order to safeguard any bats that could roost in these structures in the interim before development works commence.

4.26 It is recommended that any works to demolish/renovate building 4 or the disused well commence outside of the hibernation period, when bats are considered least vulnerable. The hibernation period is taken to run between mid to late November and mid-March, weather dependant.

4.27 A suitably experienced ecologist should oversee the start of these works. On arrival to the site the ecologist will re-inspect the barn and well internally and externally to look for evidence of roosting bats. An on-site assessment can then be made by the ecologist regarding the status of any roosts present.

4.28 The ecologist will then discuss the different stages of the proposed works with the on-site contractors. The ecologist may need to return to the site to oversee certain stages of the works.

4.29 If considered necessary following consultation with the on-site contractors, the ecologist will guide the start of the works.

4.30 The ecologist should be kept informed throughout the construction phase and an ecological watching brief may be required to oversee certain phases of the re-development.

4.1 If bats are subsequently found to be present during the remainder of the work, activities should cease immediately, and advice sought from a suitably experienced ecologist.

Habitat Enhancement

4.2 It is understood that new planting has been included in design proposals. This will improve opportunities across the site for foraging and commuting bats.

4.3 Additional roosting opportunities could be incorporated into the final design to enhance the site for roosting bats post works. This could include the installation of bat boxes such as the Schwegler 1FF bat box located on surrounding mature trees and/or the new buildings within the site. These should be orientated with a south east or south west aspect and located at least 3m from ground level.

Bats and Lighting

4.4 Different species of bat have been found to react differently to night-time lighting however research has found that generally, all species of bats are sensitive to artificial lighting and that excessive lighting can delay bats from emerging, thus shortening the time available for foraging, as well as causing individuals to move away from suitable foraging grounds or roost sites, to alternative dark areas (Jones, 2000). Bats can also become isolated from their foraging grounds if the linear features they use for commuting are suddenly illuminated, creating a light barrier (Fure, 2006).

4.5 The current site is not well lit at night and therefore the development should serve to maintain the site's value for foraging bats and to minimise indirect impacts from lighting associated with the new buildings. This can be achieved by following accepted best practice (Institute of Ecology and Environmental Management 2006, Institute of Lighting Professionals 2018, Bat Conservation Trust, 2014):

- The level of any artificial lighting including flood lighting should be kept to a minimum, particularly around the site boundaries;
- LED lights are a preferred option to low pressure sodium lights or high pressure sodium or mercury lamps. LED lights do not emit UV radiation, towards which some insects are attracted, drawing them away from bat foraging areas in the surrounding landscape;
- all lights should be directed at a low angle with minimal light spillage wherever possible;
- ideally the site boundaries should be kept dark, preferably at bat emergence (0-1 hour after sunset) and during peak bat activity periods (e.g. 1.5 hours after sunset and 1.5 hours before sunrise);
- artificial lighting should not directly illuminate any potential bat commuting areas such as boundary features. Similarly, any newly planted linear features or buffer areas around the site boundary should not be directly lit; and

- if security lights are required, then they will be set on a Passive Infrared (PIR) sensor and timer so that the light is only emitted for the short time period required.

5. Conclusions

Conclusions

5.1 The site is located at land off Church Hill and Butts Close, Marnhull, Sturminster Newton. The surrounding area predominantly comprises agricultural land and residential properties.

5.2 The site comprises areas of buildings, developed land; sealed surface, cereal crop, modified grassland, ruderal/ephemeral, fen marsh and swamp, hedgerow, hedgerow with trees, scattered trees, other rivers and streams, and bramble scrub. It is understood that current proposals are for a commercial centre at land off Church Hill, to be known as Tess Square, and for a residential development at land off Butts Close, to be known as Butts Close. The survey area extended over approximately 13.5 hectares (ha).

5.3 During the initial preliminary roost assessment undertaken on 4th May 2023 (Phlorum 2023) the pharmacy (B1) in the north of the site was assessed to be of **negligible** potential for roosting bats due to its modern construction and lack of points of ingress. The remaining parts of the derelict building (B5) in the southern field was considered to have **negligible** potential for roosting bats due to its lack of suitable roosting features. It was therefore recommended that no further survey work was required for buildings 1 and 5. The three barns (B2, B3 & B4) in the south of the northern site were considered to be of **low** potential for roosting bats due to the areas below the buildings. These voids created by the raised block work, created chambers which had stacked material. It was therefore recommended that a single emergence survey be carried out for these buildings (B2, B3 & B4). The disused well in the southern field was considered to offer **low** potential for roosting bats, as it was not possible to conduct a full internal inspection of the structure. It was therefore recommended that a single emergence survey be carried out for the disused well.

5.4 Surveys were carried out for the three barns (B2, B3 & B4) and the disused well between August and September 2023.

5.5 No bats were seen to emerge from or re-enter the disused well or building 4. It is therefore considered that roosting bats were likely absent from these structures. No licence is required for the development works for the well or building 4; however it is recommended that a precautionary approach to works is adopted due to the presence of potential roosting features.

5.6 A low number of common and soprano pipistrelles were recorded emerging from building 2. This building is considered to support a day roost for small numbers of pipistrelle bats. This is assessed as a roost of low conservation importance. It is recommended that works to building 2 are carried out under a European Protected Species Mitigation Licence (EPSML), which can be obtained once planning permission has been granted. Alternative roosting provision should be installed prior to the start of works to this building.

5.7 A low number of common pipistrelles and brown long-eared bats were recorded emerging from building 3. This building is considered to support a day roost for small numbers of pipistrelle and brown long-eared bats. This is assessed as a roost of low conservation importance. It is recommended that works to building 3 are carried out under an EPSML, which can be obtained once planning permission has been granted. Alternative roosting provision should be installed prior to the start of works to this building.

5.8 The level of general bat activity varied across the site. The lowest levels of activity were recorded around the disused well. The highest levels of bat activity were recorded around buildings 2 and 3. These buildings are adjacent to areas of trees and hedgerows, which bats appeared to be utilising for foraging and commuting. There was also little artificial lighting at these buildings. A total of at least nine different bat species were recorded on the site.

5.9 It is recommended that bat boxes are installed across the site to provide new roosting opportunities, and a bat-sensitive lighting plan is created.

6. References

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Appendix A
Bat Survey Map

Figure 1: Marnhull Hybrid Buildings 2, 3 & 4 Bat Surveyor Map

Drawn by: BC
On the: 26/09/2023
Not to Scale
Ref: 11424

Phlorum Limited, 12 Hunns Mere Way,
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Email: info@phlorum.com

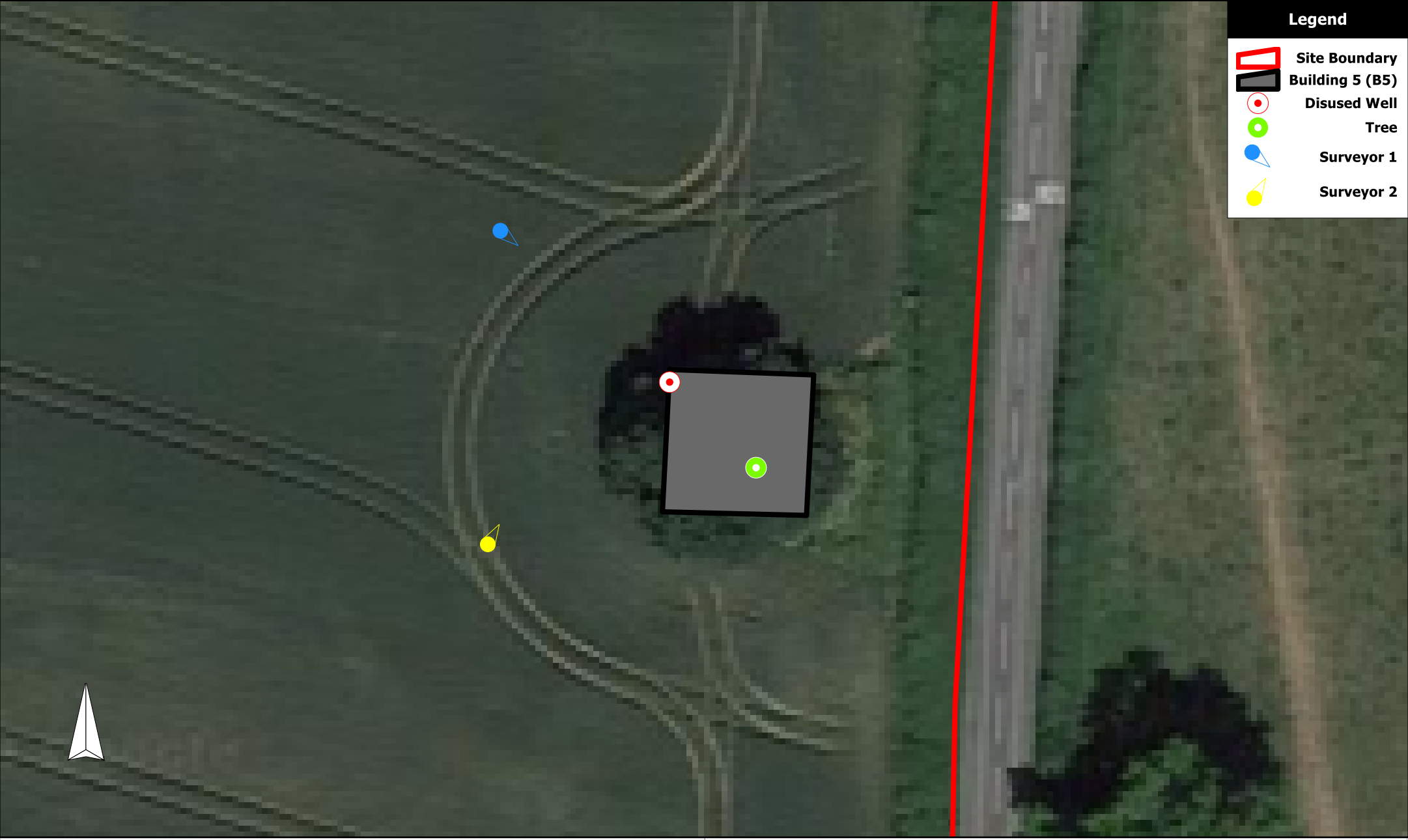

Figure 1: Marnhull Hybrid Well Bat Surveyor Map

Drawn by: BC
On the: 25/09/2023
Not to Scale
Ref: 11424

Phlorum Limited, 12 Hunns Mere Way,
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Appendix B
Legislation

Legislation

This section contains information pertaining to the legislation and planning policy applicable in Britain. This information is not applicable to Northern Ireland, the Republic of Ireland the Isle of Man or the Channel Islands. Information contained in the following appendix is provided for guidance only.

Species

The objective of the EC Habitats Directive1 is to conserve plants and animals which are considered to be rare across Europe. The Directive is transposed into UK law by The Conservation of Habitats and Species Regulations 2010 (as amended) (formerly The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) and The Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007 (as amended).

The Wildlife and Countryside Act 1981 (as amended) implements the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and also implements the obligations set out for species protection from the Council Directive 2009/147/EC (formerly 79/409/EEC) on the Conservation of Wild Birds (EC Birds Directive) in Great Britain.

Various amendments have been made since the Wildlife & Countryside Act came into force in 1981. Further details pertaining to alterations of the Act can be found on the following website: www.opsi.gov.uk. Key amendments have been made through the Countryside and Rights of Way (CRoW) Act (2000) and Nature Conservation (Scotland) Act 2004.

There are a number of other legislative Acts affording protection to species and habitats. These include:

- Countryside and Rights of Way (CRoW) Act 2000;
- Deer Act 1991;
- Natural Environment & Rural Communities (NERC) Act 2006;
- Protection of Badgers Act 1992; and
- Wild Mammals (Protection) Act 1996.

Bats

Bats are protected under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). This act protects individuals from:

- intentional or reckless disturbance (at any level);
- intentional or reckless obstruction of access to any place of shelter or protection; and

[1] Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora.

- selling, offering or exposing for sale, possession or transporting for purpose of sale

In addition, all species of bat are fully protected under The Conservation of Habitats and Species Regulations 2010 (as amended) through their inclusion on Schedule 2. Regulation 41 prohibits:

- deliberate killing, injuring or capturing of Schedule 2 species (all bats);
- deliberate disturbance of bat species as to impair their ability:

  (i) to survive, breed, or reproduce, or to rear or nurture young; and

  (ii) to hibernate or migrate.
- deliberate disturbance of bat species as to affect significantly the local distribution or abundance of the species;
- damage or destruction of a breeding site or resting place; and
- keeping, transporting, selling, exchanging or offering for sale whether live or dead or of any part thereof.

A European Protected Species Mitigation (EPSM) Licence issued by Natural England will be required for works liable to affect a bat roost or for operations likely to result in a level of disturbance which might impair their ability to undertake activities listed above. A licence is required to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and monitored.

Appendix C
Bat Survey Data

Bat Survey Data

Buildings 2, 3 & 4 (Barns) - First Dusk Emergence Survey on 9th August 2023

Number of Surveyors	Site and Job no:	Start Time	Sunset Time	Finish Time	Temperature (°C) at start	Temperature (°C) at end	Cloud Cover (Oktas 1-8)	Windspeed (Beauforts 1-12)	Rain
4	Marnhull Hybrid Scheme – Buildings 2, 3 & 4	20:27	20:42	22:43	19	14	1	1	0

Surveyor 1: Southeast of B2 viewing eastern aspect of B2 and southern aspect of B2, B3, and B4				Bat Detector Used: Bat Box Duet Heterodyne Detector
Time	Location	Activity observed	Number of passes	Comments/Notes
21:02		Heard but not seen	1	Common pipistrelle

21:03	Along eastern side of building 4	Commuting	1	Common pipistrelle
21:09		Heard but not seen		Common pipistrelle
21:12	Along eastern side of building 4	Commuting	1	Common pipistrelle
21:14	Along eastern side of building 4	Commuting	1	Common pipistrelle
21:15		Heard but not seen	1	Common pipistrelle
21:15		Heard but not seen	1	Soprano pipistrelle
21:20		Heard but not seen	2	Noctule
21:23	Above buildings 3 & 4	Foraging	1	Noctule

21:26		Heard but not seen	1	Soprano pipistrelle
21:28		Heard but not seen	1	Common pipistrelle
21:30	Along eastern side of building 4	Commuting	1	Common pipistrelle
21:31		Heard but not seen	1	Noctule
21:31		Heard but not seen	1	Common pipistrelle
21:33		Commuting	1	Common pipistrelle
21:37		Heard but not seen	1	Noctule
21:39	Along eastern side of building 4	Foraging	4	Common pipistrelle
21:59		Heard but not seen	1	Common pipistrelle
21:59		Heard but not seen	1	Noctule

22:03-22:23		Heard but not seen		Noctule
22:09		Heard but not seen	1	Soprano pipistrelle
22:11		Heard but not seen	2	Common pipistrelle

Surveyor 2: Southwest of B3 viewing southern and western aspects of B2, and southern aspect of B3				Bat Detector Used: Echo Meter Touch 2 Pro
Time	**Location**	**Activity observed**	**Number of passes**	**Comments/Notes**
21:06	Along western side of building 2	Foraging	2	Common pipistrelle
21:10	Along southern sides of buildings 2 & 3	Foraging	2	Common pipistrelle
21:11-21:13		Heard but not seen	4	Common pipistrelle
21:14		Heard but not seen		Common pipistrelle
21:15		Commuting	1	Common pipistrelle
21:16		Heard but not seen		Common pipistrelle

21:18-21:20		Heard but not seen	7	Common pipistrelle
21:20		Heard but not seen	2	Noctule
21:20		Heard but not seen		Common pipistrelle
21:23		Heard but not seen	4	Noctule
21:26	From trees to west of building 2 towards the north	Commuting	1	Common pipistrelle
21:27		Heard but not seen		Common pipistrelle
21:28	Along western side of building 2	Foraging	2	Common pipistrelle
21:31		Heard but not seen	2	Noctule

21:32		Heard but not seen		Common pipistrelle
21:35		Heard but not seen	3	Common pipistrelle
21:37-22:03		Heard but not seen	Multiple	Common pipistrelle
21:50		Heard but not seen		Noctule
22:02		Heard but not seen	2	Leisler’s noctule
22:08		Heard but not seen	2	Common pipistrelle
22:11		Heard but not seen		Noctule
22:12		Heard but not seen	6	Common pipistrelle
22:14		Heard but not seen		Myotis
22:16-22:19		Heard but not seen	6	Common pipistrelle

22:19		Heard but not seen	3	Brown long-eared bat
22:21		Heard but not seen		Common pipistrelle
22:22		Heard but not seen		Common serotine
22:23		Heard but not seen	3	Common pipistrelle
22:23		Heard but not seen	2	Brown long-eared bat
22:27		Heard but not seen	4	Common pipistrelle
22:28		Heard but not seen		Common serotine
22:28		Heard but not seen		Brown long-eared bat
22:28-22:35		Heard but not seen	22	Common pipistrelle
22:34		Heard but not seen		Noctule

Surveyor 3: North of B2 viewing northern aspect of B2 and B3				Bat Detector Used: Echo Meter Touch 2 Pro Black
Time	**Location**	**Activity observed**	**Number of passes**	**Comments/Notes**
21:04	Doors on northern side of building 2	Re-entry	2	Common pipistrelle
21:08	Shrubbery at east of northern side of building 2	Emergence	1	Common pipistrelle
21:10	Doors on northern side of building 3	Emergence	1	Common pipistrelle
21:10	Shrubbery at east of northern side of building 2	Re-entry	1	Common pipistrelle

21:11	From field to west of buildings towards the east, passing to the north of the buildings	Foraging	3	Common pipistrelle
21:13	From field to west of buildings towards the east, passing to the north of the buildings	Commuting	2	Soprano pipistrelle
21:18-21:23		Heard but not seen	2	Noctule
21:25	Shrubbery at the east of the northern side of building 2	Emergence	1	Common pipistrelle

21:30	From field to west of buildings towards the east, passing to the north of the buildings	Commuting		Common pipistrelle
21:32	Shrubbery at east of northern side of building 2	Re-entry	1	Common pipistrelle
21:40-21:50		Heard but not seen		Noctule
21:42		Heard but not seen		Common pipistrelle
21:48	Shrubbery at east of northern side of building 2	Re-entry	1	Common pipistrelle
22:15-22:25		Heard but not seen		Noctule

Surveyor 4: Northeast of B3 viewing northern and eastern aspects of B3 and northern aspect of B4				Bat Detector Used: Echo Meter Touch 2 Pro Light Blue
Time	**Location**	**Activity observed**	**Number of passes**	**Comments/Notes**
21:02	Flying between east and west, to the north of the buildings	Foraging	1	Common pipistrelle
21:03		Heard but not seen	1	Soprano pipistrelle
21:08	Doors on northern side of building 3	Re-entry	1	Common pipistrelle
21:10	Doors on northern side of building 3	Emergence	1	Common pipistrelle
21:12	Flying between east and west, to	Foraging	1	Common pipistrelle

	the north of the buildings			
21:13	Flying between east and west, to the north of the buildings	Foraging	2	Common pipistrelle
21:14	Flying between east and west, to the north of the buildings	Foraging	2	Soprano pipistrelle
21:22	Flying over building 3	Foraging	1	Noctule
21:27	Pipe at north of eastern side of building 3	Emergence	3	Common pipistrelle
21:31		Heard but not seen	1	Noctule

21:31	Doors on northern side of building 3	Re-entry	1	Common pipistrelle
21:33	Flying between east and west, to the north of the buildings	Foraging	3	Common pipistrelle
21:35	Doors on northern side of building 3	Re-entry	1	Brown long-eared bat
21:36		Heard but not seen		Noctule
21:37	Flying between east and west, to the north of the buildings	Foraging	1	Common pipistrelle
21:38	Pipe at the north of the eastern side of building 3	Emergence	2	Common pipistrelle

21:41	Doors on the northern side of building 3	Emergence	4	Common pipistrelle
22:03	Flying between east and west, to the north of the buildings	Foraging	2	Leisler’s noctule
22:09	Flying between east and west, to the north of the buildings	Foraging	1	Myotis
22:19	Overhead	Foraging	1	Common serotine

Buildings 2, 3 & 4 (Barns) - Second Dusk Emergence Survey on 24th August 2023

Number of Surveyors	Site and Job no:	Start Time	Sunset Time	Finish Time	Temperature (°C) at start	Temperature (°C) at end	Cloud Cover (Oktas 1-8)	Windspeed (Beauforts 1-12)	Rain
4	Marnhull Hybrid Scheme – Buildings 2 & 3	19:57	20:12	22:12	18	16	2	1	0

Surveyor 1: Southeast of B2 viewing southern and eastern aspects of B2 and southern aspect of B3				Bat Detector Used: Echo Meter Touch 2 Pro Light Blue
Time	**Location**	**Activity observed**	**Number of passes**	**Comments/Notes**
20:27-20:29	Emerged from southern side of building 3, re-entered	Emergence & re-entry	1	Common pipistrelle

	door on southern side of building 2			
20:30		Heard but not seen	2	Common pipistrelle
20:31	Southern side of building 3	Emergence	1	Common pipistrelle
20:37	Flying from east to west, to the south of the buildings	Commuting	1	Common pipistrelle
20:43		Heard but not seen	1	Soprano pipistrelle
20:43		Heard but not seen	1	Noctule
20:52	Flying from east to west, to the south of the buildings	Commuting	1	Common serotine

20:52		Heard but not seen	1	Soprano pipistrelle
21:00	Flying from east to west, to the south of the buildings	Commuting	1	Common serotine
21:01	Flying over building 3, from north-east towards south-west	Foraging	3	Common pipistrelle
21:45		Heard but not seen	1	Brown long-eared bat
21:52		Heard but not seen	1	Nathusius' pipistrelle
21:57		Heard but not seen	1	Leisler's noctule
21:57		Heard but not seen	1	Common pipistrelle
21:58		Heard but not seen	2	Brown long-eared bat

22:03		Heard but not seen	1	Common serotine
22:10		Heard but not seen	2	Common pipistrelle

Surveyor 2: Southwest of B3 viewing southern and western aspects of B2, and southern aspect of B3				Bat Detector Used: Echo Meter Touch 2 Pro
Time	**Location**	**Activity observed**	**Number of passes**	**Comments/Notes**
20:27-20:29	Emerged from southern side of building 3, re-entered door on southern side of building 2	Emergence & re-entry		Common pipistrelle
20:30	Flying from east to west, to the south of buildings 2 & 3	Commuting		Common pipistrelle
20:31	Emerged from southern side of building 3	Emergence		Common pipistrelle

20:33	Emerged from southern side of building 3	Emergence		Common pipistrelle
20:34		Heard but not seen	4	Common pipistrelle
20:37	To the south of buildings 2 & 3	Commuting		Common pipistrelle
20:42		Heard but not seen		Soprano pipistrelle
20:52	To the south of buildings 2 & 3	Commuting		Common serotine
20:53		Heard but not seen		Common pipistrelle
21:00	To the south of buildings 2 & 3	Foraging		Common serotine
21:01-21:19		Heard but not seen	Multiple	Common pipistrelle

21:21		Heard but not seen		Common pipistrelle
21:22		Heard but not seen		Noctule
21:25		Heard but not seen	2	Noctule
21:25-21:37		Heard but not seen	Multiple	Common pipistrelle
21:45		Heard but not seen		Noctule
21:46		Heard but not seen	6	Common pipistrelle
21:53		Heard but not seen	2	Common pipistrelle
21:56		Heard but not seen	6	Common pipistrelle
21:59		Heard but not seen	2	Common pipistrelle
22:00		Heard but not seen	5	Common pipistrelle

22:02		Heard but not seen	3	Common serotine
22:03		Heard but not seen	4	Common pipistrelle
22:05		Heard but not seen	1	Common serotine
22:07		Heard but not seen		Noctule
22:08		Heard but not seen	7	Common pipistrelle
22:10		Heard but not seen	4	Common serotine
22:12		Heard but not seen		Common pipistrelle

Surveyor 3: North of B2 viewing northern aspect of B2 and B3	**Bat Detector Used: Echo Meter Touch 2 Pro Black**

Time	Location	Activity observed	Number of passes	Comments/Notes
20:36	Flying over building 2 from south to north	Commuting	1	Common pipistrelle
20:40	To the north of buildings 2 & 3, flying between east & west	Commuting	1	Common pipistrelle
20:43		Heard but not seen		Noctule
20:43	Emerged from pipe on the east of the northern side of building 2	Emergence	1	Common pipistrelle
20:43-20:48		Heard but not seen		Common pipistrelle

20:51		Heard but not seen		Nathusius' pipistrelle
20:51		Heard but not seen		Common serotine
21:00	To the north of buildings 2 & 3, flying between east & west	Commuting	1	Common pipistrelle
21:00-21:10	To the north of buildings 2 & 3, flying between east & west, and in field to the west of building 2	Foraging	9	Common pipistrelle
21:14-21:15	Field to the west of building 2	Foraging	1	Common pipistrelle
21:18		Heard but not seen		Nathusius' pipistrelle

21:19-21:26	Circling over northwestern corner of building 2	Foraging	2	Common pipistrelle
21:42		Heard but not seen		Myotis
21:53	Flying over buildings 2 & 3 between east & west	Commuting	1	Common pipistrelle
22:02		Heard but not seen	3	Common serotine
22:05-22:07		Heard but not seen	2	Common pipistrelle

Surveyor 4: Northeast of B3 viewing northern and eastern aspects of B3				**Bat Detector Used: Bat Box Duet Heterodyne Detector**
Time	**Location**	**Activity observed**	**Number of passes**	**Comments/Notes**

20:40		Heard but not seen		Unidentified
20:41	From the south, between buildings 3 & 4 towards the north, then towards the west	Commuting	1	Common pipistrelle
20:51		Heard but not seen		Unidentified
21:00-21:08	Circling to the north of buildings 3 & 4	Foraging	12	Common pipistrelle
21:13-21:27	Circling to the north of buildings 3 & 4	Foraging	15	Common pipistrelle
21:40		Heard but not seen		Noctule

21:41		Heard but not seen		Common pipistrelle
21:53		Heard but not seen	4	Common pipistrelle
22:02		Heard but not seen		Common serotine
22:06		Heard but not seen		Soprano pipistrelle

Final Dusk Emergence Survey on 7th September 2023

Number of Surveyors	Site and Job no:	Start Time	Sunset Time	Finish Time	Temperature (°C) at start	Temperature (°C) at end	Cloud Cover (Oktas 1-8)	Windspeed (Beauforts 1-12)	Rain
4	**Marnhull Hybrid Scheme – Buildings 2 & 3**	**19:27**	**19:42**	**21:42**	**23**	**21**	**2**	**0**	**0**

Surveyor 1: Southeast of B2 viewing southern and eastern aspects of B2 and southern aspect of B3	**Bat Detector Used: Echo Meter Touch 2 Pro Light Blue**

Time	Location	Activity observed	Number of passes	Comments/Notes
19:54		Heard but not seen	1	Noctule
19:57-19:58		Heard but not seen	2	Common pipistrelle
20:01		Heard but not seen	1	Common pipistrelle
20:05		Heard but not seen	1	Common pipistrelle
20:10		Heard but not seen	1	Common pipistrelle
20:10	From east to west, to the south of buildings 2, 3 & 4	Commuting	1	Common serotine
20:11		Heard but not seen	2	Common pipistrelle

20:12		Heard but not seen	1	Common serotine
20:16-20:26	Circling to the south of buildings 2, 3 & 4	Foraging	3	Common pipistrelle
20:17-20:21	Circling to the south of buildings 2, 3 & 4	Foraging	2	Common serotine
20:17		Heard but not seen	1	Noctule
20:25	Multiple emergences and re-entries from southern side of building 3 and door on southern side of building 2	Emergence & re-entry	Multiple	Common pipistrelle
20:28-20:34	Flew over building 3	Foraging	3	Common pipistrelle

	from north towards south			
20:36		Heard but not seen	1	Noctule
20:57		Heard but not seen	1	Common pipistrelle
21:08-21:11		Heard but not seen	3	Common pipistrelle
21:12		Heard but not seen	2	Common serotine
21:17		Heard but not seen	1	Common pipistrelle
21:23		Heard but not seen	2	Common pipistrelle
21:27		Heard but not seen	2	Noctule
21:31		Heard but not seen	1	Brown long-eared bat
21:35		Heard but not seen	2	Common pipistrelle

Surveyor 2: Southwest of B3 viewing southern and western aspects of B2, and southern aspect of B3				Bat Detector Used: Echo Meter Touch 2 Pro
Time	**Location**	**Activity observed**	**Number of passes**	**Comments/Notes**
19:57	From southwest of building 2 towards northeast	Commuting		Common pipistrelle
20:04		Heard but not seen		Common pipistrelle
20:08-20:19	To the west of building 2	Foraging		Common pipistrelle & common serotine
20:19-20:32		Heard but not seen		Common pipistrelle
20:37		Heard but not seen		Common pipistrelle
20:42		Heard but not seen	2	Common pipistrelle

20:55		Heard but not seen		Common pipistrelle
20:57		Heard but not seen		Common pipistrelle
20:58		Heard but not seen		Brown long-eared
21:02		Heard but not seen		Common pipistrelle
21:05		Heard but not seen		Common pipistrelle
21:09		Heard but not seen		Common serotine
21:13		Heard but not seen		Common serotine
21:19		Heard but not seen		Common pipistrelle
21:20		Heard but not seen		Common pipistrelle
21:22		Heard but not seen		Brown-long eared bat

21:22-21:42		Heard but not seen		Common pipistrelle
21:23		Heard but not seen		Brown long-eared bat
21:25		Heard but not seen		Greater horseshoe bat
21:27		Heard but not seen		Noctule
21:39		Heard but not seen		Common serotine
21:40		Heard but not seen		Brown long-eared bat

Surveyor 3: North of B2 viewing northern aspect of B2 and B3				**Bat Detector Used: Echo Meter Touch 2 Pro Black**
Time	**Location**	**Activity observed**	**Number of passes**	**Comments/Notes**

19:35		Heard but not seen		Noctule
19:54		Heard but not seen		Noctule
20:03	Over buildings 2 & 3 from south towards north	Commuting	1	Soprano pipistrelle
20:07	Emerged from shrubbery on north of eastern side of building 2	Emergence	1	Soprano pipistrelle
20:14		Heard but not seen		Noctule
20:14		Heard but not seen		Common pipistrelle
20:16		Heard but not seen		Soprano pipistrelle
20:17		Heard but not seen		Pipistrelle

20:18-20:19	Flying between east & west to the north of buildings 2 & 3	Commuting	2	Common pipistrelle
20:18	Flying from west towards the east at the north of buildings 2 & 3	Commuting	1	Greater horseshoe
20:19	Flying from west towards the east at the north of buildings 2 & 3	Commuting	1	Common serotine
20:19		Heard but not seen		Brown long-eared bat
20:20	Flying from west towards the east at the north of	Commuting	1	Soprano pipistrelle

	buildings 2 & 3			
20:23-20:27	Over building 2 from south towards north then towards east	Foraging	8	Common pipistrelle
20:27-20:53		Heard but not seen		Common pipistrelle
20:47		Heard but not seen		Nathusius' pipistrelle
20:55	Circling at the north of buildings 2 & 3	Foraging	2	2 common pipistrelles
21:00		Heard but not seen		Common pipistrelle
21:03		Heard but not seen		Nathusius' pipistrelle
21:05		Heard but not seen		Common pipistrelle

21:05		Heard but not seen		Nathusius' pipistrelle
21:07		Heard but not seen		
21:08	Flying between east & west to the north of buildings 2 & 3	Commuting	1	Common pipistrelle
21:09		Heard but not seen		Nathusius' pipistrelle
21:10		Heard but not seen		Leisler's noctule
21:12		Heard but not seen		Soprano pipistrelle
21:15-21:19		Heard but not seen		Nathusius' pipistrelle
21:18-21:19		Heard but not seen		Common pipistrelle

21:24		Heard but not seen		Myotis
21:26-21:28		Heard but not seen		Common pipistrelle
21:28	Flying between east & west to the north of buildings 2 & 3	Commuting	1	Common pipistrelle
21:31		Heard but not seen		Common pipistrelle
21:34-21:35		Heard but not seen		Common pipistrelle

Surveyor 4: Northeast of B3 viewing northern and eastern aspects of B3				**Bat Detector Used: Bat Box Duet Heterodyne Detector**
Time	**Location**	**Activity observed**	**Number of passes**	**Comments/Notes**

19:54		Heard but not seen		Noctule
20:03		Heard but not seen		Soprano pipistrelle
20:07		Heard but not seen		Soprano pipistrelle
20:10	At the north of buildings 2, 3 & 4, from east towards west	Commuting	2	Greater horseshoe
20:12-20:17	At the north of buildings 2, 3 & 4, from west towards east	Commuting	2	Noctule
20:14		Heard but not seen		Noctule
20:19	At the north of buildings 2, 3 & 4, from	Commuting	2	Brown long-eared bat

	east towards west			
20:20	At the north of buildings 2, 3 & 4, from west towards east	Commuting	1	Soprano pipistrelle
20:23		Heard but not seen		Common pipistrelle
20:25	From field to northwest of building 3 towards the southeast (flew in between buildings 3 & 4)	Commuting	2	Soprano pipistrelle
20:28	At the north of buildings 2, 3 & 4, from west towards east	Commuting	1	Common pipistrelle

20:34		Heard but not seen		Soprano pipistrelle
20:36-20:43	At the north of buildings 2, 3 & 4	Foraging	7	Common pipistrelle
20:49		Heard but not seen		Common pipistrelle
20:51-20:54		Heard but not seen		Nathusius' pipistrelle & common pipistrelle
21:00		Heard but not seen		Common pipistrelle
21:05		Heard but not seen		Common pipistrelle
21:08		Heard but not seen		Soprano pipistrelle
21:09		Heard but not seen		Noctule
21:12		Heard but not seen		Soprano pipistrelle
21:12		Heard but not seen		Nathusius' pipistrelle

21:19		Heard but not seen		Common pipistrelle
21:26		Heard but not seen		Common pipistrelle
21:31		Heard but not seen		Common pipistrelle
21:34		Heard but not seen		Common pipistrelle

Disused Well - Dusk Emergence Survey on 14th August 2023

Number of Surveyors	Site and Job no:	Start Time	Sunset Time	Finish Time	Temperature (°C) at start	Temperature (°C) at end	Cloud Cover (Oktas 1-8)	Windspeed (Beauforts 1-12)	Rain
2	**Marnhull Hybrid Scheme – Disused Well**	**20:17**	**20:32**	**22:32**	**17**	**15**	**3**	**4**	**0**

Surveyor 1: Northwest of well viewing northwestern aspect of the well	**Bat Detector Used: Echo Meter Touch 2 Pro Black**

Time	Location	Activity observed	Number of passes	Comments/Notes
20:10		Heard but not seen		Leisler's noctule
20:13		Heard but not seen		Leisler's noctule
20:16		Heard but not seen		Noctule
20:18		Heard but not seen		Noctule
20:21		Heard but not seen		Noctule
21:32-21:51		Heard but not seen		Common pipistrelle

Surveyor 2: Southwest of well viewing southwest aspect of well				Bat Detector Used: Echo Meter Touch 2 Pro Light Blue
Time	**Location**	**Activity observed**	**Number of passes**	**Comments/Notes**
20:15		Heard but not seen		Leisler's noctule
20:32		Heard but not seen		Leisler's noctule
21:16		Heard but not seen		Common serotine
21:18		Heard but not seen		Noctule
21:41		Heard but not seen		Common pipistrelle
21:43		Heard but not seen		Myotis
21:44		Heard but not seen		Common pipistrelle

21:49		Heard but not seen		Common pipistrelle
21:55		Heard but not seen		Common pipistrelle

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