



Bat Emergence Survey
Cannon Hall, Cawthorne, Barnsley

Report reference: R-2560-01.2

July 2016

Report Title:	Bat Emergence Survey Interim Report Cannon Hall, Cawthorne, Barnsley
Report Reference:	R-2560-01.2
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Summary Statement

Of the thirteen buildings surveyed, four have been found to support bat roosts.

A total of eleven roost sites have been discovered, including a brown long eared maternity colony, and ten small summer non-breeding roosts occupied by common pipistrelle and myotis bats (suspected whiskered bat).

Introduction

1. The Cannon Hall site was subject to an Extended Phase 1 Habitat Survey and detailed Bat Roost Potential Assessment in July and August 2015. Survey and assessment was made by Berlinda Wiggs, Senior Ecologist at Access Ecological Ltd; see report 0292 Rev. 01.
2. The Bat Roost Potential element of this survey encompassed a total of 15 buildings (see below figure), of which 14 were identified as providing at least some level of roost suitability (see below table). Four of the buildings were highlighted as potentially supporting bat roosts, based on the presence of droppings.
3. Information relating to local and legal status of bats, along with detailed description of the buildings conditions and bat roost potential is provided in this report (Access Ecological Ltd report 0292 Rev. 01) and is not repeated here. However, these two reports should be read in conjunction for full context.
4. Based on the recommendations made in the Access Ecology Bat Roost Potential report, Brooks Ecological were commissioned to carry out a programme of emergence surveys on the Cannon Hall site, encompassing 13 buildings / structures highlighted as providing roosting potential (Buildings 1-11 & 13-14).

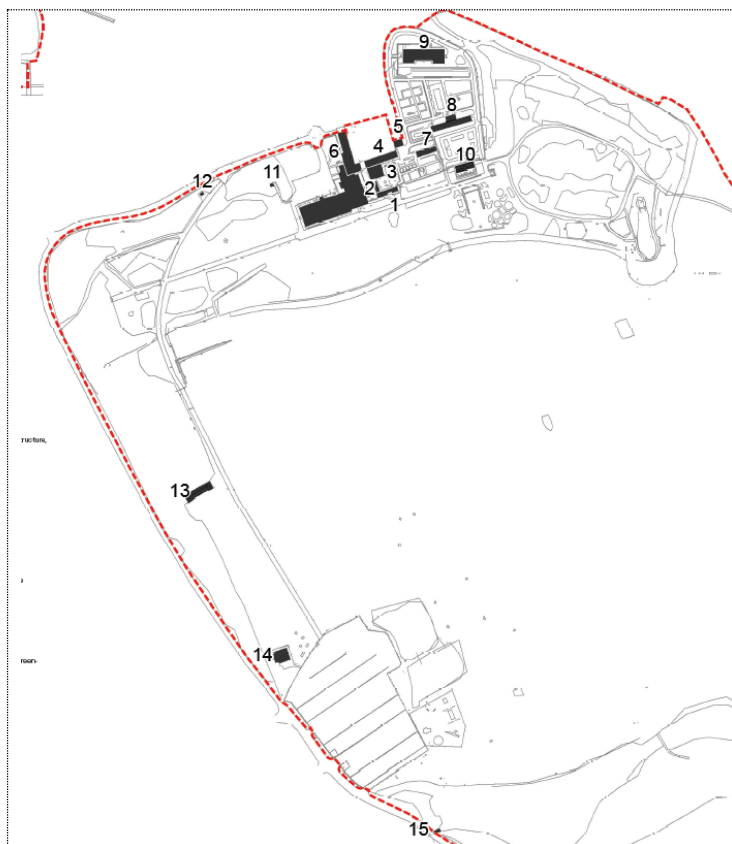


Figure 1

Building Plan

Table 1 Summary of Access Ecology's Bat Roost Potential Assessment; extracted from report 0292 Rev. 01.

Building No.	Building description	Main features present	Potential bat roost
1	Florists shop and display room	Gaps around gutters / chimney at the front.	High
2	Single story open arched garages	5 bat droppings found on walls	Potential Roost
3	Stone built gardeners staff room and shop	5 bat droppings on internal walls. Roof void. Gaps under roof tiles.	Potential Roost
4	Two brick built cottages on south side of courtyard	Roof void. Bitumen felt liner. Gaps under roof tiles. Insect wings.	High
5	Fruit store.	Roof void. No hanging cobwebs. Double skinned wall with cavity. Gaps under ridge tiles. 5 large bat droppings found on floor. Insect wings.	Potential Roost
6	Brick built cottages on western side of courtyard.	No roof void. Ceiling boarded up to roof creating a gap between boards and roof stones. Active birds nest.	High
7	Greenhouse 1	Double skinned brick wall with central cavity. Gaps under roof coping stones.	High
8	Greenhouse 2 and storage shed with cellar	Double skinned brick wall with cavity. Cellar arched roof, damp, access points down coal chute.	High
9	Greenhouse 3 Mushroom house	Central spine is brick cavity wall. Felt roof. Gaps under fascias. Large ventilation gaps in brickwork. Potential cellars, (Internal assessment not possible).	High
10	Pinery	Open building. Wide double brick walls with internal cavity. Access points between wood and stone lintels.	Moderate
11	Midden	Single storey, stone built. Gaps between stones in wall and between roof stones and internal roof tiles.	Moderate
12	Ice house	Sealed	Negligible
13	Deer shed	Open fronted stone building. 5 Large bat droppings found on back wall. Birds nest.	Potential Roost
14	Pavilion cafe toilets	Large internal roof space, bitumen underfelt. Flat roof.	Low
15	Cascade Bridge	Stone bridge. Few gaps in stonework.	Low

Proposals

5. The proposals are for the conservation and repair of key listed buildings and structures, along with improvements to footpaths, fencing, land drainage and walls to support the wider restoration of the parks and gardens.
6. A brief description of the proposed works to each individual building subject to detailed activity survey is outlined below (extracted from the Design and Access Statement).
7. Building 1 Florists shop and display room: To provide a new principle public entrance from the parkland into the walled garden, with disabled access at front and rear doors.
8. Building 2 Arched Garages: The building will be partially demolished, leaving in place the right hand pier of the last opening into the cart shed. The kitchen yard and courtyard to the Gardeners Cottage will be re-landscaped to provide level or ramped access.
9. Building 3 Gardeners Staff Room: To repair the building fabric and enhance facilities for the volunteers, including public access to an improved shop facility. The proposal is to retain this cottage in its present use as a hub and shop for the gardeners and Friends of Cannon Hall, and carry out minor interventions to create an accessible toilet, store and mess room, and to insert a new slot window into the south wall of the Friend's Shop. Internal alterations will be carried out in studwork, and will be reversible. The external window will be simple and contemporary in design, in order to avoid confusing the history of the building.
10. Building 4 Stable Cottages (East): Repair works including re-pointing of external walls with lime mortar, replacement of damaged masonry, complete re-roof, repointing chimney stacks and re-new flaunching.
11. Buildings 5, 6, 7, 8: No works are scheduled to these buildings.
12. Building 9 Greenhouse 3 - Mushroom House: The North Range glass house will be reconfigured as a seating space with historic interpretation signage. For safety reasons, the glass frame structure will be dismantled, but the north brick structure will be retained and repaired. The two glasshouse 'bookends' will be replaced with planting beds constructed using a brick matching the historic wall. The central part of the greenhouse structure will be paved and furnished with simple benches.
13. Building 10 Pinery: Minor repairs to the structure including removal of cement render to west and east elevations, replacement of cement pointing with lime mortar pointing throughout, removal of vegetation growing within masonry, replacing inner lintols over western doorway and rebuilding brickwork, replace

flaunching to brickwork on inner wall head, realign cornices and replace lead cover flashing. New design for internal paving.

14. Building 11 Midden: To repair and protect the building fabric, and to provide safe public access into the building, an estate railing with a gate will be installed to the perimeter of the midden.
15. Building 13 Deer Shed: To repair the buildings fabric, and provide power for a wider range of public uses. Repair works to include cutting out and replacing 75mm stonework face with matching stone along right hand gable, remove cement mortar and repoint with lime mortar, install Cintec Harke anchors to rear wall, replace any missing/broken stone roof slates, remove and re-bed ridge tiles, lay zinc flashing beneath the ridge and hip tiles to the north and west slopes to deter build-up of moss, clean out valleys, and repoint raking edges of stales with lime mortar, allow a PS sum to replace lead valley with new lead, clean off loose moss by gentle brushing or raking with a plastic leaf rake and provide locking cabinet with power supply in the east gabled room.
16. Building 14 Pavilion Café Toilets: The Pavilion Café currently faces out onto the car park and consists of several wooden picnic tables positioned directly outside of the entrance. By introducing a timber feature wall and associated bespoke furniture, visitors to the park will be encouraged to sit facing the parkland and spill out onto the larger area of grass. A feature retaining wall will run parallel with the car park connecting the existing café wall to the main footpath. The wall will be constructed of vertical timber struts and rubble sandstone.

Method

17. Brooks Ecological specialise in bat surveys ranging from individual buildings through to complex sites requiring numerous visits with large teams. In terms of the survey effort, number of personnel required and number of visits required to be able to properly evaluate the building(s) use by bats we refer to the Bat Conservation Trust, Survey Good Practice Guidelines (2016). However, these guidelines are not prescriptive and we approach each site individually as required using our professional judgement and significant experience base.
18. In this case, a total of 5 visits using teams of up to 8 surveyors, was deemed sufficient for collecting an accurate baseline of the sites use by bats for the purposes of supporting a planning application. These surveys were carried out across May, June and July 2016 with surveyors positioned around the site to cover all aspects where bats could potentially emerge, and to establish activity levels around the site.
19. The surveyors, using heterodyne detectors, were in place at least half an hour before dusk and left once all species of bat would be expected to have left roosts

and patterns of activity within the site had been appraised. Conditions and dates are summarised in table 2:

Table 2 Summary of activity survey dates and conditions

Date	Survey type	Weather	Invertebrate activity
04.05.16	Emergence Sunset 20:42	10°C - 9°C. Clear sky. Dry. Still.	High
24.05.16	Emergence Sunset 21:15	13°C - 10°C. Cloudy. Slight breeze. Dry.	Moderate
08.06.16	Emergence Sunset 21:31	15°C - 14°C. Full cloud. Dry. Calm.	High
23.06.16	Emergence Sunset 21:38	16°C - 14°C. Part cloud. Dry. Calm.	Moderate
06.07.16	Emergence Sunset 21:34	15°C - 14°C. Full cloud. Dry. Calm. Humid	High

20. Survey and assessment was directed by Christopher Shaw BSc (Hons) ACIEEM. Chris has over 5 years' experience of carrying out bat surveys in a professional capacity and is registered to use the new Class Survey Licence WML CL18 (Bat Survey Level 2). He is an active member of the West Yorkshire Bat Group and West Yorkshire Bat Care Scheme.

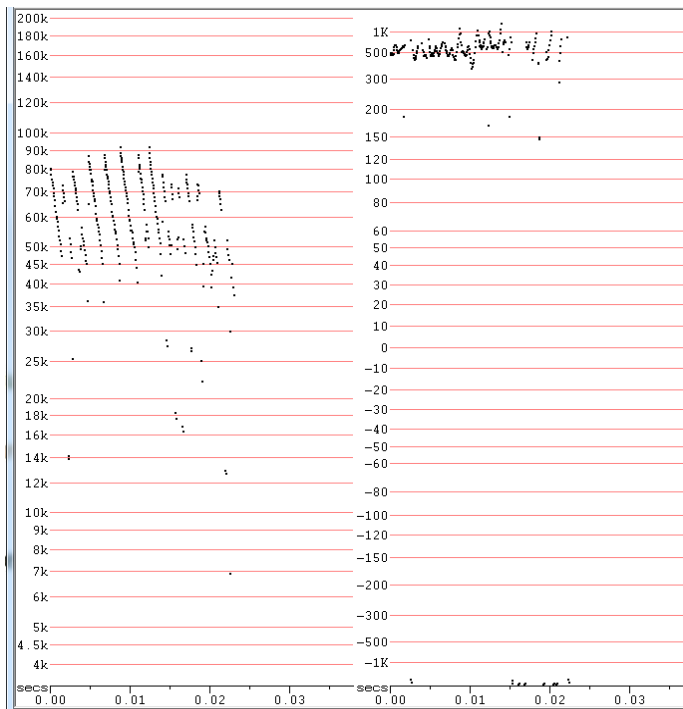
Results

21. Prior to the first emergence survey being conducted, an updating internal and external daytime assessment of all 14 buildings was completed. All of the buildings were found to be in a similar condition to that described in the Access Ecological report, however, the bat roost suitability of several buildings was downgraded based on the observed potential roost features. Most notably buildings 11 and 14 were downgraded to low and negligible, respectively.
22. The numerous small crevices noted within the structure of Building 11 are considered unlikely to support anything other than small numbers of non-breeding crevice dwelling bats on a sporadic basis. As such, this building is re-assigned a low suitability.
23. Building 14 was initially assessed as providing low roost suitability based on a limited number of gaps that were noted in association with the building ridge tile around areas of missing mortar. However, upon re-inspection, these gaps were considered too tight to permit bats access and thus the building was re-assigned negligible suitability.

24. In addition, a potting shed located along the eastern site boundary was incorporated into the programme of surveys; this was assessed as providing low roost suitability.

Survey 1 – 4th May 2016

25. Surveyors were positioned so as to cover Buildings 1 – 7, with remote monitoring devices (AnaBat Express) placed outside building 11 and building 3.
26. The first bat of the evening was common pipistrelle, seen at 21:01 when it emerged from a gap on the southwest corner of building 5. This bat then flew into the courtyard, where it remained on site foraging for much of the night. This pattern was repeated a further 5 times between 21:01 and 21:30, with a further 4 common pipistrelles and a single myotis bat emerging from the same feature on building 5. This is referenced as Roost 1 on drawing D-2560-01 in Appendix 1.
27. At roughly the same time, a second roost was recorded; this being located just off-site to the north of building 5 (see Roost 2 on drawing D-2560-01), where a single common pipistrelle was observed emerging from a gap along the eaves of the western elevation at 21:05.
28. During the course of the survey, low level foraging, predominantly of common pipistrelle, was noted around the site, with small numbers of bats following regular beats between building 2 & the main hall, between buildings 3, 7 & 10, and between buildings 7 and 8.
29. The recorder deployed outside building 11 was found to have logged no bat activity; indicating the absence of roosting within this building on this occasion.
30. The recorder deployed outside building 3 was used to assist in confirming the ID of bats seen during the emergence survey of building 1-7. Most of the registrations were attributed to common pipistrelle, with the exception of two myotis calls, suspected Whiskered bat (see below figure), logged at 21:08 and 21:18 and a single noctule call at 21:41. From these timings, the myotis seen to emerge from Roost 1 is suspected to be a whiskered bat.

**Figure 2**

Suspected
registration.

whiskered bat

Survey 2 – 24th May 2016

31. Surveyors were positioned so as to cover Buildings 8 - 10 and 13, with a single remote monitoring device (AnaBat Express) placed outside building 11 and two devices placed within building 13 (east and west).
32. The first bat of the evening was seen at 21:32, when a common pipistrelle commuted through the northern half of the site, travelling west to east.
33. The next bat to be seen was again a common pipistrelle, this time at 21:30 and this was clearly seen to emerge from a gap in the ridge line of building 13 (see Roost 3 on drawing D-2560-01). Two minutes later, two common pipistrelles quickly commuted past building 13 from southeast to northwest.
34. A second roost was then recorded in building 13 (see Roost 4 on drawing D-2560-01), with a single brown long eared bat emerging from the interior structure of the buildings open central section at 22:03. Species identification was supported by the two remote monitoring devices.
35. Two minutes prior to this, a suspected myotis bat was seen to emerge from the interior of building 10, flying out of the western archway in a south-westerly direction (see Roost 5 on D-2560-01).
36. From this point onwards, regular low level foraging was recorded around the walled garden, as well as the canopy line to the south of building 13.

37. As before no bat activity was logged on the device deployed outside building 11; thus concluding likely absence of roosting.

Survey 3 – 8th June 2016

38. Surveyors were positioned so as to cover Buildings 1 – 7, 10 and 13. Remote monitoring devices were deployed outside building 13 and within the courtyard formed by buildings 4, 5 and 6.
39. The first bat of the evening was a common pipistrelle seen at 21:45 emerging from a gap along beneath a ridge tile towards the eastern end of building 13's roof (Roost 6 on D-2560-01.1).
40. A few minutes later at 21:47, several bats emerged from the eastern most room of building 13 and flew in a westerly direction towards the tree line. Upon entering the room, the surveyor observed at least 5 brown long eared bats within the roof structure with another in flight. In total, around 10 brown long eared bats were seen to emerge from this room, all flying in a westerly direction. Given the timing and size of this roost, together with this species' ecology, this roost is considered to represent a maternity colony (Roost 7 on drawing D-2560-01.1).
41. A single common pipistrelle was again seen to emerge from the western arch of building 10 (Roost 5), this time at 21:55.
42. Within the courtyard, activity was recorded from around 21:50, with small numbers of common pipistrelle being seen foraging. None of these first bats were seen to emerge from any of buildings being surveyed, however, given the timing of their appearance, they are thought likely to have emerged from a roost nearby, within one of the neighbouring buildings. In addition to common pipistrelle, analysis of remote monitoring highlighted the presence of a single myotis registration, most likely a brandt's bat.
43. Two further roosts were recorded during the course of the survey, both comprising of single common pipistrelle, emerging from the southeast corner of building 5 (Roost 8 on drawing D-2560-01.1) and the eastern elevation of building 4 (Roost 9 on drawing D-2560-01.1), at 22:05 and 22:12 respectively.

Survey 4 – 23rd June 2016

44. Surveyors were positioned so as to cover Buildings 3-5 and 8-10. Remote monitoring devices were deployed within the courtyard formed by buildings 4, 5 & 6, and outside buildings 5, 9 and 10.

45. The first bat of the evening was a common pipistrelle at 21:52, which was seen to emerge from a gap along the eaves of the southern elevation of building 5 (Roost 8) and flew in a southerly direction out of the site.
46. Seven minutes later, a second common pipistrelle was seen to fly into the courtyard from the north, where it then flew over the wall joining buildings 4 and 5, before proceeding to forage along the southern and eastern elevation of buildings 5. On several occasions throughout the course of the survey, this bat was seen to fly back and forth over this wall, foraging within the courtyard and walled garden.
47. No other roosts were identified and in general, activity was found to be relatively low across the site, despite ideal weather conditions. Irregular foraging and commuting was noted around buildings 8, 9 and 10, primarily by common pipistrelle, with a single whiskered bat also being recorded around building 10.
48. Regular foraging by low numbers of bats was observed within the courtyard and along the eastern elevation of building 5. A maximum of 3 bats were observed at any one time, with registrations of common and soprano pipistrelle, noctule and a myotis bat being logged on remote monitoring devices.

Survey 5 – 6th July 2016

49. Surveyors were positioned so as to cover Buildings 1, 2, 10, 13, 14 and the potting shed. A remote monitoring device was deployed outside building 10.
50. The first bat of the evening was a common pipistrelle which was seen at 21:29 commuting north to south over the roof of building 13. A minute later, a second bat was seen at building 13; this was seen to fly out of the doorway of the eastern room and was not heard echolocating. This is therefore thought likely to be a BLE from the maternity colony previously recorded as Roost 7.
51. A total of 5 BLE bats emerged from this room during the course of the survey, either exiting through the open doorway or window. In addition to this, eight BLE bats also emerged from the western room, again, flying out of either the window or the doorway. These bats are almost certainly females from the maternity colony recorded previously and thus both the eastern and western rooms together are considered to form Roost 7.
52. Two further roosts were recorded in building 13, both supporting solitary common pipistrelle bats; these were seen to emerge from the verge (Roost 10) and roof structure (Roost 11) at 21:36. All of the bats emerging from building 13 flew immediately towards the western tree line, where they either remained foraging or flew north/south out of range of the surveyors.

53. All other surveyors recorded only low level irregular foraging by common pipistrelle bats, with first contacts being made at 21:45, 21:47 and 21:59 at Buildings 2, 14 and the potting shed, respectively. The surveyor positioned outside building 10 recorded no bat activity.

Summary

54. Dedicated survey has revealed the presence of 11 roosts scattered around the Cannon Hall site; these are located within Buildings 4, 5, 10 and 13.
55. Details of these roosts are summarised in the below table, whilst approximate locations are shown in the below figures and Appendix 1.

Table 3 Summary of Roosts

Ref.	Location	Feature	Details
Roost 1	Building 5	Gap along eaves towards southwest corner	4 common pipistrelles & 1 myotis (suspected Whiskered bat)
Roost 2	Off-site	Gap along eaves - western elevation	Single common pipistrelle
Roost 3	Building 13	Gap beneath roof tile - western end	Single common pipistrelle
Roost 4	Building 13	Roof structure - interior	Single brown long eared
Roost 5	Building 10	Gap in western arch	Single common pipistrelle
Roost 6	Building 13	Gap beneath roof tile - eastern end	Single common pipistrelle
Roost 7	Building 13	Interior of eastern and western rooms	Brown long eared maternity colony (13 adults)
Roost 8	Building 5	Gap along eaves of southern elevation	Single common pipistrelle
Roost 9	Building 4	Gap along verge of eastern elevation	Single common pipistrelle
Roost 10	Building 13	Gap along the verge – eastern room	Single common pipistrelle
Roost 11	Building 13	Roof structure - eaves	Single common pipistrelle

Figure 3 Western elevation of Building 5 - Roosts 1 & 2 highlighted



Figure 4 Southern elevation of Building 13 - Roosts 3, 4, 6 & 7 highlighted

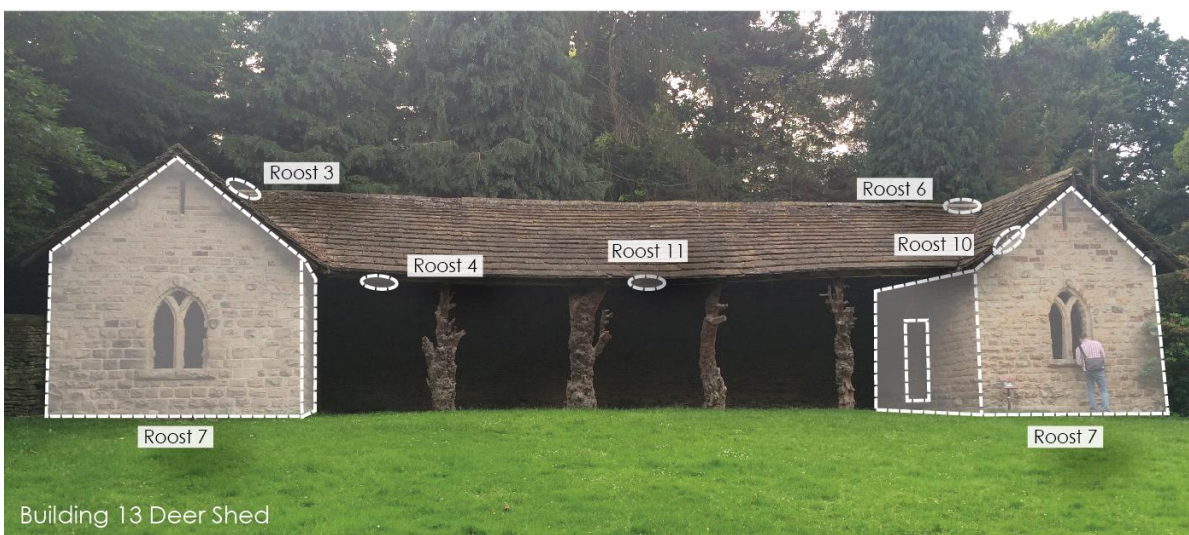


Figure 5 Southern elevation of Building 13 - Roosts 3, 4, 6 & 7 highlighted



Figure 6
Southern elevation of Building 5 –
Roost 8 highlighted



Figure 7
Eastern elevation of Building 4 –
Roost 9 highlighted



Evaluation & Recommendations

56. Emergence surveys encompassing 14 buildings across the Cannon Hall site has discovered the presence of 11 bat roosts; these are located within Buildings 4 (Cottage), 5 (Fruit store), 10 (Pinery) and 13 (Deer Shed).
57. With one exception, all of these represent summer non-breeding roosts, occupied by low numbers of crevice dwellings bats; mostly common pipistrelle, with a single whiskered bat roost. Although legally protected, these roosts would be assessed as being of low conservation significance, works here will need to be carefully planned and designed to avoid impacts on roosting.
58. The exception is a brown long eared maternity colony discovered within Building 13 (Deer Shed) using the interior roof structure of both the eastern and western rooms. Roosts of this nature are considered to be of greater conservation significance and works to this building will need to be carefully planned to ensure impacts to this sensitive roost are minimised and that bats continued use of the building is allowed.
59. In general, proposals for the site appear to be for the renovation or general repair of the surveyed buildings and wider site. Precise details of the proposals for each of the four roost buildings has been provided and the likely impacts of the works on the identified roosts are discussed below:

Building 4 (Stable cottage)

60. The proposals include a complete roof strip and replace. These works will result in the disturbance and temporary (possibly permanent) loss of Roost 9 and potentially the disturbance, injury or killing of any bats occupying the roost when the works are carried out. A licence from Natural England will therefore be required to derogate these offences and allow the proposed works to building 4 (Roost 9) to proceed.

Building 5 (Fruit store)

61. For now, no works are scheduled to this building and as such no impacts to Roosts 1, 2 or 8 are envisioned.

Building 10 (Pinery)

62. The proposals include replacing inner lintols over the western doorway and rebuilding the brickwork. These works will result in the disturbance and temporary (possibly permanent) loss of Roost 5 and potentially the disturbance, injury or killing of any bats occupying the roost when the works are carried out. A licence from Natural England will therefore be required to derogate these offences and allow the proposed works to building 10 (Roost 5) to proceed.

Building 13 (Deer shed)

63. The proposals include replacing stonework along the verge of the right hand gable, replacing missing/broken stone roof slates and removing / re-bedding ridge tiles. These works are likely to result in the disturbance and temporary (possibly permanent) loss of Roosts 3, 4, 6, 10 & 11, and potentially the disturbance, injury or killing of any bats occupying these roosts when the works are carried out. A licence from Natural England will therefore be required to derogate these offences and allow the proposed repair works to building 11s roof (Roosts 3, 4, 6, 10 & 11) to proceed.
64. Other than minor disturbance caused during the re-bedding of ridge tiles and replacement of broken/ missing roof slates, the proposed works are unlikely to impact significantly on Roost 7 – the brown long eared maternity colony. It is therefore unlikely that a licence will be required for this roost. Instead, work to the roof should be programmed during the winter period, when the roost is vacant, and carried out under the supervision of a suitably experienced and licenced Ecologist following a Bat Method Statement.
65. Given that part of the proposals for this building are to provide power for a wider range of public uses of this building, there is the opportunity to engage visitors and promote this buildings (and the wider sites) importance to local bat populations, i.e. through the installation of 'information boards', etc.

Other buildings

66. At present, none of the other buildings have been found to support bat roosts. Works to these buildings can therefore proceed with care and vigilance, with minimal risk of impacting on roosting bats.

Hibernation potential

67. All of the buildings surveyed, with the exception of Building 8, have been assessed as providing low-negligible hibernation potential. Further survey on these buildings is not considered appropriate, instead any work scheduled to take place on these buildings during the winter period should proceed with caution and all contractors involved should be made aware of the potential presence of bats.
68. Building 8 is found to support a cellar, which is accessible to bats via holes in the northern elevation. This cellar, and access to it, should be retained; if this is not feasible then further survey is recommended.
69. Although currently sealed and inaccessible for bats, building 12 (Ice House) provides an excellent opportunity to enhance the site for bats. By opening this feature up to bats, this building could become an importance hibernaculum.

Enhancement

70. The UK government's guidance on nature conservation in relation to development (NPPF) makes it clear that opportunities should be sought through their planning system to use development as an opportunity to enhance sites for wildlife where possible. Proposals for the renovation could incorporate areas that could be attractive to roosting bats, such as adapted roof tiles and ridges which can be cheaply and easily incorporated into new buildings.

General precautions

71. Any post development proposed for the site should have a sympathetic lighting plan which demonstrates that nocturnal light spill will be minimised since illumination of these areas could prejudice their use by bats. Impacts can be minimised by implementing the following (Stone, E.L. (2013):
- Use of narrow spectrum lights with no UV or warm white light;
 - Direct lighting downwards;
 - Use of low level lighting (e.g. 2m high lighting columns);
 - Use of hoods and cowls to direct lighting onto required areas and not onto adjacent habitats;
 - Restrict hours of light.

References

Bat Conservation Trust (2016) Bat Surveys For Professional Ecologists – Good Practice Guidelines

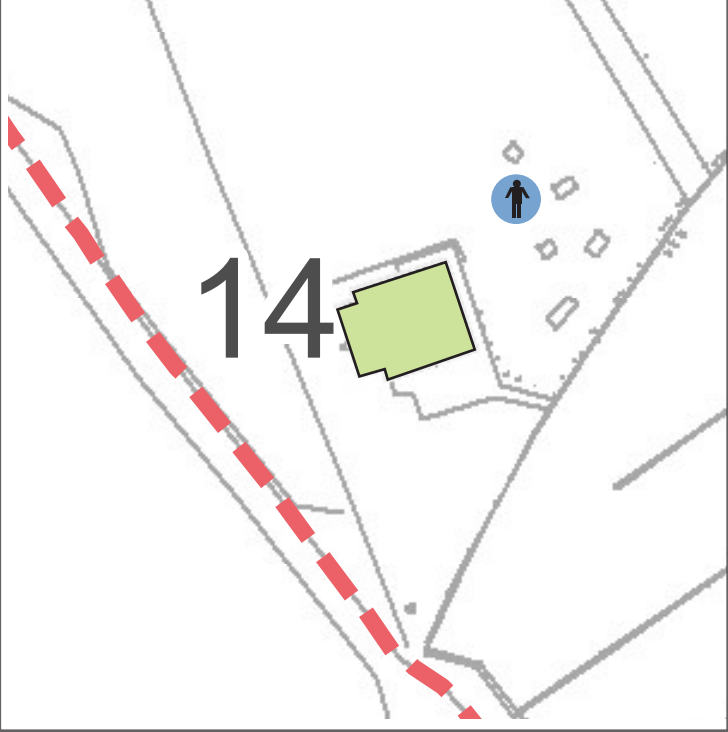
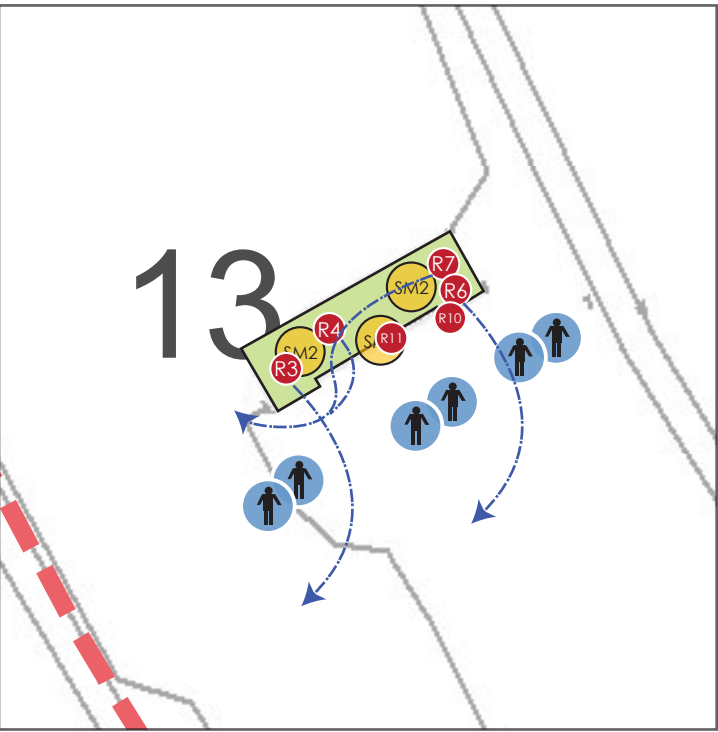
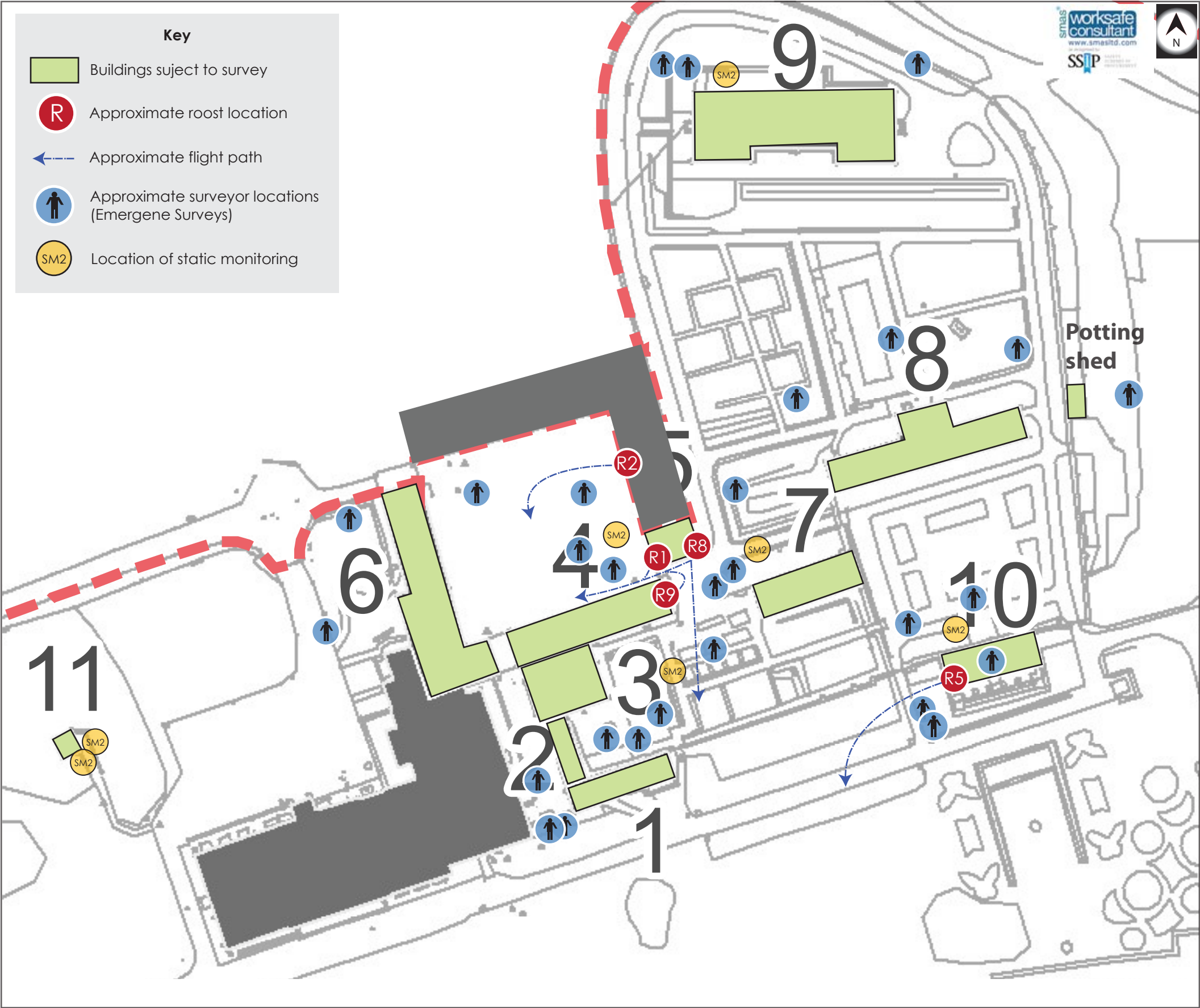
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- 1- Florists shop and display room
- 2- Single story open arched garages
- 3- Stone built gardeners staff room and shop
- 4- Two brick built cottages on south side of courtyard
- 5- Fruit store.
- 6- Brick built cottages on western side of courtyard.
- 7- Greenhouse 1
- 8- Greenhouse 2 and storage shed with cellar
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- 10- Pinery
- 11- Midden
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