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MOOREHEAD & LAING LTD

BARON HILL, BEAUMARIS

Report on Preliminary Bat Survey

for

WATKIN JONES

July 2008

2861

R I C H A R D S

M O O R E H E A D & L A I N G L T D

ENGINEERING, ENVIRONMENTAL and LANDSCAPE SPECIALISTS

BARON HILL, BEAUMARIS

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QUALITY ASSURANCE PROCEDURES: QP4

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1 INTRODUCTION

1.1 Background

1.1.1 Richards, Moorehead & Laing Ltd. has been commissioned by Watkin Jones to conduct an ecological assessment for submission as part of a planning application for the development of residential properties within the house and outbuildings at the Baron Hill Estate.

1.1.2 The study is to include a detailed, desktop search to identify protected species and sites from existing records, and a Phase 1 (extended) survey to ascertain the ecological value of the site.

1.1.3 Due to the timing of survey work the commission included a separate preliminary bat report to identify the potential for protected species such as bats at the Baron Hill Estate. The preliminary bat survey work was to include a desktop search, a hibernation survey and three emergent surveys to be undertaken by two surveyors. The purpose of the survey work was to identify the potential for bats within the site. Based on findings from the field work the report is to recommend possible future action for bats. It is recognised that a programme of further survey work and detailed mitigation (which will all be agreed with CCW) will be required as part of the preparation of a licence application. The present report is intended to provide information for the purpose of a planning application.

1.2 Site Description

1.2.1 Baron Hill is located near Beaumaris, on Anglesey, centred on NGR SH 5984 7655. The site lies outside the Baron Hill Park SSSI. The site's location is shown in the map presented in Appendix 1. Baron Hill consists of a Georgian building, a Victorian building and some outbuildings including stables; see site map within Appendix 2.

1.3 Legal status of bats

1.3.1 All 17 species of bat are protected are protected by law and are listed on:

- Schedule 5, Section 9 of the Wildlife and Countryside Act 1981 (as amended);
- Schedule 2 of the Conservation (Natural Habitats, &c.) Regulations 1994 (the Regulations).

1.3.2 The legislation gives protection to the bats themselves, their breeding places and resting places (i.e. roosts), whether or not bats are present. Specifically, under Section 39 of the Regulations, it is an offence amongst other things:

- deliberately to kill or capture any bat;
- deliberately to disturb any bat;
- to damage or destroy a breeding site or resting place of any bat.

1.3.3 Under Section 44 of the Regulations, the Welsh Assembly Government (WAG) can grant a Habitats Regulations licence (usually called a WAG licence), which gives exemption from Section 39 in specified circumstances and for certain purposes. Development is one of those purposes.

1.3.4 Before WAG can issue a licence, Regulation 44 (3) (b) of the habitats directive must be fulfilled. The condition is that "the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range". This condition is considered by WAG in consultation with the Countryside Council for Wales (CCW).

1.3.5 In practical terms the applicant must be able to demonstrate that all reasonable steps have been taken to minimise the impact of the development on the local bat population and any remaining damage will be adequately compensated for by appropriate mitigation measures.

1.3.6 Regulation 44 (3) (b) of the habitats directive seeks to maintain the conservation status of the bat which is a European Protected Species (EPS). It is for the developer to demonstrate to the statutory bodies (WAG and CCW) that the conservation status of EPS (bat in this instance) will be maintained or enhanced by their proposals. This can be achieved through detailed survey work which would transpose to detailed mitigation design measures, to minimise the impact of the development upon bats. This would be subject to the agreement with statutory bodies.

1.3.7 This preliminary bat report identifies the presence of bats and suggests future actions (survey and development of a mitigation strategy) that could be undertaken. The report does not offer the level of survey work or detailed mitigation measures which would be necessary to apply for a WAG licence.

2 METHOD

2.1 Desktop survey

2.1.1 The following organisations were contacted for information regarding bats. A 1km buffer from the site boundary was included in the search:

- Countryside Council for Wales (CCW)
- Gwynedd Bat Group
- Anglesey Biodiversity Officer
- Cofnod Biological Records Centre

2.2 Forensic and Hibernation Survey

2.2.1 The survey was carried out on the 13th March 2008 by three experienced and licensed bat workers, accompanied by a structural engineer to advise on safety. All safely-accessible areas of the building were searched using high-powered torches, and endoscopes. Ladders were used to access some areas of the building. All signs of bat activity were recorded, as well as any hibernating bats that were discovered. The survey took approximately 5 hours. Weather conditions were calm, cloudy with intermittent, light drizzle. Temperature was approximately 6˚C.

2.3 Forensic and Emergence Surveys

2.3.1 Three forensic and emergence were undertaken (Table 1). The conditions for each of the surveys were dry and warm. Each forensic survey took approximately 4-5 hours. Fieldwork was undertaken by a licensed bat worker with over 15 years' experience, assisted by other surveyors.

Table 1 Details of Forensic and Emergence Surveys

Survey	Survey Date	Temperature during Emergence Survey
1	Wednesday 7th May 2008	15 ˚C
2	Monday 19th May 2008	12˚C
3	Friday 13th June 2008	10 ˚C

2.3.3 The forensic surveys were conducted to detect the possible use of the building by bats. All safely-accessible areas were searched. The forensic survey looked for evidence of bats, in the form of droppings and staining of structures such as cracks and crevices, lath and plaster, fire places, chimneys and their stacks, gables, etc. to indicate the use of the structure or area by bats. Where necessary, binoculars, torches and ladders were used.

2.3.4 Emergence surveys were undertaken to try to identify potential bat activity within the buildings and if possible identify maternity roosts. Ecologists used Duet© Frequency Division bat detectors to record species, while general activity was observed with Magenta© heterodyne bat detectors (or Duet in heterodyne mode). An Anabat II© frequency division bat detector connected to a ZCAIM recording unit was used to record bat activity at certain points.

3 RESULTS

3.1 Desktop survey

3.1.1 Gwynedd Bat Group provided information regarding records for bats within the general area. It was confirmed that no previous bat surveys had been undertaken so little was known about the site at Baron Hill Estate.

3.1.2 Gwynedd Bat Group hold some records for the area, as shown in Table 2.

Table 2 Gwynedd bat group records for the area

Species	Record type	Distance from Baron Hill
Common pipistrelle	Bat detector / grounded bats	1 km
Soprano pipistrelle	Bat detector / grounded bats	1 km
Brown Long-eared	Bat detector / grounded bats	1 km
Noctule	Bat detector / grounded bats	1 km
Daubenton	Bat detector / grounded bats	1 km
Nathusius pipistrelle	One bat detector record	3 km
Lesser Horseshoe	Hibernation sites	2 km
Brown Long-eared	Nursery roosts	3 km
Whiskered	Nursery roosts	3 km
Common pipistrelle	Nursery roosts	3 km
Soprano pipistrelle	Nursery roosts	3 km

3.1.3 Gwynedd Bat Group stated that it was likely that survey work would reveal the presence of all bat species recorded as resident on Anglesey, including Brandt's, Natterer's and Noctule bats.

3.1.4 The Cofnod Records showed that records for the following species of bat within 1 km of the site at Baron Hill Estate were held:

- Daubenton
- Brown Long-eared
- Lesser Horseshoe
- Pipistrelle.

3.2 Forensic and Hibernation Survey

3.2.1 An outline of the findings of the forensic and hibernation survey is given in Table 3. Appendix 2 contains further details of the structures referred to.

Table 3 Forensic and Hibernation Survey (13th March, 2008)

Structure	Findings
Estate Office	The upper and lower floors of the Estate office were searched; chimneys and fire places were inspected using an endoscope. A significant number of suspected Lesser Horseshoe and Brown Long-eared bat droppings were discovered in one lower floor room. Upon inspection of the roof void a skeleton of a lesser horseshoe bat was discovered. Further inspection revealed a significant pile of droppings in one area of the roof space. The droppings were too badly decomposed to determine the species, but the volume present indicated the possibility of a maternity roost. The building offered opportunities for crevice-dwelling bats to roost and hibernate, although no bats were discovered. It is suspected that this building is used as a summer day roost. Two birds nests were found on site: one the nest of a Wren, the other a Swallow.
Wine Cellar	The Wine cellars are relatively extensive, comprising six linked chambers. Seven hibernating lesser horseshoe bats were found within these chambers. A large pile of Lesser Horseshoe droppings were present in one corner of the structure which indicates possible use as a winter hibernation site. Two vent shafts linked the roost to the outside although one of these was blocked. It is not expected that these are used as entrances for the bats but with modification they could be used.
Vault Cellar 1	No evidence of use by bats was discovered in Cellar 1. It is open and well ventilated but with modification could make a suitable hibernation site. The cellar has been flooded recently, washing away any droppings evidence.
Vault Cellar 2	No evidence of use by bats was discovered in Cellar 2. It is open and well ventilated but with modification could make a suitable hibernation site. Several Herald Moths were discovered inside the structure. These moths prefer the same conditions as hibernating bats and indicate the cellar is of suitable humidity and temperature for use as a hibernation site. The cellar has been flooded recently, washing away any droppings evidence.
Vault Cellar 3	A small brick vaulted chamber which was open and well ventilated. No evidence of use by bats was found.

Structure	Findings
Eighteenth Century Wyatt House and 1830's Harrison House	Where safe, crevices within the standing walls were searched. No bats were discovered. Chimney breasts require emergence surveys in the summer.
Service duct	The service duct entrance was inspected but no evidence of bats was found. It is possible that this duct extends to a boiler room which may be suitable for bats. Due to the confined space and possibility of collapse the tunnel was not followed. It is recommended that archive plans are consulted and, if present, any voids inspected following a thorough risk assessment.
Belvedere	A single Lesser horseshoe bat was discovered hibernating in this structure during an earlier survey on the 3rd March. The individual was not present during this survey.

3.3 Forensic and Emergent Surveys

3.3.1 The findings of the three forensic and emergence surveys are presented within section 3.3 (tables 4-9). Site plans in Appendix 2: Site Map, buildings and features on site; Appendix 2: Context Plan; Appendix 2: Emergent Survey 1; Appendix 2: Emergent Survey 2 & Appendix 2: Emergent Survey 3 identify each building and feature within the text and the positions of each of the surveyors during the emergence surveys. The survey findings are presented, structure by structure, within section 3.4.

Table 4 Forensic Survey 1 (Wednesday 7th May, 2008)

Structure	Findings
Belvedere	No evidence of bats, although previously a Lesser Horseshoe was found to be present. Recent rainfall could have washed away some evidence.
Estate Office	Initial walkover of the estate buildings. Droppings were present, on the walls and floor. Appeared to be relatively old.
Vault Cellars 1, 2&3	Three open cellars. No evidence of bats. Cellar 3 is a small ventilated chamber.
Wine Cellar	Two Lesser Horseshoe bats were present and were becoming active. Large pile of bat droppings present.
All buildings and structures	Numerous crevices within walls and numerous chimney breasts, all of which have potential for bats.
Service duct	No evidence of bats was found. Pipe work restricted access and so the duct could not be fully assessed.

Table 5 Emergence Survey 1 (Wednesday 7th May, 2008)

Surveyor	Species detected
1	• Much Soprano pipistrelle • Lesser Horseshoe activity • Common pipistrelle • *Myotis* spp. passes • Noctule
2	• Much Lesser Horseshoe activity, believed to be emerging from the cellars. • Brown Long-eared • Noctule • Much Soprano pipistrelle

Surveyor	Species detected
3	• Lesser Horseshoe bats flew into the Estate Office through the front door and 3 later came out. • Considerable Lesser Horseshoe activity around this surveyor, emergent point not identified. • Soprano pipistrelle activity
4	• Soprano pipistrelle activity • Nothing emerged from the back of the estate office building
Anabat placed at Service Duct	• Lesser Horseshoe activity recorded
Anabat placed at north side of cellars	• 1 Brown long-eared pass • 2 Lesser Horseshoe passes • Much Soprano pipistrelle passes
Anabat placed at Courtyard	• Soprano pipistrelle
Anabat walked along east side of buildings	• Lesser Horseshoe 2 passes • Myotis spp. 4 passes • A Noctule pass • A common pipistrelle pass • Many Soprano pipistrelle passes suspected to be foraging
Anabat placed at vent, north west	• 1 brown long-eared • 49 lesser horseshoe passes • 1 noctule • Much soprano pipistrelle activity

Table 6 Forensic survey 2 (Monday 19th May, 2008)

Structure	Findings
Ice House (see Appendix 2: Context Plan)	One Natterer's bat present. Ladder access required to undertake forensic survey for droppings.
Belvedere	Two Brown Long-eared bats present. Floor damp with no evidence of bat droppings.
Wine Cellar	4 Lesser Horseshoe bats present. Evidence of droppings.

Table 7 Emergence survey 2 (Monday 19th May, 2008)

Surveyor	Species detected
1	• Much Soprano pipistrelle • Barn owl present
2	• Much Soprano pipistrelle
3	• One lesser horseshoe • Soprano pipistrelles • Brown long-eared
4	• Lesser Horseshoe • Brown long-eared • Much soprano pipistrelle activity
5	• 32 Lesser Horseshoe Bats emerged from second window. Roost not identified.
Anabat placed in Belvedere	• Lesser Horseshoe and Brown Long-eared activity
Anabat placed in room south of surveyor 4	• Lesser Horseshoe • Brown long-eared • Much Soprano Pipistrelle activity
Anabat placed in room near surveyor 3	• 2 brown long-eared passes • Much Soprano Pipistrelle
Anabat in service and works range building on ground floor	• 5 Lesser horseshoe passes, • Much soprano pipistrelle activity • 1 brown long-eared pass
Anabat placed in main room on east side near surveyor 1	• Soprano pipistrelle activity

Table 8 Forensic survey 3 (Friday 13th June, 2008)

Structure	Findings
Ice House	Natterer's and Brown Long-eared present. Ladder used to access the main void within the Ice House. There was evidence of old lesser horseshoe droppings which are relatively sparse.
Belvedere	Brown Long-eared bat present.
Vault Cellars 1, 2 & 3	Went to the three open cellars. No evidence of bats. Cellar 3 small ventilated chamber.

Structure	Findings
Wine Cellar	Two Lesser Horseshoe bats present and were becoming active. Large pile of bat droppings present in certain areas.
Fireplaces within 1830's Harrison House	There were three fireplaces. Fireplace A had no signs of droppings, however one Lesser Horseshoe was observed. Fireplace B had a significant amount of Lesser Horseshoe droppings which had accumulated over many years and 4 Lesser Horseshoes were observed. There were some Lesser Horseshoe and Brown Long-eared droppings present within fireplace C. Full observation of the numbers of bats could not be made during the forensic survey.
All buildings and strucutres	Numerous crevices within walls and numerous chimney breasts, all of which have potential for bats.

Table 9 Emergence Survey 3 (Friday 13th June, 2008)

Surveyor	Species detected
1	• 26 Lesser Horseshoe bats emerged from fireplace and left the building (the 3 fireplaces have been identified as a maternity roost).
2	• 134 Lesser Horseshoe bats emerged from fireplace and left the building (the 3 fireplaces have been identified as a maternity roost).
3	• Lesser Horseshoe activity in and around cellar / void.
4	• Lesser Horseshoe activity • Soprano pipistrelle • Brown Long-eared • Barn owl present
5	• 106 Lesser Horseshoe bats emerged from second window, believed to have come from the area of the fireplaces.
6	• Lesser Horseshoe activity • Soprano pipistrelle

3.4 Summary of results

3.4.1 The following species of bat were found to be present on or very close to the site:

- Lesser Horseshoe
- Brown Long-eared
- Natterer's
- 45 pipistrelle
- 55 ('Soprano') pipistrelle

- Noctule
- *Mytotis* spp.

3.4.2 On two occasions a barn owl was seen flying in and around the buildings. It is possible that the barn owl is nesting within the buildings or in a nearby tree. Barn Owls are given the highest level of legal protection possible under the 1981 Wildlife and Countryside Act.

3.4.3 A Tawny Owl was also seen within the buildings. All wild birds are protected under the Wildlife and Countryside Act 1981 (as amended). It is an offence under Section 1 of this act to intentionally take, damage or destroy the nest of any wild bird while it is in use or being built.

3.5 Results of survey at each structure

Ice House

3.5.1 The Ice House was being used by Natterer's and Brown Long-eared bats as a roost. Forensic survey found some evidence of Lesser Horseshoe droppings. Based on the forensic evidence observed at this stage the Ice House is not believed to be used as a maternity or winter hibernaculum for Lesser Horseshoe Bats. However, the base of the Ice House was slightly damp and so there is the possibility that evidence has been washed away. It would be advisable to survey the Ice House in January to confirm whether it is used as a winter hibernaculum. The Ice House, however, lies outside the developer's control.

Belvedere

3.5.2 Limited numbers of Lesser Horseshoe and Brown Long-eared bats have been found to use this structure as a roost. The Belvedere is open and is unlikely, in its current form, to be used as a major maternity or winter hibernaculum site. An 'Anabat' detector was placed in the Belvedere, and Lesser Horseshoe activity was recorded, indicating that this area could be used as part of a bat flight line. As the structure is in good condition and listed of architectural or historic interest it may not be possible to obtain permission to modify this structure to create a winter roost and summer night roost. There is the potential to prevent access to this structure.

Estate Office

3.5.3 There were Brown Long-eared and Lesser Horseshoe droppings within this structure. There is the potential for it to be used as a maternity roost and winter hibernation site. During the first emergence survey there was evidence of Lesser Horseshoe bats going into and out of the building prospecting it. There was no definite evidence that there was a maternity roost present. However, there were numerous droppings found so more invasive survey work may be required.

Vault Cellars 1, 2 & 3

3.5.4 There was no evidence of bats found in the Vault Cellars 1, 2 & 3. The cellars were damp and so evidence could have been washed away. There is the potential for bats to use this as a winter hibernaculum. The cellars 1, 2 & 3 connect to the Wine Cellars, bats are known to pass through the Vault Cellars to reach the Wine Cellar and so could potentially use cellars 1, 2 & 3 to roost as well.

Wine Cellars

3.5.5 Lesser Horseshoe bats were found to be present in March and up until the end of May. There were some areas of the Wine Cellar which had a large amount of droppings, suggesting that a larger number of bats may be using it at a different time such as for a winter hibernation site.

1830's Harrison House

3.5.6 Within the building there were numerous chimneys, crevices and cracks, together with three fireplaces. There was a large amount of Lesser Horseshoe droppings in the middle fireplace, and some Lesser Horseshoe and Brown Long-eared droppings in the other two fireplaces. During the forensic survey Lesser Horseshoe bats were observed within the fireplaces. During the emergent survey 160 Lesser Horseshoe bats emerged from the fireplace which is currently being used as a maternity roost. The size of the maternity roost is significant and it a very important site within the UK. The majority of these bats flew out of a ground floor window at the west end of this building and directly into the nearest vegetation, which consisted of dense rhododendron, where they were immediately lost to view. Brown Long-eared activity and Soprano Pipistrelle activity was also present within the area.

Possible cellar within 1830's Harrison House

3.5.7 There is a possible cellar within the 1830's Harrison House near the fireplaces. Lesser Horseshoes were seen to be flying in and out of the entrance to the void (see Appendix 2: Emergent survey 3, surveyor location 3, for position of void) light sensing. This would need to be explored further in case it is being used as a roost.

Eighteenth Century Wyatt House

3.5.8 There were numerous gaps, cracks and crevices, along with chimneys which potentially could be a roost for bats. A small proportion of this building near the service duct had a partially remaining roof which potentially could be used by bats. Where possible the area was searched for signs of droppings and binoculars used to try to identify staining where it was not obstructed. No signs of bats were observed but crevice dwelling bats (vespertilionid bats) are likely to be present. Within the area of the Wyatt House the following species were observed and or recorded Lesser Horseshoe, Common Pipistrelle, Soprano Pipistrelle, Brown Long-eared, *Myotis* spp. and Noctule.

Service duct

3.5.9 The service duct (part of the Eighteenth Century Wyatt House) was inaccessible. The anabat was placed there and recorded Lesser Horseshoe activity. The service duct has the potential to be used by bats.

Service and Works Range

3.5.10 The Service and Works Range has a partial roof in the corner. Binoculars were used as the area is largely inaccessible. No evidence of droppings was found. Lesser Horseshoe activity was recorded between the Harrison House Fireplaces and the Service and Works Range: these bats were likely to have been coming from the fireplaces. 55 pipistrelles were also observed to be foraging within the area, though the emergent point could not be determined. Lesser Horseshoe activity and Brown Long-Eared activity was recoreded. Within the building there were numerous cracks, crevices and chimneys which have the potential for bats.

Stable 1 and Stable 2

3.5.11 The walls contained numerous cracks and crevices with ivy; little of the roof remained but there were some small areas of slate. These areas all have the potential for crevice-dwelling bats. The forensic survey did not find bat droppings or any staining.

Coach House

3.5.12 The forensic survey did not identify bat droppings or any staining. Attached to the coach house, opposite the bottom of Stable 2, was a small stairwell. Although no evidence of droppings or staining was found there was the potential for this stairwell to be used as a roost. The coach house walls contained numerous cracks and crevices with ivy; little of the roof remained but there were some small areas of slate. These areas all have the potential for crevice-dwelling bats.

Tack and Storage Range

3.5.13 The walls contain numerous cracks and crevices with ivy. Part of the corrugated iron roof remains, together with some small areas of slate. These areas all have the potential for bats.

World War II Buildings

3.5.14 There were numerous World War II buildings scattered throughout. These had no roofs and were relatively low to the ground, with some cracks and crevices which have the potential to be used by bats.

Stone Walling

3.5.15 The cracks and crevices have the potential to be used by bats.

Buildings and structures

3.5.16 Many of the buildings contain numerous chimneys, areas of lath and plaster, gaps within gables, areas with part-remaining roofs etc. In addition there are numerous areas where there are cracks, crevices and ivy. These all have the potential to be used as a roost by crevice-dwelling bats.

Trees

3.5.17 The survey did not extend to the trees that occupy the site or boundary. Many of these trees are mature, with cracks and crevices or ivy that would offer roosting sites. An assessment of the potential for bat roosts should be made before any felling of trees and flight lines will need to be considered.

Surrounding Woodland, Former Parkland and Agricultural Land

3.5.18 The area consists of surrounding woodland, former parkland and agricultural land (Appendix 2: Context Plan). These areas are important to bats which would use them as flight lines between roosts and foraging destinations, from day to day or at different times of the year. Bats are long-lived creatures and often will return to the same places year after year, and so their surroundings are important for navigation and for the population in general. The habitat surrounding the Baron Hill Estate would be used also for feeding. Lesser Horseshoe bats, in particular, prefer to roost close to areas that are densely vegetated. There are old outbuildings at the nearby Home Farm, which have the potential to harbour bats. However, these buildings lie outside the developer's control (Appendix 2: Context Plan).

3.6 Limitations

3.6.1 This study consisted of one hibernation survey only, undertaken in March, and three emergence surveys undertaken from May to June. The site has not been surveyed previously, and so little is known about the site at other times of the year.

3.6.2 An emergence survey was conducted, focusing on a few of the chimneys. There are over 30 chimneys that could be observed, many of which were obstructed by vegetation and/or fallen debris. Many of the chimney stacks had holes in or adjacent to them. It would not be possible to conduct emergence surveys on the majority of the chimneys and their stacks, as visibility is obscured.

3.6.3 Parts of the buildings and cellars were inaccessible or unsafe to enter, and so could not be surveyed.

3.6.4 Most of the staircases have been lost, and upper parts of the buildings were inaccessible. Binoculars and ladders were used where possible and safe. However, much of the building was considered too dangerous to survey.

3.6.5 There are no archival plans of the site identifying the full extent of the cellar system.

3.6.6 There were numerous cracks, crevices, lath-and-plaster etc which could not be assessed.

3.6.7 There were areas of remnant roofing which could not be adequately assessed from ground level.

3.6.8 Further survey work would be required to produce a comprehensive statement of the use of this site by bats, and to enable detailed mitigation proposals to be prepared for submission with a licence application to the Welsh Assembly Government. This survey work could be made a requirement of a condition within the planning consent.

4 RECOMMENDED MITIGATION

4.1 Components of mitigation

4.1.1 Insufficient survey information is currently available to enable detailed mitigation proposals to be prepared. Further survey work will be required so that a programme of detailed mitigation work, as part of the redevelopment programme, can be prepared. This work would reduce or avoid the potential impact upon bats through:

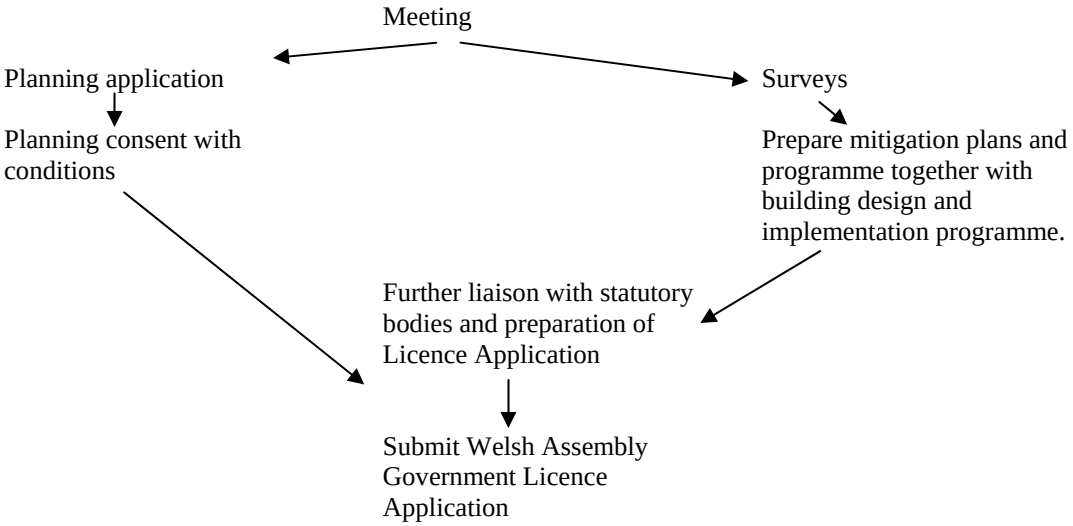
- Loss or disturbance of bats
- Loss of roosts
- Loss of feeding habitat
- Fragmentation, loss of or disturbance to flight-lines
- Impact upon bats from lighting
- Loss of major maternity roost and potentially major winter hibernaculum site for Lesser Horseshoe bats.

4.1.2 It is advised that a barn owl survey be conducted before any works. Work near a barn owl nesting site, or the relocation of a barn owl, will require a licence.

4.1.3 Detailed mitigation would need to include the following components:

- Further survey work to gain further understanding of the site and possible seasonal occupations of the site;
- Detailed mitigation design;
- Mitigation for potential loss of flight lines and foraging habitat;
- Temporary and replacement roosts in advance of works. This will include on-site mitigation such as the provision of new roosts opportunities within the site or building or off-site mitigation by the creation of new roosts within nearby locations;
- Develop working methods and or timing of works to avoid conflict with bats;
- Avoid deliberately killing, injuring or disturbing bats though site checks before works, and on-site ecologist to exclude bats where necessary;
- Long-term habitat management and maintenance;
- Post-development population monitoring to ensure that bats are using roosts.

4.1.4 Further work would need to be phased:



4.2 Mitigation Principles

4.2.1 This section of the report outlines the types of mitigation that will be required. Specific mitigation detail will be developed following further survey work and full consultation between the developer, County Ecologist / Biodiversity Officer and the Species Officer at CCW to agree working procedures and designs. These designs must also be acceptable under listed building regulations.

Further surveys

4.2.2 A programme of further survey work will be agreed with statutory bodies during the process of consultation on the planning application, and will form part of the planning conditions. The results of the surveys will be included within a comprehensive document, outlining all the mitigation proposals, accompanying the application for a Welsh Assembly Government licence. This application will also include plans of the proposed development, indicating the location and dimensions of all new bat roosts and emergence points. A document stating who is responsible for the upkeep of the new roosts may also be required as a condition of the WAG licence.

Development of mitigation proposals

4.2.3 Surveys undertaken in March, May and June 2008 at Baron Hill have revealed an important lesser horseshoe bat maternity site, and that parts of the building are used by some of these bats during late winter. The buildings are also used by a small number of brown long-eared bats, *Myotis spp.* such as Natterer's bats, and by soprano pipistrelles. Noctule bats also appear to be present in the area, possibly roosting in the surrounding woodland.

4.2.4 It will be necessary to mitigate for the loss and disturbance of a lesser horseshoe bat maternity colony. This is the only known maternity site for lesser horseshoe bats on Anglesey and is large enough to qualify as a roost of national importance.

4.2.5 There are several cellars under the house which are used by lesser horseshoe bats as a hibernation site, and it is possible that the fireplace/chimneys may be used for hibernation. The full extent of the use of the cellars and fireplaces/chimneys has not

been established, but will need to be surveyed at all times of year so that a mitigation plan can be prepared.

4.2.6 It would be desirable to undertake flight line, emergent and forensic surveys to identify whether farm outbuildings at Home Farm, on the west edge of the woodland near Baron Hill, are used by the lesser horseshoe bats. If this is the case these outbuildings could be considered for use within the mitigation package (subject to the owner's agreement) as they could provide an alternative roosting site for the bats while work is taking place on the main house. However, it is recognised that Home Farm is outside the developer's control.

4.2.7 Small numbers of pipistrelle, brown long-eared and *Myotis* spp. are also present at the site. These species will roost in crevices although brown long-eared bats also prefer a large roost area. The majority of the building is constructed from brick and as the building has degraded many crevices have formed in the brickwork and behind crumbled lath and plaster, in which bats could roost. Evidence from the ice house and belvedere confirms that bats are roosting in similar crevices there. The loss of these crevice roosting sites in the building, which may be used as hibernation sites over the winter, would require mitigation. A safe working method, to ensure no bats are sealed into these crevices as the building is repaired, would have to be developed.

4.2.8 There are also a large number of fireplaces/chimneys at the ground floor and upper floor levels of the building which bats could roost in. Due to the current dangerous state of the building these could not be surveyed. A safe working method, to ensure that any bats roosting in these fireplaces/chimneys are not harmed during the restoration work, will have to be devised.

4.3 Mitigation details

New roosts

4.3.1 The lesser horseshoe colony is large and has been using much of the derelict building to fly and roost in. It will be necessary to provide a new roost in a location as near to the existing maternity roost as possible, or on the main flight line, to ensure that the bats will find it. It will also be necessary to provide as large a space as possible

within the roost to allow the bats plenty of areas to fly in, as Lesser Horseshoe bats tend to fly around within their roost for up to an hour before they emerge in the evening, and require a lot of flying room.

4.3.2 The location of this new roost, dimensions and emergence points will be agreed with the developer and the design must be compatible with listed buildings regulations. A minimum roost size is likely to be 2.5m in height and two areas of connecting floor space 4m x 4m. Emergence holes must be large enough for bats to fly through comfortably, but as owls may be present at the site the holes may need to be smaller than the recommended size, which is 300mm wide and 200mm tall.

4.3.3 The area of the building recommended for the creation of a maternity roost would be at the west end of the Harrison House, where the majority of the bats currently exit from the building. Because the bats are used to leaving the building at the ground floor level it may be necessary to provide space for the bats at this end, leading them up to a large roof void over the whole of this section of the building. It is possible that over time the bats could become accustomed to leave the roof void at a higher level, but this would have to be introduced to them gradually over a few years. The location of the roosts should be discussed and agreed on site with CCW and the developer.

4.3.4 Lesser horseshoe bats are very light-sensitive, and so to minimise disturbance all external lighting within areas located near the emergence position or close to any flight lines must be agreed with the bat specialist. Careful use of low-level and timed lighting systems, for example, will minimise the effect of external lighting upon the bats.

4.3.5 Vegetation to provide shelter as the bats emerge is essential at a lesser horseshoe bat roost, and it will be important to retain as much as possible of the existing vegetation close to the roost site. We recommend that this vegetation is marked out on site by the bat specialist working with the developer. Flight line surveys will also be required so that the potential impact of any woodland thinning or clearance works (proposed to create a car park area or other tracks) can be assessed.

4.3.6 There are several cellars under the existing building, although not all are intact. Some of these cellars are used by lesser horseshoe bats during the winter and spring. It is not known yet whether they are used in the autumn, but a survey will be required to determine this. Another possible cellar was identified during the June survey, and if it exists this must be inspected to determine its use by bats in the autumn and winter. It will be necessary to obtain a precise plan of the cellars to understand how they all link together, to establish the location of existing bat access points into the cellars. Flight lines from these access points to the woodland vegetation will have to be assessed and to minimise disturbance, existing vegetation near access points should be retained as far as possible. The extent of external lighting near the access points or on the flight routes should be closely controlled.

4.3.7 Although most species have slightly different requirements from a roost, some species of bat will share roosts. For instance, brown long-eared bats may use the same roost as lesser horseshoe bats.

4.3.8 *Myotis* spp. bats often roost in roofs with hipped sections, as the niches created by the hipped area are favoured roosting sites. The estate office roof void could be made suitable for these bats. Small access holes (100mm long and 20mm wide) would be required in two positions under the eaves on the south gable, and a larger access hole 200mm wide and 100mm tall centrally in the gable, leading directly into the roof void. Exact locations should be agreed on site and marked onto proposal plans. If the roof has to be completely repaired, it should be reinstated with slate and lined to create a warmer environment for the bats. This building is not located close enough to vegetation to be suitable as the lesser horseshoe maternity roost.

4.3.9 Pipistrelles will also roost in the cavities created by soffits and bargeboards, and these should be fitted to the estate office on the west and east elevations if possible. Gaps of 100mm in length and 20mm tall should be created in the soffits abutting the wall, to allow bats to land on the wall and crawl up into the soffits. If possible, soffits and bargeboards, with access holes for pipistrelles, should be fitted on other sections of the house and stables. Full details and exact locations of access points should be agreed with the developer and then be marked on the proposed plans.

4.3.10 The belvedere and ice house have also been found to be used by bats, and it will be necessary to minimise human disturbance in the area around these structures. Although the Ice House is not within the developer's control and the Belvedere is subject to listed buildings regulations; it would be desirable to close them off to prevent human access (apart from for monitoring). The fitting of doors with grilles is advised, although this would require the consent of Cadw. The specification recommended by CCW should be followed: Grilles should be constructed in 25 mm high-tensile steel, finished with hot-dip galvanising. Grille bars should allow 150 mm air space between horizontal bars (i.e. 175 mm from bar centre to next bar centre) and 500 mm air space between vertical bars (i.e. 525 mm from bar centre to next bar centre). Listed building regulations may not allow the fitting of grilles to the belvedere, and liaison with the listed building officer is recommended to find a solution. The Ice House is out of the developer's control. However, the potential use of these two structures should be explored further.

4.3.11 Vegetation around both structures should be retained, as the belvedere in particular is also used as a night roost by lesser horseshoe bats.

4.3.12 Any other outbuildings found to be used by bats may require some works to create undisturbed roosting sites.

Timing of works

4.3.13 Any clearance work required to aid access for further survey, evaluation or works vehicles should be agreed with the bat specialist before being carried out. All the bat surveys should be completed and the programme of mitigation work agreed before the developer begins work on the building, or clears vegetation (including rhododendrons) at this site. Disturbance and clearance outside an agreed programme could have a detrimental effect on the bats present at the site.

4.3.14 Timing of all restoration works in the buildings, especially the areas containing the cellars and lesser horseshoe bat maternity roost, will have to be undertaken in specific months of the year to avoid disturbing any roosting bats. Generally, work in any area that could contain hibernating bats should not start during the main hibernation period (15th December to 15th March) as bats cannot be moved at this

time. This document provides guidance on the timing, but a precise timetable should be agreed between the developer and CCW, and has to be submitted as part of the WAG licence application.

4.3.15 Work on those parts of the building where bats roost (including all crevices and chimneys potentially used as roosts) or on rooms used as flight lines during the summer should not commence until all the agreed mitigation works relating to those parts of the building have been completed in accordance with the agreed programme. This is likely to include the construction of proposed new summer roosts.

4.3.16 In the case of the ground floor area of the Harrison House, it would be preferable that the lesser horseshoe bats have been confirmed to be using the new maternity roost before disturbance begins. If possible, a non-disturbing method of work should be agreed with the bat specialist, but if this is not possible then work in the Harrison House should start between 1st September and 15th April (outside the breeding season) to reduce chances of disturbing the bats further. If surveys show that bats hibernate in the fireplaces or chimney then disturbing works may have to be restricted to a short period in the spring (15th March to 15th April) to avoid both the maternity and hibernation periods.

4.3.17 Works in the cellars should be undertaken during the peak summer months (between 15th May and 15th August) as the cellars are less likely to be used by the bats at this time. Surveys will provide more details on the use of the cellars, and it may then be possible to vary these dates. Bats are known to use such sites for autumn mating, and it is necessary to find out if this is the case here. If not, then the work period could be extended until early November. Works that could disturb bats roosting in the cellars include enclosing the cellars for use by bats and constructing floors in the building. However, it will be important to ensure that the flight lines of the bats are not impeded during this period and that the maternity roost is kept undisturbed.

4.3.18 Work on the estate office to create a bat roost in the roof void should be undertaken outside the breeding period. Construction should take place between 1st September and 15th April. This roost creation should be completed before disturbance of bats as part of work to restore the main building begins.

4.3.19 As it has not been possible to inspect all the chimneys where bats could have maternity roosts, the restoration work during the summer breeding period may have to be limited unless fireplaces can be inspected and closed up during the spring or autumn. Timing of this cannot be specified until the proposed works timetable has been developed in conjunction with the developer.

Safe working methods

4.3.20 Once the mitigation design and timing has been agreed, it will be necessary to draw up a safe working method for each relevant item of work. This will include processes of exclusion where necessary, details of safe work on roofs and on the restoration of the building. At this stage it is not possible to be specific.

4.3.21 For much of the work it will be necessary to have a bat specialist on site to deal with any bats that are found, particularly during repair of internal and external walls, repair of any partially-intact sections of roof, repair of window and door frames, removal of ivy and work on fireplaces. Any bat exclusions required must also be carried out by a licensed bat worker.

4.3.22 All crevices must be inspected by a licensed bat worker before re-pointing, to ensure no bats are present. If any bats are seen or if the crevice cannot be inspected fully it will be necessary to fit an exclusion flap. Where a bat was present the flap must be left in place for one night then re-checked the following day to ensure the bat has gone and the crevice can be temporarily or permanently closed. Where it was not possible to inspect the crevice thoroughly, the exclusion flap must be left in place for at least 3 nights before permanently closing the crevice. Any walls in the gardens/woodlands that are to be demolished, and which have crevices large enough for bats to roost in, must be treated in the same manner.

4.3.23 While any roofs are repaired or re-slated, the licensed bat worker must be on site. The slates should be removed carefully by hand and if any bats are discovered, work must stop until the bat consultant has removed the bats to a safe place. **It is illegal to handle bats unless licensed**. The bats will be placed into the new roost.

4.3.24 If it is necessary to treat any of the timbers on site, only those chemicals approved (by CCW) for use in a bat roost should be used. These chemicals do still have some toxicity to bats, and so pre-treated timbers are preferable.

Other surveys required

4.3.25 An evening bat activity survey should be carried out in September and October, focusing on the cellars and fireplaces in the Harrison House to determine whether they are used as mating sites.

4.3.26 The fireplaces in the Harrison House will also require inspection in January and February to determine whether any bats hibernate there.

4.3.27 Ideally, a daylight survey of all other suitable outbuildings in the vicinity (at Home Farm) should be carried out to locate other roost sites or potential roost sites. This would require the co-operation of the owners as these buildings are outside the developer's control.

4.3.28 The Ice house and belvedere should be inspected during January and February to look for hibernating bats.

4.3.29 A flight line survey in the woodland on the west side of building, and other parts of the woodland that will be affected by the development, should be carried out during the summer months.

4.3.30 Any trees to be removed must be inspected for their potential to contain bat roosts. If necessary, a climbing inspection will be carried out. If bat roosts are found a WAG licence will be required to undertake the tree work.

4.3.31 As Barn Owl and Tawny Owl activity has been observed, a survey for nesting sites of these and other bird species should be conducted.

Monitoring

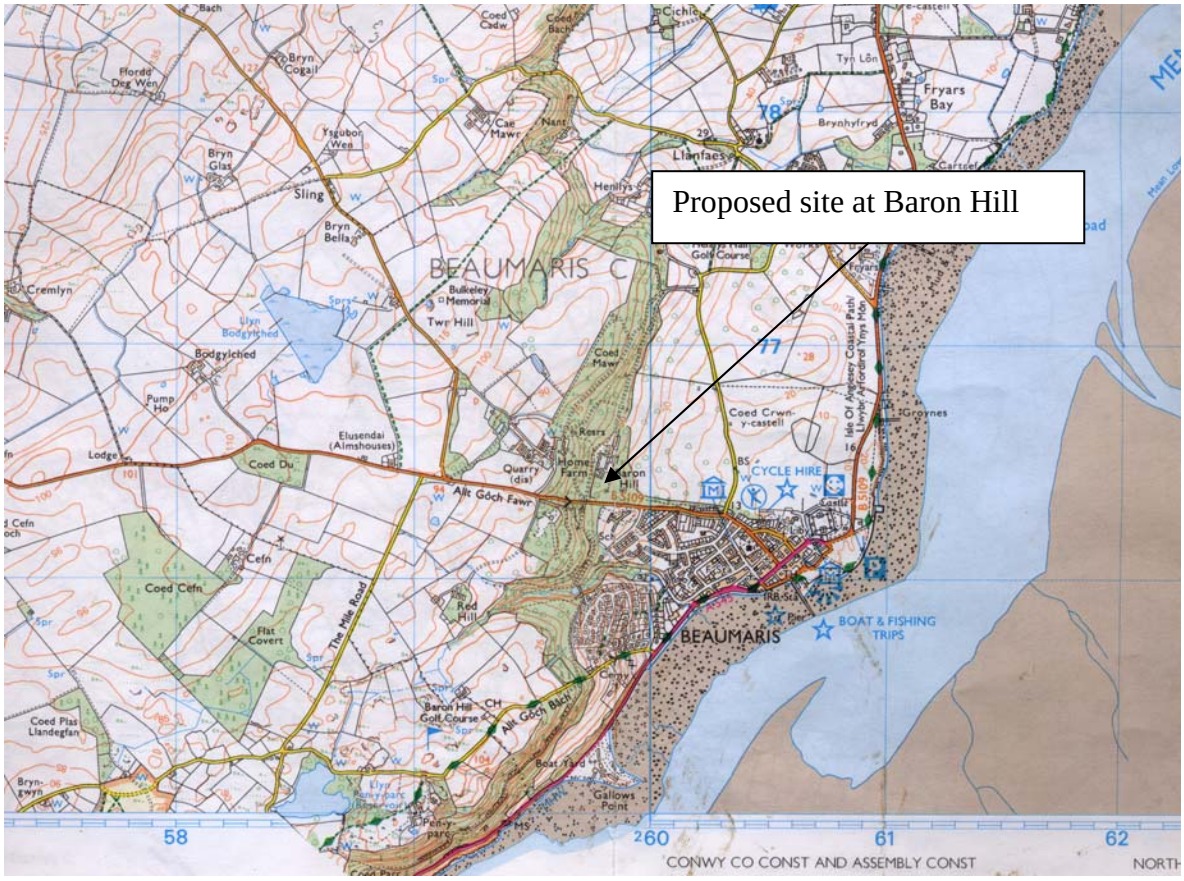
4.3.32 Long term monitoring of the site will be required during and after completion of the development, to ensure that there has been no detrimental effect on the bat population. This will involve an inspection of all roosts during daylight, and evening

surveys to count the bats. A survey should be undertaken once a year for at least five years following completion of the development. If the bat population is found to decline then alterations to the roosts may be required.

APPENDIX 1

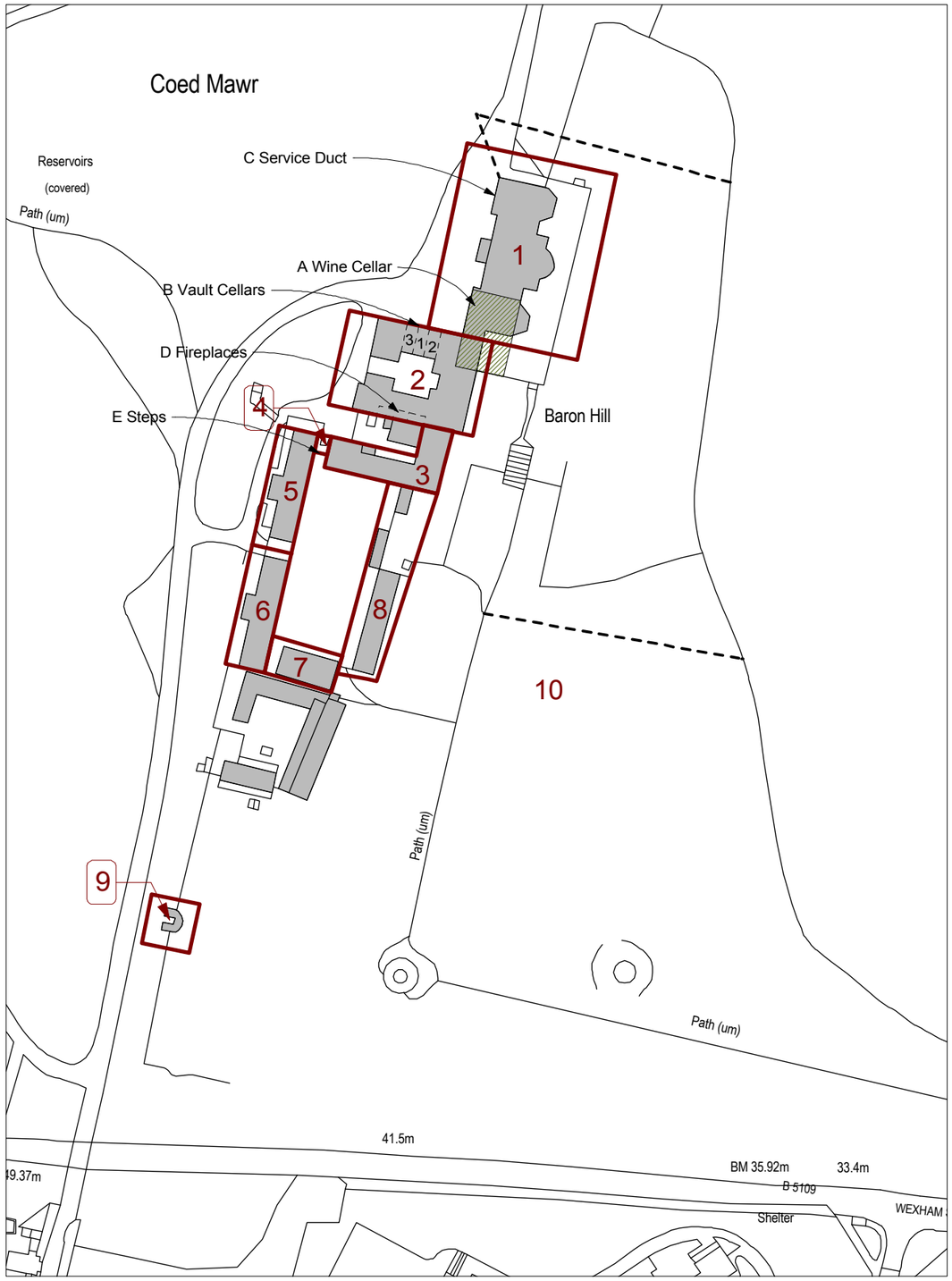
Site Location

Location Map: Proposed development at Baron Hill Estate
O.S. Licence Number AL 10,000 4963



APPENDIX 2

Plans, Site Locations and Sketches



1 18th Century 'Wyatt' House

2 1830's 'Harrison' House

3 Service and Works Range

4 Estate Office

5 Stable 1

6 Stable 2

7 Coach House

8 Tack and Storage Range

9 Belvedere

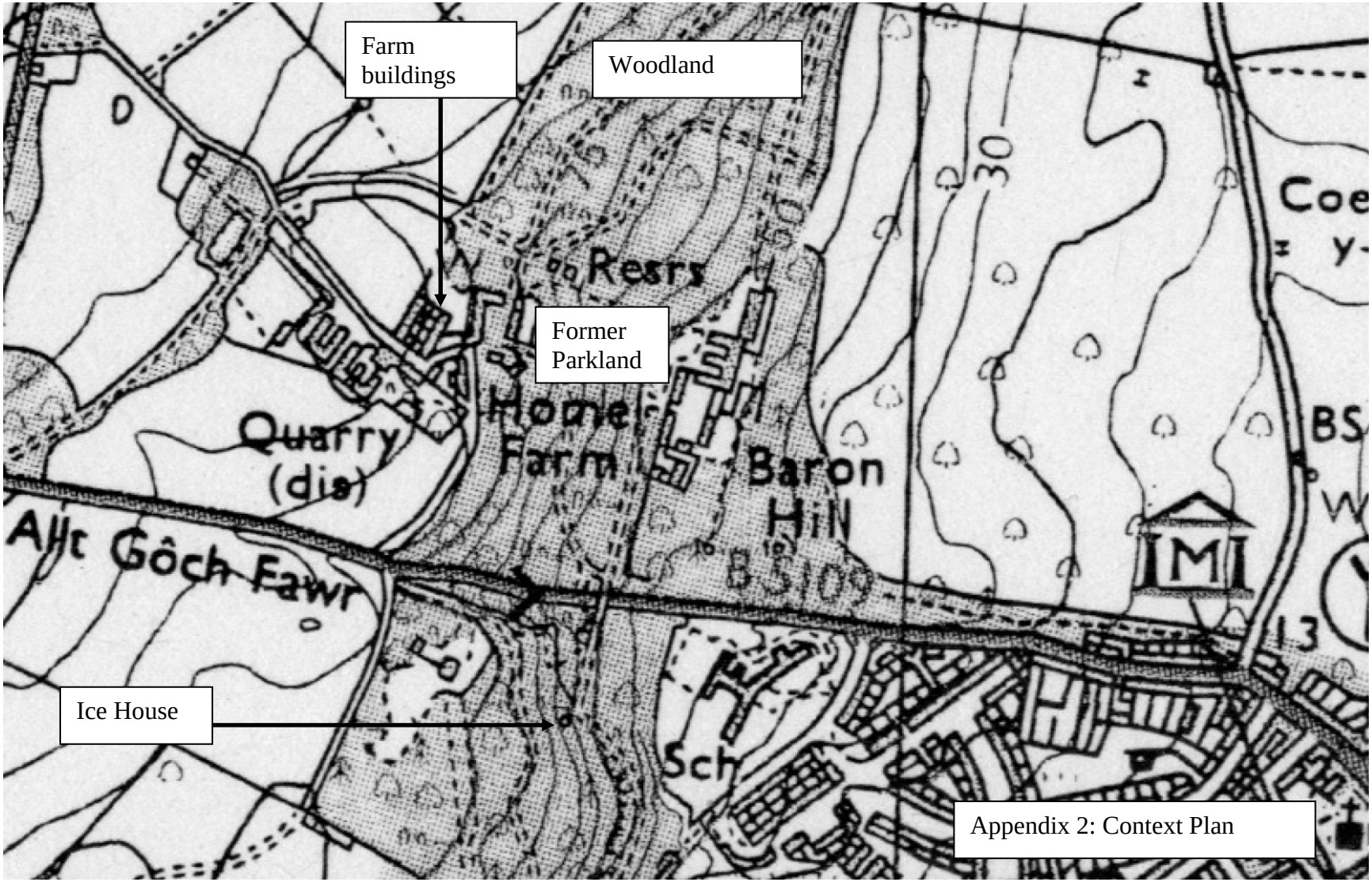
10 World War II Buildings - spread through out area

20 0 20 40 60 80 100

Metres

SITE MAP

Buildings & Features on Site



Appendix 2: Context Plan

Reservoirs

(covered)

Path (um)

C Service Duct

A Wine Cellar

B Vault Cellars

3 1 2

Blocked vent shaft

Vent from Wine Cellar

Shaft

Baron Hill

Access point

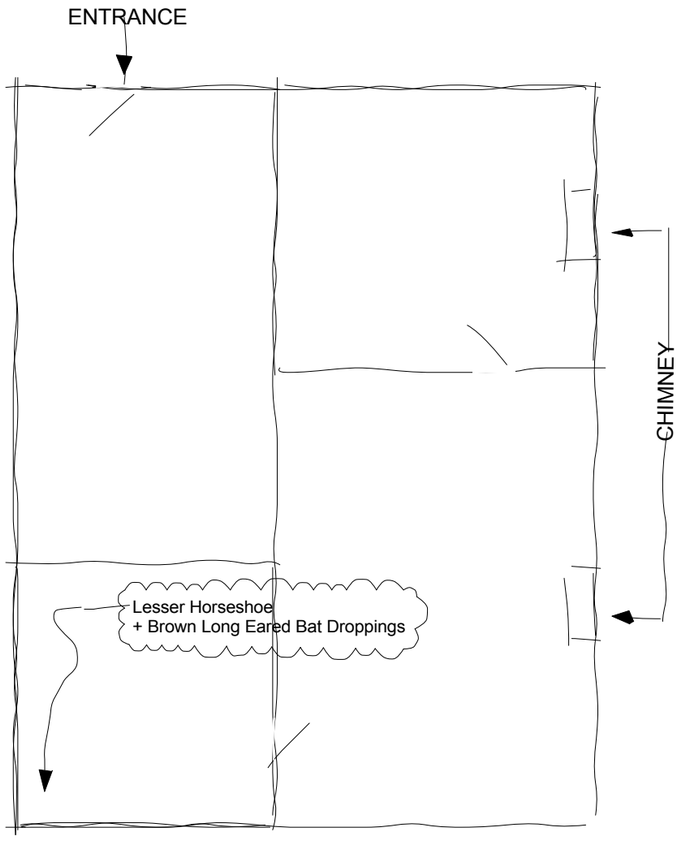
Path (um)

20 0 20 40 60 80 100

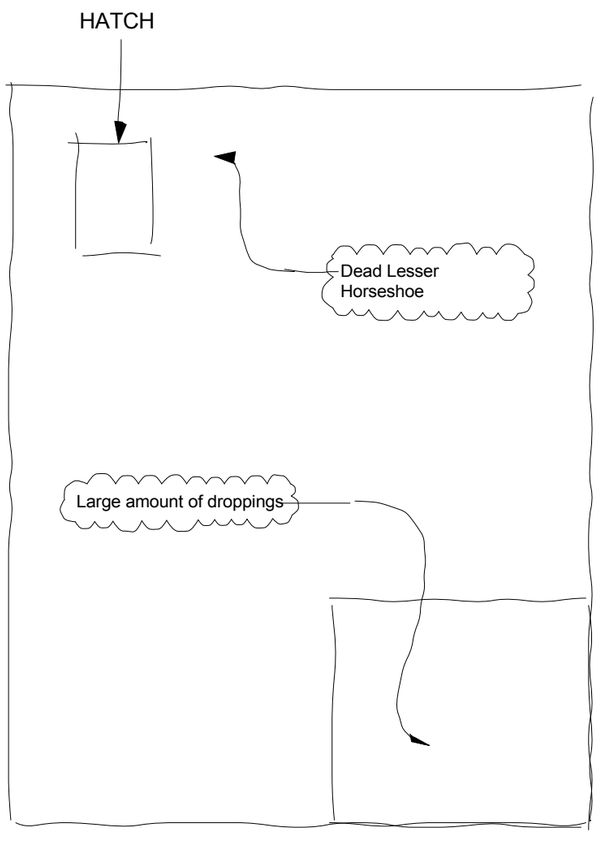
Metres

HIBERNATION SURVEY

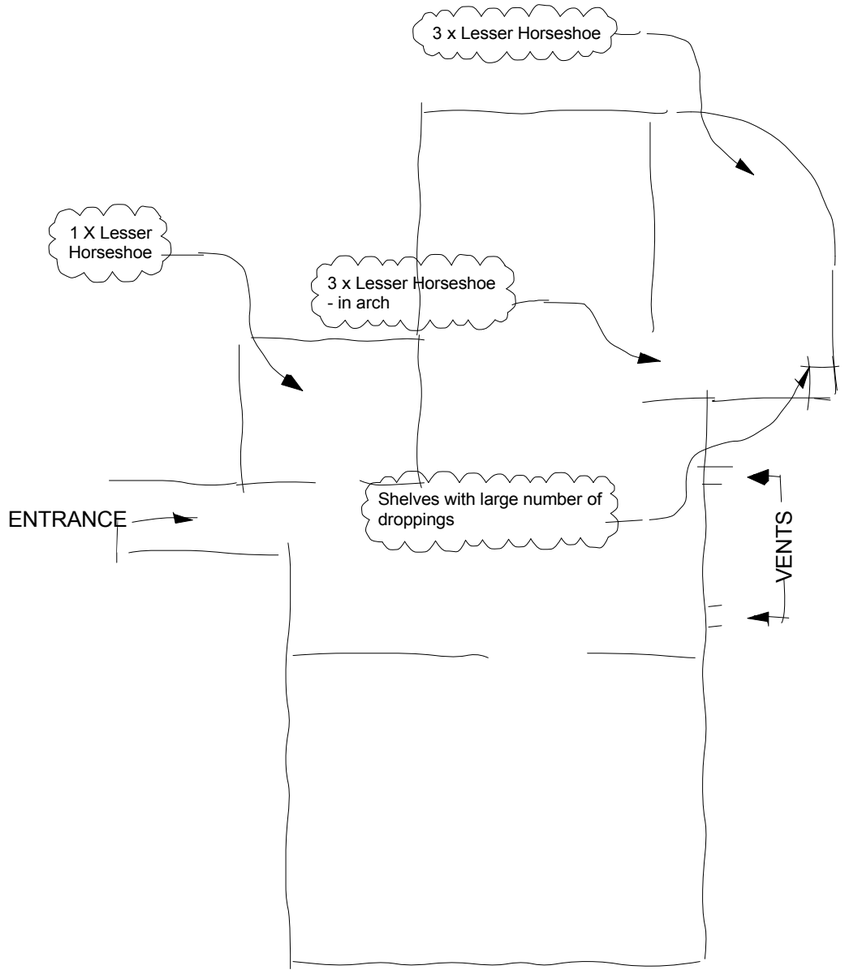
Friday 14th March 2008



ESTATE OFFICE - Ground Floor



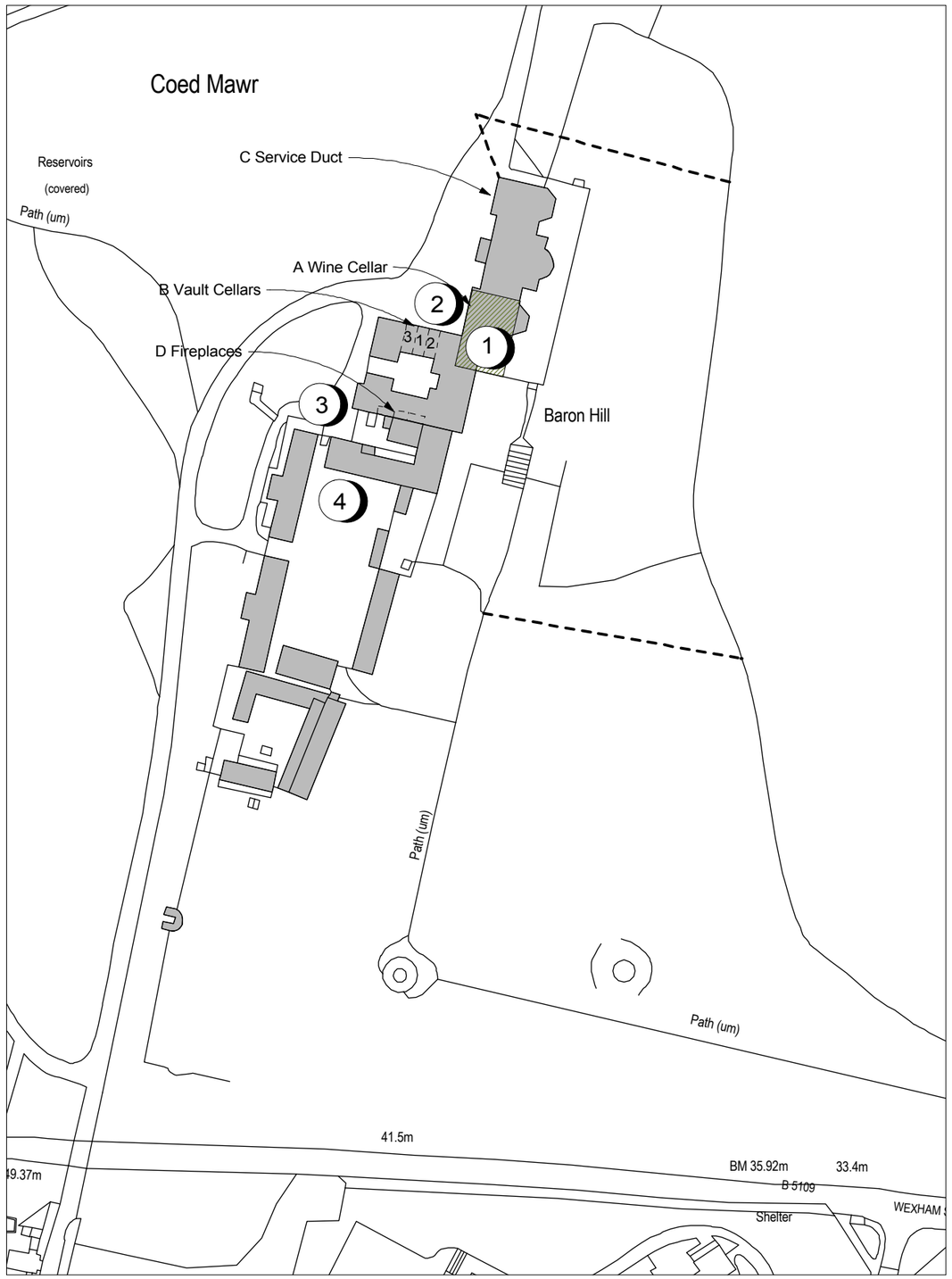
Upper Floor



WINE CELLAR - Sketch Map

SKETCH MAP OF ESTATE OFFICE AND WINE CELLAR

Not to Scale



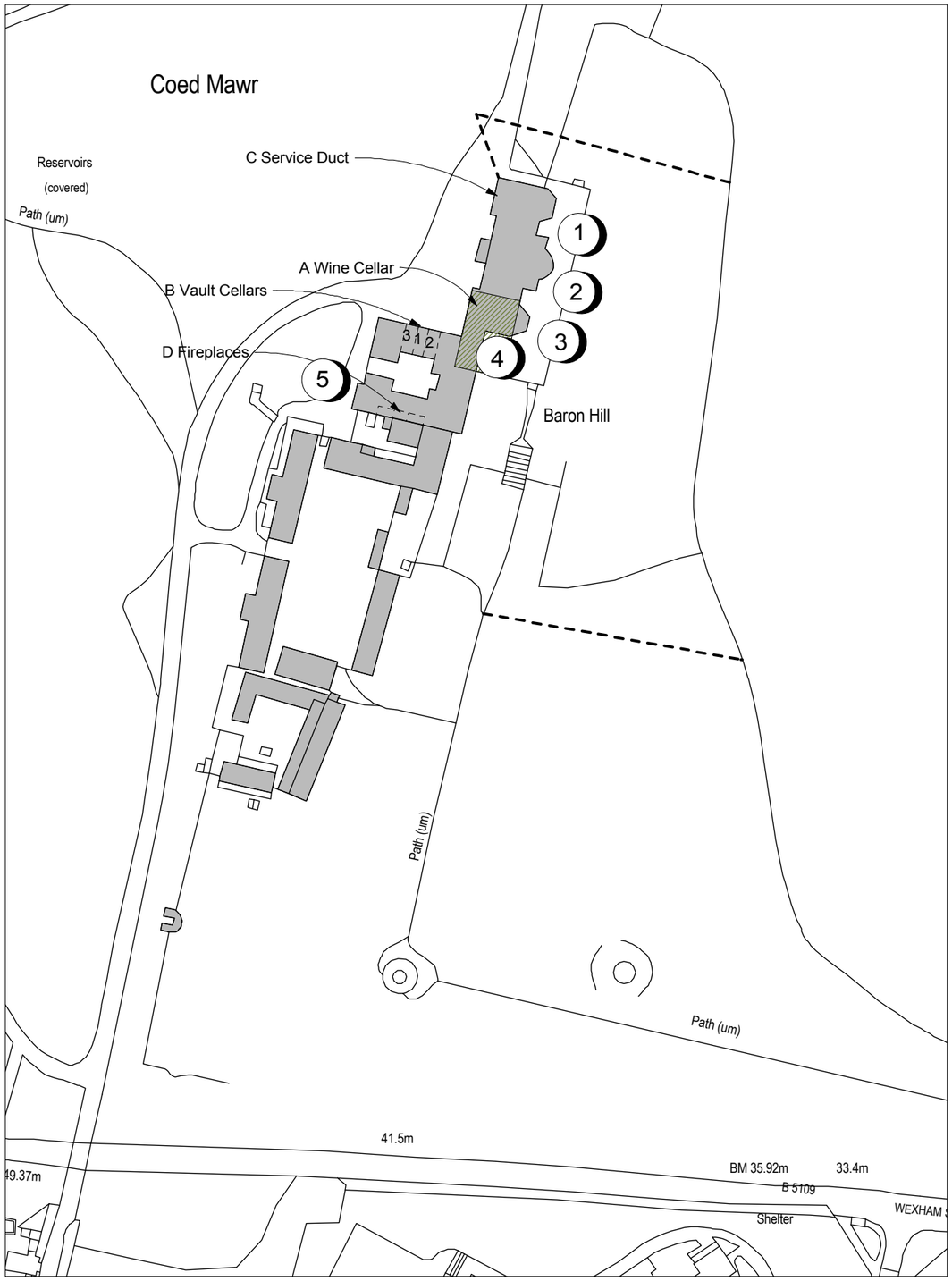
1 etc. Surveyor locations

20 0 20 40 60 80 100

Metres

EMERGENT SURVEY 1

Wednesday 7th May 2008



1 etc. Surveyor locations

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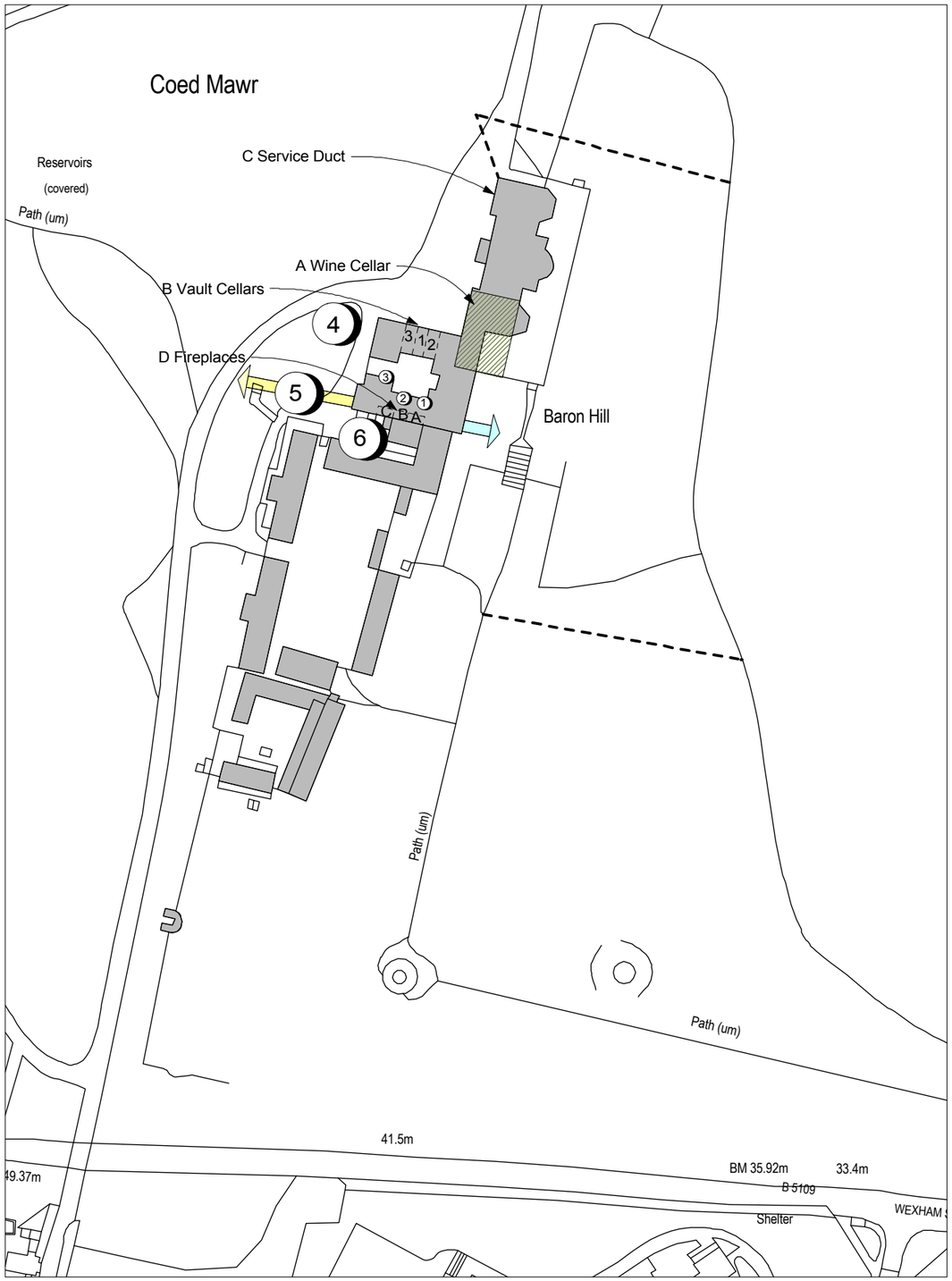
Metres

EMERGENT SURVEY 2

Monday 19th May 2008



1 etc. Surveyor locations

134 Bats exit in this direction

26 Bats exit in this direction

Note : Surveyor 3 located at possible cellar / void

20 0 20 40 60 80 100

Metres

EMERGENT SURVEY 3

Friday 13th June 2008