



ETIVE ECOLOGY Ltd

**Proposed Residential Development
Home Farm, Hanmer, Wrexham
Protected Species Report**

Produced for:



June 2016

This page is intentionally blank

CONTENTS

1	INTRODUCTION	1
1.1	The Scheme	1
1.2	Previous Study	1
1.3	Scope of this Report	2
2	METHODOLOGY	2
2.1	GCN Habitat Suitability Index	2
2.2	GCN Surveys	2
2.3	Bat Detector Surveys	3
2.4	Badger Survey	4
2.5	Limitations	4
3	RESULTS	5
3.1	Habitat Suitability Index	5
3.2	GCN Survey	5
3.3	Bat Surveys	7
3.4	Badgers	10
4	IMPACT ASSESSMENT	11
4.1	The Proposed Scheme	11
4.2	Likely Impacts	11
4.3	Derogation Licences	13
5	MITIGATION STRATEGY	15
5.1	GCN	15
5.2	Bats	16
5.3	Nesting Birds	18
6	THE “THREE TESTS”	19
6.1	The NEED	19
6.2	No SUITABLE ALTERNATIVE	19
6.3	No Impact on FAVOURABLE CONSERVATION STATUS	19
7	CONCLUSION	20
8	REFERENCES	22

APPENDIX A

Figures

Quality Assessment Record

Report Version	Written by	Date	Reviewed by	Date
1.0	Russell Grey	14 June 2016	Maddy Warriner	14 June 2016

1 INTRODUCTION

1.1 The Scheme

- 1.1.1 Etive Ecology Ltd was commissioned by Strutt & Parker LLP on behalf of the landowner in April 2016 to undertake a suite of protected species in relation to the proposed development of Home Farm, Hanmer, Wrexham. The site is centred on National Grid Reference SJ 4500 3943.
- 1.1.2 The site currently a redundant farmyard and comprises a number of farm buildings surrounded by hard-standing. There are small pockets of grassland, tall ruderal and various piles of detritus. The site is surrounded by improved grassland pasture with scattered broadleaved trees and fence-line boundaries.
- 1.1.3 There is an existing planning permission for the site to develop it for residential use (P/2008/1146), given planning permission in August 2011. This consent expires on 12th August 2016 and this report has been produced to support the extension of this consent.

1.2 Previous Study

- 1.2.1 Bat inspection surveys of the site were undertaken by Ecotrack (2008) in relation to the consented proposed development. The survey effort comprised one daytime survey to inspect all of the farm buildings, undertaken in June 2008. The survey identified bat droppings in Buildings C and D, thought to be from brown long-eared bats. The resulting recommendation was for the undertaking of bat emergence and activity surveys to determine the nature of bat activity. It was also recommended that a derogation licence would need to be obtained from Natural Resources Wales (NRW) in order for the scheme to progress.
- 1.2.2 The 2011 consented scheme included a detailed specification for compensatory bat habitat. This scheme is described by Approved Drawing No. 10, which includes a new bat loft built above the garage block located in the eastern corner of the site, with access provided for bats in the open loft space, the ridge tiles, the roof tiles and the cavity walls. Planning Condition 10 also states that this garage block must be completed before works on any other part of the development commences. Approved Drawing No. 10 is included at **Figure 2** in **Appendix A**.
- 1.2.3 A Preliminary Ecological Appraisal (PEA) of the site was undertaken by Etive Ecology in March 2016, to update the ecological baseline. The appraisal comprised of an extended Phase 1 Habitat Survey of the site and surrounding land and identified the following key ecological features;
- Four ponds within 250m of the site, all with the potential to support great crested newts (GCN).
 - Two large traditional red-brick farm buildings with the potential to support roosting bats (Buildings C and D).
 - A single hole badger sett beneath the concrete floor of one of the farm buildings.
 - Two statutory designated sites for nature conservation located immediately adjacent to the site.

1.3 Scope of this Report

- 1.3.1 The report documents the findings of GCN presence/absence surveys, bat detector surveys of the buildings and observations on the badger sett. The survey methodologies are detailed in **Section 2** and the results are presented in **Section 3**.
- 1.3.2 A brief impact assessment is provided in **Section 4**, identifying the likely impacts posed to GCN, bats and badgers by the scheme and assessing the likely scale and magnitude of these impacts. Details of the proposed scheme are presented and key risk areas and activities are identified.
- 1.3.3 **Section 5** presents a summary of the mitigation strategy for GCN, bats and badgers. The details of the mitigation strategy for these species would need to be provided prior to the commencement of any development works, to ensure that all relevant licences were obtained.
- 1.3.4 A short section on the 'three tests' is provided in **Section 6**. This provides a summary of the key issues which is given to assist the LPA in determining whether the scheme satisfactorily passes these tests.

2 METHODOLOGY

2.1 GCN Habitat Suitability Index

- 2.1.1 The Habitat Suitability Index (HSI) is a ten score system used to rapidly assess the suitability of ponds for GCN based on ten environmental parameters that can be scored objectively. The criteria include pond size, water quality, pond shading and the area of suitable adjacent terrestrial habitat (Oldham et al, 2000).
- 2.1.2 The HSI was initially used to score all ponds within 250m of the site as part of the PEA, to assist in determining the need for GCN surveys. Other factors that were considered include habitat connectivity, barriers to GCN movements and sources of disturbance. The HSI results are presented again here to show how their calculated suitability compared to the survey findings.

2.2 GCN Surveys

- 2.2.1 GCN surveys were undertaken in full accordance with the guidance set out in the *GCN Mitigation Guidelines*. The recommended survey protocol is to undertake survey work to determine presence/absence (4 survey visits) and/or population estimate surveys (6 survey visits) during the period mid-March to mid-June. Half of all survey visits should be undertaken within the 'peak' breeding period of mid-April to mid-May. On each survey visits three techniques should be employed to show reasonable survey effort – the relevant techniques used are described below.
- 2.2.2 GCN surveys may only be undertaken by suitably licensed ecologists. Licenses are issued by NRW and recognise the surveyor's skills and experience in amphibian ecology and survey.

Bottle Trapping

- 2.2.3 Bottle-trapping involves the setting of funnel-traps made from plastic bottles around the pond margins. The traps are set approximately one every two metres of suitable habitat and are left overnight. The surveyor returns to site the following morning, retrieves the bottles, records all amphibians captured and releases them.

Egg Search

- 2.2.4 Egg searches are carried out by checking aquatic vegetation, both alive and dead, for GCN eggs. Newts wrap their eggs inside such vegetation and the relative whiteness of the egg is used to determine whether it is from a GCN or a smooth or palmate newt. When GCN breeding has been confirmed, the egg search should cease for that pond to avoid unnecessary disturbance and impacts to breeding success.

Torch Survey

- 2.2.5 The torch survey involves the use of a high-powered torch (500,000 to 1,000,000 candle-power) to detect amphibians activity during darkness. The torch is used to systematically search the pond margins – and deeper areas where it is appropriate and feasible to do so – for amphibians. Counts of species and sex of all amphibians observed should be recorded.

2.3 Bat Detector Surveys

- 2.3.1 An external appraisal and an internal inspection of the farm buildings on site were undertaken as part of the 2008 bat inspection and the 2016 PEA. During the 2008 inspection, occasional droppings were found scattered throughout the floor of Building C, with a cluster of six droppings beneath a 'slot' in one of the roof beams. Building D was also found to support evidence of roosting bats; six to eight droppings in a cluster beneath a mortice joint gap. During the 2016 inspection, these roof spaces could not be safely inspected, but the general description of conditions present in 2008 were broadly still accurate.
- 2.3.2 Bat surveys were undertaken in general accordance with the guidance set out by the Bat Conservation Trust guidelines (2016). The level of survey effort was based upon the aim of the survey work; to confirm the continued presence of roosting bats such that it would be possible for the LPA to extend the existing planning consent. Therefore two dusk bat detector surveys were undertaken.
- 2.3.3 The locations of surveyors during the bat surveys are shown in Plate 3.3.

Dusk Surveys

- 2.3.4 Dusk emergence surveys were undertaken on the following dates:
- 9th May 2016
 - 16th May 2016
- 2.3.5 Dusk surveys commenced 15 minutes prior to sunset and ceased approximately 90 minutes following sunset, when survey conditions were too dark for the surveyor to accurately and definitively identify bat emergence and flight.

- 2.3.6 The surveyors were using a variety of different detection devices across the three surveys, including an SM2+, EM3, and EMTouch and a BatScanner. Bat activity was recorded on each occasion and analysed using Analook software.

2.4 Badger Survey

- 2.4.1 The badger survey comprised an inspection of the badger sett entrance during each visit to the site for GCN and/or bat surveys. On each inspection, the entrance was checked for evidence of recent use (footprints, fresh earth or bedding) and the site was searched for any fresh evidence of badger activity (latrines, pathways, hairs under gates/fences and any footprints).

2.5 Limitations

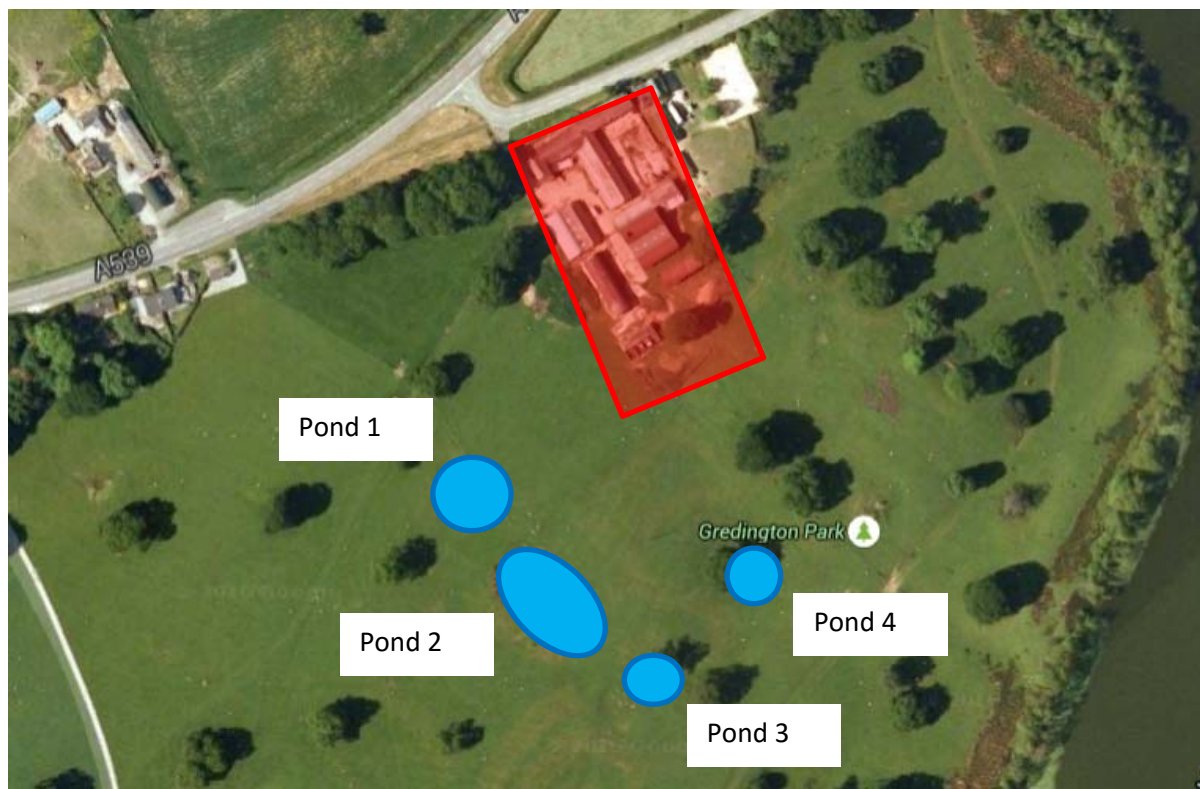
- 2.4.1 Access was made available to all of the ponds within 250m of the site, to allow surveys to take place where necessary. Access was also made available into all of the buildings on site, however, the structural condition of the first floor level of Buildings C and D was such that it was not deemed safe for the surveyor to conduct a full internal inspection of this space.
- 2.4.2 The very low water level in Pond 1 at the start of the survey effort meant that no bottle-trapping could take place in this pond. The pond was subject to an egg-search and to a torch survey of the small area of standing water that was visible due to dense soft rush tussocks. Surveys three and four on Pond 4 did not include bottle-trapping as the pond was too shallow to safely set traps.
- 2.4.3 Weather conditions for all bat and GCN surveys were considered to be suitable. Temperatures were not less than 5°C for GCN surveys or 10°C for bat surveys. During bat surveys there was no significant wind and no rainfall. Weather conditions are not therefore considered to pose any limitation to the validity of the survey findings
- 2.4.4 It is acknowledged that, although the survey methods were in line with the published guidelines, only four GCN surveys and two bat detector surveys were undertaken, rather than six and three respectively. However, the level of survey effort is deemed to be sufficient in order for the baseline ecological conditions to be confirmed and for the likely impacts on these species to be adequately predicted. It is acknowledged that both GCN and bat surveys will need to be repeated at a later date in order for relevant licences to be obtained from Natural Resources Wales (NRW).
- 2.4.5 All of the survey effort was led by Russell Grey (BSc, MCIEEM, CEnv), a licenced GCN surveyor and bat surveyor. Russell also has extensive experience in relation to badgers and has held numerous development licences with regards to badger setts and disturbance.
- 2.4.6 There are considered to be no significant limitations to the undertaking or accuracy of the bat, GCN or badger surveys.

3 RESULTS

3.1 Habitat Suitability Index

3.1.1 A total of 4 No. ponds are shown on Plate 3.1.1 below within 250m of the site. All of these ponds were subject to HSI assessment. The waterbody on the eastern edge of Plate 3.1.1 is Hanmer Mere and is too large to be considered a potentially suitable water-body for GCN.

Plate 3.1.1 Ponds within 250m



3.1.2 The findings of these HSI assessments are presented in Table 3.2.1 below.

Table 3.2.1 HSI Assessment Summary

Pond	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	HSI
1	1	0.29	0.5	0.67	1	1	1	1	0.33	1	0.71
2	1	0.29	1	0.67	1	1	1	1	0.33	1	0.76
3	1	0.1	0.5	0.67	1	1	1	1	0.33	0.5	0.59
4	1	0.23	1	0.67	1	1	1	1	0.33	0.8	0.73

3.1.3 As a result of the HSI assessment, and considering the close proximity of all four ponds to one another and to the site, all of the ponds were included in the survey effort.

3.2 GCN Survey

3.2.1 All surveys were undertaken under suitable weather conditions for GCN activity. Details of survey conditions are detailed in Table 3.2.1 below.

Table 3.2.1 Weather Conditions during surveys

Survey No.	Date	Conditions
1	14/04/16	12-5°C, still, dry and clear
2	21/04/16	12-6°C, still, dry, 40% cloud
3	28/04/16	11-5°C, breezy, dry, clear
4	11/05/16	14-8°C, breezy, light rain, overcast

3.2.3 The results of the six GCN surveys are summarised in Table 3.2.2 below.

Table 3.2.2 GCN Survey Results

Survey No.	Pond 1	Pond 2	Pond 3	Pond 4	Peak Count
1	-	1 x ♂, 1 x ♀ (Torch) 4 x ♂, 2 x ♀ (Bottles)	1 x ♀ (Bottles)	-	6
2	-	3 x ♂ (Torch) 4 x ♂, 3 x ♀ (Bottles)	1 x ♂, 1 x ♀ (Bottles)	-	9
3	-	2 x ♂, 1 x ♀ (Torch) 1 x ♂, 2 x ♀ (Bottles)	-	-	4
4	-	1 x ♂ (Torch) 2 x ♂, 1 x ♀ (Bottles)	1 x ♀ (Bottles)	-	4
Peak Count	0	7	2	0	

3.2.4 GCN eggs were found during the very first survey visit in Pond 2, confirming a breeding population in this pond. Pond 3 is also a potential breeding pond, with both male and female GCN found during the surveys. The pond is only small but there was an abundance of submerged vegetation, although egg-searches were made difficult by almost total coverage of filamentous algae. Pond 1 did not hold sufficient water depth to support breeding GCN. Pond 4 mainly receives runoff from the surrounding land, resulting in a relatively poor water quality and a declining water level throughout the survey period, making it sub-optimal for GCN.

3.2.5 It is very difficult to establish the true size of a GCN population, without at least six survey visits and ideally an extensive capture-recapture effort. Survey techniques such as bottle-trapping and torching have been shown to identify between 2% and 30% of an actual population. However, an approximation of a populations' size is useful in determining the necessary mitigation effort and other licensing requirements. The following three size classes are broadly recognised:

- Small (maximum count of up to 10)
- Medium (maximum counts between 11 and 100)
- Large (maximum counts for over 100)

- 3.2.6 Therefore, using the peak counts shown in Table 3.2.2, the size class population for ponds within 250m of Home Farm is Small. The cluster of ponds surveyed are considered close enough and sufficiently well connected for the GCN numbers to form a meta-population, i.e. there is an interchange of amphibians from one pond to the next over time.
- 3.2.7 It should also be noted that other amphibians were recorded during the survey effort. These are shown in Table 3.3.3 below.

Table 3.3.3 Other Amphibians Survey Results (Peak counts per pond)

Pond	Smooth Newts	Palmate Newts	Common Frog	Common Toad
1	1 x ♀	-	-	-
2	2 x ♂, 3 x ♀	-	-	-
3	1 x ♂, 5 x ♀	-	-	-
4	1 x ♂	-	-	-

- 3.2.8 The overall survey data indicates a small GCN breeding population in Ponds 2 and 3, resulting in a small sized GCN breeding population across these ponds. Amphibian activity was relatively constant throughout the survey effort, despite relatively dry conditions and falling water levels in all four ponds. It is noted that all four ponds are open to grazing impacts from sheep, which were present throughout the survey effort.

3.3 Bat Surveys

- 3.3.1 All surveys were undertaken under suitable weather conditions for bat activity. Details of survey conditions are detailed in Table 3.3.1 below.

Table 3.3.1 Weather Conditions during surveys

Survey ID	Date	Conditions
Dusk 1	09/05/15	15°C, 5mph, dry, 0% cloud
Dusk 2	16/05/15	10°C, 3mph, dry, 50% cloud

Dusk Survey 1 (Sunset @ 20.42)

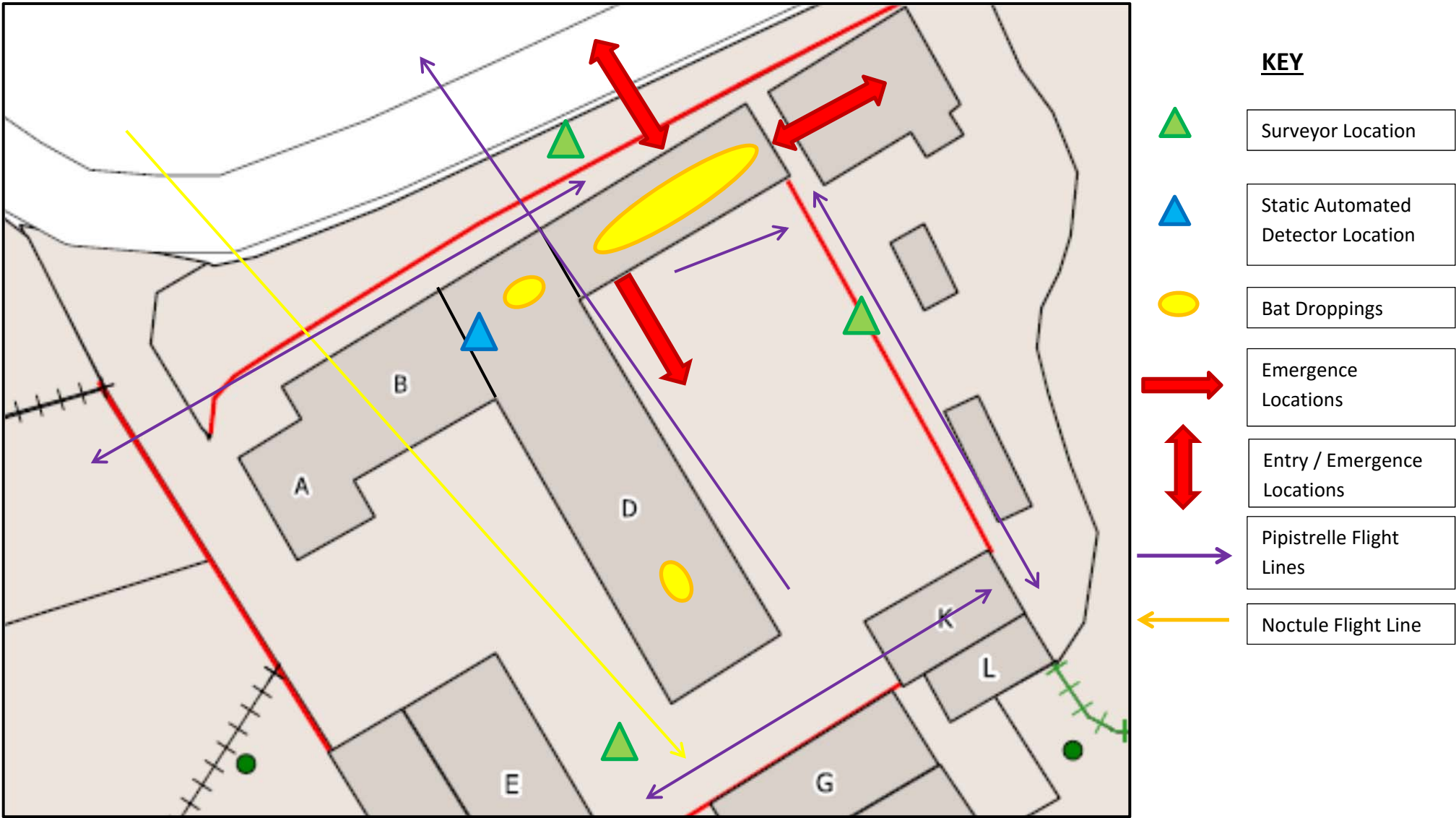
- 3.3.2 **Two bats were seen to emerge from the southern elevation of Building C** during the survey period. Both were common pipistrelles, recorded at 21.23 and 21.27, emerging from ventilation gaps in the brickwork of the first floor, near to the junction of Buildings C and D. The only other confirmed roosting activity was **up to two bats observed flying inside at the northern end of Building D** at 22.15, confirmed as soprano pipistrelles.
- 3.3.3 General bat activity across the site comprised numerous passes from Noctule bats, from 21.22 onwards, continuous common pipistrelle activity from 21.04 and frequent soprano pipistrelle activity from 21.18. In addition, there were three passes of Myotis sp. bats at 21.35, 21.50 and 21.58, and a single pass of both a lesser horseshoe bat and a greater horseshoe bat at 21.51.
- 3.3.4 A static detector was left inside the buildings for the duration of the dusk survey, located at

the dividing wall between Buildings B and D. The device recorded soprano pipistrelle activity between 21.09 and 21.16 (5 registrations), a cluster of *Myotis* sp. activity (likely Whiskered/Brandt's) at 21.18 to 21.29 (10 registrations), then occasional soprano pipistrelle activity until 21.40. As noted, above, soprano pipistrelles were again recorded within the buildings at 22.15

Dusk Survey 2 (Sunset @ 21.05)

- 3.3.5 Bats were seen to emerge from Building C from three locations; ventilation gaps in the brickwork on the northern elevation and the southern elevation, and from a hatch opening in the eastern gable end. **The first bat to emerge was a common pipistrelle at 21.18 from the northern elevation**, followed by further bats at 21.37, 21.39, 21.48, 22.01 and 22.03, one of which was a soprano pipistrelle. It is also noted that **one common pipistrelle entered the northern elevation of the building at 21.59. One bat was seen to emerge from the eastern gable end at 21.39 and one was seen to re-enter at 21.57 – both pipistrelle bats. One soprano and one common pipistrelle were also seen to emerge from the southern elevation of Building C, at 21.43 and 21.54.**
- 3.3.6 General bat activity across the site comprised numerous passes from Noctule bats, from 21.34 onwards until the end of the survey effort, and continuous common pipistrelle and soprano pipistrelle activity from 21.18 onwards. No other species of bat were recorded within or without the buildings during the survey effort.
- 3.3.7 A static detector was left inside the buildings for the duration of the dusk survey, located at the dividing wall between Buildings B and D. The device recorded soprano pipistrelle activity between 21.30 and the end of the survey at 22.37 (21 registrations), and just two common pipistrelle registrations (at 21.30 and 21.32).

Plate 3.3 Bat Survey Results



Nesting Birds

- 3.3.7 Numerous species of breeding bird were noted in and around many of the buildings on site. Of these birds, the likely nesting species included swallow, pied wagtail and house sparrow.

Summary of Findings

- 3.3.8 In summary, the bat activity associated with the farm buildings at Home Farm can be characterised as follows:
- Dusk Survey 1; a summer / day roost for a small number of Myotis bats (likely Whiskered / Brandt's) and 2 x common pipistrelles. A feeding / night roost for 2 x soprano pipistrelles.
 - Dusk Survey 2; a summer / day roost for 5 x common pipistrelles and 2 x soprano pipistrelles. A feeding / night roost for individual common and soprano pipistrelles.
 - Foraging/commuting pipistrelles, Noctule, Myotis sp., and both greater and lesser horseshoe bats on or over the site.
- 3.3.9 It is concluded that Buildings C and D are used as a summer / day roost by a small number of individual (male) Myotis sp., common pipistrelle and soprano pipistrelle bats. The buildings are also used as a feeding / night roost by a small number of common pipistrelle and soprano pipistrelle bats. This roost is assessed to be of Local value. The site is also used as a foraging resource for Noctules, pipistrelles and Myotis species. Greater and lesser horseshoe bats were also recorded on site during the first survey, although their usage of the site is unclear, particularly as neither species was recorded during the second survey. Overall, the site is considered to be of importance at the Local level on the basis of its functionality as a roost site for a small number of bats, and its value as a foraging resource.

3.4 Badgers

- 3.4.1 The badger sett was checked and inspected on the following dates in 2016;
- 14th April
 - 21st April
 - 28th April
 - 9th May
 - 11th May
 - 16th May
- 3.4.2 No fresh evidence of badger activity was noted on any of these survey visits. The spoil around the entrance hole was undisturbed, no fresh bedding was present and there were no footprints or other indications of mammal use of the hole. The use of a torch to inspect the sett chamber revealed no animals present within the sett on any of these survey dates.
- 3.4.3 During the course of four night time torch surveys and two dusk bat detector surveys, no badgers were encountered by any of the surveyors. No field evidence of badgers such as pathways, fence crossing points or latrines, were found during the setting and collecting of bottle-traps, undertaken during the hours of daylight when such evidence could be easily identified.
- 3.4.4 It is concluded that the badger sett is no longer active and that badgers are not present inside the development site boundary or within 30m of it.

4 IMPACT ASSESSMENT

4.1 The Proposed Scheme

4.1.1 The scheme is illustrated on **Figure 1** and will include the following activities:

- Conversion of Buildings A, B, C, D and E to residential units.
- Conversion of Building K to garage block.
- Demolition of Buildings F, G, H, I and L.
- Retention of the existing site access for residential use.
- Re-landscaping around the southern side of the buildings to create new garden areas, car parking and vehicle access/turning arrangements.
- Creation of new grazing pasture in the footprint of Buildings G, H, I and L.
- Construction of a new agricultural building to the south of the new grazing pasture, to replace the minor agricultural function of the existing site.
- Retention of existing brick wall boundaries and creation of new boundary features to the south of the site around the new grazing pasture and agricultural building.

4.1.2 **Figure 1** illustrates the proposed layout of the developed site. The anticipated impacts on GCN, bats and badgers are detailed below.

4.2 Likely Impacts

GCN

- 4.2.1 There is a risk that GCN may be present within the development footprint, as although the site comprises little semi-natural habitat, there are occasional pockets of suitable refugia and the site is within 100m of the main GCN breeding pond. Development of the site would therefore pose a risk of harming, injuring and disturbing individual GCN during construction works. It is considered that this risk is very low given the small sized GCN population present in Ponds 2 and 3, and the lack of suitable connecting habitat between the ponds and the development footprint.
- 4.2.2 The re-developed site will comprise a more suitable mix of habitats for GCN than the existing. However, there will still be a significant level of disturbance as a result of residential occupancy rather than farming. It is concluded that there will be a neutral long-term impact on GCN as a result of site modification.
- 4.2.3 It is anticipated that the proposed scheme poses no risk of impacting any breeding sites or indeed any key over-wintering site or other key places of shelter.
- 4.2.4 There are no long-term fragmentation or isolation impacts anticipated as a result of the scheme. The development footprint lies between 95m and 125m to the north of the two GCN breeding ponds and is already utilised for occasional agricultural purposes. The busy A539 is located immediately adjacent to the north of the site and is already a significant barrier to GCN dispersal to the north. In addition, there are at least ten ponds located within 750m to the southwest of Ponds 2 and 3, which are well connected via semi-natural habitats. It is therefore anticipated that any GCN dispersal and inter-connectivity is likely to be in a southerly direction, i.e. away from the development footprint.

- 4.2.5 Post-development the site will change from an agricultural site to a residential site. This modification will result in much the same interference impacts on GCN, i.e. the presence of regular vehicles movements, artificial site drainage, hard surfaces and frequent human activity. Therefore it is anticipated that the proposed scheme will pose a no change in interference impacts on GCN.
- 4.2.6 The anticipated scale of the impacts detailed above on GCN, prior to mitigation, is Low. This is because there would be only a short-term risk of harming/disturbing GCN prior to the start of development works, and no significant adverse impacts after this point. This scale of impact will have no detrimental effect on the Favourable Conservation Status (FCS) of the species.

Bats

- 4.2.7 The proposed scheme will result in the permanent loss of the open and connected roof spaces found in Buildings B, C and D, and significant structural and cosmetic external works to all of the buildings on site to make them suitable for residential occupancy. Buildings C and D currently support roosts of *Myotis*, common pipistrelle and soprano pipistrelle bats.
- 4.2.8 The re-development of the site will also result in permanent changes to the layout and composition of the site, which currently supports a moderate level of foraging activity by at least six species of bat. Currently the buildings are largely unoccupied and rarely used, whilst the wider site is still subject to occasional agricultural use and disturbance. The site also provides a low-light environment after dusk, with only occasional artificial lighting from the residential property adjacent to the east of the site. The agricultural use and numerous open-sheds offer sheltered habitats for invertebrates and therefore a relative abundance of prey items for bats.
- 4.2.9 Post-development interference effects associated with the scheme will comprise an increased level of human activity (disturbance) and an increase in artificial lighting. In addition, residential land-use is likely to comprise well-kempt and well-managed ornamental/amenity habitats and outdoor areas, which may support fewer insect prey items than the current redundant farmyard areas.
- 4.2.10 The scale of the impacts presented above is dependent to a large extent by the programme of works for the proposed scheme. For example, summer/day roosts may only be occupied through the active period (April to September inclusive), therefore disturbance impacts only occur if works take place during the occupied period. Careful timing of the works may be used to avoid impacts where feasible and to otherwise minimise impacts wherever possible.
- 4.2.11 The anticipated scale of site level impacts are summarised in **Table 4.2.2** below. These give the scale of the impacts prior to mitigation. It is noted that scale of the majority of the individual impacts is Low, however the overall **cumulative impact on bats prior to mitigation is assessed to be Medium**.

Table 4.2.2 Summary of Main Impacts on the Bat Populations on Site

Bat Feature	Development Effect	Scale of Impact		
		Low	Medium	High
Summer / Day Roost (Myotis sp., common pipistrelles, soprano pipistrelles)	Destruction	X		
	Isolation caused by fragmentation	X		
	Post-development interference	X		
Feeding / Night Roost (Pipistrelle sp. Myotis sp.)	Destruction	X		
	Isolation caused by fragmentation	X		
	Post-development interference	X		
Foraging / Commuting Habitat	Partial destruction / modification	X		
	Temporary disturbance	X		
	Post-development disturbance		X	

Badgers

- 4.2.12 As badgers have been found to be absent from the site and the existing sett found to be inactive and likely abandoned, no likely impacts on this species have identified. However, it is possible that badgers do occasional use the site or adjacent land for occasional foraging and/or may come to utilise the site prior to the start of development works. In this scenario, there would be a risk of causing accidental harm to badgers during construction and development works.

4.3 Derogation Licences

- 4.3.1 As noted in paragraph 4.2.6, the anticipated impacts on GCN are assessed to be minor and do not have the potential to impact the FCS of the species. Furthermore, these potential impacts can be adequately and effectively mitigated through the implementation of Reasonable Avoidance Measures (RAMs). It is therefore concluded that **a Derogation Licence for GCN will not be required** for the scheme, provided the RAMs and mitigation measures detailed in Section 5 are implemented.
- 4.3.2 The proposed scheme will result in the permanent loss of roosting habitat for at least three species of bat as well as short term disturbance to the surrounding site and the modification of the site layout and change in usage. These impacts mean that the proposed development will require a Derogation Licence to be obtained prior to the works being undertaken.
- 4.3.3 All bats and bat roosts are legally protected under the *Conservation of Habitats and Species Regulations 2010* (the Habitat Regulations). These Regulations protect bats from being captured, killed, injured or disturbed and protect their roosts (any breeding site or resting place) from being damaged, destroyed, disturbed or obstructed. Provision is made within the Regulations for the derogation of this protection, providing certain conditions are met

and this process is managed through a licensing process administered by Natural Resources Wales (NRW). To attain a license for an otherwise unlawful activity the applicant must satisfy three tests, relating to the **NEED** for the activity, the lack of any **SUITABLE ALTERNATIVES** and the **FAVOURABLE CONSERVATION STATUS** (FCS) of the species.

5 MITIGATION STRATEGY

5.1 GCN

Reasonable Avoidance Measures

5.1.1 The low risk posed to disturbing and harming GCN and other amphibians during the site work should be mitigated through the implementation of a scheme of Reasonable Avoidance Measures (RAMs). The RAMs are designed to minimise the risk of GCN being present on site during works, to ensure that the site is thoroughly checked for GCN pre-commencement of the works and to help to prevent GCN becoming at risk of harm for the duration of development works.

5.1.2 The scheme of RAMs is as follows:

- Site clearance works are to commence outside of the hibernation period for GCN, which is taken as October to February inclusive. Outside of this period, there is a low risk that GCN will be present within the development footprint which contains occasional potentially suitable hibernaculum.
- Site clearance works are to be undertaken under the full supervision of a GCN-licensed ecologist. Site clearance is deemed to include the demolition and removal of any existing buildings/structures, the removal of surface vegetation, rubble or other detritus, the breaking or lifting of existing concrete slabs or foundations, and the removal of any fencing or walling.
- For the full duration of construction works, a tidy-site policy should be implemented, including the following measures:
 - All materials are stored **off the ground** on stillages or pallets.
 - All rubble/spoil arising from works is skipped or removed from site on a daily basis.
 - Any **excavations left overnight** should either be **back-filled and compacted or else covered by plastic sheeting** and secured by plywood batons to prevent amphibians from becoming trapped within them.
 - **Pre-start checks** of working areas should be undertaken **each morning**.
 - All site workers should be made aware of the potential presence of GCN and an identification sheet should be kept on site in case any amphibians are encountered.
 - **If any GCN are found, work should cease immediately and a suitably experienced GCN-licensed ecologist contacted for advice.**

Mitigation Measures

5.1.3 To ensure that there is no long term impact on the suitability of the site for GCN, it is recommended that the landscaping scheme provides suitable semi-natural habitats for amphibians. All boundaries, including those between ornamental garden areas, should be marked by mixed native hedgerows rather than fence-lines; including the boundaries extending beyond the residential development and around the proposed grazing land and agricultural building to the south. A total of three artificial hibernaculum (brick and other rubble, piled to 1m height, covered in soil and allowed to vegetate) should be created around the southern edge of the site to provide replacement terrestrial refugia for GCN.

- 5.1.4 To offset the minor impacts posed by the development works on the local population of GCN, it is also recommended that the immediate habitat surrounding Pond 2 is protected from grazing impacts through the installation of stock-proof fencing. The fencing should be installed with an offset of 2m from the top of the pond bank and an access point for livestock to drink should be created on the south-eastern side of the pond, where there are existing hawthorn bushes overhanging the pond. This access should be not more than 4m wide and fencing should extend down either side and into the water, such that during times of low water level, livestock will still be unable to access other areas of the bank.

5.2 Bats

Mitigation Summary

- 5.2.1 Mitigation comprises two elements i) minimising the impacts of the scheme and ii) compensating for impacts that cannot otherwise be mitigated. The key targets of the mitigation strategy for the proposed development are as follows:
- Avoid the deliberate or accidental killing, injuring or disturbance of any bats through seasonal working.
 - Retain/provide roosting opportunities within the retained buildings, i.e. for summer / day roosting bats.
 - Recreate a suitable open roof space in the proposed new garages, i.e. for feeding / night roosting Pipistrelle, Myotis and potentially horseshoe bats.
 - Design the site layout so that it continues to offer suitable foraging habitat, suitable flight corridors for commuting bats and suitable flight lines to the compensatory roosting features.
 - Minimise the use of artificial lighting such that there are no permanent lighting columns, carefully positioned low level lighting and only movement sensor activated security lighting.
 - Undertake post-development population monitoring to assess the success of the scheme and to inform any remedial actions.

Avoidance of Killing / Injuring / Disturbing Bat

- 5.2.2 Development works to the block of Buildings B, C and D will only be undertaken when the building block is unoccupied by roosting bats. It is anticipated that this will be from the start of October onwards until early April. An inspection by a suitably licensed ecologist will be required (with further bat detector surveys if deemed necessary) to confirm the absence of roosting bats before the start of works. Work must start during this period and must be suitably advanced that by the time bats return to the site the building is inaccessible (see 5.2.4 below) and/or wholly unsuitable for roosting.
- 5.2.3 Where the licensed ecologist is uncertain as to whether bats are indeed absent, it may be necessary for them to supervise works within the roost / roof space, to ensure that refurbishment works are undertaken carefully and that any bats found are carefully removed from the roost and released as is appropriate.
- 5.2.4 Once the existing building block has been confirmed to be clear of roosting bats, it may be necessary to block all potential access points which will remain during construction with exclusion devices, to ensure no bats may return to roost during the construction period.

Retention / Creation of Roosting Opportunities

- 5.2.5 Whilst it is acknowledged that it is not possible to retain the existing open roof space for use by roosting bats, it is important to retain some roosting opportunities within the approximate locations of existing roosts. Therefore it is proposed that four Schwegler 1FR bat tubes (<http://www.nhbs.com/title/161276/1fr-schwegler-bat-tube>) are installed on site; two into the north-facing elevation of Building B/C and two into the south-facing elevation of Building C. These tubes should be installed such that they sit flush with the brickwork and so that the access slot is open and unobstructed. The locations of these integrated bat boxes will be specified on any subsequent bat licence application.

Providing a Replacement Roost

- 5.2.6 As part of the original application for the development of the site in 2008 (approved in 2011), it was agreed that garage block in the eastern corner of the proposed site (Building K according to Etive Ecology, 2016a) would be constructed to provide compensatory roosting habitat for bats. The proposed garage design, as shown in **Figure 2**, includes an open roof space accessible via slots in the brickwork at either gable end, two hatch-style openings for bat to enter whilst 'in-flight', and a number of lead access tiles in both sides of the roof. In addition, roosting crevices will be created by installing a top batten ~20mm below the ridge beam of the loft, and the external walls will be constructed to provide a 30mm cavity into which bats will be able to access via purposely located open mortar joints in the external walls. The overall footprint of the garage will be approximately 18.4m x 6m, with the loft space occupying the full footprint, with an apex height of 2.8m from the first floor level. A selection of floorboards, roof timbers, roof tiles and bat droppings from the existing buildings will be retained and re-used inside the garage to encourage bat occupation.
- 5.2.7 The construction of this garage roosts will commence immediately upon the start of construction. No internal or external works or alterations to any of the existing buildings will take place until the compensatory roost within the garage has been fully completed. This is to ensure that there is suitable alternative roosting available for bats to use when they return to use the site in the following early spring (March/April onwards). By this time, conversion works on the buildings are likely to be well underway, or if not, exclusion devices will still be in place, rendering these roosts inaccessible.
- 5.2.8 Suitable flight paths will be provided for bats to approach the replacement roosts, comprising vegetated and/or fully darkened corridors across the site. Flight paths and darkened corridors will be specified and detailed in any subsequent bat licence application.

Designing the Site Layout

- 5.2.9 There will be new amenity planting across much of the site, including a number of ornamental broadleaved trees. All of the interior boundaries around the individual garden plots will be marked by native hedgerows rather than fencing, to ensure there are suitable corridors for foraging and commuting bats. All trees will be of native species and will comprise stock of local provenance. This should ensure that both the layout and the functionality of the site will remain the same in terms of foraging and commuting.

Lighting Scheme

- 5.2.10 Artificial lighting has the potential to render excellent artificial roosts as unusable if

positioned inappropriately, or if excessive lighting levels are used. As a result, only low level lighting will be used around the site entrance, access road, buildings and parking area, to minimise impacts on bat flight across the site. No artificial lighting will be installed within 10m of the garage block which provides the compensatory roost. Motion sensor activated security lighting will be used on the rear of the properties, provided they are directional and are positioned such that they do not splash light onto the aforementioned flight paths.

Post-development Monitoring

- 5.2.11 It is good practise to include post-development monitoring for works which include the permanent loss of an existing roost and the provision of custom-built alternative roosts. It is therefore proposed that monitoring will take place for two years following the completion of the scheme. Survey techniques will be similar to those methods used to determine roost characteristics pre-development and will comprise of a daytime inspection of boxes and bat loft (where feasible) and a dusk survey undertaken within the period mid-May to Mid-August each year. Automated monitoring may also be used within the bat loft.

5.3 Nesting Birds

- 5.3.1 In order to mitigate for the permanent loss of nesting bird habitat, additional artificial nesting opportunities should be provided on site. It is acknowledged that the bat loft provided above the garage will offer open barn nesting for swallows, but it does not provide nesting habitat for traditional nesting species. It is therefore proposed that two 1SP Schwegler Sparrow Terrace boxes be installed in the northern façade of Building C and two into the western façade of Building E. In addition, Schwegler Type 26 Brick Nest Boxes should be installed near the eaves within the brickwork on the east gable end of Building C, the west gable end of Building A, the eastern façade of Building D and the western façade of Building D.

6 THE “THREE TESTS”

6.1 The NEED

- 6.1.1 The NEED for the scheme is to refurbish and convert an existing agricultural site and associated buildings as part of the redevelopment of the site in order to make it economically viable. Home Farm is no longer a financially viable agricultural entity, with the majority of the buildings either standing unoccupied and unused, or else performing a function that could easily be replicated elsewhere. Without the necessary financial motivation, the site would continue to sit unoccupied and unused until the buildings became unsafe and unsightly.
- 6.1.2 There is also a national shortage of residential properties and a local need for desirable properties such as those proposed. Therefore the proposed scheme meets the need for housing stock whilst developing a former agricultural site which would otherwise be left vacant with no mechanism or driver for redevelopment.

6.2 No SUITABLE ALTERNATIVE

- 6.2.1 The redevelopment as proposed is the most cost-desirable way of developing the site whilst retaining the existing red brick barns and their architectural style and aesthetic value.
- 6.2.2 Potential alternatives include the retention of the bat roosts within Buildings C and D, which would result in no development of these sections of the buildings. However this would significantly impact the economic driver and financial viability of redevelopment and would still result in significant disturbance to the roost caused by construction works on-site.
- 6.2.3 Another alternative is to ‘do nothing’, which would result in the site being left undeveloped and with no financial driver for the upkeep or maintenance of the site and no economically viable alternative for the use of the site as an agricultural business. This scenario would ultimately result in the continued degradation of the buildings until they became too far dilapidated for occupation by bats.
- 6.2.4 It is therefore considered that there are NO SUITABLE ALTERNATIVES to the proposed redevelopment scheme.

6.3 No Impact on FAVOURABLE CONSERVATION STATUS

- 6.3.1 The FAVOURABLE CONSERVATION STATUS (FCS) of the local bat populations present on site will not be adversely affected as the proposed mitigation ensures no harm and minimal disturbance to bats during construction. There is also the provision of adequate replacement roosting opportunities and the provision of suitable flight lines and foraging habitat to support bats. Provided the replacement roosts are constructed as per the proposed designs and maintained as per the requirements of any subsequent bat licence, then there will be no long-term adverse impacts on the FCS of the species.

7 CONCLUSION

- 7.1 Etive Ecology Ltd was commissioned by Strutt & Parker LLP on behalf of the landowner to undertake a suite of protected species surveys in relation to the proposed development of Home Farm, Hanmer, Wrexham. The site already has an existing consent for residential redevelopment which expires in August 2016. An application has been made to extend the duration of the consent.
- 7.2 The need for protected species surveys was identified following a preliminary ecological appraisal of the site earlier in 2016 (Etive Ecology, 2016a). A total of four ponds were found within 250m of the site, two of the buildings on site were found to be potentially suitable for roosting bats and a single hole badger sett was also found on site. The survey methodologies employed followed industry standard guidelines and included four GCN survey visits to all ponds, two dusk emergence bat surveys on the relevant buildings and six inspections of the badger sett.
- 7.3 Two of the surveyed ponds (Ponds 2 and 3) were found to support GCN. Pond 2 was confirmed to support breeding activity, with GCN eggs found during the survey effort. The two ponds each supported small GCN populations and together they still formed only a small population (a peak count of <10 individuals).
- 7.4 Buildings C and D were found to support small numbers of roosting bats from at least three different species of bat. A peak count of five common pipistrelle bats, two soprano pipistrelle bats and an unconfirmed number of Myotis bats (likely to be a small number of Whiskered / Brandt's). The buildings are considered to provide summer/day roosting as well as feeding/night roosting functions. Foraging Noctules, Myotis sp. and both greater and lesser horseshoe bats were also recorded across the site.
- 7.5 The badger sett was found to be inactive during each of the six survey visits.
- 7.6 The proposed scheme is to retain all of the red-brick buildings on site and to convert them into residential units. A number of the modern agricultural barns/sheds are to be demolished. A new purpose-built garage is to be constructed and the site will be re-landscaped and furnished with new parking bays. The main impacts identified from the proposed scheme are the risk of disturbing, injuring and killing GCN during the site clearance phase, the permanent loss of buildings used by roosting bats and the risk posed to disturbing, injuring and killing roosting bats during the construction phase. Long-term post-construction impacts such as the change in use and layout of the site are anticipated to be minor.
- 7.7 A scheme of RAMs has been detailed to minimise, manage and mitigate the likely impacts posed to GCN by the proposed scheme. The impacts on GCN are not considered to pose a significant risk to the FCS of the species, thus there should be no requirement for a derogation licence to be obtained. However, a derogation license will need to be obtained from Natural Resources Wales (NRW) with regards to the impacts on roosting bats, in order for the scheme to progress. As part of that license it will be necessary to implement the scheme of mitigation and compensation measures detailed herein in order to minimise short and long-term risks and impacts on roosting bats.

- 7.8 Compensation measures to offset the impacts posed by the scheme on GCN and bats include the protection of immediate habitat surrounding Pond 2 from grazing impacts and the construction of a dedicated purpose-built bat loft above the new garage on site. As part of the derogation licence relating to bats, there will need to be post-development maintenance and monitoring put in place to ensure the long-term success of the mitigation and compensation measures detailed.
- 7.9 It is concluded that, provided the proposed mitigation, licensing, enhancement and management measures are implemented in full, the scheme will pose no long term significant adverse effects to the Favourable Conservation Status of GCN or bats in the local area.

8 REFERENCES

Bat Workers Manual – 3rd edition. Edited by A. J. Mitchell-Jones & A. P. McLeish. Joint Nature Conservation Committee, 2004.

Collins. J., (ed.) (2016), *Bat Surveys for Professional Ecologists; Good Practice Guidelines – 3rd edition*. The Bat Conservation Trust.

English Nature (2001), *The Great Crested Newt Mitigation Guidelines*. August 2001, Peterborough.

English Nature (2001), *Bat Mitigation Guidelines*. August 2001, Peterborough.

Etive Ecology (2016), *Proposed Redevelopment of Existing Farm Buildings; Home Farm, Hanmer, Wrexham – Ecology Report*. April 2016.

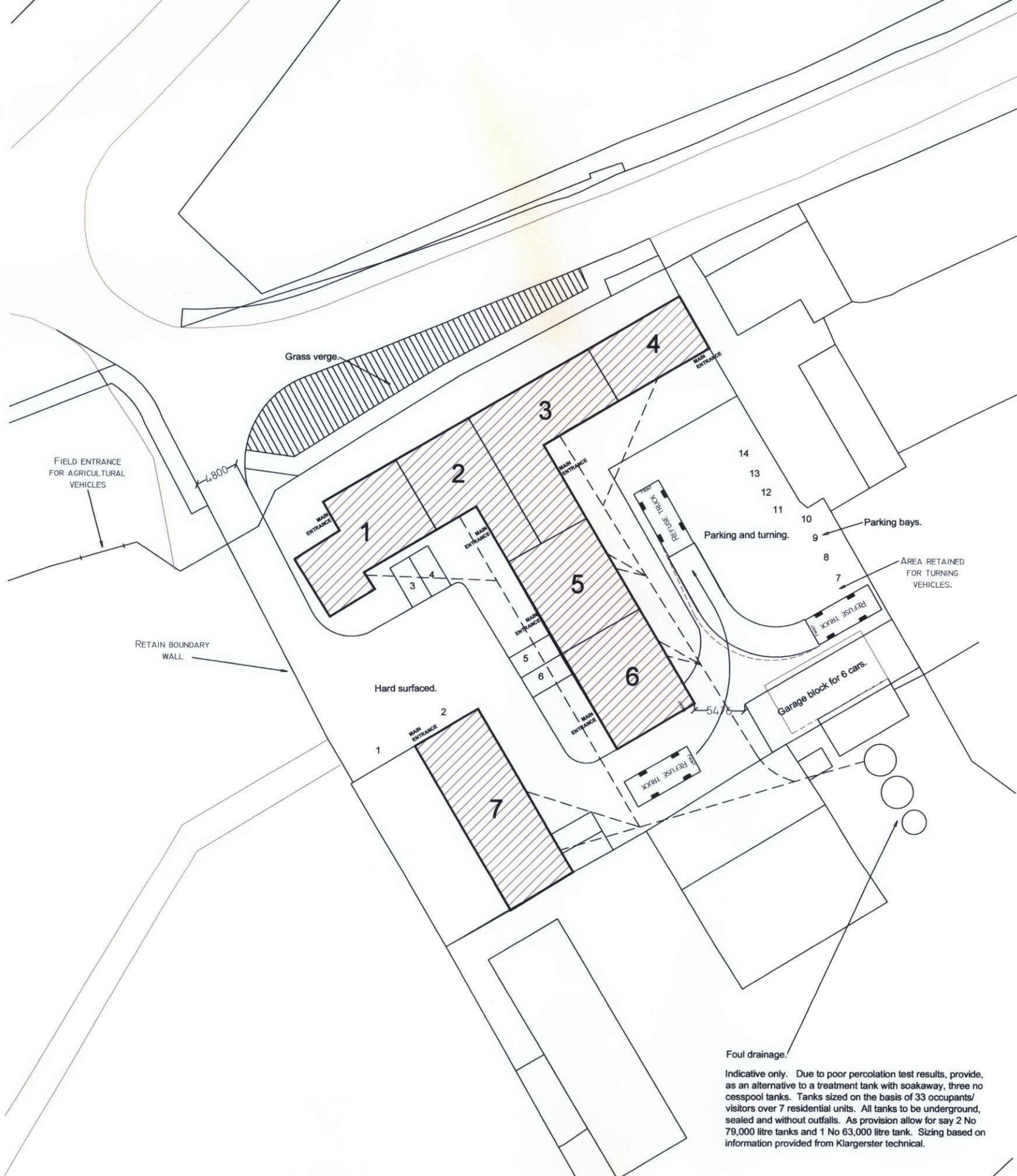
Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000), *Evaluating the suitability of habitat for the Great Crested Newt* (*Triturus cristatus*). *Herpetological Journal* 10 (4), 143-155.

Appendix A – Figures

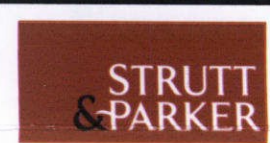
This page is intentionally blank

Figure 1 – Proposed Site Layout

This page is intentionally blank



F	17-4-09	Details of foul drainage provision confirmed and annotated. Indicative drainage runs shown from units.	PRA
E	8-4-09	Auto track placed on drawing as requested by planning.	PRA
D	6-4-09	Minor amendments as requested to main entrance, field access and annotation of turning area within site.	PRA
C	17-3-09	Further amendments to site circulation, access and Autotrack for refuse vehicle depicted.	PRA
B	12-3-09	Site circulation and parking layout amended as suggested layout from Planning.	PRA
Rev	Date	Revision Note	By



LAND MANAGEMENT DEPARTMENT

37 Lower Bridge Street Chester CH1 1RS
t: +44 (0)1244 354888
f: +44 (0)1244 319690
e: chester@struttandparker.co.uk

job title: Gredington Home Farm Conversion Scheme		
client: Gredington Estate		
drawing title: Site Plan		
drawn by: mas	date: May	scale @ A3: 1:500
job number: J2586	drawing number: 09	rev: F

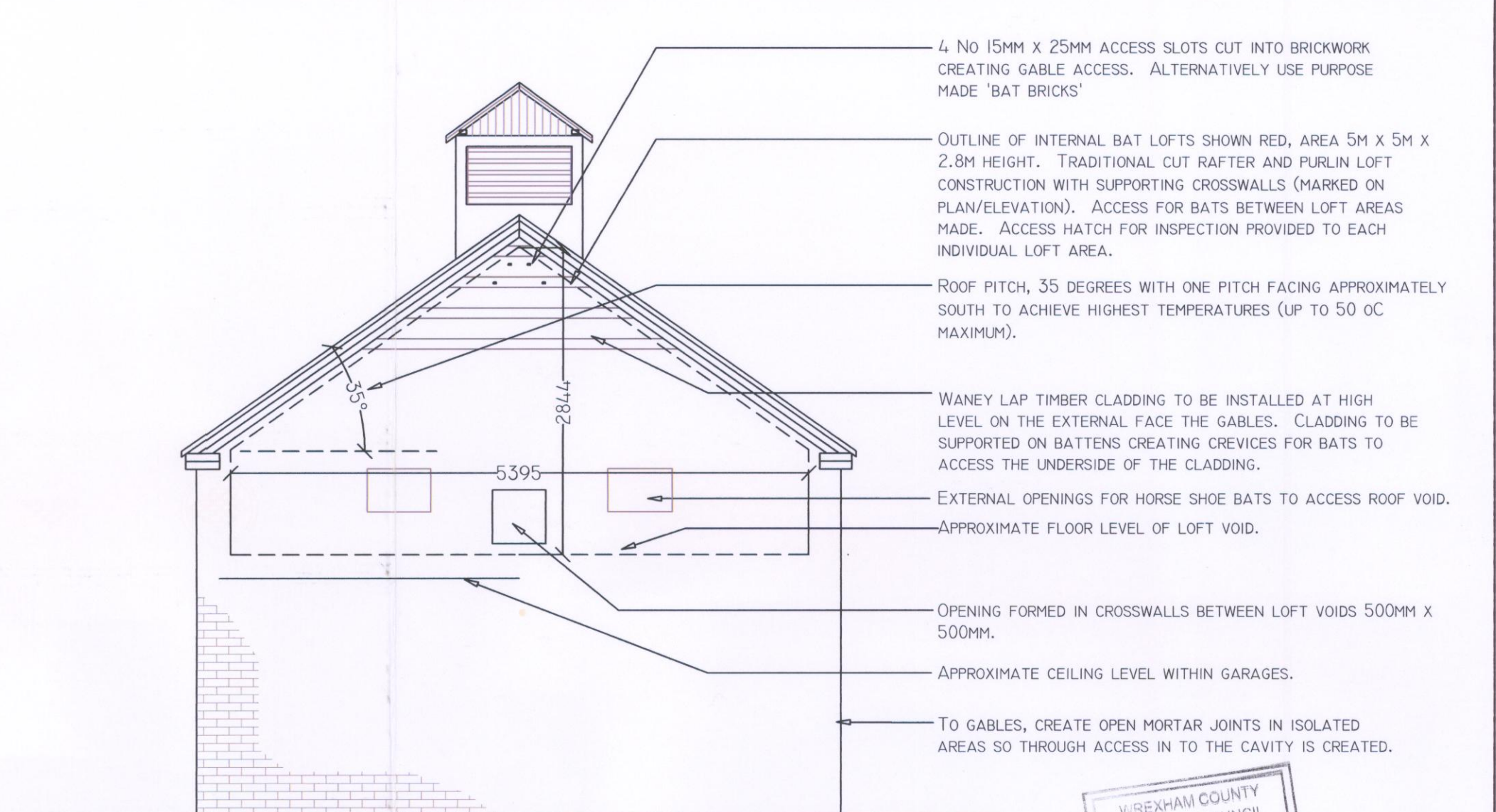
WREXHAM COUNTY
BOROUGH COUNCIL
APPROVED
PLANNING DEPARTMENT

WREXHAM COUNTY
BOROUGH COUNCIL
20 APR 2009
AMENDED
PLANNING DEPARTMENT

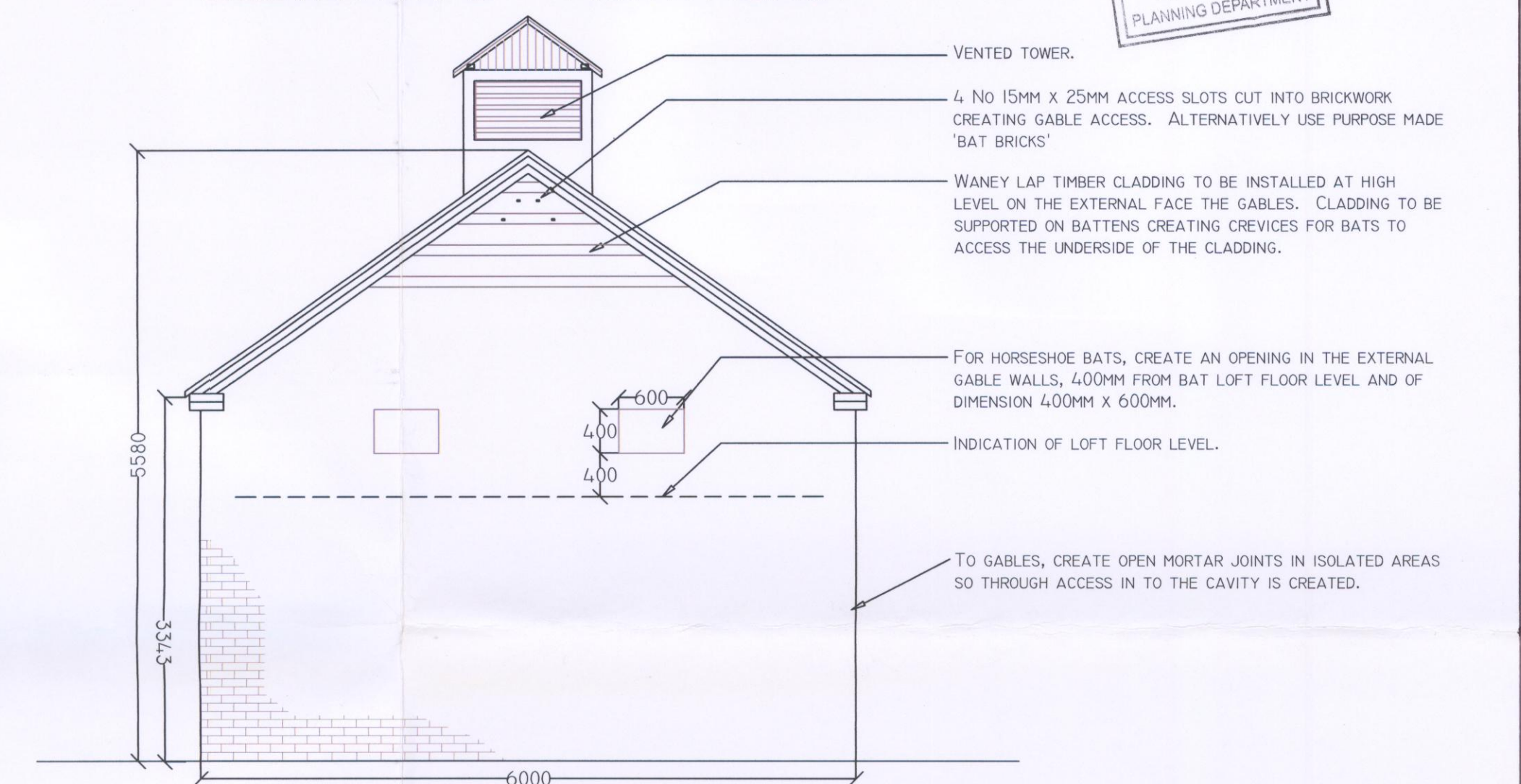
Figure 2 – Existing Bat Mitigation Details

Approved Drawing No. 10

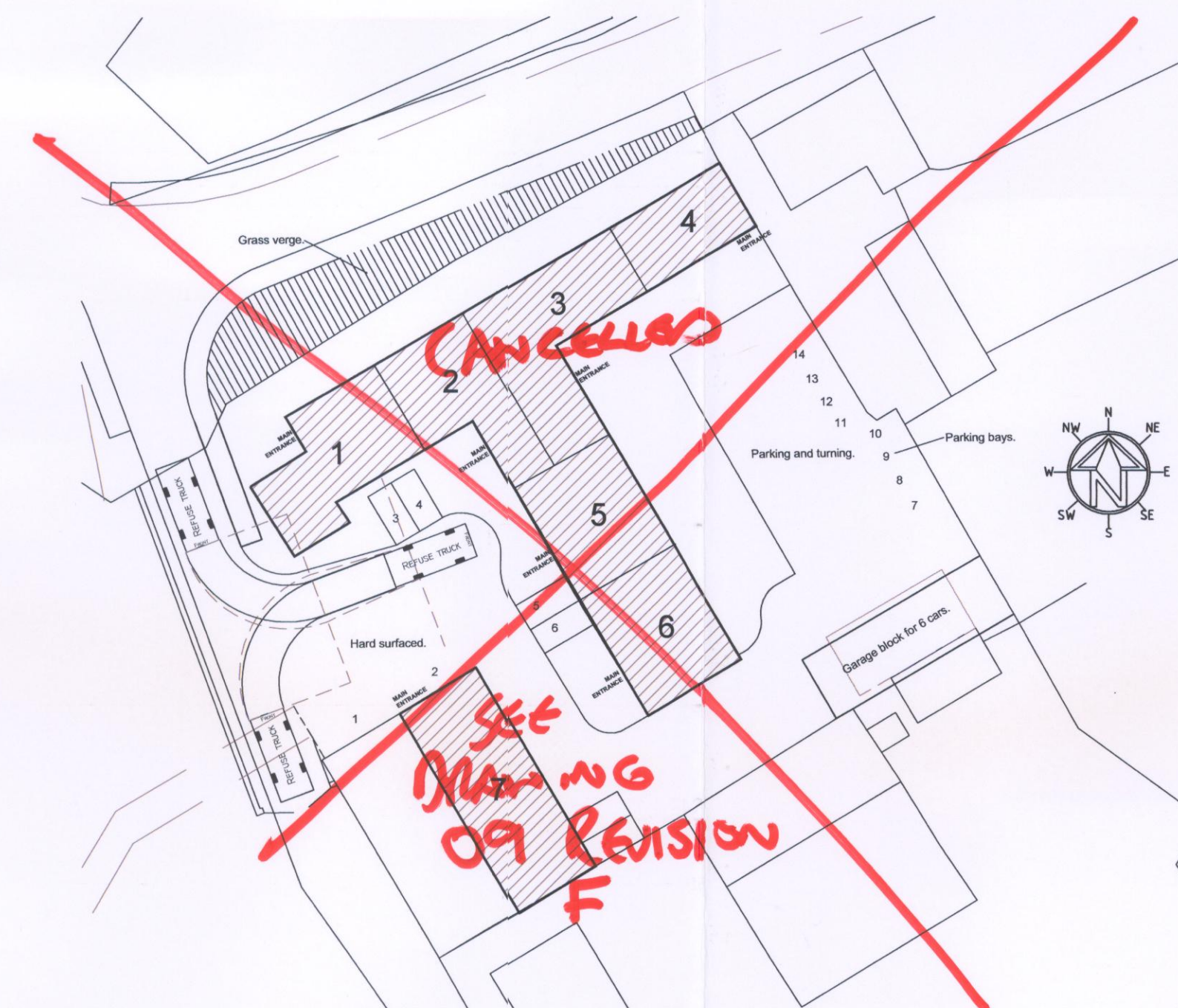
This page is intentionally blank



ELEVATION B - NORTH EAST



ELEVATION D - SOUTH WEST



SITE PLAN 1:500

D	18-3-09	Further minor amendments to garage, site circulation and parking.	PRA
C	12-3-09	Further minor amendments to garage, site circulation and parking.	PRA
B	6-3-09	Minor amendments discussed with Ecologist incorporated.	PRA
A	2-3-09	Recommended mitigation measures shown.	PRA
Rev	Date	Revision Note	By

Copyright: All rights reserved. This drawing must not be reproduced without permission.
This drawing must not be scaled
Dimensions are in millimetres unless otherwise specified.
All measurements to be checked on site before work commencing.
All materials to be agreed with Planning Authority prior to work commencing.

**STRUTT
& PARKER**

BUILDING SURVEYING AND
ARCHITECTURAL DEPARTMENT

37 Lower Bridge Street Chester CH1 1RS
t: +44 (0)1244 354888
f: +44 (0)1244 319690
e: chester@struttandparker.co.uk

job title: Home Farm, Gredington, Whitchurch, Shropshire, SY13 3DQ.
Conversion of Farm Buildings.

drawing title: Recommended mitigation measures to garage block.

drawn by: PRA	date: 25-2-09	scale @ A1: 1:50 & 1:500	scale @ A3:
job number: 2586		drawing number: 10	revision: D