



Land off Scratchface Lane, Bedhampton, PO9 3RG

Phase 2 Ecology Report: Bat, Great Crested Newt and Reptiles

Prepared on behalf of Crayfern Homes Ltd

July 2012

**Scratchface Lane
Ecology 7050/2
Issue 01**

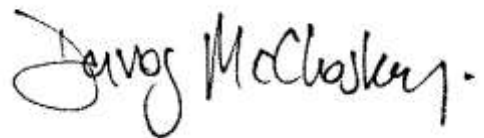
Prepared by: Michelle Brown

Date: July 2012

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Checked by: Davog McCloskey

Signed:

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Date: July 2012

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1.0 Executive Summary

- 1.1 Surveyors: Davog McCloskey, Michelle Brown , Ann Thornton and Kevin Wood
Grid Reference: SU 69492 06833
Client/contact: Crayfern Holes Ltd
Protected Species Found: Slow-worm (*Anguis fragilis*), common lizard (*Zootoca vivipara*), foraging bats (*Pipistrellus pipistrellus*; *Pipistrellus pygmaeus*; *Eptesicus serotinus* and *Nyctalus noctula*); tree roosting bats (*Pipistrellus pipistrellus*; *Pipistrellus pygmaeus*).
- 1.2 The client is proposing to demolish two existing properties (Nos. 34 and 36 Brooklands Road, PO9 3NT, grid reference SU 69600 06688) and construct 92No. residential dwellings and associated landscaping and access on land adjacent to Scratchface Lane, Bedhampton. A planning application was refused in June 2011 and a re-submission is required. Due to the time elapsed since the previous Phase 1 and 2 Ecological Surveys were undertaken (Hampshire Ecological Services, 2010), repetition of the Phase 1 Survey was advised by Hampshire County Council to be submitted in support of the new application. This would then be used to determine the requirement for any further surveys at the site. PV Ecology was commissioned to carry out these surveys.
- 1.3 Following the Phase 1 assessment (PV Ecology, 2012), the need for Phase 2 bat, great crested newt and reptile surveys was identified. A suite of bat roost and transect surveys, presence/absence great crested newt surveys and presence/absence refugia surveys for reptiles were conducted between April and July 2012 to add to and support the data from the 2010 surveys carried out by Hampshire Ecological Services. This report presents the results and implications of the surveys and subsequent ecological mitigation requirements and recommendations.
- 1.4 No evidence of current or recent bat use was found within the properties at No34 and No36 Brooklands Road – the buildings were assessed as having low bat roosting potential. No bats were recorded emerging/re-entering either building during the Phase 2 emergence/re-entry surveys. Foraging activity by a small number of common pipistrelle (*Pipistrellus pipistrellus*) was noted within the residential gardens at the rear of the properties along with brief overhead passes by noctules (*Nyctalus noctula*). No further bat surveys are required at either property. An EPS licence will not be required for the properties to be demolished.
- 1.5 Bat activity transect surveys recorded foraging and commuting activity by serotine (*Eptesicus serotinus*), common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*) and noctule (*Nyctalus noctula*) along vegetated site boundaries. The majority of bat activity was recorded along site boundaries, along the strip of trees dividing the site in two and over the wet area to the north east of the site. The linear strips of connecting and foraging habitat for bats are being retained and protected and the wet area is being mitigated for. Some bat passes were recorded through the site with some limited foraging and commuting activity found through the site also. The species of bats recorded passing through the site are species that are commonly found in houses and are unlikely to be impacted by the proposals. Previous surveys in 2010 confirmed the presence of roosting pipistrelles (*Pipistrellus pipistrellus* and *Pipistrellus pygmaeus*) within the mature oak (*Quercus robur*) trees adjacent to the stream separating the northern and southern fields. These trees will be retained on-site and protected during

the development. Simple, low-cost measures are proposed to maintain and enhance bat foraging and roosting habitat on site. Details are provided in **Section 6.0**.

- 1.6 No evidence of great crested newt (*Triturus cristatus*) presence was found within the on-site waterbody or within terrestrial habitat within the site boundaries. No further survey work or mitigation for great crested newts will be required for the purposes of the proposed development.
- 1.7 The site was found to support an exceptional population of slow-worms (*Anguis fragilis*) and a low population of common lizard (*Zootoca vivipara*). A mitigation strategy has been designed to retain the population on-site whilst maximising connectivity to the wider landscape and maintaining the long-term viability of the population. Mitigation will consist of a combination of dedicated wildlife areas, native planting, habitat enhancement and connectivity features and appropriate long-term site management. Details of the proposed mitigation strategy are presented in **Section 6.0**.
- 1.8 The site contains habitats with the potential to support nesting birds. Vegetation clearance should avoid bird nesting season (01st March to 01st August, inclusive) or not be undertaken without prior inspection by an ecologist.

2.0 Introduction

Background

- 2.1 The client is proposing to demolish two existing properties (No.34 and No.36 Brooklands Road, PO9 3NL) and construct 92 No. residential dwellings and associated landscaping and access on land adjacent to Scratchface Lane, Bedhampton (grid reference SU 69492 06833). A planning application was refused in June 2011 for the proposed development and a re-submission is required. Due to the time elapsed since the initial Phase 1 Ecological Assessment was undertaken (Hampshire Ecological Services, 2010), a re-survey of the site was required to determine if there were any changes to the impacts of the proposals. PV Ecology was commissioned on 24th April 2012 to carry out an Extended Phase 1 Ecological Assessment Survey of the land within the footprint of the proposed development to establish whether changes in the baseline ecological value of the site had changed during the elapsed time. The survey and subsequent report (PV Ecology, 2012) identified the presence of habitats with the potential to support protected species and established the need for further Phase 2 surveys in order to assess the potential impacts of the proposed development on bats, great crested newts and reptiles.
- 2.2 The results set out within this report are valid for three years from the issue date. A follow up site visit may need to be carried out immediately prior to work starting on site to ensure that there has been no significant change to habitats and species.
- 2.3 This report describes the ecological value of the site, based on the findings of Phase 2 Protected Species Surveys and review of existing data, including previous site based ecological surveys.
- 2.4 The methods employed to obtain ecological information on the site are described in **Section 3.0** of this report and the results are detailed in **Sections 4.0**. **Section 5.0** identifies the potential impact on biodiversity receptors and **Section 6.0** describes the environmental measures which will be required to be incorporated into the scheme design to minimise potential effects on biodiversity receptors.

Site Description

- 2.5 The site is located on a 3.7ha plot of land, which contains the existing residential dwellings at No.34 and No.36 Brooklands Road, and two fields. Grid reference at the center is SU 69492 06833 (**Appendix A**). The site is within a residential development with properties lying to the east of the development site. A woodland SINCR is present to the north of the development and the western boundary is adjacent to a woodland bank which is adjacent to the main A3(M).
- 2.6 The land within the proposed development site consists of short-sward grazed improved grassland, poor semi-improved rough grassland, hedgerows, scrub, ruderal vegetation, scattered broad-leaf and coniferous trees, a pond, a stream, a small shed and two brick-built residential properties.

Brief

- 2.7 To carry out Phase 2 presence/absence surveys for bats, great crested newts and reptiles on land within the footprint of the proposed development at land off Scratchface Lane and to inform the clients of any ecological implications associated with the site.

3.0 Methodologies

Bat Emergence Surveys

- 3.1 Two separate bat emergence (dusk) surveys were conducted in May 2012. **Table 1** provides details of each survey visit. Each survey was undertaken by two surveyors placed at previously identified vantage points around the dwelling which gave adequate coverage of all aspects of the property. Each surveyor was equipped with a Pettersson D240x with recording equipment (Zoom H1 Mp3 player/recorder) or a Wildlife Acoustic EchoMeter EM3 detector with inbuilt recorder. Recordings of bat echolocations were analysed with BatSound™ software to confirm the identity of species encountered.

Table 1: Phase 2 Bat Emergence Survey Details

Date	Survey type	Duration	Weather Conditions	Sunset/Sunrise Time
15.05.12	Dusk	2019 – 2249	8°C at start of survey, wind force 1-2, 60% cloud cover. 9°C at end of survey.	2049
21.05.12	Dusk	2028 – 2228	16°C at start of survey, wind force 1-2. 80% cloud cover. 14.9°C at end of survey.	2058

Bat Transect Surveys

- 3.2 Three separate bat activity surveys (two dusk and one dawn) were conducted between 14th May and 09th July 2012 during the bat maternity season. **Table 2** provides details of each survey visit. The surveys were undertaken by two surveyors walking a pre-determined survey transect route around the site which gave sufficient coverage to determine how bats were using the site. Each surveyor was equipped with either a Pettersson D240x, or BatBox Duet bat detector, and recording equipment (Zoom H1 or Edirol Mp3 player/recorders) or a Wildlife Acoustic EchoMeter EM3 detector with inbuilt recorder. Recordings of bat echolocations were analysed with BatSound™ software to confirm the identity of species encountered.

Table 2: Phase 2 Bat Transect Survey Details

Date	Survey type	Duration	Weather Conditions	Sunset/Sunrise Time
14.05.12	Dusk	2018 – 2248	10°C at start of survey, wind force 2-3, 20% cloud cover. 10°C at end of survey.	2048
14.06.12	Dawn	0318 – 0518	11°C at start of survey, wind force 1-2. 90% cloud cover. 11°C at end of survey.	0448
10.07.12	Dusk	2046 - 2246	15°C at start of survey, wind force 1-2, cloud cover 100%. 15°C at end of survey.	2116

Great Crested Newt Surveys

- 3.3 Standard methods were used involving three different methods of surveying including artificial refugia, egg search and torch search. Bottle trapping was not considered appropriate due to the shallow depth of water at the time of the surveys.
- *Artificial Refugia* –100 artificial refugia, consisting of carpet tiles, corrugated tin and bitumen roofing felt were sited in areas of scrub, grassland and ruderal vegetation within the site boundaries. All refugia were lifted during each survey visit and all amphibians present on, under or next to each refugia were recorded.
 - *Egg Search* – All accessible live and dead submerged vegetation was inspected by hand for evidence of newt egg laying. The search was conducted with care not to damage the eggs or the aquatic and marginal vegetation. Large areas of vegetation were not systematically unwrapped (to conduct egg counts) since evidence suggests that exposed eggs may be more prone to predation and UV radiation impacts. Once great crested newt eggs had been reliably identified, the search was terminated to reduce the risk of adverse impacts on the population, in accordance with current guidance (Natural England, 2001).
 - *Torch Search* – The presence of great crested newts in the pond was determined at night by shining a 1,000,000 candlepower torch into the pond. The entire margin of the pond is walked once, slowly checking for great crested newts and other amphibians.
 - *Netting* - A perimeter walk was carried out during day and night, as with torch surveys, to look at suitable locations for netting. Clarity was 100% and the bottom of the water-body was obvious and it was clear that there were no areas newts could hide.
- 3.4 The surveys took place on the 14th May 2012, 15th May 2012, 21st May 2012 and 14th June 2012. Surveys were carried out under the following conditions: night-time air temperature >5°C, no/little wind, no rain, in accordance with current guidance (Natural England, 2001).

Reptile Surveys

- 3.5 A series of presence/likely absence surveys were conducted within the boundaries of the proposed development site, targeting areas of habitat highlighted by the initial ecological survey (PV Ecology, 2012) as having potential to support reptiles. Seven separate survey visits were conducted between 26th April and 18th June 2012, under optimal weather conditions (as defined by Griffiths and Inns, 1998). All field surveys were undertaken by an experienced reptile ecologist.
- 3.6 The surveys consisted of the following three methods, in accordance with current guidance (Griffiths and Inns, 1998; Froglife, 1999):
- *Visual Search* – The site was searched visually during each visit. Details of reptiles encountered basking in the open were recorded. Recorded data included; species, sex, age and location.
 - *Extant Refugia* – Any existing potential refugia present within the site boundaries were carefully searched by hand for reptiles. Such refugia included; logs and discarded wood as well as artificial refugia from the previous reptile survey in 2010 (Hampshire Ecological Services, 2010).
 - *Artificial Refugia* – 100 artificial refugia, consisting of a mixture of carpet tiles, corrugated tin and bitumen roofing felt, were sited in areas of reptile habitat. Such areas included; scrub margins, areas of rough grassland, bramble and ruderal vegetation. All refugia were lifted during each survey visit and all reptiles present on, under or next to each refugia were recorded.

4.0 Results

Bat Emergence Surveys

15th May Dusk Emergence

- 4.1 Foraging activity by approximately three common pipistrelles (*Pipistrellus pipistrellus*) was recorded within the rear gardens of No.34 and No.36 Brooklands Road. Activity was concentrated around mature and semi-mature trees at the western garden boundaries, which border the southern field. Several passes and feeding buzzes were recorded between 2102 and 2126. One common pipistrelle was recorded passing across the rear garden of properties from a northerly direction at 2102. No bats were recorded emerging from either property.

21st May Dusk Emergence

- 4.2 Common pipistrelles (*Pipistrellus pipistrellus*) were recorded foraging within the rear gardens of both properties. Several passes and feeding buzzes were recorded between 2121 and 2157. Activity was concentrated around mature and semi-mature trees at the western garden boundaries which border the southern field. Occasional foraging activity was observed around the properties, with a common pipistrelle passing east to west over the roof of both properties. One brief overhead pass and a social call by a noctule (*Nyctalus noctula*) was recorded at 2151. No bats were recorded emerging from either property.

Bat Transect Surveys

14th May Dusk Transect

- 4.3 Common pipistrelle (*Pipistrellus pipistrellus*) foraging activity was recorded along the boundary hedgerows of the northern field. Passes and feeding buzzes were recorded between 2100 and 2157. Activity was predominantly concentrated in the north-east and south-west corners of the northern section of the site. Occasional passes by soprano pipistrelles (*Pipistrellus pygmaeus*) were recorded along boundary hedgerows and at the north-east corner of the site, over adjacent residential gardens. Common pipistrelles were recorded foraging around the mature oak trees adjacent to the stream at the southern boundary of the northern field. No bats were recorded emerging from trees within or at the site boundaries. A single common pipistrelle was recorded passing through the wooded area at the north-east corner of the southern field. An illustrated map of bat activity is included in **Appendix C**.

14th June Dawn Transect

- 4.4 Common pipistrelle (*Pipistrellus pipistrellus*) and soprano pipistrelles (*Pipistrellus pygmaeus*) foraging activity was recorded along the boundary hedgerows as well as a single noctule (*Nyctalus noctula*) social call high above the north-west corner of northern field. Passes and feeding buzzes were recorded between 03:45 and 04:34. Three common pipistrelles were recorded foraging over the water body in the north-east corner of the northern field. A single soprano pipistrelle was recorded in the south west corner of the northern field. No bats were recorded emerging from trees within or at the site boundaries. A single common pipistrelle was recorded passing through the wooded area at the north-east corner of the southern field. An illustrated map of bat activity is included in **Appendix C**.

10th July Dusk Transect

- 4.5 Common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*) and a single serotine (*Eptesicus serotinus*) were recorded foraging along the eastern boundary hedgerow of the northern field. Approximately 15 common pipistrelles were recorded foraging around the waterbody in the northern field and adjacent houses to the east between 2141 and 2222. A noctule (*Nyctalus noctula*) social call was recorded in the north-east corner of the site at 2020. A serotine was recorded at the north-west corner of the northern field at 2141, foraging along the woodland edge briefly. Common pipistrelles were recorded foraging along the stream dividing the north and southern fields. Brief passes by common pipistrelle, soprano pipistrelle and a single serotine were recorded over central areas of the southern field. A serotine bat was recorded to the east of the site in the residential area. An illustrated map of bat activity is included in **Appendix C**.

Great Crested Newts

- 4.6 Four surveys were conducted between 14th May and 14th June 2012. No amphibians of any species were recorded during any of the four surveys conducted. **Table 3** below details the conditions and results of each survey. The waterbody was found to contain very low aquatic invertebrate and macrophyte diversity.

Table 3: Phase 2 Great Crested Newt Survey Conditions and Results

Visit Number	Date	Weather	Newt Species Found		
			Method		
			Refugia Search	Egg Search	Torch Search
1	14.05.12	Air Temp °C (start / finish): 10.5 / 10.0 Water Temp (start / finish): 10.8 / 10.7 Wind: 1-2	0	0	0
2	15.05.12	Air Temp °C (start / finish): 13.1 / 12.4 Water Temp (start / finish): 13.6 / 12.3 Wind: 2	0	0	0
3	21.05.12	Air Temp °C (start / finish): 18.7 / 18.3 Water Temp (start / finish): 19.0 / 18.6 Wind: 1	0	0	0
4	14.06.12	Air Temp °C (start / finish): 11.2 / 10.8 Water Temp (start / finish): 11.8 / 11.0 Wind: 1-2	0	0	0

Reptiles

- 4.7 Slow-worms (*Anguis fragilis*) were found beneath artificial refugia on each of the seven survey visits. Common lizards (*Zootoca vivipara*) were found on or under artificial refugia on visits 4-7 inclusive. One common frog was found beneath artificial refugia on visit 4. Slow-worms and common lizards were found in marginal vegetation at the boundaries of the northern field and were found within grassland, woodland and scrub habitat throughout the southern field.
- 4.8 The peak adult count of 30 slow-worms was recorded on visit 5. The peak adult count of 2 common lizards was recorded on visits 4 and 5. In accordance with current guidance (HGBI, 1998) the site has been found to support an exceptional population of slow-worms and a low population of common lizards. **Table 4** below details the conditions and results of each of the reptile survey visits.

Table 4: Phase 2 Reptile Survey Conditions and Results

Survey No.	Survey Date	Weather	Method	Location	Species	Sex	Age	Quantity	Peak Count
1	26.04.12	Start Time: 15:00	AR felt	Northern field	<i>Anguis fragilis</i>	M	Adult	1	2 adults
		Finish Time: 17:30	AR felt	Northern field	<i>Anguis fragilis</i>	M	Adult	1	
		Start temp: 15.5°C	AR felt	Northern field	<i>Anguis fragilis</i>	F	Sub-adult	1	
		Finish temp: 14.1	AR felt	Northern field	<i>Anguis fragilis</i>	J	Juvenile	3	
		Wind speed: 1-2							
		Cloud cover: 60%							
		Rain: None							
		Ground moisture: Dry							
		Observations: 1 horse in Northern field							
2	14.05.12	Start Time:16:30	AR felt	Southern field	<i>Anguis fragilis</i>	F	Adult	1	1 adult
		Finish Time: 18:00	AR felt	Southern field	<i>Anguis fragilis</i>	J	Juvenile	9	
		Start temp: 10.0°C	AR felt	Northern field	<i>Anguis fragilis</i>	F	Sub-adult	1	
		Finish temp: 10.0°C	AR felt	Northern field	<i>Anguis fragilis</i>	J	Juvenile	2	
		Wind speed: 1-2							
		Cloud cover: 100%							
		Rain: earlier in day							
		Ground moisture: damp							
		Observations: 1 horse in Northern field							
3	15.05.12	Start Time: 17:15	AR carpet	Northern field	<i>Anguis fragilis</i>	M	Adult	1	8 adults
		Finish Time: 18:30	AR felt	Northern field	<i>Anguis fragilis</i>	M	Adult	1	
		Start temp: 13.0°C	AR felt	Northern field	<i>Anguis fragilis</i>	F	Adult	2	
		Finish temp: 12.0°C	AR felt	Northern field	<i>Anguis fragilis</i>	M	Sub-adult	1	
		Wind speed: 2	AR felt	Northern field	<i>Anguis fragilis</i>	J	Juvenile	1	
		Cloud cover: 20%	AR felt	Southern field	<i>Anguis fragilis</i>	M	Adult	3	
		Rain: a.m.	AR felt	Southern field	<i>Anguis fragilis</i>	F	Adult	1	
		Ground moisture: damp	AR felt	Southern field	<i>Anguis fragilis</i>	F	Sub-adult	1	

4	21.05.12	Observations: 1 horse in Northern field	AR felt	Southern field	<i>Anguis fragilis</i>	J	Juvenile	12	16 adults
		Start Time: 18:00	AR carpet	Northern field	<i>Anguis fragilis</i>	M	adult	5	
		Finish Time: 19:00	AR carpet	Northern field	<i>Anguis fragilis</i>	F	adult	2	
		Start temp: 19.0°C	AR carpet	Northern field	<i>Anguis fragilis</i>	F	sub-adult	1	
		Finish temp: 18.0°C	AR felt	Northern field	<i>Anguis fragilis</i>	F	Adult	1	
		Wind speed: 1	AR felt	Northern field	<i>Anguis fragilis</i>	F	Sub-adult	3	
		Cloud cover: 90% - 80%	AR felt	Northern field	<i>Anguis fragilis</i>	J	Juvenile	3	
		Rain: none	AR felt	Southern field	<i>Anguis fragilis</i>	M	Adult	4	
		Ground moisture: dry	AR felt	Southern field	<i>Anguis fragilis</i>	F	Adult	4	
		Observations: 1 horse in Northern field	AR felt	Southern field	<i>Anguis fragilis</i>	M	Sub-adult	1	
			AR felt	Southern field	<i>Anguis fragilis</i>	F	Sub-adult	10	
			AR felt	Southern field	<i>Anguis fragilis</i>	J	Juvenile	18	
			AR felt	Southern field	<i>Rana temporaria</i>	F	Adult	1	
			AR felt	Southern field	<i>Zootoca vivipara</i>	F	Adult	2	
		Start Time: 12:55	AR carpet	Northern field	<i>Anguis fragilis</i>	M	Adult	4	
		Finish Time: 14:30	AR carpet	Northern field	<i>Anguis fragilis</i>	F	Adult	1	
5	31.05.12	Start temp: 22°C	AR felt	Northern field	<i>Anguis fragilis</i>	M	Adult	1	30 adults
		Finish temp: 21°C	AR felt	Northern field	<i>Anguis fragilis</i>	F	Adult	7	
		Wind speed: 2-3	AR felt	Northern field	<i>Anguis fragilis</i>	J	Juvenile	1	
		Cloud cover: 90%	AR felt	Southern field	<i>Anguis fragilis</i>	M	Adult	2	
		Rain: none	AR felt	Southern field	<i>Anguis fragilis</i>	F	Adult	15	
		Ground moisture: dry	AR felt	Southern field	<i>Anguis fragilis</i>	M	Sub-adult	1	
		Observations: 2 horses in Northern field	AR felt	Southern field	<i>Anguis fragilis</i>	F	Sub-adult	3	
			AR felt	Southern field	<i>Anguis fragilis</i>	J	Juvenile	6	

			AR felt	Southern field	<i>Zootoca vivipara</i>	M	Adult	1	2 adults
			AR felt	Southern field	<i>Zootoca vivipara</i>	F	Adult	1	
6	15.06.12	Start Time: 10.00	AR felt	Northern field	<i>Anguis fragilis</i>	F	Sub-adult	1	1 adult
		Finish Time: 12.00	AR felt	Northern field	<i>Anguis fragilis</i>	M	Sub-adult	1	
		Start temp: 10°C	AR carpet	Northern field	<i>Anguis fragilis</i>	M	Adult	1	
		Finish temp: 16°C	AR carpet	Northern field	<i>Anguis fragilis</i>	M	Sub-adult	1	
		Wind speed: 3	AR carpet	Northern field	<i>Anguis fragilis</i>	J	Juvenile	1	
		Cloud cover: 100% - 70%	AR felt	Southern field	<i>Anguis fragilis</i>	M	Sub-adult	5	
		Rain: Light rain AM	AR felt	Southern field	<i>Anguis fragilis</i>	F	Sub-adult	1	
		Ground moisture: damp	AR felt	Southern field	<i>Anguis fragilis</i>	F	Sub-adult	1	
		Observations: 3 horses in Northern field	AR felt	Southern field	<i>Anguis fragilis</i>	F	Sub-adult	1	
			AR felt	Southern field	<i>Anguis fragilis</i>	J	Juvenile	2	
			AR felt	Northern field	<i>Zootoca vivipara</i>	M	Adult	1	
									1 adult
7	18.06.12	Start Time: 09.35	AR felt	Northern field	<i>Anguis fragilis</i>	F	Sub-adult	1	9 adults
		Finish Time: 11.00	AR felt	Northern field	<i>Anguis fragilis</i>	F	Adult	1	
		Start temp: 15°C	AR carpet	Northern field	<i>Anguis fragilis</i>	M	Adult	1	
		Finish temp: 15°C	AR carpet	Northern field	<i>Anguis fragilis</i>	F	Adult	1	
		Wind speed: 0-1	AR carpet	Northern field	<i>Anguis fragilis</i>	J	Juvenile	2	
		Cloud cover: 20% - 40%	AR carpet	Northern field	<i>Anguis fragilis</i>	M	Sub-adult	1	
		Rain: none	AR carpet	Northern field	<i>Anguis fragilis</i>	F	Adult	2	
		Ground moisture: damp	AR carpet	Northern field	<i>Anguis fragilis</i>	M	Adult	1	
		Observations: 3 horses in Northern field	AR carpet	Northern field	<i>Anguis fragilis</i>	F	Adult	1	
			AR carpet	Northern field	<i>Anguis fragilis</i>	F	Adult	1	
			AR felt	Southern field	<i>Anguis fragilis</i>	F	Sub-adult	1	
			AR felt	Southern field	<i>Anguis fragilis</i>	J	Juvenile	2	
			AR felt	Southern field	<i>Anguis fragilis</i>	J	Juvenile	1	

AR felt	Southern field	<i>Anguis fragilis</i>	J	Juvenile	2	
AR felt	Southern field	<i>Anguis fragilis</i>	F	Sub-adult	3	
AR felt	Southern field	<i>Anguis fragilis</i>	M	Adult	1	
AR felt	Northern field	<i>Zootoca vivipara</i>	F	Adult	1	1 adult

5.0 Analysis and Impact Assessment

Bats

Emergence Surveys

- 5.1 No bats were recorded emerging/ re-entering either of the properties at No.34 and No.36 Brooklands Road. Foraging activity by a small number of common pipistrelles (*Pipistrellus pipistrellus*) was recorded in the rear gardens of both properties, around the trees. A brief pass and social call by a single noctule (*Nyctalus noctula*) was recorded passing over the properties – these bats generally roost in trees but can be found roosting in bat boxes. It was thought that the buildings, upon further inspection, had little or no value to roosting bats and further endoscope inspection revealed no signs of roosting bats. The building had a relatively high degree of shading, thus limiting the temperature of the roofs, and therefore further reducing the likelihood of roosting bats. No further emergence surveys were considered necessary in 2012 to show absence as the suite of emergence surveys in 2010 (Hampshire Ecological Services, 2010) recorded no roosting bats and further activity surveys in 2010 showed that there did not appear to be bats commuting from the buildings. There are high numbers of potential bat roosts in the vicinity of the site in other buildings adjacent to the paddocks.
- 5.2 The impact of the proposed demolition of the properties at No.34 and No.36 Brooklands Road upon roosting bats is considered to be 'low' at both the site and landscape scales. An EPS licence will not be required for the demolition of the two properties. Due to the proximity of the buildings to the site, a further precautionary measure would be to demolish the buildings outside of the time of year that bats are most susceptible to disturbance, if present – during hibernation (November – February) and during the maternity season (May – August). A licensed bat ecologist should be present in case any bats are found and Natural England should be contacted if bats are discovered on site while the ecologist is present or at other times during construction.
- 5.3 Previous surveys (Hampshire Ecological Services, 2010) recorded roosting pipistrelles within mature *Quercus robur* (pedunculate oak) trees adjacent to the stream in the centre of the site. Consequently, the removal of these trees will be avoided and the trees will be protected during the construction phase of the development. If the trees are to be removed then a European Protected Species licence must be applied for from Natural England and additional survey work may be required to apply for this.
- 5.4 The activity surveys in 2012 also had some value as emergence surveys. It was considered that if bats were roosting in any of the buildings adjacent to the development site (the horse paddocks) they would be most likely to forage in the paddocks. No bats were confirmed to come from the direction of No.34 and No.36 Brooklands during any of the emergence surveys.

Activity Surveys

Northern Section of Site

- 5.5 Serotine (*Eptesicus serotinus*), common pipistrelle (*Pipistrellus pipistrellus*); soprano pipistrelle (*Pipistrellus pygmaeus*) and noctule (*Nyctalus noctula*) were recorded during the activity surveys of the northern section of the site. Foraging and commuting passes were recorded around the boundary hedgerows of the northern field with the majority of

activity recorded over the pond area to the north east of the northern field. No bats were recorded passing through the central areas of the northern field.

- 5.6 On the 14th May 2012 all bat activity was confined to the boundary hedgerows and trees – common and soprano pipistrelle activity was recorded with a single serotine or noctule (undetermined) recorded to the south-east of the northern field, over the residential area, outside of the site boundary. During the dawn survey in June 2012, common and soprano pipistrelle activity was recorded occasionally in the northern field, confined mainly to the north-west corner hedgerow/SINC woodland and to foraging over the pond area. No other bat species were recorded during the activity survey in June 2012, in the northern field. During the July 2012 activity surveys a single serotine was recorded on two occasions along the site boundary hedgerow – once on the north west boundary and once on the south east boundary hedgerow. A noctule was recorded on one occasion to the east of the northern boundary – possibly foraging high above the residential area. Up to 15 *pipistrelle sp.* were recorded around the pond at one time indicating that there may be a maternity roost nearby. The increase in pipistrelle bat numbers from the 2010 surveys by Hampshire Ecological Services and the 2012 surveys, especially in foraging activity over the pond, is likely to be due to the record rainfall and subsequent increase in standing water and freshwater invertebrate fauna that it benefits.
- 5.7 The boundary features are all being retained and enhanced and there will be two new areas that will act as ephemeral ponds, constructed to be able to retain water. The site proposals also make extensive recommendations for increasing bat roosting potential in the new buildings, for all the building roosting species recorded during the bat surveys. New roosts suitable for pipistrelle bats should be created near to the eastern side of the proposed northern field, in an area close to their flight line.
- 5.8 The pond area to the north east of the site will be lost due to the proposals however this has been shown to be ephemeral during the Hampshire Ecological Services surveys in 2010. The heavy rain in 2012 during April – June has meant that the pond has increased in depth and area, and has more insects feeding around it, and therefore more bats use it to forage. The pond will be mitigated for by the creation of attenuation areas in the northern and southern sections of the site, which will be constructed to retain water, resulting in an increase in ephemeral pond areas.

Southern Section of Site

- 5.9 Serotine, common pipistrelle and soprano pipistrelle were all recorded during the activity surveys in the southern section of the site. Most of the bat activity was recorded nearer to the line of trees dividing the southern site from the northern site and along boundary hedgerows.
- 5.10 During the first survey in May 2012, a single pipistrelle was recorded but not seen, indicating the generally low bat activity during spring 2012. In June 2012 (Dawn), three passes by a common pipistrelle and a single pass by a soprano pipistrelle were recorded in the hour before dawn but no bats were actually recorded entering building roosts or trees, although the bats in the southern field were last recorded near to the oak trees dividing the site in two and they were recorded roosting here in 2010 (Hampshire Ecological Services, 2010). In July 2012, the majority of bat activity in the southern field, was recorded near to the oak trees, dividing the site in two – this was all from a common pipistrelle (possibly two). These trees are being retained and enhanced with native planting and a buffer area along the stream that runs alongside them. A serotine was recorded briefly passing through the southern field but did not stop to forage. The serotine came from the west and appeared to cross the A3M Motorway – indicating that

it is not a barrier to serotines. Two further serotine recordings were made from the residential area to the east of horse paddocks, possibly foraging around the trees on the eastern boundary. During surveys in 2011 by Nik Night from Hampshire Bat Group, serotine bats were recorded foraging around the trees dividing the development site from the residential houses to the east. The boundary trees are all being retained in the development proposals – they should be protected during the construction phase with light disturbance minimised at the construction stage and when the development is complete. Occasional common and soprano pipistrelle recordings were made in the centre of the southern field, indicating small numbers of both species.

Summary of bat activity surveys from 2010 - 2012

- 5.11 No further activity surveys are thought to be required of the site as a suite of 9 separate bat surveys (combined Hampshire Ecological Services and PV Ecology) have been carried out over the whole site, between 2010 and 2012 inclusive. They have shown that the site as a whole is of medium value to bats and is used by up to four different species of bats. The site, although bordered by SINC woodland to the north, is bordered by residential housing and the A3M motorway on other sides (all relative barriers to bats). Surveys in 2012 started in May 2012 in periods of suitable weather. April 2012 had unseasonably high volumes of rain, and was considered less suitable for bat activity and thought unlikely to be of any significant value for bat activity surveys. The three activity (and emergence) surveys in 2012 and all the bat surveys in 2010 took place during the maternity season for bats. The diversity of surveys on the site, over the two year time frame, demonstrate that the main features of the site for commuting and foraging bats are the boundary features and the pond area, with the open space areas appearing less well used generally.
- 5.12 The impact on bats in the absence of mitigation could be medium to high due to the potential loss of commuting corridors, foraging areas and roosts. However, with mitigation and enhancements in place, the impact on bats could be low – negligible. Feeding areas can be created and enhanced, commuting features maintained and enhanced, roosts protected and enhanced and new roosts created on site. Currently there are no roosting features for serotine bats on site and with appropriate design and implementation there can be an increase in bat roosting potential on site for serotines and other bats in the local area.
- 5.13 Landscaping proposals will include measures to maintain and enhance suitable bat foraging habitat on site – these will include open grassed areas that could be used by foraging serotine bats as there is currently a loss of open grassland. These are shown in the current plans in larger garden areas, the attenuation zones and in the retained wildlife area to the south of the site. The new proposals must seek to incorporate an area that would allow the retention of water, in the same way that the area to the north-east of the site retains water, ephemerally. The development will also seek to enhance bat roosting habitat at the site scale through the incorporation of bat roost features within suitable extant trees and new buildings. Details of the requirements are discussed in **Section 6.0**. Landscaping on site should enhance the current boundaries and seek to further protect the SINC woodland to the north. This can be achieved through supplementary hedgerow planting with native species. The new residential gardens would be enhanced for bats by using native species planting or wildlife beneficial planting. Residential houses should be ordered and positioned so that new flight paths can be created across the site – this can be achieved by planting new hedgerows from west to east so that over time a new wildlife corridor will be created. The current ‘wildlife

corridor' along the western boundary which serves as a divide between the site and the A3M motorway could be further enhanced for commuting and foraging bats by providing a grassland or hedge buffer. The details of the site scale enhancements should be detailed in a Biodiversity Enhancement and Management Plan and this should include the considerate management of the open space areas.

Great Crested Newts

- 5.14 Although the marginal vegetation at the boundaries of the northern field and grassland/scrub within the southern field could be considered as having some potential to provide habitat for great crested newt, the results of the surveys suggest that it is likely that this species is absent from the site and immediate vicinity. The survey visits found no evidence of amphibian breeding within the waterbody and no terrestrial habitat use by any newt species. The waterbody was found to contain very low aquatic invertebrate and macrophyte diversity and shows signs of regular drying (Hampshire Ecological Services, 2010). The habitat immediately surrounding the waterbody is heavily horse-grazed and of poor structural diversity. Furthermore, the data search returned no records of great crested newt from within 2km of the site.
- 5.15 In the absence of appropriate mitigation, the negative ecological impact of the proposed development upon great crested newts is considered to be 'low' at both the site and landscape scales.

Reptiles

- 5.16 The majority of the southern field and a high proportion of the northern field consist of grassland and ruderal vegetation with hedgerow bases and areas of scattered trees, all of which are suitable for supporting reptiles. Reptiles were found throughout the site with greater numbers on the southern section, probably due to lack of intensive grazing. The results of the presence/absence surveys conducted in 2010 (Hampshire Ecological Services, 2010) indicated the presence of a 'low' population of slow-worm (*Anguis fragilis*) within the site boundaries and proposed a mitigation strategy consisting of an 'in-situ' translocation and habitat retention scheme. The results of the updated surveys, conducted for the purposes of the assessment contained within this report, indicate that the site supports an 'exceptional' population of slow-worms, significantly larger than the results of the 2010 surveys suggested. One constraint in this justification is the increased number of refugia on site when the site was surveyed in 2012 – more than the recommended 10 refugia per hectare were used to establish reptile activity throughout the site. This was necessary to give good site coverage. The mitigation strategy contained within the 2010 report is not considered to adequately mitigate against the effects of the development upon the extant reptile population and therefore additional measures are necessary to ensure that the population can be retained on site.
- 5.17 In the absence of mitigation, the impact on reptiles present on site is considered to be 'High' at the site scale and 'High' at the landscape scale. Through the implementation of a more substantial and appropriate reptile mitigation scheme, it will be possible to reduce the potential impacts of the proposed development upon reptiles to 'Low' at both the site and landscape scales, by designing the site to encourage reptiles to move throughout it and ensure long term viability by managing an area especially for reptiles. Details of proposed mitigation for reptiles are presented in **Section 6.0**.

6.0 Requirements and Recommendations

Measures Required to Mitigate Against the Effects of the Proposed Development

Bats

Protection of existing roosts

- 6.1 The mature *Quercus robur* (pendunculate oak) trees bordering the stream at the center of the site will be retained and protected during the development. No lighting will be installed near to or directed onto the retained trees.

Maintain and enhance foraging habitat and habitat connectivity

- 6.2 The landscape proposals will maintain and enhance border vegetation at the site boundaries, particularly the northern and western boundary hedgerows and areas on both sides of the stream dividing the site. The protection and enhancement of these areas will ensure connectivity with the wider countryside and protection and connectivity with the SINC woodland to the north. These areas will be enhanced through the planting of native tree, shrub and forb species (suggested species are included in **Appendix H** however this will need to be detailed in a Habitat Enhancement and Management Plan) to mimic woodland edge conditions, provide foraging cover and enhance invertebrate prey diversity. Open areas will be retained on site to mitigate for the loss of open space – this will be created in the larger gardens of units, the attenuation areas, retained wildlife area to the south of the site and in the buffer areas adjacent to the stream. The attenuation areas will be constructed to retain water and the detail of this construction should be conditioned in the planning permission and included as part of the Habitat Enhancement and Management Plan.
- 6.3 Artificial lighting will be aimed to illuminate only the immediate area required by using as sharp a downward angle as possible and must avoid being directed at retained and enhanced areas of vegetation. Lighting will incorporate shields and/or hoods to avoid illumination of wide areas and will not exceed 2000 lumens (150W). Movement sensors and timers will be fitted to security lights to reduce the amount of time areas are illuminated for and security lighting on residential properties will consist of porch lighting where possible. Lighting will not be directed onto the wildlife corridor, hedges, mature oak trees, attenuation areas, stream buffer area or any of the new bat roosts to be installed/created.

Enhance on-site roosting potential

- 6.4 A total of 9 No. Schwegler woodcrete bat boxes (a mixture of 1FD, 1FF and 1FS; **Appendix E**) will be erected in suitable mature trees within the site boundaries prior to the commencement of site clearance and building construction. The boxes must be fitted in accordance with the manufacturer's instructions. Indicative locations are illustrated in **Appendix D**.
- 6.5 In accordance with *Biodiversity Positive: Eco-towns biodiversity worksheet* (Town and Country Planning Association, 2009), the proposals will include provisions to enhance roosting habitat at the site scale for a range of bat species. A minimum of one in twenty new buildings will incorporate features for crevice-dwelling bats (such as pipistrelles).

Such features will include gaps in soffit boxes, specialised bat tiles and integrated bat roost boxes.

- 6.6 In line with the guidance above, the proposed development will incorporate the following:
- A total of 5No. new dwellings will incorporate access suitable for serotine bats (*Eptesicus serotinus*). Access will consist of a series of a 25mm² gap at the top of the gable-end brick walls or a similar size gap under fascia boarding leading to the area at the top of a cavity wall. These roosting points will be adjacent to areas of open green space and woodland edge planting, allowing serotines to emerge into an area of suitable foraging habitat. Indicative locations of the access points are illustrated in **Appendix D**.
 - A total of 20No. new residential dwellings in close proximity to boundary hedgerows and standing water (e.g. stream and attenuation area) will incorporate roosting features suitable for common and soprano pipistrelles (*Pipistrellus pipistrellus* and *Pipistrellus pygmaeus*). Roosting features will consist of 5No. Schwegler 1FR bat tubes, 5No. Schwegler 2FR bat tubes, and 10No. bat access slates (e.g. Morris slate) or similarly suitable crevice roosting points. Bat boxes are illustrated in **Appendix C**. Indicative locations of the access points are illustrated in **Appendix D**.

Reptiles

- 6.7 Reptile mitigation will consist of the following measures:

- A receptor site and conservation area;
- Habitat creation and enhancement; and
- Long-term habitat management.

The measures are discussed in further details below and illustrated on the Annotated Reptile Mitigation Overview Plan in **Appendix F**.

Receptor Site and Conservation Area

- 6.8 An area of existing hedgerow, scrub and rough grassland at the southern-most ends of the development site (**Appendix F**) will be retained and enhanced to act as both an on-site receptor area for translocated reptiles from other areas of the site, and be managed considerably as a conservation area in the long-term for reptiles and biodiversity in general.
- 6.9 The client must ensure the receptor/conservation area is safeguarded through the following measures:
- The receptor area must not be subject to development or other threats in the foreseeable future;
 - The receptor site must be subject to written, agreed, and pre-funded post-translocation management agreement and post-translocation monitoring programme, secured through Section 106 planning obligation or appropriately worded Planning Condition.

- 6.10 The receptor area will be temporarily fenced off from the rest of the development site (see **Appendix G** for reptile fencing specification) for the duration of the site clearance, construction and landscaping phases of the development. The reptile fencing will be removed upon completion of the construction phase of the development to allow reptiles to move into the main site
- 6.11 A reptile hibernaculum (see **Appendix G** for hibernacula specification) and a minimum of 3No.brash and compost piles will be created in the retained area to increase foraging and refuge availability for the translocated reptiles. The area will be managed in the long-term as a conservation area, connected to other areas of reptile habitat both within the development and in the wider landscape.

Trapping and In-Situ Translocation

- 6.12 A trapping and translocation exercise will be conducted in accordance with current best practice and lawful standards guidance (HGBI, 1998). Artificial refugia will be laid out at a minimum density of 100 refugia per hectare of suitable reptile habitat within the development boundaries and left to 'bed in' for a minimum of two weeks.
- 6.13 A translocation programme will be implemented between 01st March and 30th September for a minimum of 90 days under suitable weather conditions. Capture efficiency will be maximised by encouraging use of the artificial refugia through the gradual reduction of suitable habitat in the capture areas. Existing natural refugia will be removed by hand, and rough grassland and scrub will be strimmed (using hand-held tools only) to a height of approximately 15cm to reduce the amount of natural cover available.
- 6.14 The translocation effort can terminate; once 90 days capture effort has been achieved, including/in addition to five consecutive visits under suitable weather conditions with no further reptile captures (i.e. five consecutive 'reptile-free' visits) or; when reptile capture numbers are in consistently low numbers. Upon completion and subsequent termination of the translocation effort, the site will be subject to a 'destructive search' (vegetation clearance and topsoil stripping) under strict supervision of a suitably qualified and experienced ecologist, to render the rest of the development site unsuitable for reptiles.
- 6.15 Any reptiles encountered during the trapping and translocation exercise and the destructive search will be translocated to the fenced-off and enhanced receptor area at the southern end of the site.

Habitat Creation and Enhancement

- 6.16 A 'wildlife corridor' will be created along the length of the western and northern site boundaries and the south-east site boundary to ensure the receptor/conservation area at the south of the site is connected to other areas of reptile habitat both on-site and within the wider landscape. This will be achieved through the retention of existing native planting where possible and the additional planting of native species hedgerow edged with grassland along the site boundaries (see **Appendix H** for suggested species). The grassland will be mown once a year (in the autumn) to maintain a long-sward height.
- 6.17 The two detention basins/attenuation areas within the central areas of the proposed development scheme (illustrated in **Appendix F**) will be seeded with a native wildflower seed mix (e.g. Emorsgate EM2 www.wildseed.co.uk or similar) or laid with wildflower turf (e.g. www.wildflowerturf.co.uk or equivalent). These areas will be managed in the long-term for reptiles and biodiversity in general. Management should be considerate for

reptiles with once or twice yearly cuts in autumn and/or early spring, to a height of no less than 15cm.

- 6.18 Reptile hibernacula (see **Appendix G** for specifications) and brash/log piles will be constructed at intervals along the hedgerow bases and areas of dense planting (illustrated in **Appendix F**) to increase foraging, egg-laying and refuge habitat. These can be a range of different sizes to add to the diversity for reptiles.
- 6.19 Two purpose built under-road reptile hibernacula/crossing points will be constructed under the access path and cycle path in the southern field (design illustrated in **Appendix G**; indicative location depicted in **Appendix F**) to facilitate reptile dispersal between retained and enhanced habitat at the western site boundary and the attenuation area in the southern field. This will maximise connectivity between areas of habitat within the site boundaries managed for wildlife and the wider landscape.
- 6.20 Gaps of approximately 10cm will be incorporated beneath border fencing to facilitate the movement of reptiles and other wildlife between the site and areas of suitable habitat within the wider landscape.
- 6.21 Planting schemes within residential gardens will include areas of dense planting and a high proportion of native shrubs, forbs and herbs within border planting. Gardens will be encouraged to have compost areas – these are of benefit to reptiles.
- 6.22 The proposed bridge facilitating vehicular access over the stream dividing the north and south fields will ensure a minimum of 0.5m wide riparian habitat buffer on either side of the stream to allow reptiles to disperse along the stream boundaries.

Long-Term Habitat Management

- 6.23 In accordance with best practice and lawful standards guidance (HGBI, 1998), the success of the reptile translocation effort and long-term habitat management will be monitored for a period of 5 years upon completion of the development. An artificial refugia survey will be conducted annually for 5 years post-development, including an assessment of management success and advice provided accordingly.
- 6.24 The receptor area at the south of the site will be managed in the long-term as a conservation area. Grassland and scrub will be left to grow with minimal intervention and cut back annually between November and February to maintain maximum structural diversity and minimise disturbance.
- 6.25 Whilst it is recognised that the management of residential gardens cannot be controlled, an appropriate management scheme for habitats and plants in communal areas will be adopted – a detailed Biodiversity Enhancing Landscape scheme or Habitat Enhancement and Management Plan could be conditioned to ensure site design is suitable for reptiles. The use of inorganic fertilizers, herbicides and pesticides will be avoided in communal areas. A relaxed cutting regime for shrubs, hedges and grassland will help to re-create a more natural habitat structure for a range of wildlife species to shelter and forage. A relaxed cutting regime of shrubs, hedges and grassland will encourage flower and seed production and species diversity in grassland swards. Maintenance of shrubs and hedges should be carried out in late winter to avoid disturbance to nesting birds.
- 6.26 Management of the attenuation areas / detention basins will consist of the maintenance of a wildflower meadow. The grass will be cut once a year, in the autumn after the plants have set seed (and possibly a secondary cut in early spring). The cuttings will be raked

and removed and added to hibernacula, brash / log piles or compost heaps to provide additional foraging for reptiles.

- 6.27 Management of non-residential areas will maintain a 1m grassland buffer between any hedgerow bases and areas of mown or amenity grassland. The grassland buffer will be cut once or twice a year using hand-held tools (strimmer, brushcutter, etc.) and be left uncut over the winter period to encourage structural diversity of the sward height. These hedgerow and grassland buffers will facilitate the movement of reptiles and other wildlife around the development site to disperse into areas within the site managed for wildlife (attenuation/detention basins), around the perimeter of the development site, allow dispersal to residential gardens both on-site and adjacent to the site boundaries, and facilitate dispersal to and from areas of suitable habitat within the wider landscape.

Other Species

- 6.28 The mitigation measures for bats and reptiles must be carried out in conjunction with the additional mitigation measures contained in Section 6.0, paragraphs 6.10 to 6.15 inclusive, of the *Extended Phase 1 Ecological Assessment* (PV Ecology, June 2012). Such measures include:
- Protection of nesting birds through appropriate timing of demolition and vegetation removal;
 - Incorporation of bird boxes within 10No. new dwellings within the development proposals;
 - Protection of trees and hedgerows prior to, during and after the development;
 - Protection of SINC and BAP habitats during the construction phase;
 - Protection of reptiles and small mammals through appropriate timing of scrub clearance.

Further Measures Recommended to Mitigate against the Effects of the Proposed Development

Biodiversity Enhancement

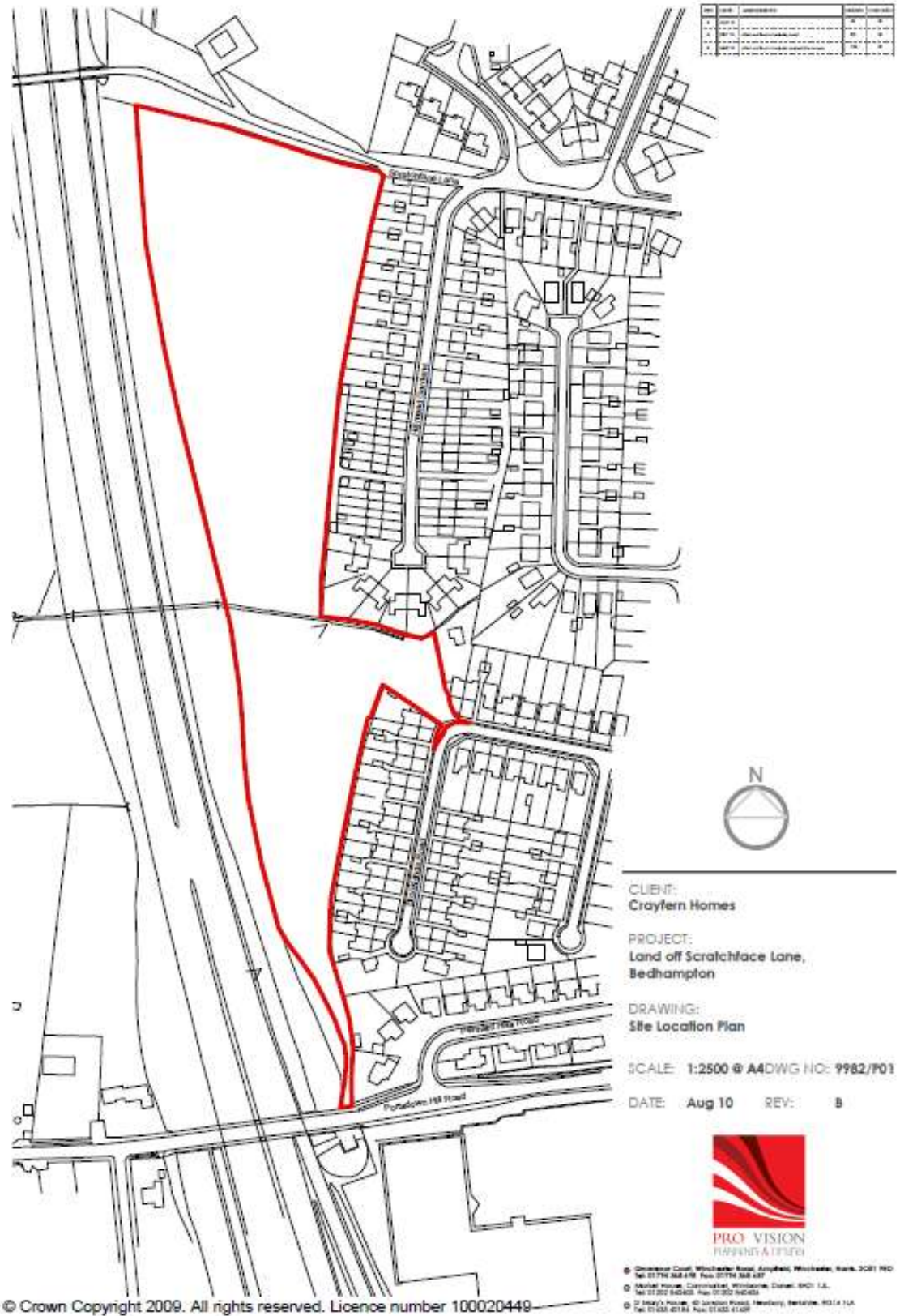
- 6.29 In accordance with the Natural Environment and Rural Communities Act (2006) and Planning Policy Statement 9 (PPS9) (ODPM, 2005) the master planning process should seek to incorporate measures to further the conservation of protected species and biodiversity in general.
- 6.30 Please refer to Section 6.0, paragraphs 6.16 to 6.17 inclusive, of the *Extended Phase 1 Ecological Assessment* (PV Ecology, June 2012) for further measures recommended to further enhance biodiversity at the site scale.

7.0 References and Bibliography

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Appendices

Appendix A: Site Location Plan



Appendix B: Current Development Proposals



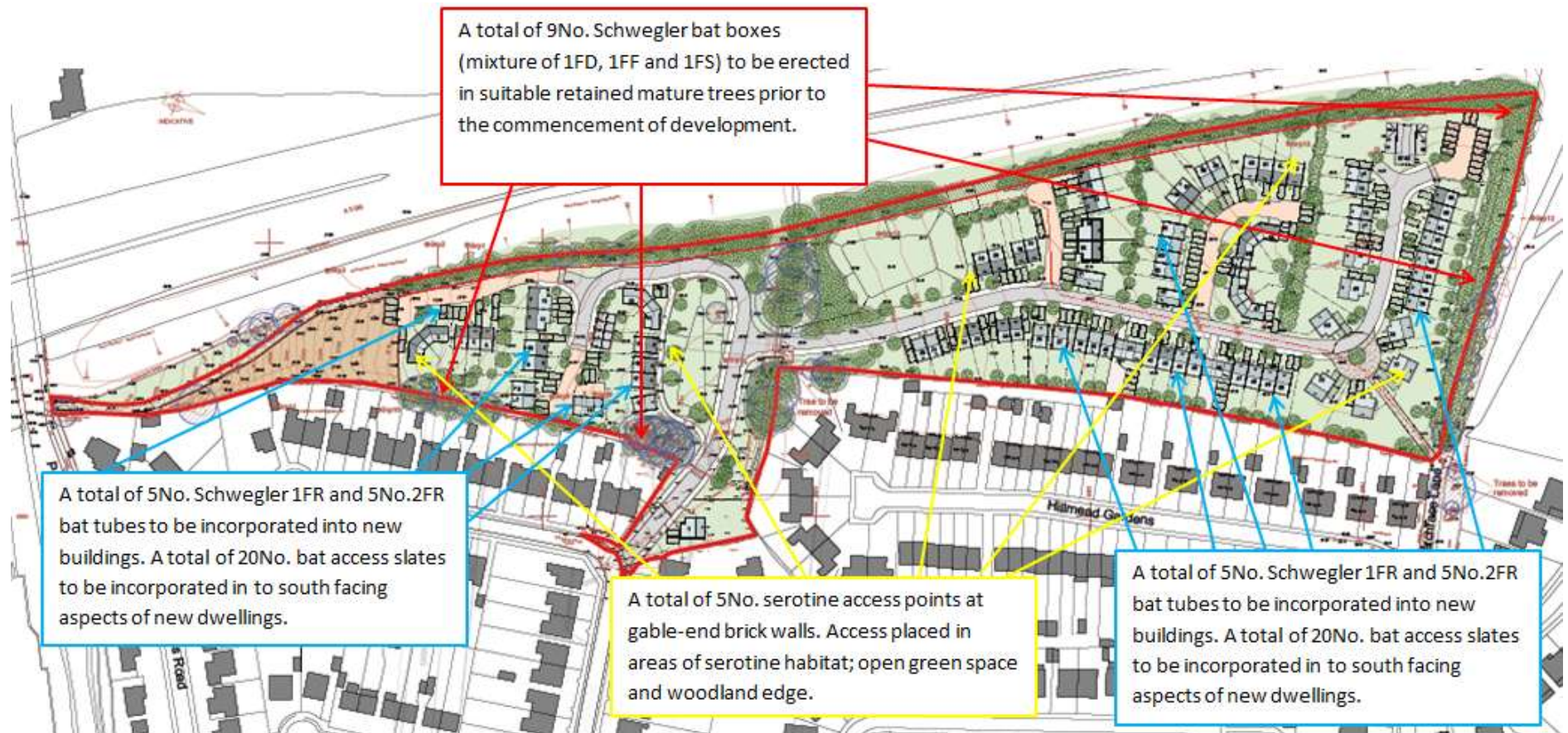
Northern Field



Southern Field



Appendix D: Indicative Locations of Proposed Bat Roost Features



Appendix E: Bat Boxes and Bat Access Slates



Schwegler 1FD Bat Box



Schwegler 1FF Bat Box



Schwegler 1FS Bat Box



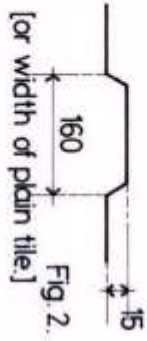
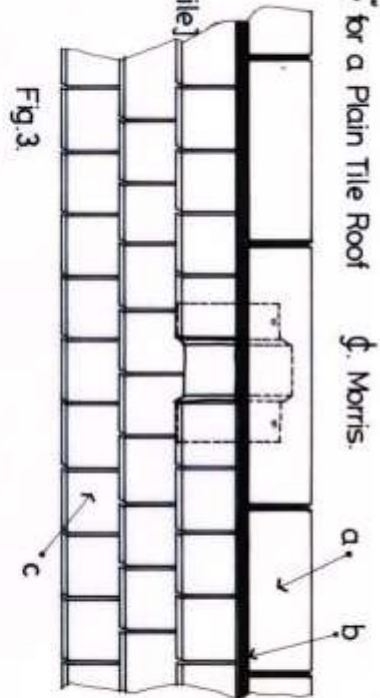
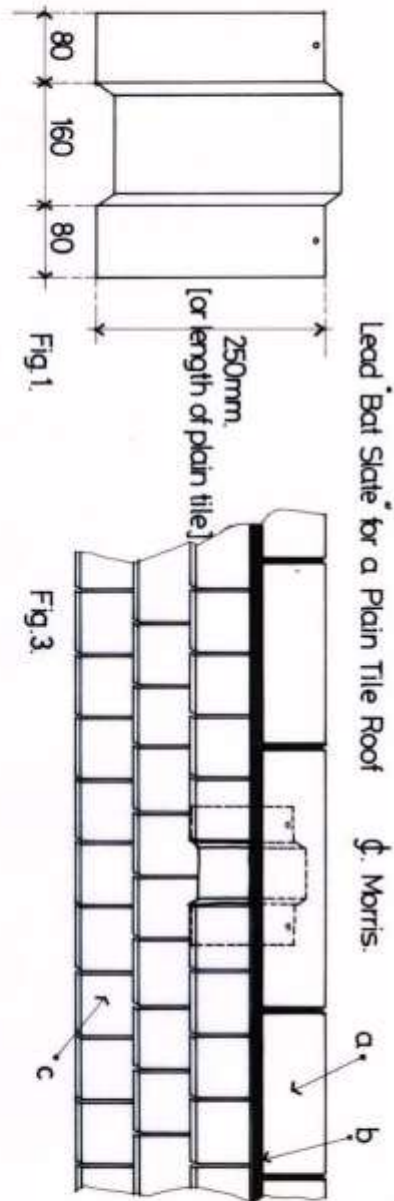
Schwegler 1FR Bat Tube



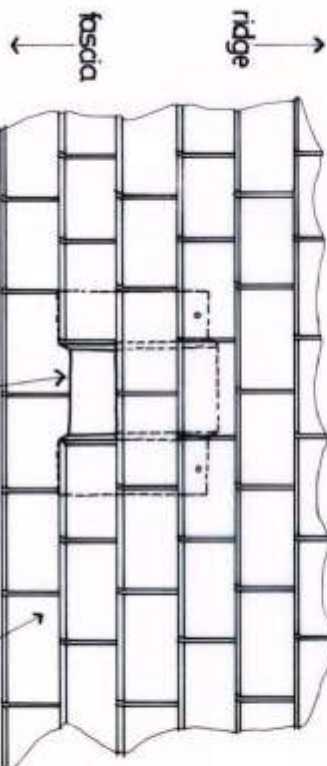
Schwegler 2FR Modular Bat Tube

Details of these can be found via the following links:

- www.alanaecology.com
- www.wildcareshop.com



Original size of lead:
250x350mm, approx.



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Bat Slate for a Profiled Tile Roof

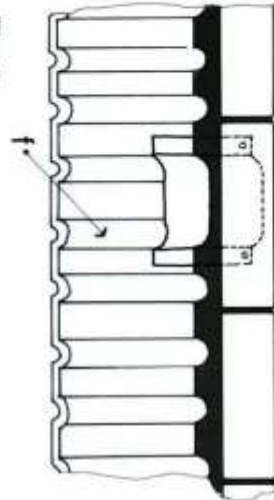


Fig. 5

Bat Slate for a Slate Roof

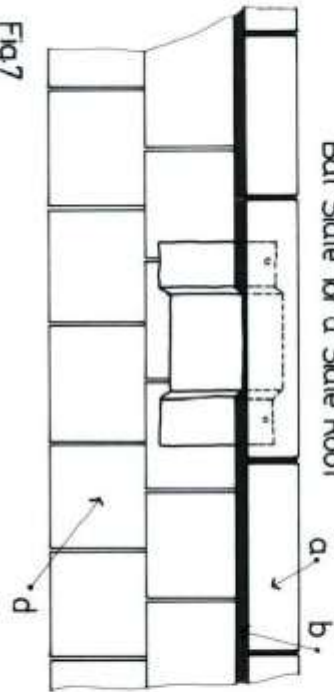


Fig. 7

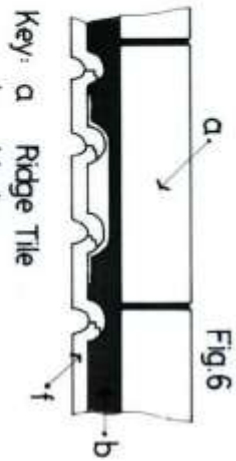


Fig. 6

Key: a Ridge Tile
b Mortar
c Plain Tile
d Slate
e Modified Ridge
f Profiled Tile

§. Morris.

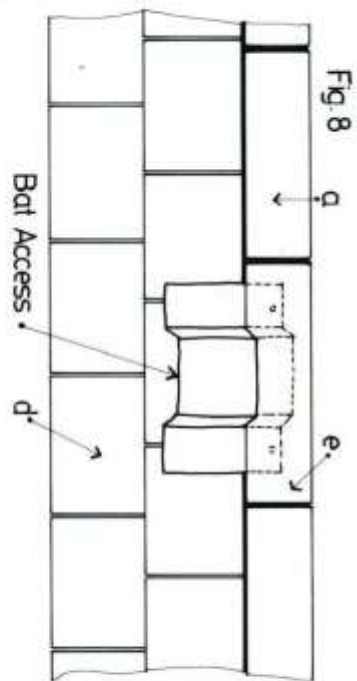


Fig. 8

Bat Access d

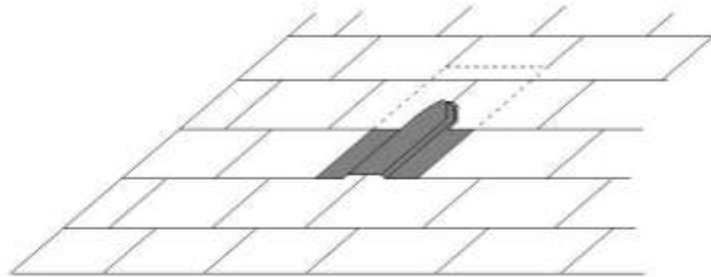


Fig 9. Bat slates can be fitted in the middle of a slate roof but more lead and considerably more labour is involved.

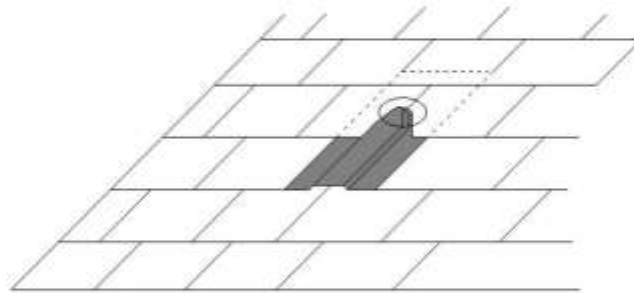


Fig 10. To allow bats into the loft, a hole may be cut in the roofing felt. The hole needs to be cut adjacent a rafter or wall to enable the bats to crawl in and out.

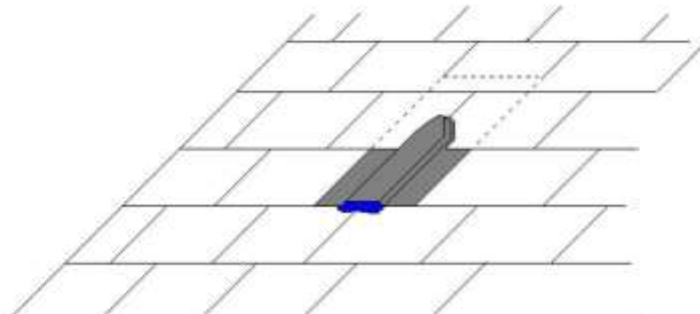
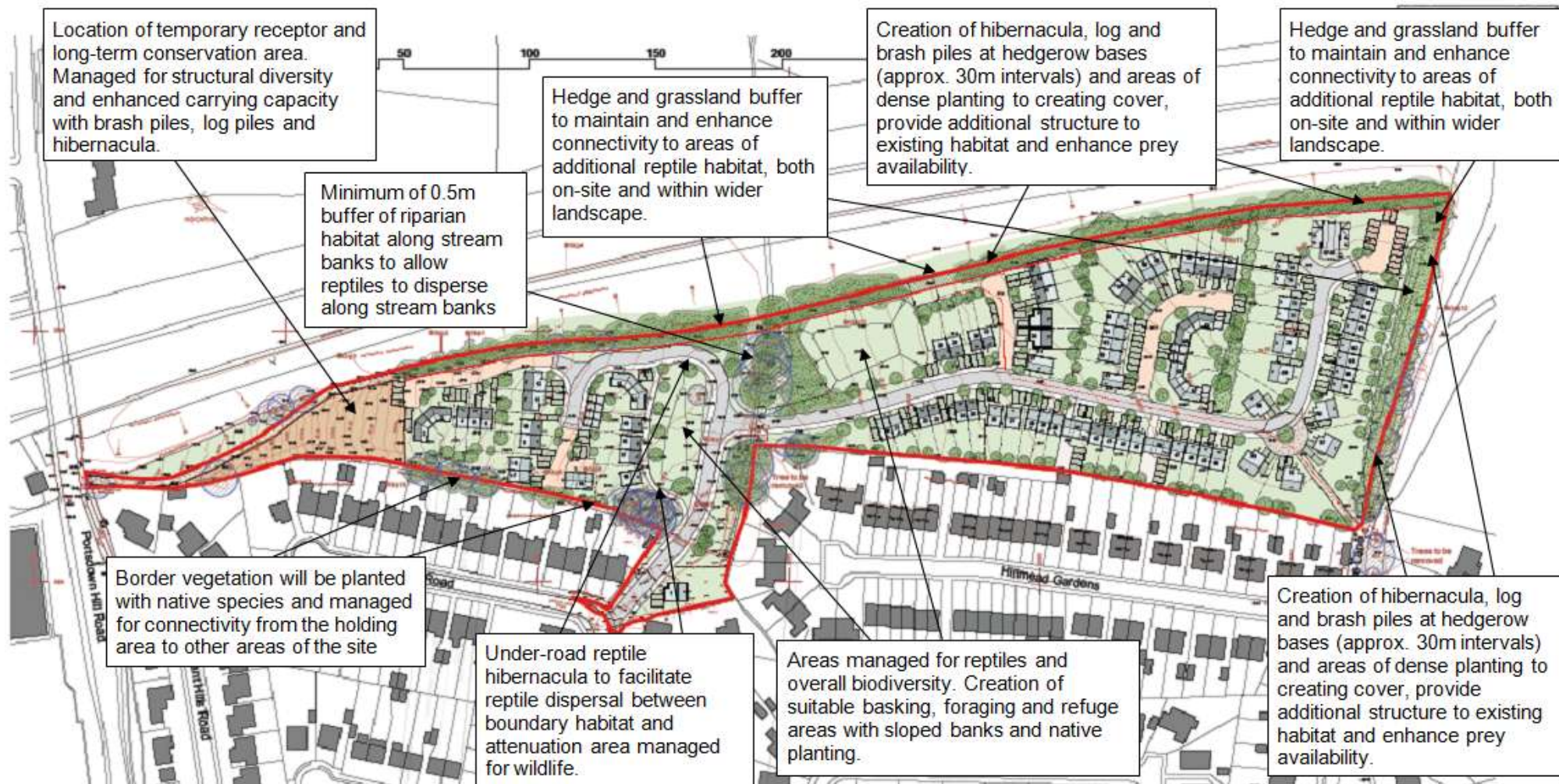


Fig 11. Steep pitched roofs

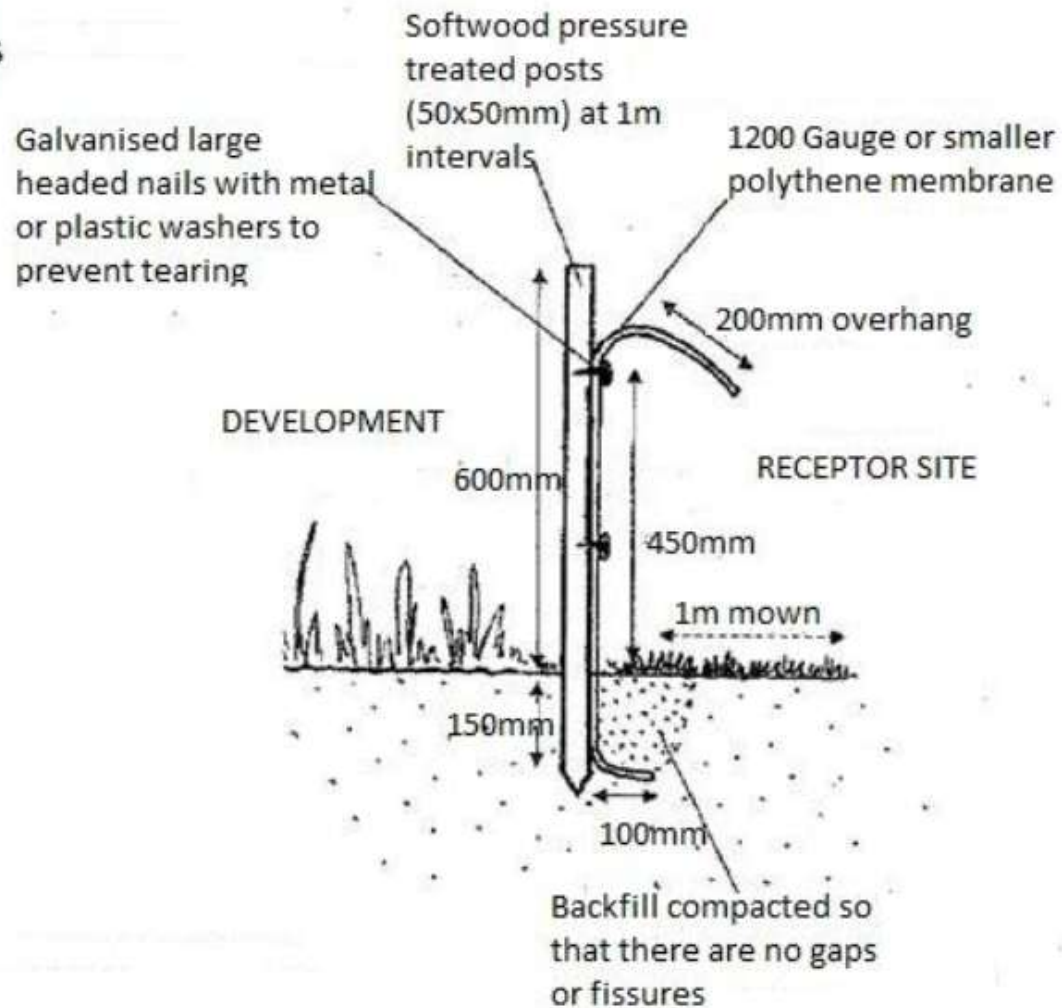
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Appendix F: Annotated Reptile Mitigation Strategy Overview Plan



Appendix G: Reptile Fencing Specification and Hibernacula Designs

REPTILE FENCE SPECIFICATIONS



PV ECOLOGY
ecological & environmental consultants

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WINCHESTER, HANTS SO31 1BD
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MARKET HOUSE, CORNWARTON, WIMBORNE, DORSET, BH21 1JL
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ST. MARY'S HOUSE, 40 LONDON ROAD, NEWSUMY, BERKE, RG14 1LA
TEL: 01430 401914 • FAX: 01430 414187

REPTILE HIBERNACULA

All UK native reptiles are protected under UK legislation and two of which are protected under European legislation. As such they are a material consideration under planning law.

Creating foraging and hibernation areas for reptiles can be simple and inexpensive to design and incorporate into a wide range of landscapes. Below are some simple instructions to provide reptiles with hibernation areas within your garden or development plans. The ideal location for your hibernacula is on a south-facing aspect on well-drained soil. The size and shape of the hibernacula can be varied slightly to fit different areas:

1. Dig a 2m x 2m pit in to the ground to a depth of 0.5m and stockpile the turf and soil;
2. Line the pit with sand, gravel and rubble to aid drainage (Fig 1);
3. Layer logs and thick braches in a non-uniform arrangement leaving plenty of gaps and holes (Fig 2);
4. Cover the logs with brash, branches, twigs and grass cuttings (Fig 3);
5. Cover over the brash with the soil from the excavation and top with turf, leaving small holes (approximately 15mm²) at ground level for reptiles to gain access (Fig 4)
6. Allow the vegetation to grow up around the hibernacula to provide plenty of cover and foraging habitat.

There are 6 different species of reptiles in the UK, each with different habitat requirements. Once we have established which reptile species are present, our expert team will be on hand to advise on every stage of your project from planning and timing to design and implementation.

Reptiles form an integral part of our ecosystem and are fascinating creatures. Incorporating reptile-friendly features into your design can enhance biodiversity, help safeguard our local wildlife, contribute towards Eco-homes credits, improve your chance of gaining planning permission and contribute towards community health and wellbeing.

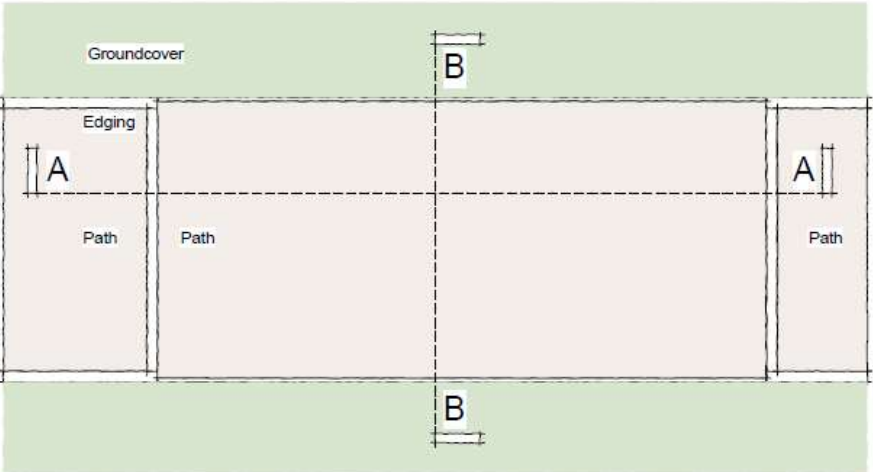
To find out more about reptiles and planning contact us at info@pv-ecology.com or call our office on 01794 368698.



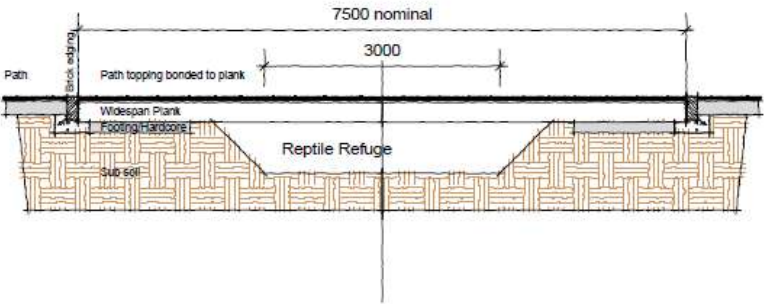
Under-Road Reptile Hibernacula Design

Refuge to be layered with sand, gravel, rubble, logs and brash as per the Reptile Hibernacula Design above.

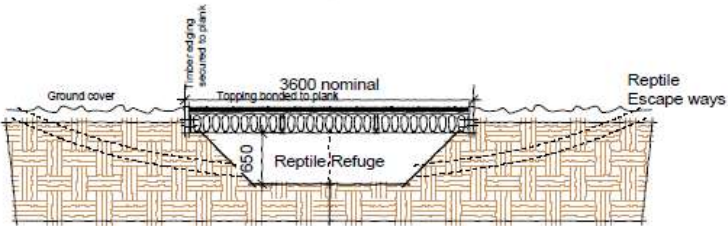
Plan of footpath



Section on A



Section on B



REV	DATE	AMENDMENTS	DRAWN	CHECKED
1	04/11			



CUSTOMER:
Crayfern Homes

PROJECT:
Land off Scratchplace Lane,
Bedhampton

DRAWING:
Reptile Refuge

SCALE: 1:50 @ A3 DWG NO: 7050 Sk 01

DATE: July 12 REV: #



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Tel: 01202 401000 Fax: 01202 401001

Appendix H: Suggested Species Planting List for Hedgerow and Woodland Edge Planting

Common Name	Latin Name
Tree Layer	
Ash	<i>Fraxinus excelsior</i>
Beech	<i>Fagus sylvatica</i>
Crab apple	<i>Malus sylvestris</i>
Hazel	<i>Corylus avellana</i>
Holly	<i>Ilex aquifolium</i>
Oak	<i>Quercus robur</i>
Rowan	<i>Sorbus aucuparia</i>
Hornbeam	<i>Caprinus sp.</i>
Field Maple	<i>Acer campestre</i>
Shrub Layer	
Spindle	<i>Euonymus europaeus</i>
Dogrose	<i>Rosa canina</i>
Dogwood	<i>Cornus sanguinea</i>
Hawthorn	<i>Crataegus monogyna</i>
Blackthorn	<i>Prunus spinosa</i>
Base Layer	
Bugle	<i>Ajuga reptans</i>
Butcher's Broom	<i>Ruscus aculeatus</i>
Common Dog Violet	<i>Viola riviniana</i>
Devilsbit Scabious	<i>Succisa pratensis</i>
English Bluebell	<i>Hyacinthoides non-scripta</i>
Foxglove	<i>Digitalis purpurea</i>
Ground Ivy	<i>Glechoma hederacea</i>
Herb Robert	<i>Geranium robertianum</i>
Oxe-eye Daisy	<i>Leucanthemum vulgare</i>
Red Campion	<i>Silene dioica</i>
Stinking Hellebore	<i>Helleborus foetidus</i>
Wild Daffodil	<i>Narcissus pseudonarcissus</i>
Wood Anemone	<i>Anemone nemorosa</i>
Wood Betony	<i>Stachys officinalis</i>
Wood Sage	<i>Teucrium scorodonia</i>
Wood Vetch	<i>Vicia sylvatica</i>

Appendix I: Protected Species Legislation

Bats

These species are listed in Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and Schedule 2 of the *Conservation of Habitats and Species Regulations 2010*. They are afforded full protection under Section 9(4) of the Act and Regulation 41 of the Regulations. These make it an offence, *inter alia*, to:

- deliberately capture, injure or kill any such animal;
- deliberately disturb any such animal, including in particular any disturbance which is likely:
 - to impair its ability to survive, breed, or rear or nurture their young;
 - to impair its ability to hibernate or migrate;
 - to affect significantly the local distribution or abundance of that species; or
- damage or destroy a breeding site or resting place of any such animal; or
- intentionally or recklessly disturb any of these animals while it is occupying a structure or place that it uses for shelter or protection; or
- intentionally or recklessly obstruct access to any place that any of these animals uses for shelter or protection.

In addition, five British bat species are listed on Annex II of the Habitats Directive. These are:

- Greater horseshoe bat (*Rhinolophus ferrumequinum*);
- Lesser horseshoe bat (*Rhinolophus hipposideros*);
- Bechstein's bat (*Myotis bechsteinii*);
- Barbastelle (*Barbastella barbastellus*);
- Greater mouse-eared bat (*Myotis myotis*).

In certain circumstances where these species are found the Directive requires the designation of Special Areas of Conservation (SACs) by EC member states to ensure that their populations are maintained at a favorable conservation status. Outside SACs, the level of legal protection that these species receive is the same as for other bat species.

Dormouse (*Muscardinus avellanarius*), European otter (*Lutra lutra*) and Great Crested Newt (*Triturus cristatus*)

These species are listed in Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and Schedule 2 of the *Conservation of Habitats and Species Regulations 2010*. They are afforded full protection under Section 9(4) of the Act and Regulation 41 of the Regulations. These make it an offence, *inter alia*, to:

- deliberately capture, injure or kill any such animal;
- deliberately disturb any such animal, including in particular any disturbance which is likely:
 - to impair its ability to survive, breed, or rear or nurture their young;
 - to impair its ability to hibernate or migrate.

- to affect significantly the local distribution or abundance of that species; or
- damage or destroy a breeding site or resting place of any such animal; or
- intentionally or recklessly disturb any of these animals while it is occupying a structure or place that it uses for shelter or protection; or
- intentionally or recklessly obstruct access to any place that any of these animals uses for shelter or protection.

Nationally Protected Species

Badger (*Meles meles*)

The *Protection of Badgers Act 1992* consolidates previous legislation (including the *Badgers Acts 1973 and 1991 Badgers (Further Protection) Act 1991*). It makes it a serious offence to:

- kill, injure or take a badger;
- attempt to kill, injure or take a badger; or
- to damage or interfere with a sett.

The 1992 Act defines a badger sett as “*any structure or place which displays signs indicating current use by a badger*”.

Breeding Birds

With certain exceptions¹, all wild birds, their nests and eggs are protected by section 1 of the *Wildlife and Countryside Act 1981* (as amended). Therefore, it is an offence, *inter alia*, to:

- intentionally kill, injure or take any wild bird;
- intentionally take, damage or destroy the nest of any wild bird while it is in use or being built; or
- intentionally take or destroy the egg of any wild bird.

These offences do not apply to hunting of birds listed in Schedule 2 subject to various controls.

Bird species listed on Schedule 1 of the Act receive further protection, thus for these species it is also an offence to:

- intentionally or recklessly disturb any bird while it is nest building, or is at a nest containing eggs or young; or
- intentionally or recklessly disturb the dependent young of any such bird.

Reptiles

The four widespread² species of reptile that are native to Britain, namely common or viviparous lizard (*Zootoca vivipara*), slow worm (*Anguis fragilis*), adder (*Vipera berus*) and grass snake

¹ Some species, such as game birds, are exempt in certain circumstances

² The other native species of British reptile (sand lizard and smooth snake) receive a higher level of protection under the *Habitats Regulations 1994* and (in England and Wales only) the *Wildlife and*

(*Natrix natrix helvetica*), are listed in Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and are afforded limited protection under Section 9 of this Act. This makes it an offence, *inter alia*, to:

- intentionally kill or injure any of these species.

Water vole (*Arvicola amphibius*)

The water vole is listed in Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and is afforded limited protection under Section 9 of this Act. This makes it an offence, *inter alia*, to:

- intentionally kill, injure, or take (handle) any a water vole (in England only);
- intentionally or recklessly damage or destroy or obstruct access to any structure or place which water voles use for shelter or protection; or
- intentionally or recklessly disturb water voles while they are using such a place.

Countryside Act 1981 (as amended). However, the distribution of these species are restricted to only a very few sites. All marine turtles (*Cheloniidae* and *Dermochelyidae*) are also protected.