AEWC Ltd

Animal Ecology & Wildlife Consultants

Reptile Survey Report

Land to the East of Tilletts Lane

Warnham
Horsham
West Sussex

Paul Thrift & Natalie Arscott

23-246
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Summary

- AEWC Ltd were commissioned by Batcheller Monkhouse on behalf of their client to undertake a presence / likely absence survey for reptiles at the Land to the east of Tilletts Lane, Warnham, Horsham, West Sussex at central grid reference TQ 15533 34010 to help inform the proposed development of the site.

- This report details the results of the survey, which was carried out between 29th May and 15th July 2024 by qualified ecologists Natalie Arscott and Paul Thrift.

- Suitable habitat for reptiles was identified within the site boundary during a previous Preliminary Ecological Appraisal. Further surveys were therefore required in order to ascertain whether reptiles are present at the site and represent a constraint to the proposed development.

- Reptile surveys were carried out on all areas considered suitable for reptiles that may be impacted by the proposed development. Artificial refugia (sheets of roofing felt, corrugated tin and corrugated bitumen) were placed in the field margins and checked seven times during suitable weather conditions.

- **The surveys conducted across the site have identified an exceptional population of slow worms, with a peak count of 125, and a low population of grass snakes, with a peak count of 3, which were found using all field margins across the main development area and adjacent to the east of Tilletts Lane.**

- **It is recommended that in-situ mitigation is adopted if possible, however due to the very high numbers of reptiles present this will require no overall reduction in the area of suitable habitat for reptiles across the site. Habitat buffers would need to be retained and appropriately managed at the field margins, and areas of Public Open Space would require appropriate habitat enhancement.**

- **It is recommended that there is a condition for the site to produce a detailed mitigation document and method statement, to be submitted to and agreed with the LPA ecologist prior to the development commencing. This mitigation document will contain the specific details of the mitigation strategy to be implemented and outline the timetable of events within the method statement. Enhancements for reptiles should be implemented into any mitigation document such as suitable habitat management and/or creation of hibernacula**.

1 Introduction

1.1 AEWC Ltd were commissioned by Batcheller Monkhouse on behalf of their client to undertake a presence / likely absence survey for reptiles at the Land to the east of Tilletts Lane, Warnham, Horsham, West Sussex to help inform the proposed development of the site.

1.2 The proposed residential development is likely to impact most of the site area and will result in the loss of areas of arable land, grassland, bramble scrub, and hedgerow. Most of the boundary hedgerows are to be retained.

1.3 A Preliminary Ecological Appraisal carried out by AEWC Ltd in April 2024 identified potentially suitable habitat for reptiles within the field margins on-site. This included native hedgerows, bramble scrub, and modified grassland.

1.4 Further surveys were therefore required to ascertain whether reptiles are present at the site and represent a constraint to the proposed development.

1.5 This report details the results of the reptile survey and outlines recommendations in relation to reptiles and the proposed development of the site.

Aims and Objectives

1.6 The objectives of the survey were to:

- Undertake a reptile survey to determine presence / likely absence of reptiles within the proposed development site;
- Evaluate the conservation importance of the survey area in relation to reptiles;
- Provide information to inform the impact assessment of development proposals for the area; and
- Provide information for use in the design and development of ecological mitigation and enhancement measures where appropriate.

Site Location and Layout

1.7 The proposed development site is located in the village of Warnham, northwest of Horsham and west of the A24. The surrounding landscape includes a diverse mix of habitats, such as ancient and semi-natural woodlands, traditional meadows, grasslands, native hedgerows, and arable and pastoral agricultural lands. Wetlands, ponds, and water bodies, particularly within Warnham Local Nature Reserve, are also present. To the south is residential development. See Figure 1.

1.8 The site covers approximately 3.55 hectares, with the main development area comprising two fields, the western of which is arable with the eastern field being grassland. The site boundary also encompasses Tilletts Lane to the west, the field corner where Tilletts Lane meets Knob Hill (formerly Threestile Road), a footpath adjoining to Knob Hill to the east, and a footpath adjoining to Caryll Place to the south. There are several hedgerows and trees across the site. See Figure 2.

FIGURE 1: SHOWING THE LOCATION OF THE SITE

FIGURE 2: AERIAL VIEW OF THE SITE SHOWING THE SITE BOUNDARY

Proposed Works

2.1 The proposed development plan involves the construction of approximately 60 dwellings, with associated public greenspace, parking, access roads, and footpaths. The majority of the habitat area on the main part of the site will be affected by these proposals. The footpaths and Tilletts Lane are to be subject to improvement works. See Figure 3 for draft plans.

FIGURE 3: PROPOSED PLANS

Legislation

1.9 Common lizard (*Lacerta vivipara*), grass snake (*Natrix helvetica*), slow worm (*Anguis fragilis*), and adder (*Vipera berus*) are listed under *Schedule 5* of the *Wildlife and Countryside Act 1981 (as amended)*, in respect of *Section 9(5)* and part of *Section 9(1)*. This protection was extended by the *Countryside and Rights of Way (CRoW) Act 2000*. Under the legislation, it is an offence to:

- intentionally or deliberately kill or injure any individual of these species; or
- sell or attempt to sell any part of these species either alive or dead.

1.10 Smooth snake *(Coronella austriaca)* and sand lizard *(Lacerta agilis)* are listed on *Schedule 5* of the *Wildlife and Countryside Act 1981 (as amended)*, which affords them full protection under *Section 9*, as amended. They are also protected under the *Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019*. In combination, this makes it an offence to:

- intentionally kill, injure or take (capture etc.);
- possess;
- intentionally or recklessly damage, destroy, obstruct access to any structure or place used by a scheduled animal for shelter or protection, or disturb any animal occupying such a structure or place; and
- sell, offer for sale, possess or transport for the purpose of sale (live or dead animal, part or derivative) or advertise for buying or selling such things.

1.11 All UK reptile species are Species of Principal Importance in England under *Section 41* of the *Natural Environment and Rural Communities Act 2006*.

Habitat Requirements

1.12 A general habitat requirement of reptile species is sunny, undisturbed glades and/or slopes, usually in the vicinity of some thick cover (vegetation). Further details of species-specific habitat preference are given below:

Common Lizard

- This species occupies a large range of habitat types. Their home range is usually quite small.
- Open patches to bask in, especially piles of rubble and wood in sunny areas.
- Ground cover of ivy is especially good for lizards for feeding and to avoid predators.
- Dense but short vegetation, open to the sun.

Slow Worm

- Occupies a large range of habitat types.
- Thick ground vegetation – they bask less often than other British reptiles.
- Regularly frequent habitats influenced by man, such as railway cuttings, allotments and gardens.

Grass Snake

- This species has a large home range.

- Grass snakes are highly aquatic and are strongly associated with riparian habitat.
- Compost heaps or dung piles are good egg laying habitat for Grass Snakes.

Adder

- Light chalk or sandy soils are preferred.
- A main requirement is that the area should be undisturbed.
- Heathlands, woodlands rides and chalk down land are good habitat for adders.

Sand Lizard

- Areas of open sand dunes.
- Mature dry heath.

Smooth Snake

- Found almost exclusively in dry heathland, especially in mature stands of heather or gravely lowland heaths.

2 Method

2.1 A site visit carried out on the 10th April 2024 by Natalie Arscott of AEWC Ltd, who assessed the site for reptiles, with particular attention paid to those features that provide suitable basking areas (e.g. south-facing slopes), hibernation sites (e.g. banks, walls, piles of rotting vegetation) and opportunities for foraging (e.g. rough grassland and scrub).

2.2 Artificial refugia (sheets of roofing felt, corrugated tin and corrugated bitumen a minimum of 0.5m^2 in area) were placed in areas of suitable habitat for reptiles throughout the site where or adjacent to where impacts may occur, in likely basking spots (for example, sunny areas near to cover). This covered the field margins of both fields within the main development area, excluding the eastern edge and most of the southern edge of the eastern field due to the eastern edge being a popular public footpath and the southern edge lacking sufficient vegetation cover. Refugia sheets were also placed along the western boundary and around the northwest corner of the arable field to the north of the main development area, since improvement works are proposed along Tilletts Lane and at the Tilletts Lane/Knob Hill junction, exact details of which are currently unknown. The central field areas are highly unlikely to support reptiles due to the western field being arable and eastern field being regularly mown grassland, therefore no refugia sheets were placed within these areas. No refugia sheets were placed along the footpaths and roads in the northeast and southeast of the site, since these areas were predominantly of low suitability to reptiles with little vegetation cover and high levels of disturbance, and impacts to vegetated habitat in these areas are expected to be minor. See Figure 5 for approximate location of refugia.

2.3 A total of 100 sheets were positioned across the site on 14th May 2024. A total of seven site visits were made throughout May to July 2024 to record reptiles, the sheets were removed on the last visit.

2.4 Where possible, survey visits took place when weather conditions were most suitable for reptile surveying. The most suitable conditions are intermittent or hazy sunshine, low air temperature (10-20^{o}C), and little or no wind (Gent & Gibson, 1998).

2.5 Any reptiles seen basking on or sheltering underneath the refugia were noted, and species, sex and age recorded. Time was also spent observing potential basking sites for reptiles on each visit.

2.6 Where reptiles are found an estimate of the population size is made.

3 Constraints/Limitations

3.1 On 29th May, 14 mats placed in the northern arable field along the north and west boundaries were destroyed by mowing. Additionally, on 1st June, a further 10 mats placed around the eastern grass field were destroyed. These incidents temporarily reduced coverage of reptile surveys in those areas. The mats were immediately replaced in the same locations, and following the 1st June visit the new mats were left to bed in for more than 2 weeks before survey visits resumed.

4 Results

4.1 The field margins offer good suitability for common reptile species, with a vegetation cover that offers basking, foraging, sheltering and hibernation opportunities. See Table 1 and Photograph 1.

Photograph 1: Field margin with grassland, bramble scrub, and hedgerow.

Table 1: Habitat Suitability Assessment

Reptile habitat characters	Whole site assessment	Notes
Location in relation to species range	Good	Within range of all common species of reptiles.
Vegetation structure	Good	Scrub, grassland and hedgerows across the site provide good foraging and sheltering habitat, with a combination of densely vegetated and more open edge habitat.
Insolation (sun exposure)	Good	The field margins are shaded at certain times of day due to the presence of hedgerow and mature trees, however the site otherwise receives good sun exposure.
Aspect	Good	The site is gently sloping with a south-facing aspect.
Topography	Moderate	There are no significant slopes or bunds that provide good basking opportunities. However, the site is gently sloping and faces south, with a more significant incline towards the northwest of the site.
Surface geology	Poor	The site is on clay soil with impeded drainage and damp areas. This reduces suitability for burrowing.
Connectivity to nearby good quality habitat;	Moderate	There is no direct habitat connectivity between the site and areas of high quality for reptiles. The site borders arable land and residential development, with the wider area being fully enclosed by roads. The site is however in a rural area with moderately suitable habitat for reptiles throughout, and on the other side of Tilletts Lane to the west is meadow.
Prey abundance	Good	The onsite habitats are suitable to support good populations of prey species.
Refuge opportunity	Good	There are belts of dense bramble scrub along the southern and western boundaries, and native hedgerows at all field boundaries, providing plenty of sheltering opportunities. No logs or similar refuge features were seen.
Hibernation habitat potential	Moderate	Dense scrub and hedgerows may be used for hibernation.
Disturbance	Moderate	Whilst the only official Public Right of Way runs along the eastern boundary, the site is well used by the public for walking, and as such there is regular human disturbance at the field margins. The fields are also subject to regular vegetation management using machinery. However, dense scrub and hedgerows provide shelter from disturbance.
Egg-laying site potential (grass snake and sand lizard only).	Poor	No suitable features for egg-laying, such as compost heaps, were identified. The site borders gardens to the south which may contain these features.

4.2 The site and surrounding area were not considered to contain suitable habitat to support adders, sand lizards, or smooth snakes.

4.3 Seven surveys were undertaken between May to July giving a survey effort score of 31 for slow worms and grass snakes and a score of 33 for common lizards based on tables 7 and 8 of the Reptile Mitigation Guidelines. These are greater than the minimum standard effort unit recommendation. See Figure 4.

Table 7 Minimum standard effort and recommended methods for presence/absence surveys

Reasonable chance of presence	Method(s)	Minimum standard effort units
Slow-worm	ARS	25
Common lizard	ARS + DOS	30
Sand lizard	DOS#	50
Grass snake	ARS + DOS	30
Adder	ARS + DOS	30
Smooth snake	ARS	50

Key:
* DOS = direct observation survey
ARS = artificial refuge survey
# ARS may be used in addition to DOS if sand lizard expected at high density, and refuges laid at density of at least 200/ha

Table 8 Monthly survey effort weighting

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Slow-worm	NR	NR	2	5	5	5	3	2	4	2	NR	NR
Common lizard	NR	2	3	5	5	5	4	3	5	3	NR	NR
Sand lizard	NR	NR	3	5	4	3	2	2	3	NR	NR	NR
Grass snake	NR	NR	3	4	5	5	3	3	4	2	NR	NR
Adder	NR	2	4	5	4	3	2	2	4	1	NR	NR
Smooth snake	NR	NR	3	5	5	4	3	3	4	NR	NR	NR

NR = No survey recommended: whilst surveys done in these months might locate animals, the chance of this is very low and so any such survey visits do not count towards standard effort

FIGURE 4: EXTRACT REPTILE MITIGATION GUIDELINES TABLE 7 AND 8

4.4 Table 2 shows the survey dates, times, and weather conditions recorded.

Table 2: Reptile survey dates, times and weather

Visit	Date	Time		Weather	Temp °C		Cloud cover (%)	Wind (BF scale)
		Start	Finish		Start	Finish		
1	29/05/24	09:20	10:25	Dry, sun and clouds	13	13	20	2
2	01/06/24	10:55	12:30	Dry, sun and clouds	15	16	75	1
3	21/06/24	10:00	11:20	Dry, clear	19	20	0	1
4	25/06/24	07:10	08:15	Dry, clear	16	16	0	1
5	30/06/24	08:00	09:15	Dry, sun and clouds	17	18	50	1
6	12/07/24	11:45	12:50	Dry, overcast	15	16	100	1
7	15/07/24	10:35	11:50	Dry, overcast	16	17	100	1

4.5 Two species of reptile were identified during the surveys: these being grass snake and slow worm. Table 3 details the results of the survey and counts for each species on each survey visit, this indicates the minimum number of reptiles on the site and can be used to give an estimate of population size where sufficient effort units have been reached. Figure 5 shows the locations of the recorded reptiles.

Table 3: Results of the reptile surveys.

Visit	Slow worm					Common Lizard					Grass Snake				
	Adult		Sub		Juv	Adult		Sub		Juv	Adult		Sub		Juv
	♂	♀	♂	♀		♂	♀	♂	♀		♂	♀	♂	♀	
1	8	26	5	25	12	0	0	0	0	0	2	1	0	0	1
2	12	23	1	15	12	0	0	0	0	0	2	0	0	0	0
3	5	18	1	13	3	0	0	0	0	0	1	0	0	0	0
4	0	2	1	4	2	0	0	0	0	0	0	0	0	0	1
5	5	39	0	23	10	0	0	0	0	0	1	0	0	0	1
6	13	37	2	19	19	0	0	0	0	0	0	0	0	1	1
7	13	65	4	43	11	0	0	0	0	0	0	2	0	0	3

(♂=Male, ♀=Female, Sub = Sub-adult, Juv=Juvenile)

FIGURE 5: LOCATIONS OF REPTILE REFUGIA MATS AND AREAS WHERE REPTILES WERE RECORDED DURING THE SURVEY PERIOD

4.6 Both slow worms and grass snakes were recorded on every survey visit. Slow worms were recorded using almost every refugia sheet across the survey visits and were typically recorded in high numbers. Grass snakes were present in lower numbers but were found in various locations across the survey area, including at every field margin where mats were distributed. Adults, sub-adults, and juveniles were present for both species, indicating successful breeding on-site.

4.7 Reptiles were only seen beneath the refugia sheets and never basking in the open.

4.8 A single female smooth newt (*Lissotriton vulgaris*) was found under a refugia sheet on the southern boundary during the check on the 21st June 2024.

5 Evaluation

5.1 The seven survey visits identified a peak count of 125 adult/sub-adult slow worms and 3 adult/sub-adult grass snakes present using the site.

Table 4: Reptile Population Estimates.

Species	Population		
	Low	Good	Exceptional
Adder	<5	5-10	>10
Grass Snake	<5	5-10	>10
Common Lizard	<5	5-20	>20
Slow worm	<5	5-20	>20

Figures in the table refer to maximum number of adults seen by observation and/or under tins (placed at a density of up to 10 per hectare), by one person in one day.

5.2 Using the Key Reptile Sites Assessment (Froglife, 1999), see Table 4, the peak counts recorded at the site would indicate that there is an exceptional population of slow worms and a low population of grass snakes present.

5.3 Reptiles were present across all field margins surveyed, showing no particular preference for a particular area or habitat type within the site.

5.4 No other reptile species were found, and they are therefore considered likely to be absent. The site and surrounding area are not considered to contain suitable habitat to support adder, sand lizard, or smooth snake. The site would be suitable for common lizard; however, the minimum recommended survey effort units were exceeded, refugia sheets were distributed at a thorough density, and checks were undertaken in suitable conditions, and no individuals of this species were encountered. Common lizards are therefore likely absent, or if present they are likely present at very low densities or on occasion only.

5.5 The presence of a single smooth newt during one of the surveys confirms that common amphibians also utilise the field boundaries.

6 Conclusions & Recommendations

6.1 **The surveys conducted across the site have identified an exceptional population of slow worms and a low population of grass snakes, which were found using all field margins across the main development area and adjacent to the east of Tilletts Lane**.

6.2 A lack of any mitigation could result in a negative impact on this species through potential death. Two possible mitigation options exist for reptiles:

- **In-situ mitigation**, which requires a suitable quantity and quality of habitat to be retained or provided within the proposed development site so as to enable the persistence of viable populations of reptile species. This is the preferred approach as it offers the advantage of conserving populations on a site where the habitat is known to be suitable and minimising the level of disturbance to reptiles. This is normally suitable when less than 25% of the habitat on the site will be lost.
- **Ex-situ mitigation**, which is required when there is insufficient space or scope for on-site conservation requires suitable receptor sites. Reptiles will need to be translocated to these off-site receptor sites, taking fully into account good practice guidelines and recommendations. Habitat enhancement may be required prior to translocation and subsequent monitoring should be practiced in order to establish whether or not the translocation has been successful.

6.3 Wherever practicable, in-situ mitigation is the preferred, least disruptive mitigation method for reptiles. **Due to the very high numbers of slow worms recorded at the site, for in-situ mitigation to be possible there will need to be no overall reduction in area of suitable habitat across the site**. Whilst most of the site will be affected by the proposed development, suitable habitat for reptiles is currently restricted to the field margins, with central field areas being unsuitable. As such, it may be possible to provide sufficient habitat to retain the reptiles on-site, depending on the development design. **It is recommended that wide habitat buffers are retained at the field margins, and these areas managed to be suitable for reptiles. At least some of the Public Open Space areas should also provide suitable habitat for reptiles to compensate for the loss of some field margins where new access roads are proposed**.

6.4 Whether in-situ or ex-situ mitigation is undertaken, measures to ensure that reptiles are removed from / prevented from colonising the works area (to prevent killing and injury) will need to be put in place. This normally involves erecting reptile exclusion fencing around the works area and then undertaking a capture / translocation programme of the reptiles from the works area to the receptor area. This involves several visits in the season in which reptiles are active (typically March to July and September). This is normally followed by a destructive search, supervised by an ecologist, for any habitats to be lost within the development.

6.5 Development designs have not yet been finalised; therefore, it is unknown whether in-situ or ex-situ mitigation will be required.

6.6 **It is recommended that there is a condition for the site to produce a detailed mitigation document and method statement to be submitted to and agreed with the LPA ecologist prior to the development commencing. This mitigation document will contain the specific details of the mitigation strategy to be implemented and outline the timetable of events within the method statement. Enhancements for reptiles should be implemented into any mitigation document such as suitable habitat management and/or creation of hibernacula**.

6.7 Any common amphibians using the site will be protected through the mitigation measures adopted for reptiles.

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