

M25 junction 10/A3 Wisley interchange TR010030

6.5 Environmental Statement: Appendix 7.12 Reptiles

Regulation 5(2)a
Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009



Infrastructure Planning

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (as amended)

M25 junction 10/A3 Wisley interchange

The M25 junction 10/A3 Wisley interchange Development Consent Order 202[x]

6.5 ENVIRONMENTAL STATEMENT: APPENDIX 7.12 REPTILES

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Appendix 7.12

Reptiles

7.1 Reptile surveys (2017 and 2018)

7.1.1 Introduction

- 7.1.1.1 All native species of reptile are protected under the Wildlife and Countryside Act 1981 (as amended). The rare sand lizard and smooth snake are also protected under the Conservation of Habitats and Species Regulations 2017. A summary of the relevant legislation is provided in Appendix 7.1. All reptiles are also listed as UK Biodiversity Action Plan (BAP) priority species¹.
- 7.1.1.2 For reptile surveys, available guidance documents as listed below have been refereed to and based on this, specific survey methodology relevant to the project has been devised.
- Blanke, I & Fearnley, H (2015). The Sand Lizard; between light and shadow.
 - Design Manual for Roads and Bridges (May 2005). Volume 10 Environmental Design & management Section 4 The Good Roads Guide – Nature Conservation Part 7 HA 116/05 Nature Conservation Advice in relation to reptiles and roads.
 - Forestry Commission (2013). Guidance on managing woodlands with sand lizard and smooth snake in England, Guidance, Version 2, 14 October 2013.
 - Froglife (1999). Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife advice sheet 10.
 - Froglife (2015). Surveying for reptiles. Tips, techniques and skills to help you survey for reptiles.
 - Langham, S (2015) Sand lizard 'Test' egg-burrow surveying, Surrey Amphibian and Reptile Group.
 - Moulton, N & Corbett, K (1999) Sand Lizard Conservation Handbook, English Nature.
 - Natural England (2011). Reptile Mitigation Guidelines (technical Information Note TIN102); redacted.
 - Sewell, D., Griffiths, R. A., Beebee, T. J. C., Foster, J. and Wilkinson, J. W. (2013). Survey protocols for British herpetofauna. (http://narrs.org.uk/documents/Survey_protocols_for_the_British_herpetofauna.pdf).

¹ Information on and lists of UK BAP priority species and habitats can be found at <http://jncc.defra.gov.uk/page-5705>. Accessed 24/05/2018.

- 7.1.1.3 Reptile surveys for sand lizard (*Lacerta agilis*) and common species of reptiles (common lizard (*Zootoca vivipara*), grass snake (*Natrix helvetica helvetica*²), slow worm (*Anguis fragilis*), adder (*Vipera berus*)) were carried out to determine the presence/likely absence of reptiles within selected habitats throughout the M25 Junction 10/A3 Wisley interchange Improvement Scheme (hereafter referred to as 'the Scheme'). There are no records of smooth snake (*Coronella austriaca*) within 1 km of the scheme. Suitable heathland habitat exists for this species; however, these areas have been monitored by the Amphibian and Reptile Conservation (ARC) trust since 1991 with no records of smooth snake found. Therefore, this species has been scoped out from these surveys. Surveys were led by an experienced surveyor who holds a Natural England sand lizard (and smooth snake) licence and is considered to be accomplished under the Chartered Institute of Ecology and Environmental Management (CIEEM) competency levels.
- 7.1.1.4 This report provides the methodology and results of these surveys. An evaluation of the importance of the Site for common species of reptiles and sand lizard, and the importance of the populations present will be provided in the Environmental Statement (ES) for the Scheme. The extent of the Scheme is shown by the Development Consent Order red line (DCO) boundary on Figure 7.16.

7.1.2 Objectives

- 7.1.2.1 The aim of the reptile surveys was to determine the presence/likely absence of common species of reptiles and sand lizard within and in proximity to the Scheme.

7.1.3 Methodology

Desk study

- 7.1.3.1 The Surrey Amphibian and Reptile Group (SARG) and Surrey Biodiversity Information Centre (SBIC) were contacted in 2017 for records of legally protected and notable species of reptiles within 1 km of the Scheme within the last ten years (2007 – 2017).

Habitat assessment

- 7.1.3.2 An assessment of all habitats within the Scheme (based on the Stage 2 options with greatest land take) was carried out by the lead surveyor. This assessment was to assess suitability of habitats for reptiles, and investigate practical issues in surveying (safety, pedestrian access, suitable refugia locations etc.) and involved the following:
- A review of aerial photography³ and species records as provided by SARG; and
 - A walkover survey of accessible land (of land within the Scheme and immediately adjacent areas).

² Until 2017, the species of grass snake present within the United Kingdom was thought to be *Natrix natrix* subspecies *helvetica*. This was one of 14 subspecies of *Natrix natrix* within Europe. However, following genetic sequencing studies, the 14 subspecies of *Natrix natrix* was differentiated into two species; *Natrix natrix* and *Natrix helvetica*. There is only one species of grass snake known to occur within the UK and this is now known as *Natrix helvetica helvetica*.

<https://www.arguk.org/get-involved/news/what-does-the-re-classification-of-european-grass-snakes-mean-for-our-native-grass-snakes>

³ Imagery ©2018 DigitalGlobe, Infoterra Ltd & Bluesky, Google, Map data ©2018 Google

7.1.3.3 All habitats were assessed based on the following factors:

- Location in relation to species range;
- Vegetation structure;
- Insolation/sun exposure;
- Aspect;
- Topography;
- Connectivity to nearby good quality habitat;
- Likely prey abundance;
- Refuge opportunity;
- Hibernation habitat potential;
- Disturbance;
- Surface cover (i.e. soil, stone etc); and
- Egg-laying site potential (for grass snake and sand lizard).

7.1.3.4 Based on these criteria, habitats were assessed as having low, moderate or high potential to support reptiles:

- Low: habitat which is relatively unfavourable for reptiles based on the majority of the habitat assessed in relation to factors listed above, or is limited in size and highly isolated from other areas of suitable habitat;
- Moderate: habitat which is favourable or sub-optimal for many of the habitat assessment factors listed above; or is sub-optimal for some of the criteria and has good connectivity with areas of more suitable habitat; and
- High: habitat which is favourable for reptiles based on the majority of habitat assessment factors listed above.

7.1.3.5 Figure 7.17 illustrates the areas of habitats that offer low, moderate or high potential to support reptiles.

Presence/likely absence surveys

Common species of reptiles

Habitat Selection

7.1.3.6 For habitats where sand lizard were not expected to be present, all habitats categorised as high potential were selected for presence/likely absence surveys to include visual searches and refugia checks where there were no health and safety and access constraints. The majority of the habitats within the Scheme are abundant in the wider area and are adjacent to or contiguous with habitats with potential to support common reptile species. Therefore, surveys were undertaken within the Scheme and extended into adjacent suitable connected habitat to provide an overview of the reptile populations within and adjacent to the Scheme.

- 7.1.3.7 For the A3 roadway verge sections, surveys only took place in areas which were safely accessible by pedestrians. This included areas where a public footpath was present in addition to a safety bollard; or in areas where a crash barrier was present. Such locations were only present along the south bound (east side) road verge of the A3, therefore a sampling approach was undertaken. Of the safely accessible areas, approximately 25% of the total length for each of the two accessible verges (i.e. the 2.6 km long A3 east verge south of M25 junction to Ripley interchange and 2.0 km long A3 east verge north of M25 junction Painshill) were subject to presence/likely absence surveys. Within these areas surveyed, both moderate and high suitability habitats were subject to presence/likely absence surveys. Where moderate habitat was present, it was considered that detection rates were likely to be low and surveys inconclusive, therefore presence was assumed on a precautionary basis.
- 7.1.3.8 Elsewhere, moderate suitability habitat was not subject to presence/likely absence surveys with the exception of isolated areas of moderate suitability habitat that were disconnected from high suitability habitat. For example, Snakes Field was proposed to be surveyed as a proxy for the 'moderate potential' habitat to be impacted as a result of the proposed works along Elm Lane.

Refugia survey

- 7.1.3.9 Blocks of moderate or high-quality habitat required a minimum of 10 refugia per hectare (ha) in line with survey guidance (Froglife (1999))⁴, with density determined by the specific characteristics of each location (for example in dense woodland, refugia were restricted to open rides).
- 7.1.3.10 Linear habitats, including verges of less than 10 m width were surveyed using a density of 1 refuge every 10 metres for the 25% of each verge with the highest potential for reptiles, i.e.:
- Deployment of a minimum of 65 refugia at 10 m intervals along 650 m of high or moderate potential habitat within the 2.6 km long A3 east verge south of M25 junction to Ripley interchange; and
 - Deployment of a minimum of 50 refugia at 10 m intervals along 500 m of high or moderate potential habitat within the 2.0 km long A3 east verge north of M25 junction Painshill.
- 7.1.3.11 The minimum density of 10 refugia/ha has been determined based on existing guidance⁴ and is considered to be appropriate due to the nature of the majority of surveyed habitats which comprise woodland (both open and relatively more closed canopy). In these habitats, deployment of refugia to survey for basking reptiles was limited to rides and open glades. In addition, the majority of the Survey Areas are publicly accessible and regularly used for informal recreation; it is therefore not appropriate for a greater density of refugia to be deployed due to the risks of refugia disturbance and the public encountering adder. A density of 10 refugia/ha and one refugia every 10 m is in line with various guidance documents^{4, 5, 6}.

⁴ Froglife (1999). Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife advice sheet 10.

⁵ Design Manual for Roads and Bridges (May 2005). Volume 10 Environmental Design & management Section 4 The Good Roads Guide – Nature Conservation Part 7 HA 116/05 Nature Conservation Advice in relation to reptiles and roads.

⁶ Froglife (2015). Surveying for reptiles. Tips, techniques and skills to help you survey for reptiles.

- 7.1.3.12 Refugia were deployed as an approximate equal mix of metal (more effective for species such as adder), corrugated bitumen and flat roofing felt. However, on road verges only heavy weight flat roofing felt was used to ensure that the refugia were not blown up by the draught of passing vehicles following guidance in the Design Manual for Roads and Bridges (DMRB)⁵. The refugia each measured approximately 1 m x 0.5-0.6 m i.e. minimum of 0.5 m².
- 7.1.3.13 The refugia were laid out within suitable habitat on the dates listed in Table 7.1.2 in Annex A. The refugia were then left for a minimum of one week and up to two weeks before surveying in order to bed in before surveys started, enabling reptiles to locate the refugia over time and to start using the refugia regularly free from disturbance. The location of refugia deployed within the Scheme is shown on Figure 7.16.
- 7.1.3.14 Seven checks of the refugia were undertaken in suitable weather conditions (taken to be daytime air temperatures between 9°C and 20°C, with little or no wind or precipitation) from August to October 2017 in accordance with survey guidance^{4, 5, 6, 7, 8}. Surveyors initially visually checked the upper surface of refugia on their approach, to identify any reptiles basking on top of the refugia. The refugia were then lifted to identify any reptiles present underneath. Notes of any reptiles identified such as; species, numbers, sex and age were recorded. In addition to the refugia checks, existing natural and artificial refugia (such as dead wood and other materials that could trap heat and warm animals) were also checked⁹.
- 7.1.3.15 The weather conditions during each survey visit for the various Survey Areas are summarised in Table 7.1.2 in Annex A. The different Survey Areas are illustrated on Figure 7.16.
- 7.1.3.16 Where temperatures rose above 20°C, surveys were only undertaken if they met the following criteria:
- Broken or overcast cloud cover (3 or more Oktas); or
 - If the Survey Area was within a location that is characterised as being relatively shaded.

Sand lizards

Habitat selection

- 7.1.3.17 For habitats with the potential for sand lizard to be present and affected by the Scheme, habitats of all levels of suitability (low, moderate and high) were proposed to be surveyed. This included the edges, rides and relatively more open areas of the woodland surrounding the west and north-west sides of Ockham Common (including the edges of the Ockham Bites car park) (see Figure 7.16).

⁷ Natural England (2011). Reptile Mitigation Guidelines (technical Information Note TIN102); redacted.

⁸ Sewell, D., Griffiths, R. A., Beebee, T. J. C., Foster, J. and Wilkinson, J. W. (2013). Survey protocols for British herpetofauna. (http://narrs.org.uk/documents/Survey_protocols_for_the_British_herpetofauna.pdf).

⁹ It should be noted that artificial refugia are of limited effectiveness for surveying lizards, and therefore surveys will incorporate existing refuge features, exposed basking areas etc to increase the potential to record common and / or sand lizards.

7.1.3.18 The rationale for surveying habitats of low, moderate and high levels of suitability where sand lizard may be affected is the full legal protection afforded to this species (which is a European Protected Species) which means that in addition to the individual sand lizards being protected, their habitats are also protected. Therefore, it was considered necessary to identify all habitat being used by sand lizards insofar as possible. As a result, the extent of the surveys was increased to include an area of Chatley Heath which is known to support a population of sand lizards. Chatley Heath is located outside of the Scheme, however, it is connected to the Scheme by coniferous woodland plantation and mixed woodland plantation.

Visual searches

7.1.3.19 For the area within which there was the potential for sand lizard to occur (see the sand lizard Survey Area as shown on Figure 7.16), the visual element of the survey was the main survey technique; since sand lizard are known not to use artificial refugia. Refugia, were deployed within the sand lizard Survey Area since this area also had potential to support common reptile species, including adder, which are known to utilise artificial refugia.

7.1.3.20 For the visual searching of the sand lizard Survey Area, the proposed approach followed standard reptile visual searching methods⁴ but also included:

- Walking transect designed to be routed along woodland rides, woodland paths, open glades in woodland, woodland/scrub edge habitats and included any potential key habitat features, e.g. suitable basking sites, suitable egg laying areas shelter and hibernation habitat⁶;
- Search of potentially suitable sand lizard egg laying areas for 'test' egg-burrows that may be created in late summer (August) if any second clutches are laid¹⁰; and
- Search of potentially suitable sand lizard egg laying areas in September for hatchlings¹¹.

7.1.3.21 The surveys were conducted in August to October 2017, with further surveys undertaken in April to June 2018. The weather conditions during each survey visit are summarised in Table 7.1.2 in Annex A.

¹⁰ Langham, S (2015) Sand lizard 'Test' egg-burrow surveying, Surrey Amphibian and Reptile Group.

¹¹ Forestry Commission (2013). Guidance on managing woodlands with sand lizard and smooth snake in England, Guidance, Version 2, 14 October 2013.

7.1.4 Survey limitations

- 7.1.4.1 In general, the best months to reliably find reptiles are April to mid/late-May, and mid/late August to mid/late September, depending upon the weather conditions⁵. However, reptiles are generally active from March to October⁵. No reptiles were recorded during the surveys after October 5. In addition, the 2017 surveys did not cover the spring reptile survey window which may allow identification of sand lizard egg burrowing sites. There is an increased chance of encountering sand lizards during the spring survey period due to higher levels of basking activity. Taking this into account, it is possible that sand lizards presence within the Scheme was missed during the 2017 surveys and this is therefore considered a significant limitation. This is further highlighted by the fact that no sand lizards were recorded during the 2017 surveys, even within Chatley Heath which is known to have population of sand lizards. Therefore, to confirm likely absence of sand lizards from within the Scheme and adjacent habitats, further surveys were undertaken in spring 2018.
- 7.1.4.2 The timing of the surveys is not considered a significant limiting factor for common species of reptiles. For all sites where surveys were conducted up until 20 October 2017 (Survey Areas B, M and P, see Figure 7.16), surveys were undertaken in suitable weather conditions. In general, weather conditions were suitable for the majority of surveys. The survey at Survey Area L on 26 September between 13:25 and 13:38, (see Table 7.1.2 in Annex A) was considered sub-optimal as the majority of the refugia at this location were orientated such that they were in the sun from first thing in the morning. Therefore, the refugia would have been in the sun too long allowing any reptiles present beneath the refugia to have warmed up sufficiently, to enable them to leave the refugia and move off into the surrounding habitats to forage. This is evidenced by no grass snake being recorded, (see Table 7.1.4 in Annex B). The survey was repeated between 15:25 and 15:55 in similar weather conditions; during this visit two grass snake were observed (see Table 7.1.2 in Annex A and in Table 7.1.4 in Annex B). Although this second visit recorded grass snake, it was decided to do an 8th visit to Survey Area L in case reptile presence was affected by the refugia being disturbed approximately 1.5 hours before. This was not therefore considered to be a significant limitation to the survey effort.
- 7.1.4.3 In addition, the surveys on 6 September 2017 at Survey Area J and K were considered potentially sub-optimal with surveys starting and ending in the rain which could reduce the chance of finding reptiles basking on top of refugia, particularly common lizards. Although conversely, captures from beneath reptile refugia tend to increase during warm weather following a rain shower with periods of sunshine after rain being important triggers for increased reptile activity⁵. Taking this into account, along with the fact that at both of these locations, a further six surveys were undertaken in optimal weather conditions, the sub-optimal weather condition son 6 September 2017 at Survey Areas J and K were not considered a significant limitation.

- 7.1.4.4 For sand lizards, the timing of the surveys in 2017 (mid-/late-September and mid-/late-October) is considered to be a significant limitation as it was not possible to conduct surveys to search for egg burrowing sites of first clutches laid in June or to undertake surveys during the optimal period for identifying basking sand lizards (late March to mid-May)^{5/12}. Further surveys were therefore conducted in 2018 (mid-April to late-June), to establish whether sand lizards are present within suitable habitats within and adjacent to the Scheme. During the sand lizard survey on 15 May 2018, temperatures had reached 20°C by 10:15, with remaining areas still left to check. Therefore, the survey was cut short and repeated on 17 May 2018, when cooler temperatures were predicted. Following the completion of further surveys in spring 2018, the timing of these surveys are no longer considered a significant limitation.
- 7.1.4.5 For common species of reptiles, the majority of the Survey Areas had two weeks in order to allow the refugia to bed in. However, for Survey Areas A: Wisley Airfield, M: Hilton Hotel and P: A3 Verge_North refugia were left for no more than one week before surveys commenced in order to fit seven visits in within the most optimal survey period for reptiles. Nevertheless, this is still within the parameters of current guidelines which recommend refugia should be left to bed down for at least a week prior to surveys commencing⁴. Therefore, this is not considered a significant limitation.
- 7.1.4.6 Where surveys were conducted in wet conditions, this involved rain showers only and not heavy rain. Therefore, these surveys are not considered sub-optimal and this is not a significant limitation to the surveys.
- 7.1.4.7 Only six visits for common reptile species were completed at Survey Areas C and D. The Froglife (1999)⁴ guidelines recommend that seven survey visits should be undertaken in order to establish presence/likely absence. However, the DMRB guidelines⁵ state that a minimum of five inspections should be undertaken in suitable weather conditions and at suitable times of day¹³ (see Table 7.1.2: Weather conditions – for survey of common species of reptiles in Annex A). Taking this into account, there is no significant limitation for Survey Area C as a result of only six visits being undertaken. For Survey Area D, not all surveys have been undertaken in the optimal time period during the survey window. Nevertheless, common reptiles were recorded across all six visits. Therefore, neither the timing of the surveys or the number of survey visits is considered a significant limitation for Survey Area D.

¹² Moulton, N & Corbett, K (1999) Sand Lizard Conservation Handbook, English Nature.

¹³ The DMRB recommends that surveys be conducted in suitable weather conditions in April to mid-/late-May, and mid-/late-August to mid-/late-September. The most appropriate times of day to undertake surveys during this time periods is between 0830 to 11000 and 1600 to 1830.

- 7.1.4.8 Due to health and safety reasons (risks to surveyors working along a live highway), it was not possible to survey the entire verge of the A3 where suitable habitat exists and as result, a sampling approach was taken as detailed in paragraph 7.1.3.7. Refugia were only deployed in areas where the following were present; a public footpath and a safety bollard; or a crash barrier. Furthermore, it was only possible to use refugia made of bitumen roofing felt in these locations, and the refugia were required to be secured to the ground by pegs. The process of removing the pegs in order to check under the refugia may have created disturbance, therefore potentially reducing the detectability of common species of reptiles. It should also be noted that the vegetation along the A3 verges was trimmed during the presence/likely absence surveys as part of the normal highways maintenance regime, potentially resulting in disturbance. This is not considered a significant limitation to the survey as disturbance would have been temporary and only a single refugia was damaged during the process.
- 7.1.4.9 The sand lizard visual search was undertaken in woodland with a network of existing formal footpaths, bridleways and woodland rides. Inherently this means that at any specific time of day of the visual search (and depending upon levels of cloud cover) at least some stretches of the transect route would typically be shaded, such that sand lizard would not be expected to be basking in such shaded areas. In addition, the transect route was necessarily largely limited to existing formal footpaths, bridleways and woodland rides (with the exception of the open glade and minor informal woodland track through the woodland/bracken. These existing formal footpaths, bridleways and woodland rides are public rights of way and regularly used by horse riders, dog walkers and joggers etc. The majority of the transect route therefore is subject to regular disturbance, which could be expected to adversely affect basking by any sand lizard present and reduce detectability during the visual search. This is also true of common reptile species, for which the surveys were predominantly undertaken within areas that are accessed by the public and may therefore be subject to disturbance.
- 7.1.4.10 Taking into account the constraints for the presence/likely absence surveys conducted in 2017 for common species of reptile and sand lizard, with the addition of the 2018 sand lizard surveys, the results detailed in this report can be considered as an accurate representation of presence/likely absence for common species of reptiles.

7.1.5 Results

Desk study

- 7.1.5.1 The SARG data search identified 452 records within 1 km of the Scheme which comprised of common lizard, grass snake, slow worm, adder and sand lizard. Grass snake, slow worm and sand lizard were most recently recorded in 2016, while adder and common lizard were most recently recorded in 2017. No species were recorded within the highways proposals, however, adder, slow worm, grass snake and common lizard were recorded within the Special Protection Area (SPA) compensation package. While sand lizard was recorded approximately 11 m south of the SPA compensation package, with the closest record in relation to the highways proposals being located approximately 26 m south-west of the Scheme. These reptile records are predominantly associated with heathland areas within Ockham and Wisley Common. Adder records were provided within or in close proximity to Survey Areas G, I and J.
- 7.1.5.2 The SBIC data search returned 18 records of reptile species within 1 km of the Scheme which comprised of sand lizard, adder, common lizard, grass snake and slow worm since 2007 (i.e. within 10 years of the data search). Grass snake, slow worm, common lizard and sand lizard were most recently recorded in 2016, while adder was most recently recorded in 2017. The closest records to the Scheme fall within the 1 km OS grid squares for Bolder Mere, Wisley Common and Ockham Common.
- 7.1.5.3 In addition, Wisley Airfield Site of Nature Conservation Interest (SNCI) is identified in the desk study as being bounded by areas of long grass which is suitable habitat for common foraging reptiles. Wisley Airfield SNCI falls partially within the Scheme. Grass snake, slow worm and common lizard have all been recorded within the eastern section of the Wisley Airfield SNCI. Adders have also been recorded within the Wisley Airfield SNCI¹⁴.
- 7.1.5.4 Areas of heathland are present at Ockham Common. This habitat has high suitability for reptiles, and is likely to support common reptile species as well as sand lizard. Sand lizards were identified in the desk study. Sand lizard have been confirmed by Surrey Wildlife Trust¹⁵ and SARG as having established following a successful re-introduction in 1991. The re-introduction took place in the mature heathland at Chatley Heath in the south-east quadrant of Wisley and Ockham Commons Surrey Wildlife Trust nature reserve (i.e. Ockham Common). Sand lizards were reintroduced to Ockham Common and are considered to be absent from the habitats within the south-west, north-east and north-west quadrants of habitat surrounding M25 Junction 10, due to the A3 and M25 forming barriers to dispersal.

Habitat assessment

- 7.1.5.5 A review of aerial photography, species records and a walkover survey identified habitats suitable for common reptiles within the Scheme. These were categorised as having low, medium or high potential for reptiles and are shown on Figure 7.17.

¹⁴ RPS (2013). Wisley Airfield, Surrey – Reptile Survey.

¹⁵ Surrey Wildlife Trust manage Ockham and Wisley Common on behalf of Surrey County Council

- 7.1.5.6 The habitat types present within the Scheme are consistent with those in the wider area and are predominantly well connected to suitable habitats nearby. This is true of all Survey Areas except for Survey Area J which is an isolated clearing within woodland, with the nearest suitable habitat for reptiles being along the verge of the M25 east bound slip road located approximately 30 m away through woodland.

Presence/likely absence surveys

Common species of reptiles

- 7.1.5.7 Survey Areas subjected to presence/likely absence surveys for common species of reptile are shown in Figure 7.16. The surveys identified common reptiles being present at all Survey Areas except for J and M. The full results of these surveys are provided in Annex A. Out of the 16 Survey Areas, grass snake were recorded at 11 of the Survey Areas, slow worm were recorded at 10 of the Survey Areas and common lizard were recorded at 9 of the Survey Areas. Adders were only recorded within Survey Area I, however, an incidental record of a female adult adder was also noted during a great crested newt eDNA survey within Wisley Common at approximately TQ 068 587 in May 2017.
- 7.1.5.8 Juvenile records of all four common species were recorded across the Scheme.

Sand lizards

- 7.1.5.9 During the 11 sand lizard surveys undertaken from the 19 August 2017 to the 20 October 2017, no sand lizards were recorded, see Table 7.1.5 in Annex B.
- 7.1.5.10 An incidental record of a juvenile male sand lizard was recorded during an invertebrate survey on 20 June 2017 at TQ 07890 58748, see Table 7.1.5, Annex B. This sand lizard was recorded along the footpath that leads from Ockham Common Car Park to Cockcrow Footbridge.
- 7.1.5.11 Taking the incidental record into account and the fact that the 2017 surveys did not cover the spring season during which there is an increased chance of identifying sand lizard presence, the results cannot be taken to confirm likely absence of sand lizard from within the Scheme. Therefore, further surveys were conducted in Spring 2018.

Plate 7.1 1 Photograph of sand lizard incidental record. 20/06/2017 at TQ 07890 58748



7.1.5.12 In 2018, six sand lizard surveys were undertaken between 14 April and 24 June 2018. During these surveys, a total of 10 sand lizards were recorded, see Annex B. Nine of the sand lizards were recorded within Chatley Heath at Ockham Common which is outside of the Scheme. A single juvenile male sand lizard was recorded within the Scheme located at OSNGR TQ 08170 59054 within a woodland glade in Ockham Wood at Ockham Common.

7.1.6 Discussion

- 7.1.6.1 The presence of juvenile reptiles of all four common species indicates that breeding populations of these species are present within the Survey Area.
- 7.1.6.2 Grass snake and adder typically occur at lower densities than slow worm, common lizard and sand lizard, and tend to range over larger areas⁵. These surveys only identified adder at one Survey Area (Survey Area I) and grass snake at 11 Survey Areas, detection rates for these species are lower and it is likely that grass snake and adder are distributed across the scheme at a low density. This is corroborated by the desk study data which provided recent records of adder within or in close proximity to Survey Areas I, G and J. Adder were recorded within Wisley Airfield SNCI¹⁴, within which Survey Area A falls. As a precaution, it is therefore assumed that adders and grass snake are present in low numbers across the Scheme.

7.1.6.3 There is currently no truly reliable or statistically accurate way of assessing reptile population numbers from a short survey that does not employ marking or tagging techniques. DMRB, Volume 10, Section 4, Part 7⁵, in relation to reptiles refers to the Key Reptile Sites Register criteria proposed by Froglife (1999)⁴. This Register is a mechanism designed to promote safeguarding important reptile sites but the criteria used can assist in the assessment of significance of reptile survey results. To qualify for the Key Reptile Site Register, the site in question must meet at least one of the following criteria:

- Supports three or more reptile species;
- Supports two snake species;
- Supports exceptional populations of one species (see Table 7.1.1 below);
- Supports an assemblage of species scoring at least 4 (see Table 7.1.1 below); and
- Does not satisfy above criteria but is of particular regional importance due to local rarity.

Table 7.1.1 Key reptile site Population Size Class criteria*

Species	Low population score 1	Good population score 2	Exceptional population score 3
Adder	<5	5-10	>10
Grass snake	<5	5-10	>10
Slow worm	<5	5-20	>20
Common lizard	<5	5-20	>20

*Figures in the table refer to maximum numbers 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 (adapted from Key Reptile Site criteria from Froglife, 1999⁴).

7.1.6.4 Taking into account the Population Size Classes (PSC) as detailed in Table 7.1.1 above. Table 7.1.6 in Annex C provides estimates of the PSC following the peak count of adult reptiles for the various Survey Areas. It should be noted that typically at least twenty survey visits are required for populations to be classified as 'low', 'good' or 'exceptional'¹⁶ using the criteria in Table 7.1.1. However, the results of the presence/likely absence survey visits can be used as an indication for PSC estimates. An exceptional population of slow worm has been recorded at Survey Area G which was also found to have (indicatively) a good population of common lizard and a low population of grass snake.

7.1.6.5 When considering the Key Reptile Site criteria as detailed above in paragraph 7.1.6.3, the following Survey Areas would qualify as being Key Reptile Sites:

- A: Wisley Airfield – this Survey Area meets the Key Reptile Site criteria i and iv;
- E_Elm Lane: Snakes Field – this Survey Area meets the Key Reptile Site criteria i and iv;

¹⁶ An exceptional population of slow worm were recorded at Survey Area G during the seven survey visits in 2017. For this species, further surveys would not be required to confirm that the population is considered exceptional.

- G: Wisley Common – this Survey Area meets the Key Reptile Site criteria i, ii, iii for slow worm and iv;
- H: NW Quadrant – this Survey Area meets the Key Reptile Site criteria i; and
- I: Ockham Common Wood – this Survey Area meets the Key Reptile Site criteria i and ii.

7.1.6.6 Taking into account, the Key Reptile Site criteria as detailed in paragraph 7.1.6.3, Survey Areas A, E, G, H and I should all be considered Key Reptile Sites.

7.1.6.7 No sand lizards were recorded within the surveys from August to October 2017. The Natural England redacted Technical Information Note TIN102 2011⁷ states that '*this species is difficult to detect outside early spring*'. Therefore, further surveys were conducted in spring 2018 to confirm presence or likely absence of sand lizards within suitable habitat within or adjacent to the Scheme. The 2018 surveys confirmed that a breeding population of sand lizards are present within Chatley Heath located outside but within close proximity of the Scheme with records of adult male and female sand lizards along with juveniles. From an incidental record and the 2018 surveys, only two male juveniles were recorded within the woodland that falls within the Scheme. It is possible that these are exploring individuals attempting to find their own territory.

Appendices

Appendix A. Weather conditions during surveys

Table 7.1.2: Weather conditions – for survey of common species of reptiles

Survey area	Deployment date	Survey number	Survey date	Start/end time	Start / end temperature (°C)	Start / end wind (Beaufort scale 0-12)	Start / end precipitation	Start / end cloud cover (Okta 0-8)
A: Wisley Airfield	18/08/2017 to 27/08/2017	1	01/09/2017	09:30 / 11:40	16 / 16	1 / 1	Dry / Dry	0 / 0
		2	06/09/2017	10:00 / 12:15	17 / 17	3 / 3	Dry / Dry	3 / 3
		3	09/09/2017	12:05 / 13:36	17 / 17	4 / 2	Dry / Dry	4 / 6
		4	13/09/2017	10:49 / 12:05	15 / 16	4 / 4	Dry / Dry	4 / 4
		5	19/09/2017	10:15 / 12:15	15 / 16	1 / 1	Dry / Dry	1 / 5
		6	24/09/2017	10:55 / 11:55	19 / 19	3 / 3	Dry / Dry	1 / 1
		7	27/09/2017	13:50 / 15:10	19 / 20	3 / 3	Dry / Dry	7 / 8
B: A3 Verge_South	01/09/2017	1	13/09/2017	13:50 / 16:58	16 / 15	4 / 3	Dry / Dry	4 / 1
		2	22/09/2017	16:16 / 17:03	18 / 18	1 / 1	Dry / Dry	1 / 1
		3	26/09/2017	15:52 / 17:05	15 / 18	1 / 1	Dry / Dry	4 / 4
		4	03/10/2017	15:24 / 16:02	18 / 16	3 / 3	Dry / Dry	3 / 3
		5	05/10/2017	16:18 / 17:16	16 / 15	4 / 4	Dry / Dry	4 / 2
		6	15/10/2017	15:58 / 16:48	18 / 18	3 / 3	Dry / Dry	1 / 1
		7	20/10/2017	16:19 / 17:05	14 / 14	3 / 3	Dry / Dry	2 / 2
C: Wisley Gardens Frontage	1/07/2017 to 22/07/2017	1	11/08/2017	09:10 / 09:36	14 / 16	2 / 6	Dry / Dry	2 / 8
		2	31/08/2017	10:00 / 10:20	17 / 17	2 / 2	Dry / Dry	3 / 1
		3	06/09/2017	09:45 / 10:00	17 / 17	3 / 3	Dry / Dry	4 / 4
		4	12/09/2017	09:58 / 10:10	15 / 16	3 / 3	Dry / Dry	0 / 0
		5	22/09/2017	10:05 / 10:25	17 / 18	1 / 1	Dry / Dry	0 / 0
		6	24/09/2017	10:30 / 10:48	20 / 20	2 / 2	Dry / Dry	4 / 8
		1	11/08/2017	11:21 / 11:52	18 / 19	2 / 2	Dry / Dry	2 / 0

Survey area	Deployment date	Survey number	Survey date	Start/end time	Start / end temperature (°C)	Start / end wind (Beaufort scale 0-12)	Start / end precipitation	Start / end cloud cover (Okta 0-8)
D: Wisley Lane (North)	1/07/2017 to 22/07/2017	2	24/08/2017	16:55 / 17:21	19 / 19	3 / 3	Dry / Dry	3 / 4
		3	01/09/2017	13:05 / 13:30	20 / 20	0 / 0	Dry / Dry	4 / 0
		4	06/09/2017	14:25 / 14:48	19 / 22	0 / 0	Dry / Dry	0 / 0
		5	12/09/2017	14:17 / 14:40	16 / 17	3 / 3	Dry / Dry	7 / 8
		6	24/09/2017	12:00 / 12:15	19 / 19	3 / 3	Dry / Dry	5 / 5
E_Elm Lane: Snakes Field	09/07/2017 to 12/07/2017	1	04/08/2017	15:30 / 16:05	19 / 20	3 / 3	Dry / Dry	5 / 5
		2	24/08/2017	9:50 / 10:50	19 / 19	4 / 4	Dry / Dry	3 / 5
		3	31/08/2017	10:05 / 11:05	16 / 13	3 / 3	Dry / Dry	3 / 8
		4	06/09/2017	09:50 / 10:50	17 / 18	3 / 4	Dry / Dry	3 / 5
		5	13/09/2017	09:36 / 10:19	15 / 15	5 / 5	Dry / Dry	1 / 1
		6	19/09/2017	10:30 / 11:55	13 / 15	2 / 2	Dry / Dry	4 / 4
		7	27/09/2017	12:50 / 13:40	19 / 19	3 / 3	Dry / Dry	7 / 7
F: Boldermere	09/07/2017	1	10/08/2017	13:23 / 13:38	15 / 18	3 / 7	Dry / Dry	3 / 3
		2	24/08/2017	16:58 / 17:35	21 / 20	1 / 1	Dry / Dry	7 / 6
		3	01/09/2017	13:49 / 14:15	19 / 19	0 / 1	Dry / Dry	4 / 5
		4	06/09/2017	15:25 / 15:53	20 / 20	1 / 1	Dry / Dry	4 / 4
		5	13/09/2017	14:30 / 14:55	16 / 16	1 / 1	Dry / Dry	7 / 7
		6	19/09/2017	13:45 - 14:15	15 / 24	1 / 1	Dry / Dry	7 / 7
		7	28/09/2017	15:19 / 15:45	18 / 18	3 / 2	Dry / Dry	3 / 2
G: Wisley Common	1/07/2017 to 22/07/2017	1	06/08/2017	09:05 / 12:40	15 / 20	2 / 3	Dry / Dry	0 / 4
		2	10/08/2017	09:30 / 14:53	15 / 18	3 / 7	Dry / Dry	3 / 3

Survey area	Deployment date	Survey number	Survey date	Start/end time	Start / end temperature (°C)	Start / end wind (Beaufort scale 0-12)	Start / end precipitation	Start / end cloud cover (Okta 0-8)
			11/08/2017	09:47 / 12:50	16 / 19	2 / 2	Dry / Dry	0 / 0
		3	24/08/2017	10:50 / 17:22	20 / 19	3 / 3	Dry / Dry	6 / 8
		4	31/08/2017	14:11 / 16:33	16 / 23	2 / 2	Dry / Dry	3 / 3
			01/09/2017	11:10 / 13:11	17 / 19	2 / 3	Dry / Wet	0 / 3
		5	06/09/2017	10:26 / 13:24	17 / 21	3 / 2	Dry / Wet	3 / 8
		6	12/09/2017	10:25 / 15:12	15 / 17	3 / 3	Dry / Dry	7 / 7
		7	22/09/2017	10:16 / 12:05	12 / 15	2 / 3	Dry / Dry	0 / 0
H: NW Quadrant	03/08/2017	1	01/09/2017	13:10 / 13:58	17 / 18	2 / 2	Dry / Dry	4 / 4
		2	06/09/2017	14:45 / 15:35	19 / 19	3 / 3	Dry / Dry	8 / 8
		3	15/09/2017	14:14 / 15:10	15 / 14	2 / 3	Dry / Dry	3 / 7
		4	22/09/2017	14:00 / 14:41	17 / 17	1 / 1	Dry / Dry	3 / 3
		5	26/09/2017	14:05 / 14:35	17 / 18	1 / 1	Dry / Dry	4 / 4
		6	28/09/2017	16:31 / 17:11	18 / 18	2 / 3	Dry / Dry	3 / 4
		7	03/10/2017	12:52 / 13:12	14 / 14	3 / 3	Dry / Dry	4 / 4
I: Ockham Common Wood	01/08/2017 to 04/08/2017	1	19/08/2017	12:29 / 14:52	19 / 19	4 / 4	Dry / Dry	4 / 4
		2	27/08/2017	09:23 / 12:37	18 / 22	2 / 2	Dry / Dry	0 / 0
		3	02/09/2017	13:58 / 15:30	18 / 18	2 / 2	Dry / Dry	2 / 2
		4	06/09/2017	14:35 / 15:53	16 / 16	1 / 3	Dry / Wet	8 / 8
		5	15/09/2017	11:30 / 13:39	13 / 14	2 / 2	Dry / Dry	4 / 5
		6	22/09/2017	12:40 / 15:00	17 / 18	3 /	Dry / Dry	3 / 3
		7	28/09/2017	14:00 - 15:14	17 / 17	3 / 3	Dry / Dry	4 / 5
J: NE Quadrant	11/07/2017	1	04/08/2017	15:05 / 15:25	20 / 19	3 / 3	Dry / Dry	4 / 4

Survey area	Deployment date	Survey number	Survey date	Start/end time	Start / end temperature (°C)	Start / end wind (Beaufort scale 0-12)	Start / end precipitation	Start / end cloud cover (Okta 0-8)
		2	25/08/2017	11:14 / 11:25	19 / 19	2 / 2	Dry / Dry	2 / 2
		3	01/09/2017	11:18 / 11:29	16 / 16	1 / 1	Wet / Wet	0 / 0
		4	06/09/2017	11:40 / 11:49	17 / 17	3 / 3	Wet / Wet	8 / 8
		5	12/09/2017	12:47 / 12:59	17 / 17	3 / 3	Dry / Dry	4 / 4
		6	19/09/2017	12:15 / 12:35	14 / 14	2 / 2	Dry / Dry	7 / 7
		7	28/09/2017	12:49 / 12:59	18 / 17	3 / 3	Dry / Dry	3 / 3
K: Painshill Park_NW	28/07/2017	1	13/08/2017	10:00 / 10:34	17 / 17	2 / 2	Dry / Dry	0 / 0
			14/08/2017	10:04 / 10:33	18 / 18	3 / 3	Dry / Dry	8 / 8
		2	24/08/2017	11:20 / 12:03	19 / 20	2 / 2	Dry / Dry	4 / 4
		3	31/08/2017	10:36 / 11:40	16 / 16	2 / 2	Dry / Dry	2 / 2
		4	06/09/2017	10:01 / 10:29	14 / 14	3 / 3	Wet / Wet	4 / 4
		5	12/09/2017	10:35 / 11:02	14 / 14	2 / 4	Dry / Dry	7 / 2
		6	19/09/2017	10:53 / 11:31	12 / 13	2 / 2	Dry / Dry	5 / 5
		7	27/09/2017	13:23 / 13:50	19 / 19	3 / 3	Dry / Dry	6 / 6
L: Court Close Farm	05/09/2017	1	12/09/2017	11:58 / 12:29	16 / 17	3 / 3	Dry / Dry	4 / 4
		2	15/09/2017	10:55 / 11:15	12 / 14	2 / 2	Dry / Dry	5 / 5
		3	19/09/2017	12:02 / 12:14	14 / 14	2 / 2	Dry / Dry	4 / 4
		4	22/09/2017	16:11 / 16:30	17 / 18	3 / 3	Dry / Dry	2 / 2
		5	24/09/2017	09:50 / 10:12	17 / 17	3 / 3	Dry / Dry	1 / 1
		6a	26/09/2017	13:25 / 13:38	19 / 19	1 / 1	Dry / Dry	4 / 4
		6b		15:25 / 15:55	19 / 19	1 / 1	Dry / Dry	4 / 4
		7	28/09/2017	12:10 / 12:29	17 / 17	3 / 3	Dry / Wet	4 / 6

Survey area	Deployment date	Survey number	Survey date	Start/end time	Start / end temperature (°C)	Start / end wind (Beaufort scale 0-12)	Start / end precipitation	Start / end cloud cover (Okta 0-8)
M: Hilton Hotel	13/09/2017	8	03/10/2017	14:45 / 15:08	15 / 15	3 / 3	Dry / Dry	4 / 4
		1	19/09/2017	13:55 / 14:20	14 / 14	2 / 2	Dry / Dry	7 / 7
		2	22/09/2017	15:30 / 15:47	18 / 18	1 / 1	Dry / Dry	1 / 2
		3	24/09/2017	10:27 / 10:40	17 / 17	2 / 2	Dry / Dry	1 / 1
		4	26/09/2017	13:00 / 13:15	17 / 17	1 / 1	Dry / Dry	4 / 4
		5	28/09/2017	11:44 / 11:58	17 / 17	2 / 2	Dry / Dry	5 / 4
		6	03/10/2017	13:44 / 13:54	16 / 16	3 / 3	Dry / Dry	4 / 4
N: Painshill_Centre	28/07/2017	1	13/08/2017	10:48 / 11:22	19 / 19	2 / 2	Dry / Dry	0 / 0
			14/08/2017	10:42 / 11:11	19 / 19	1 / 1	Dry / Dry	1 / 1
		2	24/08/2017	12:21 / 12:50	19 / 19	2 / 2	Dry / Dry	2 / 2
		3	31/08/2017	14:33 / 14:59	19 / 19	2 / 2	Wet / Wet	3 / 3
		4	06/09/2017	10:19 / 10:57	19 / 19	3 / 3	Dry / Dry	2 / 2
		5	12/09/2017	10:13 / 11:35	16 / 15	2 / 2	Dry / Dry	4 / 4
		6	19/09/2017	10:38 / 11:06	15 / 15	2 / 2	Dry / Dry	2 / 2
		7	27/09/2017	13:07 / 14:16	19 / 19	2 / 2	Dry / Dry	8 / 8
O: Painshill Park_North	27/07/2017	1	13/08/2017	09:31 / 12:45	17 / 20	2 / 2	Dry / Dry	0 / 0
			14/08/2017	09:43 / 11:27	17 / 19	3 / 3	Dry / Dry	7 / 3
		2	24/08/2017	10:53 / 13:14	19 / 20	3 / 4	Dry / Dry	6 / 3
		3	31/08/2017	10:12 / 14:29	15 / 17	2 / 2	Wet / Wet	1 / 4
		4	06/09/2017	09:50 / 11:18	18 / 17	3 / 3	Dry / Dry	1 / 1
		5	12/09/2017	10:13 / 11:35	16 / 15	4 / 2	Dry / Dry	3 / 4

Survey area	Deployment date	Survey number	Survey date	Start/end time	Start / end temperature (°C)	Start / end wind (Beaufort scale 0-12)	Start / end precipitation	Start / end cloud cover (Okta 0-8)
P: A3 Verge_North	05/09/2017	6	19/09/2017	10:38 / 12:15	15 / 12	2 / 2	Dry / Dry	2 / 2
		7	27/09/2017	13:07 / 14:16	19 / 19	2 / 2	Dry / Dry	8 / 8
		1	12/09/2017	16:04 / 16:41	16 / 16	2 / 2	Dry / Dry	6 / 6
		2	22/09/2017	15:58 / 16:27	15 / 15	1 / 1	Dry / Dry	3 / 2
		3	26/09/2017	15:06 / 15:32	18 / 18	1 / 1	Dry / Dry	4 / 4
		4	28/09/2017	17:32 / 18:02	17 / 17	3 / 3	Wet / Wet	4 / 6
		5	03/10/2017	14:25 / 14:58	15 / 16	3 / 3	Dry / Dry	5 / 5
		6	05/10/2017	15:35 / 16:03	16 / 15	3 / 3	Dry / Dry	3 / 3
		7	20/10/2017	15:28 / 16:00	14 / 14	3 / 3	Dry / Dry	2 / 2

Table 7.1.3: Weather conditions – for survey of sand lizard (sand lizard survey area shown on Figure 7.16)

Survey No.	Date	Start / end time	Start / end temp (°C)	Start / end wind (Beaufort scale 0-12)	Start / end precipitation	Start / end cloud cover (Okta 0-8)
1	19/08/2017	12:25 / 14:25	19 / 19	4 / 4	Dry / Dry	4 / 7
2	27/08/2017	09:25 / 12:40	18 / 22	2 / 2	Dry / Dry	0 / 0
3	02/09/2017	13:55 / 15:30	18 / 19	2 / 3	Dry / Dry	3 / 2
4	09/09/2017	09:45 / 11:35	14 / 15	3 / 3	Dry / Dry	0 / 4
5	15/09/2017	11:30 / 13:40	13 / 15	2 / 2	Dry / Dry	4 / 4
6	22/09/2017	12:40 / 15:00	17 / 15	3 / 2	Dry / Dry	3 / 4
7	05/10/2017	11:05 / 13:00	14 / 16	3 / 3	Dry / Dry	2 / 2
8	08/10/2017	13:35 / 14:55	15 / 16	2 / 2	Dry / Dry	4 / 4
9	12/10/2017	13:45 / 15:20	16 / 16	2 / 2	Dry / Dry	2 / 1
10	15/10/2017	14:25 / 15:50	18 / 18	2 / 2	Dry / Dry	2 / 2
11	20/10/2017	14:15 / 15:35	14 / 14	2 / 3	Dry / Dry	2 / 4
12	14/04/2018 ¹⁷	10:30 / 11:15	15 / 15	2 / 2	Dry / Dry	1 / 1
	18/04/2018	08:30 / 11:45	17 / 20	1 / 1	Dry / Dry	0 / 1
13	01/05/2018	08:30 / 11:45	8 / 12	0 / 0	Dry / Dry	3 / 5
14	15/05/2018 ¹⁸	07:20 / 11:30	11 / 20	2 / 2	Dry / Dry	0 / 0
	17/05/2018	07:45 / 11:15	8 / 14	2 / 2	Dry / Dry	7 / 1
15	03/06/2018	07:15 / 10:05	16 / 19	1 / 1	Dry / Dry	0 / 3
16	24/06/2018	07:35 / 10:45	14 / 20	1 / 1	Dry / Dry	5 / 5

¹⁷ Survey split across two dates as only Chatley Heath was surveyed on 14/04/2018

¹⁸ Survey conducted on the 15/05/2018 was repeated as temperatures had reached 20°C by 10:15. And therefore survey conditions were considered sub-optimum.

Appendix B. Presence/likely absence survey results for common species of reptiles

Table 7.1.4: Presence/likely absence survey results for common species of reptiles

Survey area	Survey No.	Survey date	Number of species observed (A = Adult, J = Juvenile and U = Undetermined)			
			Grass snake	Slow worm	Common lizard	Adder
A: Wisley Airfield (Disused)	1	01/09/2017	1 (1x A)	7 (5x A / 2x J)	-	-
	2	06/09/2017	-	8 (8x A)	-	-
	3	09/09/2017	2 (1x J / 1x U)	6 (3x A / 3x J)	4 (1xA / 3x J)	-
	4	13/09/2017	-	7 (2x A / 5x A)	6 (2x A / 4x J)	-
	5	19/09/2017	-	3 (2x A / 1x J)	4 (2x A / 2x J)	-
	6	24/09/2017	-	3 (1x A / 1x J)	1 (1x J)	-
	7	27/09/2017	1 (1x J)	7 (2x A / 5x J)	9 (2x A / 7x J)	-
B: A3 Verge_South	1	13/09/2017	1 (1x J)	-	-	-
	2	22/09/2017	1 (1x A)	-	-	-
	3	26/09/2017	-	1 (1x J)	-	-
	4	03/10/2017	-	-	-	-
	5	05/10/2017	-	-	-	-
	6	15/10/2017	-	-	-	-
	7	20/10/2017	-	-	-	-
C: Wisley Gardens Frontage	1	11/08/2017	-	-	-	-
	2	31/08/2017	1 (1x J)	-	-	-
	3	06/09/2017	-	-	-	-
	4	12/09/2017	-	-	-	-
	5	22/09/2017	-	-	-	-
	6	24/09/2017	-	-	-	-

Survey area	Survey No.	Survey date	Number of species observed (A = Adult, J = Juvenile and U = Undetermined)			
			Grass snake	Slow worm	Common lizard	Adder
D: Wisley Lane (North)	1	11/08/2017	-	7 (1x A / 6x J)	-	-
	2	24/08/2017	-	13 (1x A/ 12x J)	-	-
	3	01/09/2017	-	2 (2x A)	-	-
	4	06/09/2017	-	5 (2x A / 3x J)	1 (1x U)	-
	5	12/09/2017	-	1 (1x J)	2 (2x J)	-
	6	24/09/2017	-	2 (2x A)	-	-
E_Elm Lane: Snakes Field	1	04/08/2017	3 (3x J)	27 (9x A / 18x J)	3 (3x J)	-
	2	24/08/2017	5 (5x J)	25 (18x A / 7x J)	7 (1x A / 5x J / 1x U)	-
	3	31/08/2017	6 (5x A / 1x J)	7 (6x A / 1x J)	-	-
	4	06/09/2017	8 (1x A / 7x J)	12 (4x A / 8x J)	4 (1x A / 2x J / 1x U)	-
	5	13/09/2017	4 (4x J)	-	10 (10x J)	-
	6	19/09/2017	2 (2x J)	4 (2x A / 2x J)	15 (15x J)	-
	7	27/09/2017	2 (2x J)	11 (4x A / 7x J)	27 (6x A / 21x J)	-
F: Boldermere	1	10/08/2017	2 (1x A / 1x U)	-	1 (1x J)	-
	2	24/08/2017	3 (3x A)	-	3 (3x J)	-
	3	01/09/2017	-	-	-	-
	4	06/09/2017	4 (3x A / 1x J)	-	-	-
	5	13/09/2017	3 (3x J)	-	4 (4x J)	-
	6	19/09/2017	1 (1x A)	-	3 (1x A / 2x J)	-
	7	28/09/2017	-	-	1 (1x J)	-
G: Wisley Common	1	06/08/2017	-	12 (5x A / 7x J)	3 (3x A)	-
	2	10/08/2017	1 (1x J)	20 (12x A / 8x J)	25 (5x A / 12x J / 8x U)	-

Survey area	Survey No.	Survey date	Number of species observed (A = Adult, J = Juvenile and U = Undetermined)			
			Grass snake	Slow worm	Common lizard	Adder
		11/08/2017	-	11 (8x A / 3x J)	-	-
	3	24/08/2017	1 (1x J)	64 (31x A / 33x J)	44 (7x A / 36x J / 1x U)	-
	4	31/08/2017	-	19 (12x A / 7x J)	26 (6xA / 14x J / 6x U)	-
		01/09/2017	-	1 (1x A)	2 (1x A / 1x J)	-
	5	06/09/2017	-	47 (20x A / 25x J / 2x U)	44 (13x A / 23x J / 8x U)	-
	6	12/09/2017	-	31 (12x A / 19x J)	23 (5x A / 17x J / 1x U)	-
	7	22/09/2017	1 (1x A)	12 (8x A / 4x J)	8 (2x A / 5x J / 1x U)	-
H: NW Quadrant	1	01/09/2017	-	7 (2x A / 5x J)	1 (1xA)	-
	2	06/09/2017	-	5 (1x A / 1x J / 3x U)	1 (1xA)	-
	3	15/09/2017	-	1 (1xJ)	1 (1xA)	-
	4	22/09/2017	-	1 (1xA)	-	-
	5	26/09/2017	-	1 (1x A)	-	-
	6	28/09/2017	1 (1x A)	1 (1x A)	1 (1x A)	-
	7	03/10/2017	-	-	1 (1x A)	-
I: Ockham Common Wood	1	19/08/2017	1 (1x J)	1 (1x J)	2 (2x J)	-
	2	27/08/2017	-	1 (1x J)	-	-
	3	02/09/2017	-	-	-	-
	4	06/09/2017	-	1 (1x J)	1 (1x A)	1 (1x J)
	5	15/09/2017	-	-	5 (1x A / 4x J)	-
	6	22/09/2017	-	-	-	-
	7	28/09/2017	-	-	1 (1x J)	-
J: NE Quadrant	1	04/08/2017	-	-	-	-

Survey area	Survey No.	Survey date	Number of species observed (A = Adult, J = Juvenile and U = Undetermined)			
			Grass snake	Slow worm	Common lizard	Adder
	2	25/08/2017	-	-	-	-
	3	01/09/2017	-	-	-	-
	4	06/09/2017	-	-	-	-
	5	12/09/2017	-	-	-	-
	6	19/09/2017	-	-	-	-
	7	28/09/2017	-	-	-	-
K: Painshill Park_NW	1	13/08/2017	-	-	-	-
		14/08/2017	-	-	-	-
	2	24/08/2017	1 (1x J)	1 (1x J)	-	-
	3	31/08/2017	-	1 (1x J)	-	-
	4	06/09/2017	2 (2x J)	1 (1x J)	-	-
	5	12/09/2017	4 (4x J)	2 (2x J)	-	-
	6	19/09/2017	3 (3x J)	2 (2x J)	-	-
	7	27/09/2017	1 (1x J)	1 (1x J)	-	-
L: Court Close Farm	1	12/09/2017	1 (1x J)	-	-	-
	2	15/09/2017	4 (4x J)	-	-	-
	3	19/09/2017	2 (2x J)	-	-	-
	4	22/09/2017	3 (3x J)	-	-	-
	5	24/09/2017	2 (2x J)	-	-	-
	6a	26/09/2017	-	-	-	-
	6b		2 (2x J)	-	-	-
	7	28/09/2017	2 (2x J)	-	-	-

Survey area	Survey No.	Survey date	Number of species observed (A = Adult, J = Juvenile and U = Undetermined)			
			Grass snake	Slow worm	Common lizard	Adder
M: Hilton Hotel	8	03/10/2017	1 (1x J)	-	-	-
	1	19/09/2017	-	-	-	-
	2	22/09/2017	-	-	-	-
	3	24/09/2017	-	-	-	-
	4	26/09/2017	-	-	-	-
	5	28/09/2017	-	-	-	-
	6	03/10/2017	-	-	-	-
	7	20/10/2017	-	-	-	-
N: Painshill_Centre	1	13/08/2017	-	-	-	-
		14/08/2017	1 (1x J)	-	-	-
	2	24/08/2017	1 (1x J)	-	-	-
	3	31/08/2017	-	-	-	-
	4	06/09/2017	1 (1x J)	-	-	-
	5	12/09/2017	-	-	-	-
	6	19/09/2017	-	-	-	-
	7	27/09/2017	-	-	1 (1x J)	-
O: Painshill Park_North	1	13/08/2017	-	2 (2x A)	-	-
	1	14/08/2017	-	2 (1x A / 1x J)	-	-
	2	24/08/2017	-	-	1 (1x A)	-
	3	31/08/2017	-	-	-	-
	4	06/09/2017	-	3 (3x A)	-	-
	5	12/09/2017	-	2 (1x A / 1x J)	2 (1x A / 1x J)	-

Survey area	Survey No.	Survey date	Number of species observed (A = Adult, J = Juvenile and U = Undetermined)			
			Grass snake	Slow worm	Common lizard	Adder
P: A3 Verge_North	6	19/09/2017	-	-	-	-
	7	27/09/2017	-	2 (2x J)	-	-
	1	12/09/2017	-	1 (1x J)	-	-
	2	22/09/2017	-	-	-	-
	3	26/09/2017	-	-	-	-
	4	28/09/2017	-	-	-	-
	5	03/10/2017	-	1 (1x J)	-	-
	6	05/10/2017	-	1 (1x J)	-	-
	7	20/10/2017	-	-	-	-

Table 7.1.5: Presence/likely absence survey results for sand lizard

(A = adult, J = juvenile and U = undetermined (sex and/or life stage), F = female, M = male)

Survey No.	Date	Start / end time	No. of sand lizard	Location	Incidental records
1	19/08/2017	12:25 / 14:25	0	N/A	1x common lizard (JM)
2	27/08/2017	09:25 / 12:40	0	N/A	N/A
3	02/09/2017	13:55 / 15:30	0	N/A	N/A
4	09/09/2017	09:45 / 11:35	0	N/A	2x common lizard (1x JU / 1x JM)
5	15/09/2017	11:30 / 13:40	0	N/A	1x common lizard (1x JU)
6	22/09/2017	12:40 / 15:00	0	N/A	N/A
7	05/10/2017	11:05 / 13:00	0	N/A	N/A
8	08/10/2017	13:35 / 14:55	0	N/A	N/A
9	12/10/2017	13:45 / 15:20	0	N/A	N/A
10	15/10/2017	14:25 / 15:50	0	N/A	N/A
11	20/10/2017	14:15 / 15:35	0	N/A	N/A
12	14/04/2018	10:30 / 11:15	4 (1x AM / 2x AF / 1x JU)	All sand lizards recorded within Chatley Heath	N/A
	18/04/2018	08:30 / 11:45	0	N/A	3x common lizards (1x AM / 1x AF / 1x AU)
13	01/05/2018	08:30 / 11:45	2 (1x AM / 1x JM)	Chatley Heath	1x adder (1x AM) 5x common lizards (4x AM / 1x UU) 2x grass snake (2x JU)
14	15/05/2018	07:20 / 11:30	0	N/A	2x common lizard (1x AM / 1x AU) 1x grass snake (1x AU) 1x slow worm (1x AF)
	17/05/2018	07:45 / 11:15	1 (1x AU)	Chatley Heath	3x common lizard (3x AU) 1x grass snake (1x JU)

Survey No.	Date	Start / end time	No. of sand lizard	Location	Incidental records
15	03/06/2018	07:15 / 10:05	2 (1x JF / 1x JM)	JF recorded within Chatley Heath JM recorded within woodland glade in Ockham Wood at OSNGR TQ 08170 59054, located within the Scheme.	2x common lizard (2x AM) 2x grass snake (2x JU) 1x slow worm (1x AF) 1x lizard slough, species unconfirmed. Located within Glade within Ockham Wood
16	24/06/2018	07:35 / 10:45	1 (1x JM)	Chatley Heath	1x common lizard (1x AM) 3x grass snake (2x JU / 1x AU) 1x snake (1x UU – 4 cm tip of dark black tail seen in vegetation, likely adder)

Appendix C. Peak counts of adult common species of reptiles and estimated Population Size Class

Table 7.1.6: Peak counts of adults and estimated/indicative Population Size Class*

Survey area	Grass snake		Slow worm		Common lizard		Adder		PSC Score
	Peak count	PSC	Peak count	PSC	Peak count	PSC	Peak count	PSC	
A: Wisley Airfield	1	Low	8	Good	2	Low	-	-	4
B: A3 Verge_South	1	Low	J only	-	-	-	-	-	1
C: Wisley Gardens Frontage	J only	-	-	-	-	-	-	-	-
D: Wisley Lane (North)	-	-	2	Low	J only	-	-	-	1
E_Elm Lane: Snakes Field	5	Good	18	Good	6	Good	-	-	6
F: Bolder Mere	3	Low	-	-	1	Low	-	-	2
G: Wisley Common	1	Low	31	Exceptional	13	Good	-	-	6
H: NW Quadrant	J only	-	2	Low	1	Low	-	-	2
I: Ockham Common Wood	J only	-	J only	-	1	Low	J only	-	1
J: NE Quadrant	-	-	-	-	-	-	-	-	-
K: Painshill Park_NW	1	Low	J only	-	-	-	-	-	1
L: Court Close Farm	J only	-	-	-	-	-	-	-	-
M: Hilton Hotel	-	-	-	-	-	-	-	-	-
N: Painshill_Centre	J only	-	-	-	J only	-	-	-	-
O: Painshill Park_North	-	-	3	Low	1	Low	-	-	2
P: A3 Verge_North	-	-	J only	-	-	-	-	-	-

*J = Juvenile

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