REPTILE SURVEY REPORT

OPTION TWO DEVELOPMENT LTD

LAND AT COURTHOUSE FARM

COPTHORNE COMMON ROAD, COPTHORNE, WEST SUSSEX, RH10 3LA

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1. EXECUTIVE SUMMARY

1.1 A reptile presence / likely absence survey of land at Courthouse Farm, Copthorne Common Road, Copthorne, West Sussex, RH10 3LA was undertaken between June and July 2025 (inclusive).

1.2 One non-adult grass snake was recorded during the survey, which evidences both the presence of the species on-site and the fact that this species breeds on or near Site. The survey results indicate the presence of an estimated 'low' population of grass snake within the Site.

1.3 Based on the above, the Site is considered to be of 'low' importance for reptiles.

1.4 In the absence of appropriate avoidance, mitigation and compensation measures, the proposed development could result in adverse impacts upon the local reptile population through the removal of suitable, occupied reptile habitat.

1.5 Appropriate avoidance, mitigation and compensation measures have been devised and will need to be implemented for reptiles.

1.6 The associated '*Ecological Impact Assessment'* report will detail avoidance, mitigation, compensation and enhancement measures relating to reptiles and confirm whether the proposed works are likely to adversely or positively affect the 'long-term viability' of the local reptile population.

2. INTRODUCTION

2.1 Lloydbore Ltd was instructed to undertake a reptile presence / likely absence survey of land at Court House Farm, Copthorne Common Road, Copthorne, West Sussex, RH10 3LA (approximate centre: TQ 32406 39008), hereafter referred to as the 'Site'.

2.2 The Site is located within the Mid Sussex District Council. The Site supports heavily grazed semi-improved grassland, scattered trees, one stable building and a single-track access road. The Site has a golf course to the west, woodland and grassland to the south and residential houses to the east/south-east. To the north, the Site adjoins the A264 Copthorne Common Road.

2.3 The survey was commissioned in light of recommendations provided following the *'Preliminary Ecological Appraisal'* during which suitable habitat for reptiles was recorded within the Site *(*Lloydbore Ltd, 2019), alongside an update site walkover undertaken in May 2025.

2.4 The proposed development is an outline planning application comprising options for a retirement village or a housing development. As a result, the proposed development will result in the destruction of suitable habitat for reptiles.

2.5 Further survey and assessment was required to assess the level of risk posed to reptiles as a result of the proposed development.

SURVEY OBJECTIVES

2.6 The objectives of the survey and report are to: -

- Determine whether reptiles are present within the Site;
- If reptiles are present, confirm what species are present;
- Provide indicative estimates of the associated population size class for each species of reptile (if present);
- If reptiles are present, assess the importance of on-site habitats for reptiles; and
- Determine whether avoidance, mitigation and / or compensation measures are required with regards to reptiles.

SUMMARY OF RELEVANT LEGISLATION

2.7 The Wildlife and Countryside Act 1981 (as amended) affords legal protection to the four most common and widespread reptile species; slow worm (*Anguis fragilis*), common lizard (*Zootoca vivipara*), grass snake (*Natrix helvetica*) and adder (*Vipera berus*).

2.8 The Conservation of Habitats and Species Regulations 2017 (as amended) afford full legal protection to sand lizard (*Lacerta agilis*) and smooth snake (*Coronella austriaca*), including their habitat. However, based on the Site location and the on-site habitat types present, there is a negligible risk of these two species being present on-site.

2.9 Additional detail relating to the aforementioned legislation in relation to reptiles is provided in Appendix 1.

3. METHOD

3.1 The Herpetofauna Workers Manual (Gent and Gibson, 2003), Froglife Reptile Survey Guidance (Froglife, 1999) and other associated guidelines have been used to:-

- Assess the suitability of on-site and adjacent habitats for reptiles; and
- Inform the scope of survey works required to determine presence / likely absence of reptiles.

3.2 Natural England's standing advice, which is a material consideration at planning, also provides details on survey methodology and how the implementation of mitigation measures, such as using recognised techniques at the appropriate time of year, can reduce the scope of survey work required (Natural England, 2023).

DESK STUDY

SCOPE

3.3 Home ranges vary widely among reptile species, with slow worm home ranges estimated as being as small as 0.38ha and mobile species such as grass snake ranging between 1.29ha and 3.56ha (Reading and Jofré, 2009; Schmid *et al*, 2017).

3.4 Reptile dispersal distances directly correlate with the extent, quality and connectivity of suitable habitat within their environment and the average dispersal distances range from 34m for slow-worm and between 64-106m for grass snake respectively (Reading and Jofré, 2009; Schmidt *et al*, 2017).

3.5 The likelihood of reptiles occupying suitable habitat within the environment is also influenced by the presence of barriers to dispersal, which may result in reptiles having to cross areas which increase the risk of predation and mortality. Large expanses of built environment, major roads such as motorways and highways and large expanses of open water are barriers to reptile dispersal. Minor or medium roads are less likely to constitute barriers to reptile dispersal; however, traffic density is a key factor in determining whether such roads present a barrier.

3.6 Given all of the above, the reptile desk study comprised the analysis and evaluation of biological records, habitat connectivity and a review of barriers to dispersal.

DESK STUDY METHOD

3.7 A biological records search was conducted by the Sussex Biodiversity Records Centre in June 2025. The data obtained through this search includes records of protected and priority species such as reptiles. The search radius was 1km, measured from the Site boundary.

3.8 Records obtained within the ten-year period prior to the date of the record search are considered 'recent'. Records older than this are considered 'historic'.

3.9 The desk study search radii cover a greater area than the known average dispersal range for common and widespread reptile species to ensure that multiple home ranges of reptiles were covered and that a broader local picture of likelihood of reptile presence was established.

3.10 Aerial imagery and mapping software were used to assess the connectivity of on-site habitats to any wider network of habitat that are, or may be, suitable for reptiles.

HABITAT ASSESSMENT

SCOPE

3.11 There is no published method for objective assessment of the quality of habitat for reptiles, or the likelihood of reptile presence within habitats.

3.12 However, certain habitat characteristics are known to influence the suitability of habitats for reptiles. These comprise: -

- Location in relation to the known geographic range of a species;
- Vegetation structure and type;
- Habitat management;
- Quantity and quality of available basking sites;
- Aspect;
- Topography;
- Surface geology;
- Connectivity to nearby good quality habitat;
- Prey abundance;
- Refuge opportunity;
- Presence or absence of suitable brumation (overwintering) habitat;
- Presence or absence of predators such as domestic cats (*Felis catus*) and pheasant (*Phasianus colchicus*);
- Disturbance levels; and
- Availability of suitable egg laying sites (egg laying reptile species only).

3.13 Lloydbore Ltd have established reptile habitat suitability criteria based on the above factors - to assess the suitability of sites for reptiles and inform assessments of the likelihood of reptile presence. These criteria were used during the initial Site visit and are provided in Appendix 2.

3.14 The assessment focusses on the ecological functionality of habitats present within a Site paying particular attention to the opportunities that the habitat provides for reptiles in relation to key elements of their ecology - namely foraging, shelter / protection, basking, brumation (overwintering) and dispersal.

HABITAT ASSESSMENT METHOD

3.15 An initial habitat assessment was conducted by a Lloydbore Ltd surveyor in December 2018 as part of the Preliminary Ecological Appraisal (Lloydbore Ltd, 2019).

3.16 An update walkover was undertaken on 21st June 2025 by Charlotte Clements, Head of Ecology at Lloydbore Ltd.

3.17 Charlotte is an Associate Member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and has over 10 years' experience of habitat survey and ecological appraisal.

REPTILE SURVEY

SCOPE

3.18 Reptiles are typically active between April and September (inclusive) depending on the prevailing weather conditions.

3.19 Guidance states that reptile presence / likely absence surveys should be undertaken within optimal survey months with the highest chance of detecting reptile presence: April, May and September. Surveys within sub-optimal survey months June, July and August can still be undertaken given this is within the reptile active season however, there is a reduced chance of detecting reptile presence within these months due to a combination of factors. Where extended periods of suitable weather conditions occur, it may be possible to complete some early reptile survey visits in late March and/or some late survey visits in October within a given year.

3.20 Artificial Cover Objects (ACOs) such as roofing felt, corrugated tin and corrugated onduline sheets are deployed across a Site as part of a reptile presence / likely absence survey to increase detectability of reptiles, if they are present. In addition, where safe to do so, natural refugia (log piles, discarded materials) are also checked for use by reptiles.

3.21 An optimal walking route which passes suitable basking spots and all of the ACOs and natural refugia present within the Site should be determined prior to the commencement of the reptile presence / likely absence survey visits.

3.22 The total number and density of ACOs used during a reptile presence / likely absence survey should account for the smallest home range of the focal species group.

3.23 Standard good practice guidelines recommend a density of between five and ten ACOs per hectare of suitable reptile habitat for presence / likely absence surveys, or an unspecified greater number of ACOs for more detailed surveys or monitoring (Froglife, 1999).

3.24 However, more recent research recommends that the most effective inter-ACO spacing for reptile presence / likely absences is proximately 28m which takes into account the home range of slow worms, the species with the smallest home range size of the four common and widespread reptile species (Sollman, Gardner and Belant 2012; Schmidt *et al* 2017). This is broadly equivalent to a density of 16 ACOs per hectare of suitable habitat.

3.25 The higher ACO density recommended by Schmidt *et al*. (2017) is likely to sample a greater number and proportion of reptile home ranges/catchment areas, thus increasing the likelihood of detecting reptiles within the survey area. Therefore, utilising 16 ACOs per hectare is likely to enhance the effectiveness of the presence / likely absence survey.

3.26 Because reptiles are ectothermic (i.e., they derive their body heat from their surrounding environment), the likelihood of recording reptile presence during periods below 9°C (when reptiles are less likely to be active) and exceeding 20°C (when reptiles are likely to be warm enough to not need heat from objects such as ACOs) are significantly reduced. Reptile survey guidance recommends that reptile survey visits should be conducted between temperatures of between 9°C and 18°C, however, recent research has indicated that grass snakes are more commonly encountered during periods of between 12°C and 20°C (Froglife, 1999; Gent and Gibson, 2003). Survey visits should not be conducted during periods of rain or strong wind.

3.27 Standard good practice guidelines state that reptile presence / likely absence surveys should typically comprise seven survey visits but that between six and ten visits may need to be undertaken

to be confident in confirming likely absence of reptiles from a site (Froglife, 1999; Sewell 2013; Schmidt *et al,* 2017).

3.28 Additional guidance states that to be able to determine population class assessments of reptile species recorded on a site, a minimum of seven survey visits within optimal survey months (April, May and September) or at least 20 survey visits across the reptile active season should be undertaken (Froglife, 1999; Sewell *et al*, 2013). It is also recommended that the survey effort is increased for population monitoring purposes or when survey dates fall outside these optimal periods (Sewell *et al*., 2013).

3.29 Population size class estimates for reptile species are derived from the peak count of adults of that species found during a single survey visit, divided by the size of the survey area as measured in hectares.

3.30 A total of six to ten survey visits, conducted during optimal survey conditions, are recommended for a robust estimate (Sewell, Griffiths, Beebee, Foster, & Wilkinson, 2013). However, it should be understood that due to the somewhat cryptic nature of reptiles, the proportion of the population which is revealed during any given survey can vary according to a number of factors. As such, population size class estimates should only be treated as broadly indicative of the importance of a site for reptiles.

Table 1 Population size class estimates for the common reptile species, adapted from Herpetofauna Groups of Britain and Ireland (HGBI) guidance (1998) in consultation with Richard Andrews MA (Cantab), CEnv, FCIEEM (pers.comm.).

Species	Population size (adult density)		
	'Low' population	'Medium' population	'High' population
Slow worm	< 50 / ha	50 - 100 / ha	> 100 / ha
Common lizard	< 20 / ha	20 - 80 / ha	> 80 / ha
Grass snake	< 2 / ha	2 - 4 / ha	> 4 / ha
Adder	< 2 / ha	2 - 4 / ha	> 4 / ha

SURVEY METHOD

3.31 36 ACOs were placed across the Site, within areas of 'moderate' suitable reptile habitat (*c*.2.57ha), on 29th May 2025. This equates to an ACO density of 14 ACOs per hectare. ACOs were not placed out within the 'low' suitability reptile habitat (northern-most field and the horse paddock).

3.32 The ACOs were left to ‘bed down’ for 13 days, to allow time for any reptiles present to discover them and begin using them as basking locations.

3.33 A reptile presence / likely absence survey was undertaken between 17th June and 30th July 2025 (inclusive), to establish whether reptiles are present on-site.

3.34 The ACOs and other suitable basking features and areas along the transect were then periodically checked for reptiles on seven occasions. The locations of the ACOs are shown in the Appendix 3.

Table 2 Dates, times, and associated weather conditions of reptile survey visits.

Visit	Date	Time (start / stop)	Air temperature	Cloud cover (Oktas scale)	Wind speed (Beaufort scale)	Ground conditions
1	17/06/2025	08:29 / 09:14	19°C	2	B1	Dry.
2	20/06/2025	06:30 / 07:25	18°C	0	B1	Slightly damp
3	25/06/2025	07:13 / 08:02	19°C	8	B1	Slightly damp
4	02/07/2025	05:32 / 06:03	19°C	8	B2	Wet
5	16/07/2025	07:10 / 07:35	18°C	2	B2	Dry
6	24/07/2025	07:09 / 08:04	17°C	1	Not recorded	Damp
7	30/07/2025	07:25 / 08:07	18°C	7	B1	Damp

3.35 Cloud cover is recorded in oktas or eighths with the additional convention that (Met Office, 2023a): -

- 0 oktas represents the complete absence of cloud.
- 1 oktas represents a cloud amount of 1 eighth or less, but not zero.
- 7 oktas represents a cloud amount of 7 eighths or more, but not full cloud cover.
- 8 oktas represents full cloud cover with no breaks.
- 9 oktas represents sky obscured by fog or other meteorological phenomena.

3.36 Wind speed is measures using the Beaufort wind force scale with corresponding wind descriptive terms (Met Office, 2023b): -

- B0 - Calm.
- B1 - Light air.
- B2 - Light breeze.
- B3 - Gentle breeze.
- B4 - Moderate breeze.
- B5 - Fresh breeze.
- B6 - Strong breeze.

ASSESSING IMPORTANCE

3.37 Reptiles should always be considered as 'important ecological features' when recorded as present on a site given the legal protection afforded to them.

3.38 The assessment of the importance of on-site habitats for reptiles has been informed by guidance set out in Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2024).

3.39 The assessment of geographic importance is informed by a suite of standard factors, which include but are not limited to: -

- Population size of species recorded on-site;
- Evidence (including distribution atlases and biological records) and knowledge of wider species distribution within wider local area, district, county and/or region;

- Extent and quality of habitat available to the recorded reptile species, both on-site and off-site within the wider local area, district, county and/or region;
- Habitat connectivity to off-site areas suitable for the same species; and
- Published criteria that can be used, subject to full consideration of the other factors listed above to assign potential geographic levels of importance (e.g., designated site designation criteria for county wildlife sites, which can be used to assess whether a site meets a county level threshold; or site of special scientific Interest criteria that can be used to assess whether a site meets a national level threshold).

3.40 The above factors should be considered when reviewing survey results and assessing the geographic level of importance of a given site for reptiles.

ZONE OF INFLUENCE

3.41 The potential impact(s) of a development are not always limited to the boundaries of the Site concerned. A development may also have the potential to result in impacts upon ecologically important sites, habitats or species that are located beyond the Site boundaries.

3.42 The area over which a development may impact ecologically important features is known as the Zone of Influence (ZoI).

3.43 The ZoI is determined by the source/type of impact, the potential pathway(s) for that impact and the location and sensitivity of the ecologically important feature(s) beyond the boundary.

3.44 The potential ZoI of a project in relation to reptiles is used to determine the extents of the reptile survey study area.

3.45 A review of the development proposals confirmed that the development will result in loss of suitable on-site reptile habitat. Works may also result in impacts on individual animals (e.g., killing and/or injury during Site works).

3.46 These potential impacts could adversely affect the conservation status of the wider local reptile population, but the most significant potential adverse effects would likely be experienced by any reptiles present on-site.

3.47 Therefore, in the absence of appropriate avoidance, mitigation, and compensation measures, the potential ZoI of the proposed development, in relation to reptiles, is likely to extend to the Site and those areas located just beyond the Site boundary.

3.48 This potential ZoI was used to establish the required extents of the reptile survey, which included all suitable on-site habitat.

SURVEY LIMITATIONS

3.49 For standard access, project confidentiality reasons and considering the need to ensure that only proportionate survey effort is expended, the survey only sampled on-site habitats. This means that the reptiles recorded on-site may form part of a wider local population and the survey results therefore only provide a partial sample of this local population. This is a standard limitation for reptile surveys that are completed in association with proposed developments and given the objectives of this survey and report, is not considered to be a significant limitation.

3.50 June and July are sub-optimal months for conducting a reptile survey, due to high average temperatures across these months reducing the amount the ACOs will be utilised by reptiles for basking. However, reptiles are still active in June and July (Sewell *et al.*, 2013) and grass snakes

were recorded during the survey visits. Additionally, the weather conditions throughout all survey visits remained suitable for conducting reptile surveys (low wind speed, no rain, air temperature not exceeding 20°C) in line with survey condition recommendations described by Sewell *et al.* (2013). Therefore, completing survey visits within June and July is not considered to be a significant constraint to the presence / likely absence survey in this instance, though the indicative population size class estimate may be constrained.

3.51 The density of ACOs used during the survey was lower than the recommended ACO density (16 ACOs per hectare) most effective for slow worm survey (Sollmann, Gardner, & Belant, 2012; Schmidt *et al*, 2017). This being said, the ACO density exceeded the minimum five to ten per hectare stated within good practice guidelines. The above is not considered a limitation to the survey given reptile presence was recorded during the survey.

3.52 Two ACOs were destroyed between the survey set-up and the first survey. These ACOs were likely damaged during farm management/site works of the active Site. No reptile fatalities were recorded during the survey visits. ACOs were replaced at these locations, with the first survey delayed by seven days to allow further bedding down of the replacement ACOs.

3.53 There are no ecologically significant limitations to the effectiveness of the reptile survey undertaken. This report provides an evidence-based assessment of the Site's importance for reptiles and fulfils the objectives set out in Section 2 of this report.

LIFESPAN OF SURVEY DATA

3.54 The survey data is considered valid for a period of 18 months from the conclusion of the survey (i.e., until 1st February 2027), after which a suitably experienced ecologist will need to undertake a site visit, determine whether the extent and quality of reptile habitat present has changed significantly and determine whether an update reptile presence / likely absence survey is required.

3.55 Dependent on the results of the update Site assessment, an update reptile presence / likely absence may be required to provide up-to-date baseline survey and to ensure that the project has a robust understanding of project legal risks and mitigation requirements in relation to reptiles.

4. RESULTS

DESK STUDY

4.1 The biological records search returned recent / historic records (1990) slow worm, (1990-1996) grass snake, (1990) adder and (1990) common lizard within 1 km of the Site.

4.2 The biological records search indicates that the most recent record of slow worm, adder and common lizard dates from 1990 and evidences the presence of slow worm, adder and common lizard approximately *c*.0.45 km west of the Site. The most recent record of grass snake dates from 1996 and evidences the presence of grass snake approximately *c*.0.8km north-east of the Site.

4.3 Off-site adjacent habitats bordering the Site to the east, south and south-west also provide suitable habitat for reptiles and have direct connectivity to on-site suitable habitat for reptiles.

4.4 The A264 Copthorne Common Road adjacent to the northern boundary of the Site likely acts as a partial barrier to dispersal, inhibiting movement of reptiles between the Site itself and suitable off-site habitats to the north.

HABITAT ASSESSMENT

4.5 The Site is *c*.4.3ha in area, of which *c*.2.57ha comprises habitat of 'moderate' suitability for reptiles, consisting of grassland with a good sward and species diversity despite ongoing management. These areas are adjacent to a woodland (to the south) and multiple tree and hedge lines across the Site, offering opportunities for basking, foraging and shelter. These habitats have been assessed as being of 'moderate' suitability for reptiles.

4.6 Grazed improved grassland present within the Site (*c*.1.79ha) provide opportunities for basking and foraging only. On this basis, these habitats have been assessed as being 'low' suitability reptile habitat.

4.7 Bare ground/buildings/hardstanding present within the Site have been assessed as being of 'negligible' suitability for reptiles.

4.8 See Appendix 2 for full detail of the criteria used to assess reptile habitat suitability.

4.9 The location and distribution of suitable reptile habitat within the survey area is indicated in the *'Reptile Habitat Suitability and Survey Results Plan'*, shown within Appendix 3.

SURVEY RESULTS

4.10 One reptile species (grass snake) are present on-site.

4.11 Detailed survey results are provided in Table 3.

Table 3 Detailed survey results (number of animals of each species recorded during each visit).

Visit	Date	Number of reptiles recorded	
		Grass snake	
		Adult	Non-adult
1	16/07/2025	0	1
2	24/07/2025	0	1

4.12 A total peak of one non-adult grass snake was recorded for the Site.

4.13 No amphibians were recorded during the survey visits.

5. EVALUATION AND RECOMMENDATIONS

5.1 Population size class is estimated based on the number of adult animals recorded over the course of a survey. No adult grass snakes were recorded, however, at least one sub-adult grass snake was recorded during the survey on multiple visits, which evidences both the presence of the species on Site and the fact that this species breeds on or near Site.

5.2 Given the above, it is estimated that a ‘low’ population of grass snake is present on-site.

5.3 Given the recorded presence of reptiles within the Site, it is assumed that all available habitat within Site and wider environment is occupied by reptiles.

5.4 Based on the presence of grass snake reptile species and the peak count numbers recorded, the limited extent and variable quality of on-site reptile habitats and the low number of individuals recorded, the Site is assessed as being of 'local' importance for reptiles.

5.5 In the absence of appropriate avoidance, mitigation and compensation measures, the proposed development works may result in impacts on individual animals (e.g., killing and/or injury during site works) and a reduction in occupied reptile habitat.

5.6 Given the above, appropriate avoidance, mitigation and compensation measures will need to be adopted and implemented to minimise the risk of the proposed works adversely affecting reptiles and/or resulting in a legal offence with regards to this species.

5.7 The associated *Ecological Impact Assessment* report will detail avoidance, mitigation, compensation and enhancement measures relating to reptiles and confirm whether the proposed works are likely to adversely or positively affect the 'long-term viability’ of the local reptile population.

6. REFERENCES

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7. APPENDIX 1: LEGISLATION AND PLANNING POLICY

7.1 The specific legal protection afforded to reptiles can be found within the Sections and Schedules of the relevant legislation and relevant case law.

7.2 Slow worm (*Anguis fragilis*), common lizard (*Zootoca vivipara*), grass snake (*Natrix helvetica)* and adder (*Vipera berus*) are the four most common reptile species in the UK. These species are protected from intentional and reckless killing and injury under the Wildlife and Countryside Act 1981 (as amended).

7.3 The habitat of slow worm, common lizard, grass snake and adder is not legally protected. However, if great crested newts (*Triturus cristatus*) are present, the habitat supporting reptiles might be protected because of the legal protection afforded to great crested newts.

7.4 Actions affecting multiple animals can be construed as separate offences and therefore penalties can be applied per animal impacted.

7.5 The sand lizard (*Lacerta agilis*) and smooth snake (*Coronella austriaca*), including their habitat, are fully protected by the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (as amended). However, these species are restricted to narrow geographies and specific habitat types not found on or near the Site. Therefore, they are not considered further in this assessment.

7.6 All reptiles and amphibians are afforded legal protection by the Animal Welfare Act 2006. This Act makes it an offence to cause any 'animal' (defined in the Act as all vertebrates other than human beings) to suffer unnecessarily, or to allow any such action to occur. The Act also makes it an offence to fail to take any reasonable action that would prevent unnecessary suffering. This Act is of relevance during reptile and amphibian translocation exercises.

7.7 Adder is listed by the Dangerous Wild Animals Act 1976 (as amended). This may be of relevance during reptile translocation works.

7.8 Licences to capture and move the four most common UK reptile species are not required.

7.9 The Wildlife and Countryside Act (1981) as amended, includes certain defences that may apply in some specific circumstances.

7.10 All native UK reptile species are listed as Species of Principal Importance.

8. APPENDIX 2: HABITAT SUITABILITY CRITERIA

8.1 For the purpose of this report, habitat suitability criteria developed by Lloydbore Ltd have been used to assess and categorise on-site habitats for reptiles. Suitable reptile habitats include the following habitat types: -

- Heathland;
- Moorland;
- Grasslands;
- Scrub;
- Woodland;
- Wetlands;
- Sand dune;
- Hard and soft cliffs;
- Vegetated shingle;
- Open mosaic habitats; and
- Coastal lagoon.

8.2 These habitats can be found within a broad range of land use types, including: -

- Farmland;
- Brownfield sites;
- Gardens and allotments;
- Parks and grounds;
- Churchyards;
- Mineral sites;
- Road and rail embankments; and
- River and sea walls.

8.3 Other habitat and land use types may be utilised by reptiles, if their basic ecological requirements (foraging, shelter, protection, basking, breeding and/or brumation (overwintering)) are met by the habitat. It is therefore imperative that all sites / habitats are assessed based on their ecological functionality for reptiles, rather than making hard and fast judgements based on broad habitat and/or land use type.

8.4 The below suitability criteria have been devised to provide a structured way of assessing ecological functionality for reptiles, which can be applied by suitably experienced ecologists.

8.5 Reptiles require large areas, or closely spaced patches, of suitable habitat to support viable population in the long term. Therefore, habitat connectivity is important on a landscape level but also within a site.

8.6 The below has been adapted from the Reptile Habitat Management Handbook and details the habitat requirements of reptiles (Edgar, Foster and Baker, 2010). The factors cited in Table 5 have been used to develop the suitability criteria that are set out in Table 6.

Table 4 Reptile habitat requirements (Edgar, Foster and Baker, 2010)

Requirement	Description
Basking sites (thermoregulation)	Reptiles bask openly in direct sunlight or seek warm sites under cover (in vegetation or under object) or partially exposed amidst dense vegetation (mosaic basking). Varied topography (south-facing slopes are particularly favoured by reptiles) and a mosaic of open, sunny areas and dense cover provide the best range of basking opportunities. Waterlogged soil is typically unsuitable as it warms slowly and can reduce body temperature through latent heat loss.
Shelter from predators and the elements (heat, dry weather, wind)	Reptiles need vegetation cover and open areas in close proximity to each other. The best habitats are structurally diverse habitats, or mosaics of vegetation of differing heights, ages, or types. Thorny or prickly plants such as gorse and bramble can provide particularly good refuge from predators and may be used as sheltered basking sites. In summer months with high air temperatures, shade and shelter are required for reptiles to regulate their body temperature, with some species also becoming inactive to prevent heat stress.
Overwintering opportunities (shelter during torpor)	Areas suitable for reptiles in torpor must be climatically stable, frost-free, humid (but not wet) and safe from flooding and predators. Typical overwintering sites include mammal burrows, rotted tree stumps and root holes, fissures in soil / substrate, large grass tussocks, anthills, old walls and building foundations, piles of rubble and other debris and under large logs and fallen trees. Sand lizard, grass snake, smooth snake and adder usually make seasonal movements to overwintering sites. Slow worm and common lizard may also make shorter distance migrations to overwintering features, but the location of these features normally corresponds with the areas used during the active season.
Prey availability	Legged lizard (common lizard and sand lizard): Main prey items are insects and other invertebrates such as spiders. Legless lizard (slow worm): Main prey items are soft-bodies invertebrates such as slugs and worms. Smooth snake: Main prey items are reptiles and small mammals. Grass snake: Main prey items are amphibians and fish. Adder: Main prey items are small mammals and occasionally lizards.
Breeding habitat	Breeding sites are more likely to be found where structurally diverse habitats encourage high population densities. Reptiles require secluded areas close to, or under, secure cover for courting and mating. Grass snakes need access to decomposing material to lay their eggs. Typical egg-laying sites include manure heaps, compost heaps, piles of grass clippings, sawdust, cut reed and, in coastal areas, seaweed heaps. Sand lizards require areas of exposed sand (or similar loose substrate) with good sun exposure in which to lay their eggs.

Requirement	Description
Landscape connectivity for dispersal	Many reptile species will travel seasonally to suitable breeding and / or overwintering habitats. Reptiles with higher dispersal distances, such as grass snakes and adders, will also travel to feed. Suitable connecting habitat provides a mixture of cover and basking opportunities and offers a permanent connection between larger areas of suitable habitat. Rail corridors and ecotones (interface areas between different habitat types)

8.7 The below habitat suitability criteria have been adapted based on the ecology and specific ecological requirements of reptiles (as described above).

Table 5 Reptile habitat suitability criteria.

Habitat Suitability Category	Ecological Functionality for Reptiles (one or more species)	Typical Characteristics of habitats within this Category*
High	Provides significant opportunities for: - Foraging; Shelter / protection; Thermoregulation; breeding; and Brumation (overwintering).	Heterogenous habitat (e.g., grassland, scrub, woodland edges). *Structurally diverse habitats, mosaics of vegetation of differing heights, ages, or types* (e.g., tussocky grassland, dense scrub/islands). Extensive landscape connectivity to suitable off-Site reptile habitat.
Medium	Provides significant opportunities for two or three of the above key ecological functions.	Homogenous / slightly heterogenous habitat (one to two dominant habitats e.g., grassland and scrub). Habitat structure is diverse, but habitat type is uniform (e.g., tussocky grassland only). Sub-optimal landscape connectivity to suitable off-Site reptile habitat.
Low	Provides significant opportunities for one of the above key ecological functions or some limited (minimal) opportunities for two or more of these functions.	Uniform habitat composition (e.g., grassland). Limited vegetative structure (e.g., closely mown or grazed grassland). Possess limited landscape connectivity to suitable off-Site habitat.
Negligible	Does not provide any opportunities for reptiles.	Unvegetated areas, such as bare ground and buildings.
*Note that the characteristics given in Column 3 of this Table are typical characteristics of high, medium, low, and negligible suitability habitats, and are provided for illustrative purposes to aid the assignment of a habitat suitability category. They are not absolute criteria or universal rules that will always dictate the suitability category that the habitat within a given survey site must fall within.		

Note:

8.8 It is important to note that a holistic view of Site/habitat suitability for reptiles should be taken when attributing suitability categories to areas of habitat. Consideration of habitat continuity and connectivity within a site is key to determining habitat suitability.

8.9 For instance, a block of on-site woodland may provide significant brumation (overwintering) opportunities, whilst an immediately adjacent on-site belt of structurally diverse grassland with debris piles may provide significant basking, foraging, shelter and breeding opportunities.

8.10 Taken as a whole (i.e., as a functional habitat unit), these habitats are likely to be correctly assigned a habitat suitability level that is higher than if they were assessed individually.

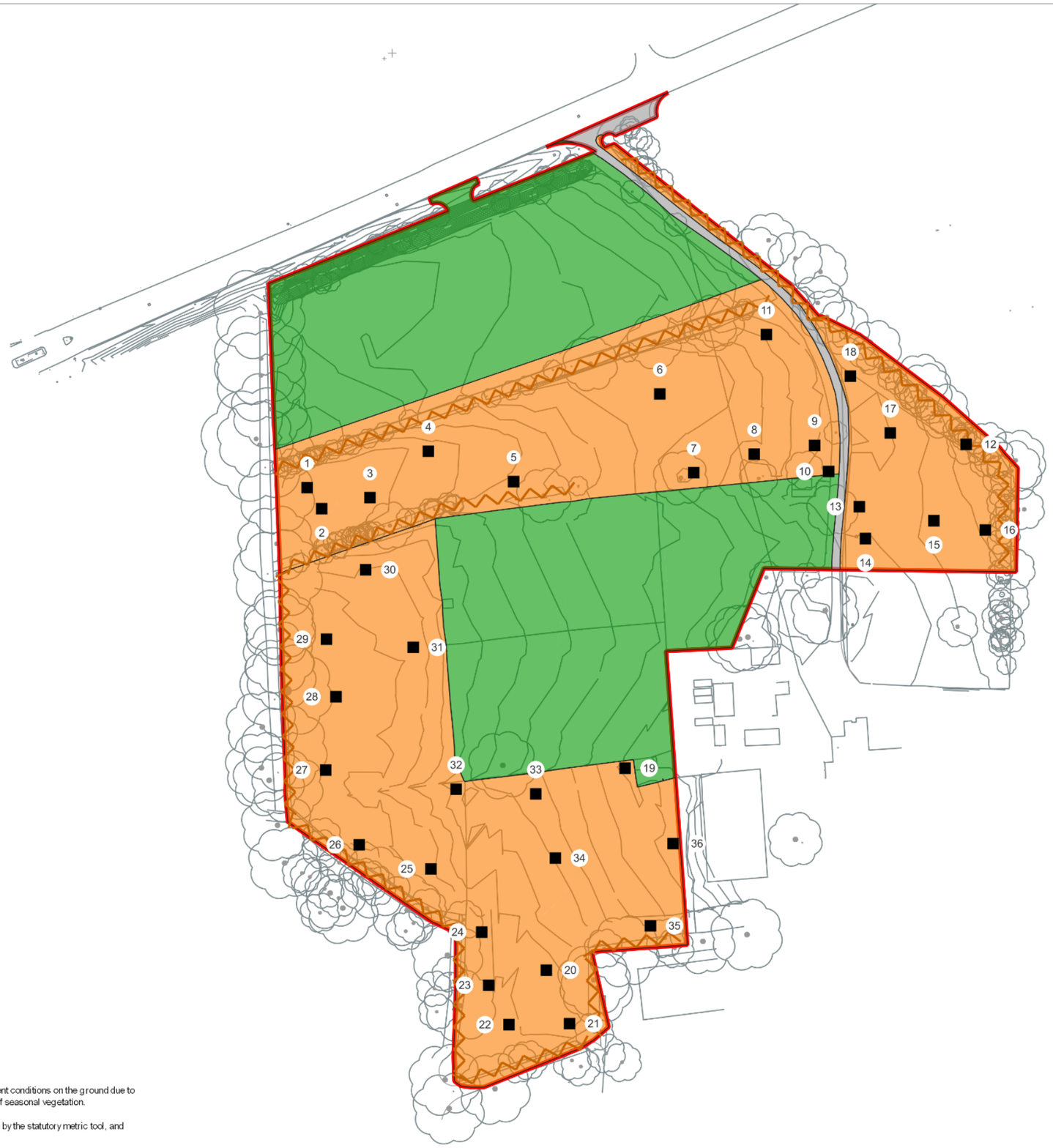
8.11 If, however, these habitats (the woodland and grassland in this example) were separated by a substantial area of bare ground that would prevent or severely limit reptile dispersal between the two, then these habitat areas should correctly be assessed as separate habitat units and categorised based on their individual ecological functionality for reptiles.

8.12 The categorisation of habitats must therefore consider what constitutes a 'functional habitat unit' for reptiles on a given Site.

8.13 Professional judgement and knowledge of species ecology can and should be used during habitat assessment, but the above criteria and guidance are used as tools to ensure that a structured and evidence-based assessment is conducted and that the criteria used are as objective as possible.

9. APPENDIX 3: REPTILE HABITAT SUITABILITY AND SURVEY RESULTS PLAN

[SEE OVERLEAF]



Note:

Habitat boundaries depicted may not accurately reflect the current conditions on the ground due to potentially outdated aerial photography and the variable nature of seasonal vegetation.

The area value for habitat includes rounding assumptions made by the statutory metric tool, and discrepancy may occur between this and the total site area.

Legend:

Reptile Habitat Suitability

- Habitat of moderate suitability for reptiles
- Habitat of low suitability for reptiles
- Habitat of negligible suitability for reptiles
- Linear feature of moderate suitability for reptiles
- Location of reptile artificial cover object (ACO)
- Red line boundary
  Total area approx: 4.3647 ha.

0 15 30 m

1:1500

client. ***Option Two Development Ltd***
project. ***Land at Courthouse Farm***
Copthorne Common Road
Copthorne, West Sussex

drawing no. ***5096-LLB-RF-0019***
drawing title. ***Reptile Habitat Suitability & Survey Plan***
title 2.
title 3.

scale. ***1:1500***
sheet. ***A3***
author. ***DM***
checked. ***CC***

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