

M54 to M6 Link Road TR010054 Volume 6 6.3 Environmental Statement Appendices Appendix 8.12 Reptiles

Regulation 5(2)(a)

Planning Act 2008

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

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Infrastructure Planning

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6.3 Environmental Statement Appendices Appendix 8.12 Reptiles

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1 Introduction

- 1.1.1 Highways England are developing a link road between the M54 and M6 to provide a link between Junction 1 of the M54, M6 North and the A460 to Cannock. The M54 to M6 Link Road (herein referred to as 'the Scheme') aims to reduce congestion on local / regional routes, particularly the A449 and A460 and deliver improved transport links to encourage the development of the surrounding area.
- 1.1.2 This appendix has been prepared in respect of 'common' native UK reptile species: adder *Vipera berus*, common lizard *Zootoca vivipara*, grass snake *Natrix helvetica*, and slow worm *Anguis fragilis* relating to the Scheme.
- 1.1.3 The 'endangered' reptile species sand lizard *Lacerta agilis* and smooth snake *Coronella austriaca* are not known to be present in Staffordshire with the lack of suitable heathland habitats screening out both sand lizard and smooth snake from the survey design, as such they are not considered any further.
- 1.1.4 This appendix includes the following information:
 - legislation and planning policy relevant to reptiles;
 - methodologies for desk and field- based assessments undertaken in 2018 and 2019 respectively, to determine the presence/likely absence and population sizes of reptile species;
 - competencies of the ecologists involved in undertaking the above surveys;
 - limitations to the surveys undertaken and any assumptions made as a result of incomplete data;
 - survey results; and
 - the approach for determining the nature conservation importance.
- 1.1.5 This appendix should be read in conjunction with Chapter 8: Biodiversity of the Environmental Statement (ES) [TR010054/APP/6.1].



2 Relevant Legislation and Policy

2.1 Legislation

- 2.1.1 Appendix 8.1 Legislation and Policy Framework [TR010054/APP/6.3] provides detail on the legislation that is of direct relevance to the assessment of biodiversity.
- 2.1.2 All common native UK reptile species are protected under Section 9 of the Wildlife and Countryside Act 1981, making it illegal to intentionally kill or injure them.

2.2 Planning policy

2.2.1 Full detail of relevant national and local planning policy relevant to nature conservation is provided in Appendix 8.1 Legislation and Policy Framework [TR010054/APP/6.3] and a summary is provided in Chapter 8: Biodiversity of the ES [TR010054/APP/6.1].

2.3 Priority species

- 2.3.1 All native reptile species are listed on the Natural Environment and Rural Communities Act (NERC) 2006 (refer to Appendix 8.1) whose conservation is therefore a material planning concern.
- 2.3.2 Grass snake are the only reptile listed as a local Biodiversity Action Plan (BAP) species in the Staffordshire Biodiversity Action Plan (SBAP) (Ref 1). This Action Plan aims to:
 - "maintain the current existing populations within Staffordshire"; and
 - "increase the populations within Staffordshire at sites where they are known to exist".
- 2.3.3 In terms of 'management, monitoring, research and survey' the SBAP aims to:
 - "seek to encourage landowners to appropriately manage sites important for grass snakes";
 - "ensure effective management agreements, covering agricultural practices and water level management, are in place on all SSSIs which formerly, currently, or have the potential to, support grass snakes";
 - "seek to restore existing and future gravel pits in the Trent-Tame floodplain to wet grassland, ponds and other habitats suitable for grass snakes";
 - "promote good practice (i.e. retention of vegetation piles and bare ground basking sites) and seek to enhance habitat conditions for grass snakes during routine maintenance of drainage infrastructure"; and
 - "carry out management work for grass snakes in gardens and landholdings within grass snake strongholds e.g. Staffordshire Moorlands".



3 Methodology

3.1 Desk study

- 3.1.1 Records for reptile species from Staffordshire Ecological Record Centre (SERC), and the Ecological records centre for Birmingham and the Black Country (EcoRecord) were obtained in 2017 for an area up to 2 km from the Scheme boundary, which is considered an appropriate study area to obtain an indication of reptile presence within the wider landscape.
- 3.1.2 Only records from the last 10 years have been included. Where only a historic (i.e. over 10 years old) record is present this has been used for context.
- 3.1.3 This desk study data has been used to inform assumptions in relation to reptiles where field data is incomplete, or access for field survey was not possible.

3.2 Field surveys

Surveyor competency

3.2.1 Field surveys undertaken in 2018 and 2019, were all led by suitably qualified ecologists, experienced at undertaking surveys for 'common' reptile species that could potentially be encountered. All lead surveyors were members of Chartered Institute of Ecological and Environmental Management (CIEEM).

Habitat Suitability Assessment

- 3.2.2 Habitat Suitability Assessments (HSA) have been undertaken in 2018 and 2019 to identify suitable reptile habitat, where access was possible, in line with standard methodology (Ref 2). An HSA assessment reviews a number of variables to derive a measure of habitat quality and suitability for reptiles including the following:
 - location in relation to species range;
 - vegetation structure;
 - insolation (sun exposure);
 - aspect;
 - topography;
 - surface geology;
 - connectivity to nearby good quality habitat;
 - prey abundance;
 - refuge opportunity;
 - hibernation potential;
 - disturbance; and
 - egg-laying site potential (grass snake only).
- 3.2.3 Each habitat type or discrete area has been assigned a habitat grading of 'poor', 'good' or 'exceptional' potential to support reptiles, based on reasoned consideration of the above factors (see Table 3.1 below).



Table 3.1: Habitat Suitability Assessment for reptiles

Habitat Grading	Definition
Poor	Habitat which is unfavourable for reptiles based on most of the habitat assessment characters listed above or is limited in size and highly isolated from other areas of suitable habitat.
Good	Habitat which is favourable or sub-optimal for many of the habitat assessment characters listed above; or is sub-optimal for some of the characters and has good connectivity with areas of more suitable habitat.
Exceptional	Habitat which is favourable for reptiles based on most of the habitat assessment characters listed above.

3.2.4 Areas of habitat offering Good or Exceptional suitability for reptiles have been scoped in for further survey to determine reptile presence/likely absence. These areas comprise species poor semi-improved grassland, arable field margins, dense scrub, tree lines, hedgerows, and woodland edges.

Presence/likely absence surveys

- 3.2.5 Presence/likely absence surveys for reptiles have been based on standard guidance (Ref 3), (Ref 4), (Ref 5).
- 3.2.6 The 2018 survey effort was carried out in line with standard guidance (Ref 5) and (Ref 6) with seven surveys undertaken in May and September.
- 3.2.7 Although now replaced with LA 108 (Ref 6), the 2019 survey effort was carried out in line with the Design Manual for Roads and Bridges (DMRB) inspection protocol for surveys undertaken outside the optimum season (Ref 7). This comprises a total of 11 visits with the first visit used to install artificial refugia in suitable habitat, allowing two weeks for them to bed in, followed by 10 visits undertaken between late May and September.
- 3.2.8 Surveys were undertaken in suitable weather conditions 9 20°C during full, hazy, or intermittent sunshine suitable to encourage reptiles to utilise the refugia, in line with standard guidance (Ref 4).
- 3.2.9 A total of 423 artificial refugia comprising 0.5m² sections of corrugated metal, corrugated bitumen-based roofing material, and roofing felt were deployed in 13 areas within and immediately adjacent to the Scheme, surveyed between 2018 and 2019, shown on the Reptile Mat Location Plan (Figure 8.30). The total number of mats per area is provided in Table 3.2 below.



Table 3.2: Total number of artificial refugia deployed during 2018 and 2019 presence/likely absence surveys

Year	Area	Total Number of Artificial Refugia
2018	Α	10
2018	В	10
2018	С	10
2018	D	5
2018	E	5
2018	F	14
2018	G	14
2019	1	178
2019	2	60
2019	3	77
2019	4	40

- 3.2.10 The refugia were placed in densities of at least 10 per hectare and approximately 2 5 m apart along suitable habitat including:
 - embankments and mounds, hollows and other slopes;
 - logs, brash piles, posts, rock piles;
 - stony areas with crevices e.g. dry-stone walls, cliffs, rocky outcrops;
 - sun traps on open ground within denser vegetation;
 - bases of hedges and tree lines;
 - paths cut or trodden through denser vegetation;
 - edge of woodland/scrub/bramble patches and grassy areas, especially if 'tussocky' grassland;
 - cover items (refugia) such as stones, wood or 'rubbish' items that animals may warm up underneath; and
 - habitat piles e.g. compost heaps, and cut grass.
- 3.2.11 The dates for the survey visits as well as meta data is provided in Tables 3.3 to 3.9 below.



Table 3.3: Date and meta data of reptile surveys in 2018 Areas A - G

Visit Number	Deta (2019)	Temperature (°C)		Cloud Cover (%)		Wind (Beaufort)		Precipitation*	
	Date (2018)	At Start	At End	At Start	At End	At Start	At End	At Start	At End
1	11 th May	11.5	14	75	100	2	2	0	0
2	18 th May	14	18	10	30	1	2	0	0
3	21 st May	15	20	0	10	1	2	0	0
4	10 th September	17.5	17	75	80	3	4	0	0
5	24 th September	12	13	25	30	1	2	0	0
6	25 th September	16	15	25	30	2	2	0	0
7	27 th September	19	15	75	75	2	1	0	0

^{*}Precipitation was classified 0-5, with 0=none and 5=heavy downpour

Table 3.4: Date and meta data of reptile surveys undertaken in 2019 Area 1A

Visit	Data (2010)	Temper	Temperature (°C)		Cloud Cover (%)		Wind (Beaufort)		Precipitation*	
Number	Date (2019)	At Start	At End	At Start	At End	At Start	At End	At Start	At End	
1	21 st June	16	18	40	70	1	2	0	0	
2	2 nd July	15	16	70	85	3	3	0	0	
3	10 th July	17	19	100	100	2	1	0	0	
4	13 th July	19	18	5	5	2	2	0	0	
5	22 nd August	18	17	5	5	2	2	0	0	
6	28 th August	17	18	60	30	3	2	0	0	
7	4 th September	15	16	50	50	3	3	0	0	
8	11 th September	17	18	15	5	1	1	0	0	
9	18 th September	15	17	40	30	2	2	0	0	
10	24 th September	16	16	60	40	2	2	0	0	

^{*}Precipitation was classified 0-5, with 0=none and 5=heavy downpour



Table 3.5: Date and meta data of reptile surveys undertaken in 2019 Area 1B

Visit	Deta (2010)	Temper	Temperature (°C)		Cloud Cover (%)		Wind (Beaufort)		Precipitation*	
Number	Date (2019)	At Start	At End	At Start	At End	At Start	At End	At Start	At End	
1**	20 th June	16	18	30	70	1	2	0	0	
1***	21 st June	19	20	50	50	2	1	0	0	
2	2 nd July	15	16	70	85	3	3	0	0	
3	10 th July	17	19	100	100	2	1	0	0	
4	13 th July	19	18	5	5	2	2	0	0	
5	22 nd August	18	17	5	5	2	2	0	0	
6	28 th August	17	18	60	30	3	2	0	0	
7	4 th September	15	16	50	50	3	3	0	0	
8	11 th September	17	18	15	5	1	1	0	0	
9	18 th September	15	17	40	30	2	2	0	0	
10	24 th September	16	16	60	40	2	2	0	0	

^{*}Precipitation was classified 0-5, with 0=none and 5=heavy downpour

Table 3.6: Date and meta data of reptile surveys undertaken in 2019 Area 1C

Visit	Data (2010)	Temper	Temperature (°C)		Cloud Cover (%)		Wind (Beaufort)		Precipitation*	
Number	Date (2019)	At Start	At End	At Start	At End	At Start	At End	At Start	At End	
1	5 th June	15.5	17	80	60	5	4	0	0	
2	20 th June	19	20	50	50	2	1	0	0	
3	10 th July	17	19	100	100	2	1	0	0	
4	13 th July	19	18	5	5	2	2	0	0	
5	22 nd August	18	17	5	5	2	2	0	0	
6	28 th August	17	18	60	30	3	2	0	0	
7	4 th September	15	16	50	50	3	3	0	0	
8	11 th September	17	18	15	5	1	1	0	0	
9	18 th September	15	17	40	30	2	2	0	0	
10	24 th September	16	16	60	40	2	2	0	0	

^{*}Precipitation was classified 0-5, with 0=none and 5=heavy downpour

^{**} Part survey of Area B

^{***} Part Remaining survey of Area B



Table 3.7: Date and meta data of reptile surveys undertaken in 2019 Area 2

Visit	Date (2019)	Temper	Temperature (°C)		Cloud Cover (%)		Wind (Beaufort)		Precipitation*	
Number		At Start	At End	At Start	At End	At Start	At End	At Start	At End	
1	2 nd July	21	17.5	80	80	0	0	0	0	
2	9 th July	20	23	100	100	1	1	0	0	
3	15 th August	16	18	50	35	2	2	0	0	
4	29 th August	16	16	20	20	2	2	0	0	
5	3 rd September	19	18	40	40	2	2	0	0	
6	6 th September	17	17	20	20	1	1	0	0	
7	10 th September	15	16	30	20	2	2	0	0	
8	13 th September	16	17	30	20	2	1	0	0	
9	18 th September	17	18	20	20	2	2	0	0	
10	26 th September	16	17	50	60	2	2	0	0	

^{*}Precipitation was classified 0-5, with 0=none and 5=heavy downpour

Table 3.8: Date and meta data of reptile surveys undertaken in 2019 Area 3

Visit	Deta (2040)	Tempe	Temperature (°C)		Cloud Cover (%)		Wind (Beaufort)		Precipitation*	
Number	Date (2019)	At Start	At End	At Start	At End	At Start	At End	At Start	At End	
1	30 th May	18	18	100	100	1	1	0	0	
2	6 th June	17	19	50	50	6	2.5	0	0	
3	15 th August	16	18	50	30	2	2	0	0	
4	22 nd August	17	18	10	10	2	2	0	0	
5	29 th August	14	16	30	20	2	2	0	0	
6	3 rd September	18	19	40	40	1	1	0	0	
7	6 th September	15	17	30	20	1	1	0	0	
8	10 th September	16	16	20	20	2	2	0	0	
9	18 th September	18	18	20	20	2	2	0	0	
10	26 th September	15	16	60	60	3	2	0	0	

^{*}Precipitation was classified 0-5, with 0=none and 5=heavy downpour



Table 3.9: Date and meta data of reptile surveys undertaken in 2019 Area 4

Visit	Date (2019)	Temperature (°C)		Cloud C (%)	Cloud Cover (%)		Wind (Beaufort)		Precipitation*	
Number		At Start	At End	At Start	At End	At Start	At End	At Start	At End	
1	27 th June	16	17	0	0	2	2	0	0	
2	2 nd July	19	18	70	70	0	1	0	0	
3	9 th July	22	21	100	100	0	1	0	0	
4	22 nd August	17	16	10	10	2	2	0	0	
5	28 th August	17	17	50	60	3	3	0	0	
6	4 th Septem ber	16	16	40	40	3	2	0	0	
7	11 th Septem ber	18	18	10	10	1	1	0	0	

^{*}Precipitation was classified 0-5, with 0=none and 5=heavy downpour

Population size class assessment

3.2.12 Currently there are no guidelines for all individual reptile species population class assessment, with the Reptile Mitigation Guidelines produced by Natural England in 2011 having been rescinded (Ref 8), for reference this is shown in Table 3.10. below.

Table 3.10: Population class assessment categories using peak adult survey counts and habitat suitability extracted from the rescinded 2011 Reptile Mitigation Guidelines 2011

Species	Small	Medium	Large
Slow-worm	<10, or presence + 'poor' habitat suitability	10 – 40, or presence + 'good' habitat suitability	>40, or presence + 'exceptional' habitat suitability
Common lizard	<5, or presence + 'poor' habitat suitability	5 – 20 or presence + 'good' habitat suitability	>20, or presence + 'exceptional' habitat suitability
Grass snake	<5, or presence + 'poor' habitat suitability	5 – 20 or presence + 'good' habitat suitability	>10, or presence + 'exceptional' habitat suitability
Adder	<5, or presence + 'poor' habitat suitability	5 – 20 or presence + 'good' habitat suitability	>10, or presence + 'exceptional' habitat suitability



3.2.13 Standard guidance (Ref 5) provides an assessment on the relative size of 'common reptile' populations on the basis of survey counts from presence/likely absence surveys to help identify 'Key Reptile Sites' this is shown in Table 3.11.

Table 3.11: Population assessment for 'common reptiles' using presence absence surveys

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

3.3 Nature conservation evaluation

- 3.3.1 The evaluation of ecological importance for 'common' reptile species was defined in terms of the following geographical context:
 - National (England) population of reptiles which results in the designation of nationally designated sites such as Sites of Special Scientific Interest (SSSI) or reptile populations that would meet SSSI criteria but are not currently designated;
 - Regional (West Midlands) populations that occur within regionally important sites or localities, and whose loss would significantly affect the national distribution of reptiles;
 - County (Staffordshire) populations of reptiles which qualify for designation as a Local Wildlife Site (LWS) known in Staffordshire as Sites of Biological Importance (SBI); and
 - Local (South Staffordshire District or Shareshill/Hilton Parish); populations
 of reptiles which qualify for designation as a Biodiversity Alert Sites (BAS); or
 undesignated populations that contribute to the maintenance of reptiles at a
 local level.
- 3.3.2 Other characteristics considered to contribute to the importance of reptile populations include, but were not limited to, the following taken from the Ratcliffe criteria (Ref 9):
 - diversity: the variety of reptile species present:
 - fragility: the degree of sensitivity to the habitats that could support reptiles;
 - rarity: the presence of reptile species that may be rare in the local vicinity;
 - size: the size of any reptile populations and suitable habitat available;
 - habitat diversity: the range of suitable habitat available to reptile species for basking, sheltering, foraging, hibernation and egg laying;
 - potential value: habitats with potential value to support reptiles with appropriate management or natural change;



- naturalness: taking into account the history of anthropogenic impacts on available habitats that could support reptiles; and
- intrinsic appeal: reptiles are a charismatic group of species that attract attention throughout all age groups.
- 3.3.3 Importance was based on the following geographic contexts:
 - For SSSIs, the guideline for selection (Ref 10) states "the best locality containing at least three of the other species, adder Vipera berus, grass snake Natrix natrix, common lizard Lacerta vivipara and slow worm Anguis fragilis, should be selected. Sites should not be chosen to represent populations of one or two species, but the occurrence of any species should count positively in the evaluation of sites chosen largely on other grounds, especially in areas where the species concerned is rare or at the geographical limits of its range". Using this an exceptional population of three or more reptile species would be evaluated as national importance:
 - There are no guidelines to assess an evaluation of regional importance, as such an exceptional population of two reptile species will be considered of regional importance;
 - The guidelines for the selection of LWS in Staffordshire (Ref 11) states that "for SBIs any site which regularly supports a significant population of any native reptile, presence should be confirmed for at least three years out of the previous five at time of selection. Following selection, species should be recorded every five years to confirm status". Using this any populations of reptile species with an exceptional population would be considered 'significant' and of county importance; and
 - Biodiversity Alert Sites (BAS) are sites stated as being "of lower intrinsic quality, smaller size or damage or disturbance. Nevertheless they collectively form a significant part of the County's nature conservation resource, and in some cases a valuable 'reserve series' for some of the Sites of Biological Importance. The degree of protection merited by each site needs to be assessed on an individual basis and in the light of prevailing circumstances. Both SBIs and BASs contribute significantly to the maintenance of biodiversity in the wider countryside, now recognised as a major local and national objective" (Ref 11). There are no quantifiable measures available to ascertain local importance, any single species with a good population (Table 3.11) would be considered of local importance.

3.4 Assumptions and limitations

Desk study

3.4.1 The information collected from the desk study background record search represents only those records submitted to records centres and is therefore not considered to be a definitive list of reptile species identified within the Desk Study Area. If records have not been provided, this does not confirm absence of reptiles from within the Scheme boundary.



- 3.4.2 The following are inherent limitations of a desk study which includes obtaining data from a Biological Records Centre (BRC):
 - recorder bias biological records are not a representation of the distribution of species within the search area, only records of those species, so the dataset provided by a BRC may be biased towards the favoured locations / 'patches' of taxonomic preference of local recorders (and the locations / favoured 'patches' of those recorders) and the presence (or absence) of specialist recording groups (mammal group, invertebrates group, plant group) within that county or vice county;
 - incomplete data the current dataset held by a BRC is considered to be the
 most accurate and most up-to-date representation of reptile species within
 each BRC boundary, although records are largely random. Where atlases
 which have systematically surveyed monads, tetrads, or hectads for taxonomic
 groups within a given area are available these records therein are a more
 accurate picture of reptile species assemblage and distribution;
 - data availability lag Resources at BRCs can be limited, which can lead to a
 lag between the time that records are submitted by recorders and the time that
 they are verified and entered into the database for that county. Additionally,
 special interest recording groups (which often hold their own datasets) may
 only submit their records annually (if at all) which causes further lag in dataset
 accuracy; and
 - changes in Data due to the Verification Process where new information or specialist knowledge sheds light on the validity of recent or historical submitted records, the verification process may add or remove records which may alter the results of a data search over time with same parameters.

Field surveys

- 3.4.3 From the 7th August 2019 a parcel of land within Area 3 containing 24 artificial refugia was not possible to survey due to land access being withdrawn. Therefore 24 mats out of the 77 deployed in Area 3 were only checked on three out of the scheduled ten survey visits (see Figure 8.30 [TR010054/APP/6.2]).
- 3.4.4 After the 11th September 2019 the parcel of land containing all of Area 4 with a total of 40 mats, was not possible to survey due to land access being withdrawn. A total of seven presence absence surveys were undertaken.
- 3.4.5 On the 9th of July weather conditions exceeded 20 degrees Celsius, as such the survey undertaken in Area 2 and Area 4 is considered sub-optimal.
- 3.4.6 Given the large area surveyed during the 2018 and 2019 surveys, the lack of reptile species within the data search records and field survey records, the limitations identified are not considered a significant limitation to the survey effort.



4 Results

- 4.1 Desk study
- 4.1.1 There are no records of reptiles returned from SERC or EcoRecord within 2 km of the Scheme boundary.
- 4.2 Field survey

Habitat suitability assessment

4.2.1 Following the HSA, the Scheme was identified as having suitable habitats consisting of; poor semi-improved grassland, hedgerows and tree lines, arable field margins, dense scrub, and woodland edges (see Figure 8.30 [TR010054/APP/6.2]).

Presence/likely absence surveys

4.2.2 No reptiles were recorded during the field surveys in either 2018 or 2019. Incidental records of common toad *Bufo bufo* were recorded with a total of 46 common toads recorded during the 2018 surveys, and 67 in 2019.



5 Summary

- 5.1.1 There have been no reptiles found during the desk study or field surveys in 2018 and 2019, with reptiles considered absent from the Scheme, as such no specific mitigation or compensation for reptiles is required.
- 5.1.2 During the surveys incidental records of amphibians (common toads) were recorded using the artificial refugia. Any losses to common toad populations will be compensated through replacement habitat, and waterbodies suitable for amphibians, created as part of the compensation for Great Crested Newts *Triturus cristatus* (refer to Appendix 8.11 [TR010054/APP/6.3]).



6 References

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