The Great Grid Upgrade

Sea Link

Sea Link

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1.1 Introduction

Background

1.1.1 The Sea Link Project (hereafter referred to as the 'Proposed Project') is a proposal by National Grid Electricity Transmission plc (hereafter referred to as National Grid) to reinforce the transmission network in the southeast and East Anglia. The Proposed Project is required to accommodate additional power flows generated from renewable and low carbon generation, as well as accommodating additional new interconnection with mainland Europe. This would be achieved by reinforcing the network with a High Voltage Direct Current (HVDC) Link between the proposed Friston substation in the Sizewell area of Suffolk and the existing Richborough to Canterbury 400 kV overhead line close to Richborough in Kent.

1.1.2 The purpose of this document is to:

- summarise relevant legislation and policy;
- describe the methodologies used for desk and field-based assessments;
- describe any limitations to the surveys undertaken; and,
- detail the results of presence/ likely absence surveys for common reptiles conducted in relation to the Kent Onshore Scheme.

1.1.3 The baseline findings of this report provide information on any potential ecological constraints associated with reptiles for incorporation into **Application Document 6.2.3.2 Part 3 Chapter 2 Ecology and Biodiversity** for the Kent Onshore Scheme.

1.1.4 Details of avoidance, mitigation, compensation and enhancement measures relating to reptiles are not included in this report but are instead reported within **Application Document 6.2.3.2 Part 3 Chapter 2 Ecology and Biodiversity**.

1.1.5 This appendix should be read in conjunction with the following figures:

- **Application Document 6.4.3.2.I.1 Kent Reptile Refugia Locations and Results**.

Scope

1.1.6 This report details the results of surveys undertaken to confirm the presence or likely absence of reptiles within the Kent Onshore Scheme Order Limits through appropriate surveys.

1.1.7 The findings of reptile surveys within the Kent Onshore Scheme Order Limits have informed the ecological impact assessment and identification of mitigation measures (where required) which are reported in **Application Document 6.2.3.2 Part 3 Kent Chapter 2 Ecology and Biodiversity**.

Survey Area

1.1.8 The survey areas were identified based on an initial assessment via aerial imagery and habitat assessment made during the extended Phase 1 walkover surveys. The locations of these surveys and refugia locations placed are shown in **Application Document 6.4.3.2.I.1 Kent Reptile Refugia Locations and Results**:

- Survey Area A is northeast of the River Stour, within land parcel 232.
- Survey Area B is southwest of the River Stour, within land parcel 237.
- Survey Area C is located northeast of the River Stour within land parcel 244.
- Survey Area D is northeast of the River Stour, and is situated parallel to the A256, within land parcel 336.

1.2 Reptile Legislation, Policy and Guidance

Widespread Reptiles

1.2.1 All UK native reptile species are protected against intentional killing or injuring under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (HM Government, 1981). It should be noted that, where it is predictable that reptiles are likely to be killed or injured by an activity (such as site clearance) this could legally constitute "*intentional killing or injuring*", even if that was not the intention of the activity.

1.2.2 There are four 'widespread species' of reptile in the UK: common lizard (*Zootoca vivipara*), slow worm (*Anguis fragilis*), grass snake (*Natrix helvatica*) and adder (*Vipera berus*). All four widespread reptile species are listed as species of principal importance under Section 41 of the NERC Act (2006), ((HM Government, 2006)) (and further amended by the Environment Act (HM Government, 2021)), making them a material consideration during the planning process.

Rare Reptiles

1.2.3 The two other native reptile species to the UK, sand lizard (*Lacerta agilis*) and smooth snake (*Coronella austriaca*), are European Protected Species and as such receive full protection under the Wildlife and Countryside Act 1981 (as amended) (HM Government, 1981) and The Conservation of Habitats and Species Regulations 2017 (as amended) (HM Government, 2017). The Kent Onshore Scheme and surrounding area does not contain suitable habitat for these species. These species are, therefore, not discussed further in relation to the Kent Onshore Scheme.

1.3 Methodology

Desk Study

1.3.1 A desk study was undertaken and records requested of common reptiles within the preceding ten years and within a 2 km radius of the Kent Onshore Scheme from the Kent and Medway Biological Records Centre.

1.3.2 The desk-study was undertaken on 6 June 2022 and updated on 4 October 2024 to obtain records of protected and notable species (Joint Nature Conservation Committee, 2023), (HM Government, 2006) within the proposed Kent Onshore Scheme Order Limits and appropriate Zones of Influence (ZOIs).

Zone of Influence

1.3.3 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.

1.3.4 The area over which a development may impact ecologically important features is known as the ZOI. 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 Kent Onshore Scheme Order Limits. The potential ZOI of a project in relation to reptiles is used to determine the extent of the reptile survey and study areas.

1.3.5 The ZOI was determined as all suitable habitats within the Kent Onshore Scheme Order Limits and relevant adjacent habitats (boundary scrub, tree lines and hedgerows), also noting any obvious territorial behavior that encompassed both the Kent Onshore Scheme Order Limits and adjacent fields. This was used to establish the required extent of the reptile survey.

Presence/Absence Surveys

1.3.6 Reptile presence/absence survey followed best practice guidance set out in the Herpetological Workers' Manual (Gent & Gibson, 2003). This involved placing artificial refugia flush to the ground in suitable habitat to provide basking and sheltering opportunities for reptiles. Artificial refugia comprised roofing tin and bitumen roofing felt measuring approximately 0.5 m x 0.75 m.

1.3.7 A total of 186 artificial refugia were installed within the Kent Onshore Scheme Order Limits in locations that were identified as being attractive to reptiles (e.g. sunny areas adjacent to scrub, often south-facing). Refugia were deployed in April 2024 and left in-situ to 'bed in' for at least two weeks. The locations of these artificial refugia are shown in **Application Document 6.4.3.2.I.1 Kent Reptile Refugia Locations and Results**. A summary of the number of artificial refugia installed in each Survey Area is provided in Table 1.1.

Table 1.1 Summary of artificial refugia installed in each survey area

Survey Area	Number of Artificial Refugia Installed
A	51
B	46
C	52
D	37

1.3.8 A total of seven survey visits for each survey area were undertaken between April and September 2024, during which all artificial refugia were checked for reptiles within a constant temperature range of between 10°C and 17°C and during appropriate weather conditions (Gent & Gibson, 2003). The survey conditions are detailed in Table 1.4.

1.3.9 Refugia were initially inspected from a suitable distance to identify any reptiles that may be basking on top without causing disturbance. Refugia were then approached quietly and carefully, and lifted swiftly to examine the ground beneath for reptiles. In addition, suitable habitat such as basking areas and natural refugia was inspected visually for reptiles. The species, life stage and sex of any reptiles encountered were recorded.

1.3.10 Data collected during the presence/absence survey were used to provide an indication of the population sizes of the species recorded, using guidance set out in Reptile survey – Froglife Advice Sheet 10 (Froglife, 1999). Twenty survey occasions would be required to fully determine population size. However, an initial estimate of reptile population size based on the information obtained during summer 2024 has been provided. This is based on peak adult counts recorded by surveyors in a single visit.

1.3.11 Reptiles were broadly classed as either adult, sub-adult or juvenile for the purposes of estimating size class based on individual characteristics, guidance from Froglife Advice Sheet 10 (Froglife, 1999) and surveyor experience.

1.3.12 The placement of refugia met the density requirements (ten refugia per hectare) for population estimates. Populations were classed as Exceptional, Good or Low (Table 1.2).

Table 1.2 Categories for establishing reptile population size (Froglife, 1999)

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

1.3.13 Population estimates described in Table 1.2 are based on placing and surveying ten refugia per hectare of suitable habitat.

Limitations

1.3.14 Visit 3 for Survey Area A was conducted at a maximum temperature range of 18ºC, which is above the recommended 10 to 17ºC range. As this was on only one visit out of seven, and is minorly above the recommended range, this is not considered to impact the validity of the overall survey results.

1.3.15 It should be noted that ecosystems are dynamic and constantly changing, and therefore species may move, or new species may be recorded in subsequent years. For this reason, and in accordance with current guidance, the existing survey data has a ‘shelf-life’ and should only be relied on for a period of two years from the date of survey (The Chartered Institute of Ecology and Environmental Management, 2019). After this date update surveys are likely to be required, and advice should be sought from an appropriately qualified ecologist to determine the survey scope and methods.

1.4 Results

Desk Study

1.4.1 Table 1.3 contains a summary of the results obtained from the desk study for the Kent Onshore Scheme Order Limits, showing records for protected and notable species of reptiles within 2 km of the Kent Onshore Scheme Order Limits.

Table 1.3 Desk study results for reptiles

Common Name	Scientific Name	Legally Protected Species	Species of Principal Importance	Other Notable Species	Present on Site	Present/ Potentially Present in wider ZoI	Latest Record	Closest Record
Slow worm	*Anguis fragilis*	Y	Y	-	Y	Y	Within Kent Onshore Scheme Order Limits, 2023	Within Kent Onshore Scheme Order Limits, 2023
Grass snake	*Natrix helvetica*	Y	Y	-	Y	Y	Within Kent Onshore Scheme Order Limits, 2023	Within Kent Onshore Scheme Order Limits, 2023
Sand lizard	*Lacerta agilis*	Y	Y	-	-	Y	Approximately 1.2 km south 2022	Approximately 1.2 km south 2022
Common lizard	*Zootoca vivipara*	Y	Y	-	Y	Y	Within Kent Onshore Scheme Order Limits, 2023	Within Kent Onshore Scheme Order Limits, 2023

Presence/Absence Survey Results

Weather conditions

1.4.2 Prior to the surveys commencing, both temperature and weather conditions were recorded to ensure that the surveys were conducted in appropriate conditions based on the species being surveyed for. This included wind strength, cloud coverage, and precipitation state.

1.4.3 Survey conditions have the potential to impact field survey results for reptile surveys. All surveys, except for Visit 3, Survey Area A were conducted in suitable conditions summarized in Table 1.4. The recorded temperature at the start of this survey was 1°C above the recommended range.

1.4.4 Field survey results are presented in Table 1.5 to Table 1.6.

Table 1.4 Reptile presence/absence survey weather conditions

Visit	Date	Survey Area	Start Temperature (°C)	Weather Conditions
1	13/05/2024	A	17	Scattered cloud cover, light breeze, dry
	07/05/2024	B, C, D	15	Clear, no clouds, light breeze, dry
2	10/05/2024	B, C, D	14	Clear, little cloud, sunny, light breeze, dry
	15/05/2024	A	17	Clear, light breeze, sunny, dry
3	15/05/2024	B, C, D	17	Clear, light breeze, sunny, dry
	17/05/2024	A	18	Sunny, still, dry
4	20/05/2024	A, B, C, D	14	Scattered clouds, light breeze, dry
5	22/05/2024	A, B, C, D	16	Overcast, light breeze, dry
6	30/05/2024	B, C, D	16	Overcast, moderate wind, dry
	04/06/2024	A	15	Occasional cloud, moderate wind, sunny, dry
7	04/06/2024	A, B, C, D	15	Occasional cloud, moderate wind, sunny, dry
	06/06/2024	A	17	Scattered cloud, still, dry

Habitats present

1.4.5 Survey Area A consisted of floodplain, grazed grassland, and unmanaged grassland. The grass at this Survey Area was intermittently grazed by sheep, and as a result varied in length across the land parcel, ranging from approximately 3 cm to 30 cm. Felts were placed in different areas of the land parcel to gain an accurate and unbiased insight into the presence or lack of reptiles, including in the floodplain area, hedgerow verges, and small scrub verges.

1.4.6 Survey Area B consisted of both managed and unmanaged grassland, tree lines, hedgerows, and scrub. The managed grassland was grazed intermittently by cattle. The areas of grassland ranged from approximately 3 cm to 20 cm. Felts were placed at the scrub verges, against the tree line, and by the side of the river within vegetation.

1.4.7 Survey Area C consisted of hedgerows, unmanaged grassland, scrub, and single scattered trees. The grass length was approximately 10 to 15 cm in most areas. Felts were placed along the verge of the scrub and trees in areas of slightly higher vegetation.

1.4.8 Survey Area D consisted of an arable field, with a steep grassed bank with a tree line consisting of mainly hawthorn at the top of the bank. The bank was not managed, and the grass was approximately 10 to 30 cm in length. Felts were placed on the sloping part of the bank in tall grasses and surrounding vegetation.

Presence/absence reptile survey

1.4.9 A summary of the results of the presence/absence survey for each Survey Area is provided in Table 1.5, Table 1.6, Table 1.7 and Table 1.8. Full reptile presence/absence survey data for each Survey Area is provided in **Annex 2.I.1**.

1.4.10 Population size estimate classifications (Low, Good, Exceptional) in Table 1.5, Table 1.6, Table 1.7 and Table 1.8 are based on guidance provided within Froglife Advice Sheet 10 (Froglife, 1999).

1.4.11 Reptiles were recorded in all the Survey Areas. A map of the locations of reptile populations recorded is provided in **Application Document 6.4.3.2.I.1 Kent Reptile Refugia Locations and Results**.

Table 1.5 Summary of reptile presence/absence survey results for Survey Area A

Visit/Date	Common Lizard			Slow Worm			Grass Snake		
Life Stage	**Adult**	**Sub-adult**	**Juvenile**	**Adult**	**Sub-adult**	**Juvenile**	**Adult**	**Sub-adult**	**Juvenile**
1 (13/05/2024)	6	0	0	27	1	1	0	0	0
2 (15/05/2024)	4	0	0	12	0	5	0	0	0
3 (17/05/2024)	1	1	0	25	1	0	1	0	0
4 (20/05/2024)	9	3	0	27	3	0	3	2	0
5 (22/05/2024)	1	0	1	13	1	7	0	1	0
6 (04/06/2024)	0	0	0	27	7	4	1	0	0
7 (06/06/2024)	2	0	0	19	0	0	2	0	0
Peak Count Per Species	**9**			**27**			**3**		
Population Size	**Good**			**Exceptional**			**Low**		

Table 1.6 Summary of reptile presence/absence survey results for Survey Area B

Visit/Date	Common Lizard			Slow Worm			Grass Snake		
Life Stage	Adult	Sub-adult	Juvenile	Adult	Sub-adult	Juvenile	Adult	Sub-adult	Juvenile
1 (07/05/2024)	0	0	0	0	0	0	0	0	0
2 (10/05/2024)	0	0	0	0	0	0	0	0	0
3 (15/05/2024)	0	0	0	0	0	0	0	0	0
4 (20/05/2024)	0	0	0	0	0	0	0	0	0
5 (22/05/2024)	0	0	0	0	0	0	0	0	0
6 (30/05/2024)	1	0	0	0	0	0	0	0	0
7 (04/06/2024)	0	0	0	0	0	0	0	0	0
Peak Count Per Species	**1**				**0**			**0**	
Population Size		**Low**			**Low**			**Low**	

Table 1.7 Summary of reptile presence/absence survey results for Survey Area C

Visit/Date	Common Lizard			Slow Worm			Grass Snake		
Life Stage	Adult	Sub-adult	Juvenile	Adult	Sub-adult	Juvenile	Adult	Sub-adult	Juvenile
1 (07/05/2024)	0	0	0	0	0	0	0	0	0
2 (10/05/2024)	0	0	0	0	0	0	0	0	0
3 (15/05/2024)	2	0	0	1	0	1	0	0	0

Visit/Date	Common Lizard			Slow Worm			Grass Snake		
4 (20/05/2024)	0	0	0	6	0	0	1	0	0
5 (22/05/2024)	2	1	0	8	0	0	0	0	0
6 (30/05/2024)	0	0	0	4	0	0	0	0	0
7 (04/06/2024)	0	0	0	7	0	0	0	0	0
Peak Count per Species	**2**			**8**			**1**		
Population Size		**Low**			**Good**			**Low**	

Table 1.8 Summary of reptile presence/absence survey results for Survey Area D

Visit/Date	Common Lizard			Slow Worm			Grass Snake		
Life Stage	**Adult**	**Sub-adult**	**Juvenile**	**Adult**	**Sub-adult**	**Juvenile**	**Adult**	**Sub-adult**	**Juvenile**
1 (07/05/2024)	0	0	0	0	0	0	0	0	0
2 (10/05/2024)	0	0	0	0	0	0	0	0	0
3 (15/05/2024)	5	0	0	2	2	6	0	0	0
4 (20/05/2024)	2	0	0	3	6	0	0	0	0
5 (22/05/2024)	0	0	0	4	6	0	0	0	0
6 (30/05/2024)	1	0	0	6	1	4	0	0	0
7 (04/06/2024)	3	0	0	6	0	8	0	0	0
Peak Count Per Species	**5**			**7**			**0**		
Population Size		**Good**			**Good**			**Low**	

Table 1.9 Peak adult counts and population size

Visit	Common Lizard	Slow Worm	Grass Snake
1	6	27	0
2	4	12	0
3	7	28	1
4	11	36	4
5	3	25	0
6	2	38	1
7	5	32	2
Population Size	**Good**	**Exceptional**	**Low**

1.5 Discussion

1.5.1 Reptiles were encountered within each of the survey areas. Survey Area B returned the fewest reptile records, and the highest numbers of reptile records were from Survey Area A. Sub-adult and juvenile reptiles were also recorded, indicating the presence of breeding populations.

1.5.2 The habitats in Survey Area B, although suitable for reptiles, were less so than those in the other areas. Cattle were present in the field for parts of the survey and refugia were often disturbed or had suffered trampling damage which may have impacted results. The grass itself was short and trampled and therefore unable to provide as adequate cover for hunting or protection from potential predators as other survey areas (for example grey heron (*Ardea cinerea*) which are known to be in the area).

1.5.3 Survey Area A returned significantly more reptile records than areas B, C or D. This is likely due to the habitat and features present. The Survey Area A borders a river which is favorable to reptiles such as grass snakes due to prey opportunities which can include fish. Areas of both short and long grassland are present, providing both basking opportunities and sheltered areas.

1.5.4 The peak counts for each species was recorded based on the highest number of each species seen on an individual survey and are as follows:

- Survey Area A: Common Lizard – 9 (Good), Slow Worm – 27 (Exceptional), Grass Snake – 3 (Low);
- Survey Area B: Common Lizard – 1 (Low), Slow Worm – 0, Grass Snake – 0;
- Survey Area C: Common Lizard – 2 (Low), Slow Worm – 8 (Good), Grass Snake – 1 (Low); and,
- Survey Area D: Common Lizard – 5 (Good), Slow Worm – 7 (Good), Grass Snake – 0.

1.5.5 Overall, across the Kent Onshore Scheme Order Limits the estimate populations of reptile (Froglife, 1999) are:

- Common lizard – Good;
- Slow worm – Exceptional; and,
- Grass snake – Low.

References

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Annex 2.I.1 Detailed Presence/Absence Results

A.1 Survey Area A

Table A.10 Full presence/absence results for Survey Area A.

Visit	Date	Refugia No.	Species	Count	Life Stage	Sex
1	07/05/2024	100	Slow worm	1	Adult	-
		100	Common lizard	2	Adult	-
		100	Slow worm	1	Adult	Female
		102	Common lizard	1	Adult	-
		102	Slow worm	2	Adult	-
		102	Slow worm	2	Adult	Male
		102	Slow worm	2	Adult	Female
		110	Slow worm	1	Adult	Male
		110	Slow worm	1	Adult	Female
		110	Slow worm	1	Sub-Adult	Female
		112	Slow worm	1	Adult	Female
		112	Slow worm	1	Adult	Male
		114	Slow worm	1	Adult	Male
		114	Slow worm	1	Juvenile	-
		114	Slow worm	1	Adult	Male
		116	Slow worm	1	Adult	Female
		120	Common lizard	1	Adult	-
		120	Slow worm	1	Adult	Male
		122	Common lizard	2	Adult	-
		124	Slow worm	1	Adult	Male
		125	Slow worm	1	Adult	Male
		130	Slow worm	5	Adult	-
		130	Slow worm	1	Adult	Female
		133	Slow worm	1	Adult	Female
		135	Slow worm	1	Adult	Female
		147	Slow worm	1	Adult	Male
2	15/05/2024	98	Common lizard	1	Adult	-
		98	Slow worm	1	Juvenile	Female
		99	Slow worm	1	Adult	Female
		103	Common lizard	2	Adult	-
		116	Slow worm	1	Adult	-
		118	Slow worm	1	Adult	Female
		127	Slow worm	1	Adult	Male
		127	Common lizard	1	Adult	-

Visit	Date	Refugia No.	Species	Count	Life Stage	Sex
		128	Slow worm	1	Adult	Female
		128	Slow worm	1	Adult	Male
		129	Slow worm	1	Adult	Male
		130	Slow worm	1	Adult	Male
		133	Slow worm	2	Juvenile	Male
		133	Slow worm	3	Adult	Female
		135	Slow worm	1	Adult	Female
		147	Slow worm	1	Adult	Female
		148	Slow worm	1		Female
3	17/05/2024	97	Slow worm	1	Adult	Female
		98	Slow worm	1	Sub-adult	Female
		100	Slow worm	1	Adult	Female
		102	Slow worm	3	Adult	Female
		110	Slow worm	1	Adult	Female
		112	Common lizard	1	Sub-adult	-
		114	Slow worm	1	Adult	Male
		116	Common lizard	1	Adult	-
		124	Slow worm	1	Adult	Male
		125	Slow worm	1	Adult	Male
		128	Slow worm	1	Adult	Female
		130	Slow worm	2	Adult	Female
		130	Slow worm	1	Adult	Male
		130	Grass snake	1	Adult	-
		131	Slow worm	1	Adult	-
		133	Slow worm	3	Adult	Male
		133	Slow worm	4	Adult	Female
		135	Slow worm	1	Adult	Female
		147	Slow worm	1	Adult	Female
		148	Slow worm	1	Adult	Male
		148	Slow worm	1	Adult	Female
4	20/05/2024	97	Common lizard	1	Sub-adult	-
		98	Common lizard	1	Adult	-
		100	Common lizard	1	Adult	-
		100	Grass snake	1	Sub-adult	-
		102	Common lizard	1	Sub-adult	-
		102	Slow worm	2	Adult	Female
		103	Common lizard	1	Adult	-
		108	Grass snake	1	Adult	-
		112	Slow worm	1	Adult	Female
		114	Slow worm	2	Adult	Male

Visit	Date	Refugia No.	Species	Count	Life Stage	Sex
		114	Common lizard	1	Adult	-
		118	Slow worm	1	Adult	Female
		120	Common lizard	1	Sub-adult	-
		122	Slow worm	1	Adult	Male
		123	Common lizard	1	Adult	-
		123	Slow worm	2	Adult	Female
		124	Slow worm	1	Adult	Male
		127	Common lizard	2	Adult	-
		127	Slow worm	2	Adult	Male
		129	Common lizard	1	Adult	-
		129	Slow worm	4	Adult	-
		130	Slow worm	2	Sub-adult	Female
		130	Slow worm	1	Sub-adult	Male
		130	Grass snake	1	Sub-adult	-
		131	Slow worm	3	Adult	Female
		133	Slow worm	2	Adult	Female
		133	Slow worm	2	Adult	Male
		141	Common lizard	1	Adult	-
		141	Grass snake	1	Adult	-
		145	Grass snake	1	Adult	-
		145	Slow worm	1	Adult	Female
		147	Slow worm	1	Adult	Female
		147	Slow worm	1	Adult	Male
		148	Slow worm	1	Adult	Female
5	22/05/2024	98	Slow worm	2	Juvenile	-
		98	Common lizard	1	Juvenile	-
		100	Slow worm	3	Adult	-
		100	Common lizard	1	Adult	-
		100	Grass snake	1	Sub-adult	-
		102	Slow worm	2	Juvenile	-
		110	Slow worm	2	Adult	-
		112	Slow worm	1	Juvenile	-
		116	Slow worm	1	Juvenile	-
		118	Slow worm	1	Juvenile	-
		118	Slow worm	1	Adult	-
		122	Slow worm	1	Adult	-
		128	Slow worm	1	Adult	Female
		130	Slow worm	3	Adult	-
		132	Slow worm	1	Sub-adult	Female
		147	Slow worm	2	Adult	-

Visit	Date	Refugia No.	Species	Count	Life Stage	Sex
6	04/06/2024	100	Slow worm	1	Adult	Male
		102	Slow worm	1	Adult	Male
		104	Slow worm	1	Adult	Female
		105	Slow worm	1	Sub-adult	Male
		109	Slow worm	1	Adult	Male
		110	Grass snake	1	Adult	-
		110	Slow worm	1	Adult	Male
		112	Slow worm	2	Sub-adult	Female
		114	Slow worm	1	Adult	Male
		114	Slow worm	1	Adult	Female
		116	Slow worm	1	Adult	Female
		118	Slow worm	1	Adult	Male
		118	Slow worm	1	Adult	Female
		120	Slow worm	1	Adult	Male
		122	Slow worm	1	Adult	Male
		122	Slow worm	1	Adult	Female
		125	Slow worm	1	Adult	Male
		126	Slow worm	1	Adult	Female
		127	Slow worm	1	Sub-adult	-
		130	Slow worm	2	Adult	Female
		131	Slow worm	6	Adult	Female
		133	Slow worm	4	Juvenile	-
		133	Slow worm	3	Sub-adult	-
		135	Slow worm	1	Adult	Female
		138	Slow worm	1	Adult	Female
		147	Slow worm	1	Adult	Male
		148	Slow worm	1	Adult	Male
7	06/06/2024	100	Common lizard	1	Adult	-
		100	Common lizard	1	Adult	Female
		108	Slow worm	1	Adult	Female
		108	Grass snake	1	Adult	-
		109	Slow worm	1	Adult	Female
		110	Grass snake	1	Adult	-
		110	Slow worm	1	Adult	Male
		112	Slow worm	1	Adult	Female
		114	Slow worm	1	Adult	Male
		118	Slow worm	1	Adult	Male
		127	Slow worm	1	Adult	Male
		130	Slow worm	1	Adult	Female
		130	Slow worm	1	Adult	Male
		132	Slow worm	3	Adult	Male

Visit	Date	Refugia No.	Species	Count	Life Stage	Sex
		133	Slow worm	3	Adult	Male
		138	Slow worm	1	Adult	Female
		145	Slow worm	1	Adult	Female
		147	Slow worm	1	Adult	Male
		147	Slow worm	1	Adult	Female

A.2 Survey Area B

Table A.11 Full presence/absence Results for Survey Area B

Visit	Date	Refugia No.	Species	Count	Life Stage	Sex
1	07/05/2024	-	-	0	-	-
2	10/05/2024	-	-	0	-	-
3	15/05/2024	-	-	0	-	-
4	20/05/2024	-	-	0	-	-
5	22/05/2024	-	-	0	-	-
6	30/05/2024	25	Common lizard	1	Adult	Unknown
7	04/06/2024	-	-	0	-	-

A.3 Survey Area C

Table A.12 Full presence/absence results for Survey Area C

Visit	Date	Refugia No.	Species	Count	Life Stage	Sex
1	07/05/2024	-	-	0	-	-
2	10/05/2024	-	-	0	-	-
3	15/05/2024	49	Slow worm	1	Adult	Male
		58	Common lizard	1	Adult	-
		63	Common lizard	1	Adult	-
		76	Slow worm	1	Juvenile	Female
4	20/05/2024	49	Grass snake	1	Adult	-
		49	Slow worm	1	Adult	Male
		53	Slow worm	2	Adult	Male
		57	Slow worm	1	Adult	Female
		82	Slow worm	1	Adult	Female
		93	Slow worm	1	Adult	Female
5	22/05/2024	49	Slow worm	1	Adult	Male
		53	Slow worm	1	Adult	Female
		57	Slow worm	1	Adult	Female
		59	Common lizard	1	Adult	-
		63	Common lizard	1	Adult	-
		77	Slow worm	1	Adult	Female
		82	Slow worm	4	Adult	Female
		85	Common lizard	1	Sub-adult	-
6	30/05/2024	53	Slow worm	1	Adult	Male
		57	Slow worm	1	Adult	-
		77	Slow worm	1	Adult	-
		86	Slow worm	1	Adult	-
7	03/06/2024	47	Slow worm	1	Adult	Female
		49	Slow worm	1	Adult	Male
		53	Slow worm	1	Adult	Male
		56	Slow worm	1	Adult	Male
		58	Slow worm	1	Adult	Female
		77	Slow worm	1	Adult	Female
		86	Slow worm	1	Adult	Female

A.4 Survey Area D

Table A.13 Full presence/absence results for Survey Area D

Visit	Date	Refugia No.	Species	Count	Life Stage	Sex
1	07/05/2024	-	-	0	-	-
2	10/05/2024	-	-	0	-	-
3	15/05/2024	149	Common lizard	2	Adult	-
		154	Common lizard	1	Adult	-
		165	Common lizard	1	Adult	-
		168	Common lizard	1	Adult	-
		179	Slow worm	2	Juvenile	-
		179	Slow worm	2	Egg	-
		182	Slow worm	1	Juvenile	-
		182	Slow worm	1	Adult	Male
		182	Slow worm	1	Adult	Female
		184	Slow worm	2	Juvenile	-
		185	Slow worm	1	Juvenile	-
		185	Slow worm	2	Sub-adult	Female
4	20/05/2024	159	Common lizard	1	Adult	-
		166	Common lizard	1	Adult	-
		182	Slow worm	1	Adult	Male
		184	Slow worm	1	Adult	Male
		184	Slow worm	1	Adult	Female
		184	Slow worm	1	Sub-adult	Female
		185	Slow worm	5	Sub-adult	Female
5	22/05/2024	182	Slow worm	1	Adult	Male
		184	Slow worm	3	Adult	Male
		185	Slow worm	6	Sub-adult	Female
6	30/05/2024	182	Slow worm	2	Adult	Male
		183	Slow worm	1	Adult	-
		184	Slow worm	1	Adult	-
		184	Common lizard	1	Adult	-
		185	Slow worm	1	Adult	Female
		185	Slow worm	1	Sub-adult	-
		185	Slow worm	4	Juvenile	-
		186	Slow worm	1	Adult	Female
7	03/06/2024	149	Common lizard	1	Adult	-
		153	Slow worm	1	Adult	Male

Visit	Date	Refugia No.	Species	Count	Life Stage	Sex
		179	Common lizard	1	Adult	-
		182	Slow worm	1	Adult	-
		182	Slow worm	5	Juvenile	-
		182	Common lizard	1	Adult	-
		183	Slow worm	2	Adult	Male
		184	Slow worm	3	Juvenile	-
		185	Slow worm	1	Adult	Female
		185	Slow worm	1	Adult	Male

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