A12 Chelmsford to A120 widening scheme

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9.23 Tetratech Reptile Survey Report

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9.23 Tetratech Reptile Survey Report

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A12 Chelmsford to A120 widening scheme

REPTILE SURVEY REPORT

784-B034849

Jacobs

January 2023

[redacted]

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CONTENTS

1.0 INTRODUCTION 5

1.1 Background 5

1.2 Site Location 5

1.3 Development Proposals 6

1.4 Purpose of the Report 6

2.0 PREVIOUS REPORTS 7

3.0 METHODOLOGY 7

3.1 Desk Study 7

3.2 Reptile Presence / Likely Absence Surveys 7

3.3 Reptile Survey Assessment 10

3.4 Limitations 10

4.0 SURVEY RESULTS 12

4.1 Reptile Presence / likely absence survey 12

4.1.1 Relevant Desk Study Data 12

4.1.2 Field Survey Results 13

4.1.3 Peak Counts 14

4.1.4 Population Size Class Assessment 14

4.1.5 Reptile Status 14

4.1.6 Reptile Distribution and Habitats Suitable for Reptiles 14

4.2 Legislation 16

4.2.1 Wildlife and Countryside Act 1981 (as amended) 16

4.2.2 Natural Environment and Rural Communities Act 2006 16

4.2.3 Planning policy 16

5.0 DISCUSSION 17

5.1 Potential Impacts 17

5.2 Mitigation 18

5.3 Reasonable Avoidance measures for reptiles 18

6.0 SUMMARY 18

7.0 REFERENCES 19

FIGURES 20

APPENDIX A – REPORT CONDITIONS 21

APPENDIX B – GENERAL SITE PHOTOS 22

APPENDIX C – FURTHER SURVEY DETAILS 29

EXECUTIVE SUMMARY

Contents	Summary
Site Location	A12 Chelmsford to A120 widening scheme – centred on Grid Ref TL 82853 15638 with 29 survey sites spread along the site– see Figure 1.
Proposals	The A12 Chelmsford to A120 widening scheme will involve a mix of upgrade of the current online A12 carriageway, proposed new offline carriageway and decommission of redundant carriageway.
Existing Site Information	Previous population estimate surveys were carried out in 2017 by Jacobs (National Highways, 2022). Of the 28 sites surveyed, common lizard was recorded at 15 sites (5, 6, 7, 8, 11, 13, 14, 15, 16, 17, 18, 19, 20, 21, 25), slow worm at 8 sites (7, 8, 11, 12, 13, 17, 18, 19) and grass snake at three sites (9, 18, 22). Reptiles were not detected during any of the survey visits at 10 of the sites (Survey Sites 1, 2, 3, 4, 10, 23, 24, 26, 27 and 28).
Scope of this Survey(s)	A reptile survey and population class assessment were undertaken, involving 15 site visits at sites 1, 3, 11, and 13, and 14 site visits at sites 15, 16, 17, 24, 27, and 28 to establish presence / likely absence, species, and estimated population at each site. Ten survey sites in 2022 allowed access.
Results	• Three species of reptile were recorded across 10 sites including common lizard, slow worm, and grass snake. • **No reptiles were observed at sites 1, 3, 15, 24, and 28 recording a likely absence.** • The survey data recorded appears to indicate a “low population” of common lizards, grass snakes, and slow worms on sites 11, 13, 16, 17, and 27 (Froglife, 1999). • When site 16 is assessed against the “key reptile sites” criteria it meets criteria 1, “supports three or more reptile species” as the site supports common lizards, slow worm, and grass snake. Therefore, this site is assessed as being a “key reptile site”.
Recommendations	• If adverse effects on reptiles are anticipated, mitigation will be required to avoid an offence under schedule 5 of the Wildlife and Countryside Act 1981 (as amended). • Detailed mitigation is outlined in Jacobs ES.

GLOSSARY

CIEEM	Chartered Institute of Ecology & Environmental Management
EA	Ecological Appraisal
ECoW	Ecological Clerk of Works
JNCC	Joint Nature Conservation Committee
LNR	Local Nature Reserve
MCIEEM	Member of Chartered Institute of Ecology & Environmental Management
Natura 2000 site	A European site designated for its nature conservation value
NE	Natural England
SAC	Special Area of Conservation
SSSI	Site of Special Scientific Interest
TT	Tetra Tech
W&CA	Wildlife & Countryside Act 1981 (as amended)

1.0 INTRODUCTION

1.1 BACKGROUND

Tetra Tech was commissioned by Jacobs on 22nd February 2022 to undertake reptile surveys of the site known as A12 Chelmsford to A120 widening scheme.

This report has been prepared by Tetra Tech Assistant Ecologist Hannah Coutts BSc and the conditions pertinent to it are provided in Appendix A.

1.2 SITE LOCATION

The site is located on the A12 between junction 19 (Boreham, Chelmsford interchange) and junction 25 (A120 Marks Tey interchange). During the months of September to October, access was granted to carry out reptile surveys on 10 of the 29 sites. See Figure 1 for site locations and Appendix B for site photos. These individual 10 sites are located as follows.

- **Site 24:** located at Feering, Colchester and is centred at Ordnance Survey National Grid Reference TL8813220614. This site was a small field consisting of tall ruderal vegetation, small, scattered trees, and scrubs. The northeast, south, and southwest field boundaries were made up of hedgerows. Immediately to the south of the site was the A12 road, located to the north and west was arable fields, and to the east of the site was residential and commercial buildings. The closest designated site was the Brockwell Meadows LNR which was located 2.3km southwest of the site.
- **Site 27:** located at ARC Raceway UK, Colchester and is centred at Ordnance Survey National Grid Reference TL9026022417. This site consisted of a disused racetrack with varied topography which was encompassed with small trees and shrubs. A shallow filled ditch was located immediately to the south of the racetrack. A large quantity of disused materials including tyres, brash piles, artificial grass, and wood were scattered across the site. The wider area included arable fields to the north, east, and west and the A12 road was located to the south. The closest designated site was the Marks Tey Brickpit SSSI which was located 1.7km to the northeast of the site.
- **Site 28:** located at Doggetts Lane, Marks Tey and is centred at Ordnance Survey National Grid Reference TL9103822944. This site was a field encompassed with hedgerows and contains tall ruderal, ephemeral / short perennial, small, scattered trees, and scrubs. Piles of logs were also situated in various locations across the site. The wider site included arable fields to the east, south, and west of the site, a petrol station and the A12 road to the north, and residential buildings to the southwest and west. The closest designated site was the Marks Tey Brickpit SSSI which was located 0.98km north of the site.
- **Site 15:** located at Rivenhall, Witham and is centred at Ordnance Survey National Grid Reference TL8418316494. This site comprised two fields of semi-improved grassland encompassed with small trees and scrubs. To the north of the site was a service station and the A12 road. Located to the east and south of the site were arable fields, and to the west was residential and commercial buildings. The nearest designated site was the Whetmead LNR which was located 2.4km to the southwest of the site.
- **Site 16:** located at Henry Dixon Road, Rivenhall and is centred at Ordnance Survey National Grid Reference TL8381116824. This site consisted of a small land parcel made up of dense tall ruderal vegetation. A stream was located immediately adjacent to the south of the site, a railway was located to the northwest, and arable fields were located to the northeast and east. The closest designated sites were the Whetmead LNR which was located 2.7km to the

southwest of the site, and the Brockwell Meadows LNR which was located 2.8km to the northeast of the site.

- **Site 17:** located immediately adjacent to the north of the A12 and is centred at Ordnance Survey National Grid Reference TL8430916892. This site was located to the south of a large arable field and consisted of a grass verge with tall ruderal vegetation. The closest designated sites were the Brockwell Meadows LNR which was located 2.7km to the southwest of the site, and the Whetmead LNR which was located 2.8km to the northeast of the site.
- **Site 13:** located at Whetmead LNR, Witham and is centred at Ordnance Survey National Grid Reference TL8268013826. The site consisted of small parcels of tall ruderal vegetation with scattered shrubs and trees. The River Brain ran immediately adjacent to the south of the site, and Blackwater Lane ran adjacent to the north. The wider site consisted of residential buildings and the A12 road to the east.
- **Site 11:** located at Howbridge Hall Lane, Witham and is centred at Ordnance Survey National Grid Reference TL8151412730. The site consisted of two arable fields, and two land parcels of semi-improved grassland, all of which were encompassed with hedgerows. The site also contained a dry ditch which is located in the centre of the site, and a dried-out pond which was located to the southwest of the site. In the wider site, located to the north was a residential building and the A12 road. The nearest designated site was the Whetmead LNR which was located 1.6km to the northeast of the site.
- **Site 3:** located at the Chelmsford Bypass, Boreham and is centred at Ordnance Survey National Grid Reference TL7404609171. The site was located on the grass verge, immediately adjacent to the west of the A12 road. The site consisted of tall ruderal vegetation with scattered trees and shrubs. A waterbody was also located to the south of the site. The wider area included the A130 road to the northwest, and commercial buildings to the east and south. The closest designated site was the Chelmer Valley Riverside LNR which was located 2.9km to the west of the site.
- **Site 1:** located at Springfield, Chelmsford and is centred at Ordnance Survey National Grid Reference TL7413207862. The site consisted of semi-improved grassland with an orchard to the south, and the River Chelmer located to the east. The wider site included arable fields to the north and east of the site, and the A12 road to the west. The nearest designated sites were the Blake's Wood & Lingwood Common SSSI which was located 2.6km to the southeast of the site, and Chelmer Valley Riverside LNR which was located 2.7km to the west of the site.

1.3 DEVELOPMENT PROPOSALS

The A12 Chelmsford to A120 widening scheme will involve a mix of upgrade of the current online A12 carriageway, proposed new offline carriageway and decommission of redundant carriageway.

1.4 PURPOSE OF THE REPORT

The purpose of this report is to:

- Outline the legislative protection given to reptiles;
- Identify suitable habitats and features within the site that have the potential to be used by reptiles;
- Summarise the findings of the reptile presence / likely absence surveys and report on the presence or otherwise of reptile species at the site; and
- Provide an assessment of the potential ecological constraints to the proposed works at the site and recommendations for avoidance, mitigation, licensing, and enhancement where appropriate.

Note that scientific names are provided at the first mention of each species and common names (where appropriate) are then used throughout the rest of the report for ease of reading.

2.0 PREVIOUS REPORTS

Previous population estimate surveys were undertaken in 2017 by Jacobs (National Highways, 2022). Of the 28 sites surveyed, common lizard was recorded at 15 sites (5, 6, 7, 8, 11, 13, 14, 15, 16, 17, 18, 19, 20, 21, 25), slow worm at 8 sites (7, 8, 11, 12, 13, 17, 18, 19) and grass snake at three sites (9, 18, 22). Reptiles were not detected during any of the survey visits at 10 of the sites (Survey Sites 1, 2, 3, 4, 10, 23, 24, 26, 27 and 28).

All survey sites were scoped for previously by the client (Jacobs) based on proposed impacts to these areas due to the A12 road widening scheme.

3.0 METHODOLOGY

3.1 DESK STUDY

A short desk study was carried out using open data from the NBN Atlas to look at local reptile species records within a 2km radius from each of the 10 sites that were surveyed in 2022. Results are exhibited in Table 3.

3.2 REPTILE PRESENCE / LIKELY ABSENCE SURVEYS

In accordance with guidance outlined in the Herpetofauna Workers' Manual (Gent & Gibson, 2003) and Froglife's Reptile Surveys: Advice Sheet 10 (1999) surveys were undertaken to establish the presence or likely absence of reptile species within the 10 sites (see Figure 1).

Artificial refuges were constructed from sections of bitumen roofing felt measuring approximately 0.5m x 0.5m and were placed on the 10 sites which were accessed on the 1st of September 2022. The number of refuges placed on the site exceeded the best practice standard of a minimum of 10 artificial refuges per hectare of suitable habitat (Froglife, 1999). See Figure 2 for the refuge placement plans.

In total 255 artificial refugia were originally placed within the scheme across the initial ten survey areas. The number of refugia for each survey area was as follows:

- Site 1 (Approximately 0.45ha): 10 artificial refugia
- Site 3 (Approximately 0.79ha): 10 artificial refugia
- Site 11 (Approximately 4.0ha): 50 artificial refugia
- Site 13 (Approximately 0.32ha): 35 artificial refugia
- Site 15 (Approximately 6.69ha): 65 artificial refugia
- Site 16 (Approximately 0.61ha): 15 artificial refugia
- Site 17 (Approximately 0.35ha): 15 artificial refugia
- Site 24 (Approximately 0.5ha): 15 artificial refugia
- Site 27 (Approximately 0.85ha): 20 artificial refugia
- Site 28 (Approximately 1.49ha: 20 artificial refugia

Refugia were placed in areas which provided basking habitats adjacent to areas which provide natural shelter and protection including dense scrub (Gent & Gibson, 2003). Habitats which were most

suitable to support reptiles was targeted during the placement of artificial refugia around the sites as the survey aims to determine reptile presence or absence only.

The artificial refuges were then left undisturbed on the 10 sites for five days prior to the commencement of the surveys to allow reptiles on the site to find and utilise them.

15 survey visits to check the artificial refugia were conducted at sites 1, 3, 11, and 13 between the 5th September and the 14th of October 2022, and 14 survey visits were conducted at sites 15, 16, 17, 24, 27, and 28 between the 5th of September and the 21st of October 2022. The refuges were removed on the final survey visit. During each visit, each artificial refuge was first checked for basking individuals from a distance, before slowly approached and hand searched for sheltering reptiles.

Reptiles are active from the month of March to October, but the recommended months for surveying are April, May, and September (Froglife, 1999). The sand lizard is associated with heathland and coastal sand dune and the smooth snake is associated with heathlands (Gent and Gibson, 2003). These habitat types are absence from the scheme or adjacent land and therefore it is considered unlikely these species are present within the scheme. The scheme contains habitats suitable to support common reptiles including grass snake, slow worm, and common lizard.

Survey guidance (Froglife, 1999), states that the optimal time to survey reptiles is between 08:30 to 11:00 and 16:00 and 18:30 and when the air temperature is between 9°C and 18°C. Heavy rain and wind are considered unsuitable (Froglife, 1999). Surveys were conducted in line with the above guidance and any deviations from this are discussed in the Limitations section (Section 3.2). As reptile activity is heavily dependent on weather conditions, the surveyor recorded air temperature, wind speed, precipitation, and cloud cover at each of the 14 survey visits. Details of the dates are given in Table 1 below. The full list of times and weather conditions for each survey visit are given in Appendix C below.

Table 1: Dates of surveys

Site	Dates surveyed
1	06/09/2022, 08/09/2022, 12/09/2022, 14/09/2022, 16/09/2022, 23/09/2022, 27/09/2022, 29/09/2022, 03/10/2022, 05/10/2022, 07/10/2022, 11/10/2022, 14/10/2022, and 21/10/2022.
3	06/09/2022, 08/09/2022, 12/09/2022, 14/09/2022, 16/09/2022, 23/09/2022, 27/09/2022, 29/09/2022, 03/10/2022, 05/10/2022, 07/10/2022, 11/10/2022, 14/10/2022, and 21/10/2022.
11	06/09/2022, 08/09/2022, 12/09/2022, 14/09/2022, 16/09/2022, 23/09/2022, 27/09/2022, 29/09/2022, 03/10/2022, 05/10/2022, 07/10/2022, 11/10/2022, 14/10/2022, and 21/10/2022.
13	06/09/2022, 08/09/2022, 12/09/2022, 14/09/2022, 16/09/2022, 23/09/2022, 27/09/2022, 29/09/2022, 03/10/2022, 05/10/2022, 07/10/2022, 11/10/2022, 14/10/2022, and 21/10/2022.
15	05/09/2022, 07/09/2022, 09/09/2022, 13/09/2022, 15/09/2022, 20/09/2022, 22/09/2022, 26/09/2022, 28/09/2022, 30/09/2022, 04/10/2022, 06/10/2022, 10/10/2022, and 13/10/2022.
16	05/09/2022, 07/09/2022, 09/09/2022, 13/09/2022, 15/09/2022, 20/09/2022, 22/09/2022, 26/09/2022, 28/09/2022, 30/09/2022, 04/10/2022, 06/10/2022, 10/10/2022, and 13/10/2022.
17	05/09/2022, 07/09/2022, 09/09/2022, 13/09/2022, 15/09/2022, 20/09/2022, 22/09/2022, 26/09/2022, 28/09/2022, 30/09/2022, 04/10/2022, 06/10/2022, 10/10/2022, and 13/10/2022.
24	05/09/2022, 07/09/2022, 09/09/2022, 13/09/2022, 15/09/2022, 20/09/2022, 22/09/2022, 26/09/2022, 28/09/2022, 30/09/2022, 04/10/2022, 06/10/2022, 10/10/2022, and 13/10/2022.
27	05/09/2022, 07/09/2022, 09/09/2022, 13/09/2022, 15/09/2022, 20/09/2022, 22/09/2022, 26/09/2022, 28/09/2022, 30/09/2022, 04/10/2022, 06/10/2022, 10/10/2022, and 13/10/2022.
28	05/09/2022, 07/09/2022, 09/09/2022, 13/09/2022, 15/09/2022, 20/09/2022, 22/09/2022, 26/09/2022, 28/09/2022, 30/09/2022, 04/10/2022, 06/10/2022, 10/10/2022, and 13/10/2022.

The reptile surveys were conducted by TT Assistant Ecologist Hannah Coutts, TT Assistant Ecologist Neil Smith, TT Assistant Ecologist Skye Jakeman, TT Senior Ecological Richard Brown, and TT Senior Ecologist Ian Ruston.

3.3 REPTILE SURVEY ASSESSMENT

Below is the methodology from the Froglife Handbook in relation to the key reptile sites criteria and the three population scores (Froglife, 1999).

If during works a good or excellent population of reptiles is discovered in an area where habitat loss may have a direct impact on the species, works should seize while a strategy and mitigation is put in place. See Table 2 below for identifying the size of a reptile population.

Table 2: Table Assessing population size using peak counts (Froglife, 1999)

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

3.4 LIMITATIONS

The details of this report will remain valid until October 2023 (CIEEM, 2019), after which the validity of this assessment should be reviewed to determine whether further updates are necessary. It is not certain that further surveys would be required following the 12-month post-survey period, however the validity check will establish this. The 12-month period is less than a typical 18-month period post survey due to the mobile nature of the species and the number of potential locations across the large site which could be occupied if local conditions change. Note that the recommendations within this report should be reviewed (and reassessed if necessary) should there be any changes to the site boundaries or development proposals which the survey and this report was based upon.

Land access was not permitted at sites 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 18, 19, 20, 21, 22, 23, 25, 26 to which are of interest for reptiles within the boundaries of the proposed scheme.

Due to the commencement of surveys late in the season, artificial reptile refugia were only left to bed in for five days (as opposed to two recommended in best practice guidance). As reptiles were encountered during the first checks in many parts of the site this is not considered a significant constraint to the quality of survey data obtained.

Surveys continued into October in order to achieve the minimum required number of survey visits. The weather conditions were suitable for reptiles at the time of the surveys and therefore this does not represent a significant constraint to the data collected.

14 out of the possible 15 site visits were carried out at sites 15, 16, 17, 24, 27, and 28 due to the Costain site compound being closed on Wednesday 12th October 2022. As a result of this, we were not able to visit the sites on this day. However, this is not considered a significant limitation as it is evident that an accurate population assessment was carried out from the other visits which found populations of reptiles.

Site 13: On Thursday 29th September 2022 five mats were displaced from site. Surveyors were unable to locate the misplaced mats, and therefore the five missing mats were replaced on the next survey visit (Monday 3rd October 2022).

Site 1: During visit 8 on Tuesday 27th September 2022 the field, including five artificial refugia, had been flailed. As a result of this the five lost mats were replaced on the following survey on Thursday 29th September 2022.

On the 23rd of September during a visit to sites 1, 3, 11, and 13 it was raining lightly (between 0.25 and 1mm/hr). additionally, on the 26th of September and the 10th of October during visits to sites 15, 16, 17, 24, 27, and 28 it was also raining lightly (between 0.25 and 1mm/hr). These weather conditions are typically considered to not be favoured by reptile species. However, this was not considered a significant limitation as the light rain did not last the entirety of the survey and reptiles were still recorded.

The survey data reflects the site at the time of survey. Species can move in and out of an area following a survey, and habitats are subject to change.

4.0 SURVEY RESULTS

4.1 REPTILE PRESENCE / LIKELY ABSENCE SURVEY

4.1.1 Relevant Desk Study Data

Of the 28 sites surveyed, common lizard was recorded at 15 sites (5, 6, 7, 8, 11, 13, 14, 15, 16, 17, 18, 19, 20, 21, 25), slow worm at 8 sites (7, 8, 11, 12, 13, 17, 18, 19) and grass snake at three sites (9, 18, 22) (National Highways, 2022). Reptiles were not detected during any of the survey visits at 10 of the sites (Survey Sites 1, 2, 3, 4, 10, 23, 24, 26, 27 and 28). It was also noted that habitat throughout the scheme was not considered suitable for adder.

See Table 3 below for the results of the short desk study.

Table 3: NBN Atlas Desk Study Data

Site	Number of Reptiles	Direction	Dates Recorded
1	2 x slow worms	North & West	2012 & 2019
3	1 x slow worm	South	2019
11	12 x slow worms 2 x grass snakes	North & East	2012 – 2019
13	12 x slow worms 2 x grass snakes	North & East	2012 – 2019
15	7 x slow worms 3 x grass snakes 1 x common lizard	North & West	2018 – 2020
16	7 x slow worms 3 x grass snakes 1 x common lizard	North & West	2018 – 2020
17	7 x slow worms 3 x grass snakes 1 x common lizard	North & West	2018 – 2020
24	0	N/A	N/A
27	0	N/A	N/A
28	0	N/A	N/A

4.1.2 Field Survey Results

No reptiles were observed at sites 1, 3, 15, 24, and 28 recording a likely absence for these sites. Reptiles were only recorded during surveys at sites 27, 16, 17, 13, and 11. Table 4 details the findings made. The locations of these reptile locations are presented in figure 2.

Table 4: Summary results from all survey visits

Survey Area	Dates surveyed	2022 Survey Results	Mat ID(s)
11	29/09/2022	1 Adult common lizard	BF
13	06/09/2022	1 Adult slow worm	DC
	12/09/2022	2 Adult slow worms and 1 juvenile slow worm	DD
	14/09/2022	1 Adult slow worm	DA
	23/09/2022	2 Adult slow worms	DC
	29/09/2022	2 Adult slow worms	DD & DC
	03/10/2022	4 Adult slow worms and 5 juvenile slow worms	DL
	05/10/2022	5 Adult slow worms and 4 juvenile slow worms	DL
	07/10/2022	3 Adult slow worms and 3 juvenile slow worms	DL
	11/10/2022	3 Adult slow worms and 3 juvenile slow worms	DL
	14/10/2022	3 Adult slow worms and 4 juvenile slow worms	DL
	21/10/2022	2 Adult slow worms and 2 juvenile slow worms	DL
16	09/09/2022	1 Adult common Lizard and 1 juvenile common lizard	GU & GV
	13/09/2022	2 Adult slow worms	HA & GV
	15/09/2022	1 Adult common lizard and 1 juvenile common lizard	GY & GZ
	20/09/2022	3 Adult common lizards and 1 juvenile slow worm	GY & GV & GU
	26/09/2022	3 Adult common lizards	GV & GW & GY
	28/09/2022	2 Adult common lizards	GZ & GY
	30/09/2022	1 Adult grass snake	GO
	04/10/2022	1 Adult common lizard, 1 adult slow worm and 1 juvenile common lizard	GU & GW & GY
17	05/09/2022	1 Adult common lizard	HI
27	07/09/2022	1 Adult common lizard	IO
	20/09/2022	4 Adult common lizards	IV & IW
	04/10/2022	1 Adult slow worm	IO

4.1.3 Peak Counts

See table 5 below exhibiting the peak counts of reptiles found at each site.

Table 5: Peak Counts

Site Number	Peak Count	Date of Peak Count
11	1 Adult common lizard	29/09/2022
13	Total 9 slow worms (5 adult and 4 juvenile)	05/10/2022
16	Adult grass snake peak count: 1	30/09/2022
	Adult common lizard peak count: 3	20/09/2022 & 26/09/20022
	Adult slow worm peak count: 2	13/09/2022
17	1 Adult common lizard	05/09/2022
27	4 Adult common lizards	20/09/2022

4.1.4 Population Size Class Assessment

The survey data recorded appears to indicate a “low population” of common lizards, grass snakes, and slow worms on sites 11, 16, 17, and 27 (Froglife, 1999). In addition, the reptile results show that a “good population” of slow worms are present on site 13 as the peak count is five.

When site 16 is assessed against the “key reptile sites” criteria it meets criteria 1, *“supports three or more reptile species”* as the site supports common lizards, slow worm, and grass snake. Therefore, this site is assessed as being a “key reptile site”.

4.1.5 Reptile Status

Grass snake, slow worm and common lizard are listed as species of principal importance in Section 41 of the Natural Environment and Rural Communities Act 2006 and protected from intentionally killing or injury, being traded or sold under the Wildlife and Countryside Act 1981 (as amended).

The presence of juvenile slow worm at sites 13 and 16 suggest that those area are used as a breeding ground.

Although no reptile populations have been observed in the remaining sites (1, 3, 15, 24, and 28), this does not prove their absence due to the high mobility of reptiles, but the results exhibit likely absence.

4.1.6 Reptile Distribution and Habitats Suitable for Reptiles

Site 11: one adult common lizard was observed in the centre of the site, taking refuge under a bitumen felt mat on the southern side of the ditch. This south facing slope provides an excellent location for reptiles as it receives more hours of sunlight.
Site 13: most reptile observations were in the north-western area of the site associated with tall ruderal vegetation. It was also found that the refuges placed on areas of the ground with large cracks had reptiles lying underneath. This is due to the crevices providing shelter for reptile species. This site had excellent sun exposure, and the River Brain was located adjacent to the south of the site, providing a water source for the reptiles inhabitants. Furthermore, the area which in which reptile species were found were undisturbed by human presence, due to them being placed in an area adjacent to the public footpath.
Site 16: the reptiles were observed in the north-west of the site in an area of dense tall ruderal vegetation. Located adjacent to the north of the site is a railway consisting of ballast which provides

great basking opportunities for reptiles. Furthermore, to the south of the site is a small stream which provides a water source and hunting opportunities for grass snakes.

Site 17: this site is located to the north of the A12 road. An adult common lizard was found basking on an artificial refuge which was exposed in the sunlight.

Site 24: common lizards were observed basking on the artificial refuges upon the areas of varied topography, particularly the south facing slopes consisting of tall ruderal and scrub vegetation. This site consists of excellent basking and refuge opportunities due to the considerable number of disused debris placed across the site including tyres, wood, and bitumen felt. A small ditch also runs along the centre of the site, providing a water source for reptiles.

4.2 LEGISLATION

4.2.1 Wildlife and Countryside Act 1981 (as amended)

All six species of reptile native to the United Kingdom are protected through inclusion under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and benefit from various levels of protection. This legislation makes it an offence to:

- Intentionally or recklessly kill or injure these animals; and
- Sell, offer for sale, possess, or transport for the purpose of sale of publish advertisement to buy or sell individual reptiles

4.2.2 Natural Environment and Rural Communities Act 2006

All six reptile species native to the UK are also afforded more general protection in England (and Wales) within the NERC Act. This imposes a duty on all public bodies, including local authorities and statutory bodies, in exercising their functions, to have due regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity [Section 40 (1)]. It notes that conserving biodiversity includes restoring or enhancing a population or habitat [Section 40 (3)]. Consequently, attention should be given to dealing with the modification or development of an area if aspects of it are deemed important to reptiles, such as foraging, basking, and resting areas.

All UK reptile species are listed as 'Species of Principal Importance' for the Conservation of Biodiversity in England and are listed under Section 41 of the NERC Act.

4.2.3 Planning policy

4.2.3.1 National Planning Policy Framework 2021

The National Planning Policy Framework 2021 (Ministry of Housing, Communities and Local Government, 2021) outlines how planning policies should be applied at the local authority level. Paragraphs 174, 175, 179, 180, 181, and 182 emphasise the need to conserve and enhance existing biodiversity and valuable habitats including designated sites, while preventing development that would cause significant adverse impacts to biodiversity and habitats.

4.2.3.2 Local Planning Policy

Policy LPP 63 in the Braintree District Council Local Plan (2022) outlines:
"Policy LPP 63 Natural Environment and Green Infrastructure Development proposals must take available measures to ensure the protection and enhancement of the natural environment, habitats, biodiversity and geodiversity of the District and to be acceptable, also taking climate change and water scarcity into account in their design. This will include protection from pollution. Proposals inside the District which are likely to adversely affect, either individually or cumulatively, International or Nationally designated nature conservation sites within and outside the District will not normally be acceptable."

Policy LPP 66 in the Braintree District Council Local Plan (2022) outlines:
"Policy LPP 66 Protection, Enhancement, Management and Monitoring of Biodiversity Development proposals shall provide for the protection of biodiversity and the mitigation or compensation of any adverse impacts. Additionally, enhancement of biodiversity should be included in all proposals, commensurate with the scale of the development. For example, such enhancement could include watercourse improvements to benefit biodiversity and improve water quality, habitat creation, wildlife links (including as part of green or blue infrastructure) and building design which creates wildlife habitat (e.g. green roofs, bird or bat boxes as integral parts of buildings in partnership with organisations such as The Swift Conservation Group and Essex Wildlife Trust). Previously developed

land (brownfield sites) can harbour biodiversity. The reuse of such sites must be undertaken carefully with regard to existing features of biodiversity interest. Development proposals on such sites will be expected to include measures that maintain and enhance important features and appropriately incorporate them within any development of the site. If significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or as a last resort, compensated for, then planning permission should be refused."

Furthermore, **Policy DM16** within the Chelmsford Local Plan outlines:
"POLICY DM16 – ECOLOGY AND BIODIVERSITY
A) Internationally Designated Sites Developments that are likely to have an adverse impact (either individually or in combination with other developments) on European Designated Sites must satisfy the requirements of the Habitats Regulations, determining site specific impacts and avoiding or mitigating against impacts where identified. Where appropriate, contributions from developments will be secured towards mitigation measures identified in the Essex Recreational disturbance Avoidance and Mitigation Strategy (RAMS) which will be completed by the time the Local Plan is adopted. Prior to RAMS completion, the authority will seek contributions, where appropriate, from proposed residential development to deliver all measures identified (including strategic measures) through project level HRAs, or otherwise, to mitigate any recreational disturbance impacts in compliance with the Habitats Regulations and Habitats Directive.
B) Nationally Designated Sites Development proposals within or outside a SSSI, likely to have an adverse effect on a SSSI (either individually or in combination with other developments), will not be permitted unless, on an exceptional basis, the benefits of the development clearly outweigh both the adverse impacts on the features of the site and any adverse impacts on the wider network of SSSIs.
217 Chelmsford Local Plan Adopted 27 May 2020
C) Locally Designated Sites Development likely to adversely affect locally designated sites, their features or their function as part of the ecological network, will only be permitted where the need and benefits of the development clearly outweigh the loss and the coherence of the local ecological network is maintained.
D) Biodiversity and Geodiversity in Development All development proposals should: i. Conserve and enhance the network of habitats, species and sites (both statutory and non-statutory, including priority habitats and species) of international, national and local importance commensurate with their status and give appropriate weight to their importance; and ii. Avoid negative impacts on biodiversity and geodiversity, mitigate unavoidable impacts and as a last resort compensate for residual impacts; and iii. Deliver a net gain in biodiversity where possible, by creating, restoring and enhancing habitats, and enhancing them for the benefit of species".

5.0 DISCUSSION

5.1 POTENTIAL IMPACTS

Sites 11, 13, 16, 17, and 24 provide suitable conditions for common lizard, grass snake, and slow worm and the surveys indicate that low populations of these species are present across sites 11, 16, 17, and 24 and a good population of slow worms is present on site 13. Site 16 has also been assessed as a "key reptile site". Construction activities within these sites has the potential to impact on reptiles.

Reptiles observed during the surveys across all sites were generally confined to areas of tall ruderal, rubble piles, and semi-improved grassland with surrounding areas of scrub and bramble. If these suitable habitats are to be removed or habitat connectivity severed, due to proposed development, it is considered that without ecological mitigation, the development has the potential to cause harm/injury

to individual reptiles and causes a breach in Schedule 5 of the Wildlife and Countryside Act 1981 (W&CA).

5.2 MITIGATION

If adverse effects on reptiles are anticipated, mitigation will be required to avoid an offence under schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Detailed mitigation is outlined in the Jacobs ES.

5.3 REASONABLE AVOIDANCE MEASURES FOR REPTILES

Reptiles are likely to be threatened, killed or injured by the following activities if precautions are not actioned, English Nature (2004):

- Archaeological and geotechnical investigations;
- Clearing land, installing site offices or digging foundations;
- Cutting vegetation to a low height;
- Laying pipelines or installing other services;
- Driving machinery over sensitive areas such as unimproved grassland or scrub / grassland mosaic;
- Storing construction materials in sensitive areas i.e. within unimproved grassland or adjacent to scrub or woodland habitats. Construction materials should be stored on areas of hardstanding away from habitats that reptiles may be using such as scrub, woodland edge and grasslands;
- Removing rubble, wood piles and other debris.

6.0 SUMMARY

- A reptile survey and population class assessment were undertaken, involving 15 site visits at sites 1, 3, 11, and 13, and 14 site visits at sites 15, 16, 17, 24, 27, and 28 to establish presence / likely absence, species, and estimated population at each site.
- **No reptiles were observed at sites 1, 3, 15, 24, and 28.**
- Grass snake, common lizard, and slow worm were found across the five of the sites. It is considered that sites 11, 13, 16, 17, and 24 currently supports a low population of slow worm, common lizard, and/or grass snake, and site 13 supports a good population of slow worm.
- Site 16 has been identified as being a “key reptile site”.
- Detailed mitigation is outlined in Jacobs ES.

7.0 REFERENCES

- Braintree District Council, 2022. Local Plan. [online] Available at: s1-2-text-adopted-r (braintree.gov.uk). Accessed 28th October 2022.
- Chelmsford Local Plan, 2020. Chelmsford Local Plan. [online] Available at: chelmsford-local-plan-may-2020-includes-a1-plans.pdf. Accessed 28th October 2022.
- English Nature, (2004), Reptiles: guidelines for developers. English Nature, Peterborough.
- Froglife (1999). Advice Sheet 10 – Reptile Survey An introduction of planning, conducting and interpreting surveys for snake and lizard conservation.
- Gent, T. & Gibson, S. (2003). Herpetofauna Workers' Manual. JNCC, Peterborough.
- National Highways, (2022). 6.3 Environmental Statement. Appendix 9.9 Reptile Survey Report. [online] Available at: Reptile Survey Report (planninginspectorate.gov.uk). Accessed 3rd November 2022.

FIGURES

Figure 1 – Site Location Plan

Figure 2 – Refugia Placement Plan

Figure 3 – Locations of Sites Not Surveyed

Site Location Plan

A12 Reptile Surveys

Jacobs

Legend

Survey Site

Notes:

Drawn by: GF

Checked by: HC

Office: Southampton

Figure No. 1

Revision No. A

0 1,000 2,000 3,000 Meters

Scale 1:65,000 @A3

24 October 2022

NGR: 582563E 215370N

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Refugia Placement Plan
Site 1
A12 Reptile Surveys

F

Jacobs

Legend

Survey site

Reptile refugia location

Notes:

Drawn by: CHRIS.DAWE

Checked by: HC

Office: Southampton

Figure No. 2.1

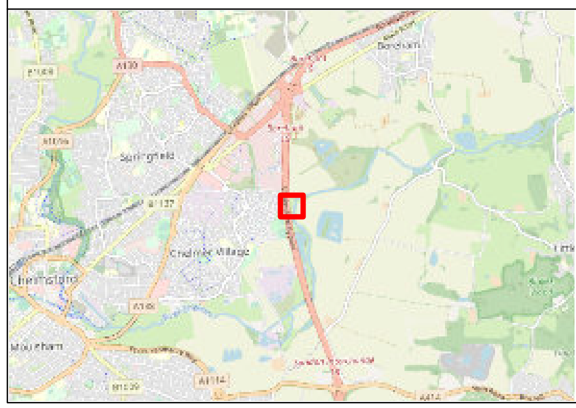
Revision No. A

0 10 20 30 40 Meters

Scale 1:1,000 @A3

28 October 2022

NGR: 574148E 207842N



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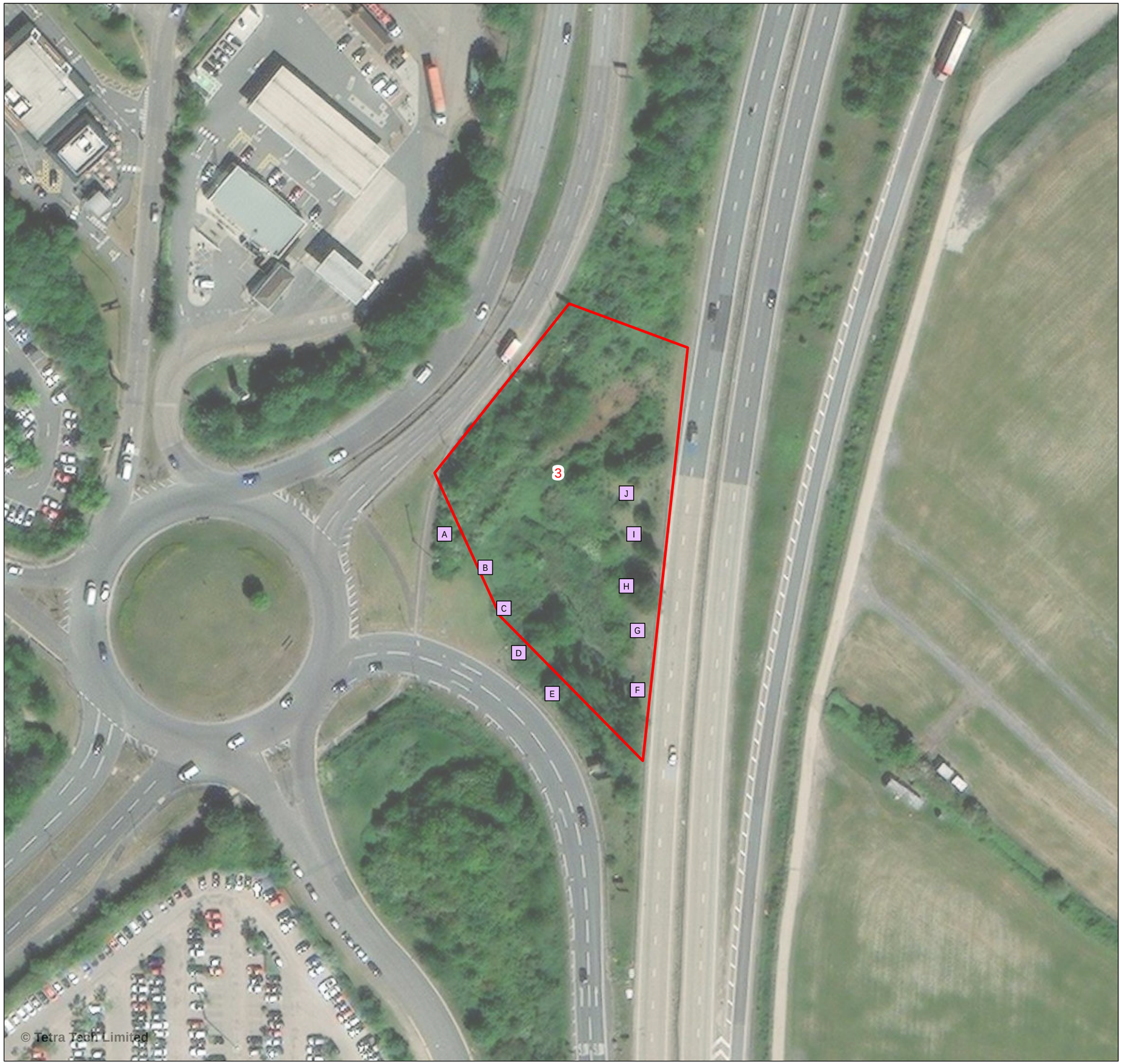


Refugia Placement Plan
Site 3

A12 Reptile Surveys

Jacobs

F

Legend

Survey site

Reptile refugia location

Notes:

Drawn by: CHRIS.DAWE

Checked by: HC

Office: Southampton

Figure No. 2.3

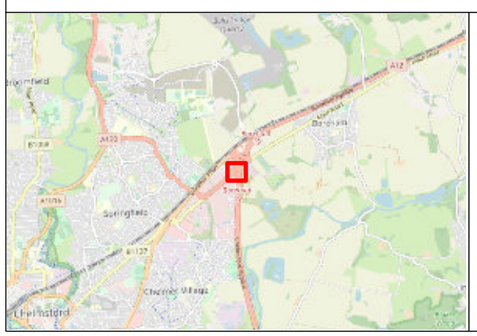
Revision No. A

0 10 20 30 40 Meters

Scale 1:1,000 @A3

28 October 2022

NGR: 574041E 209163N



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Refugia Placement Plan
Site 11

A12 Reptile Surveys

Jacobs

F

Legend

Survey site

Reptile refugia location

BQ BP BO BN BM BL BK BJ BD BC CD BB BA Z CC Y W X CA CB V U CF CG T S R Q CE P O N M L K BY BX BW BV BU BT BS BR BI BH BG BF BE BZ 11

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Notes:

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Checked by: HC
Office: Southampton

Figure No. 2.11
Revision No. A

0 20 40 60 80 Meters

Scale 1:2,000 @A3

28 October 2022

NGR: 581602E 212724N

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Refugia Placement Plan
Site 13

A12 Reptile Surveys

Jacobs

Legend

- Survey site
- Reptile refugia location

Notes:

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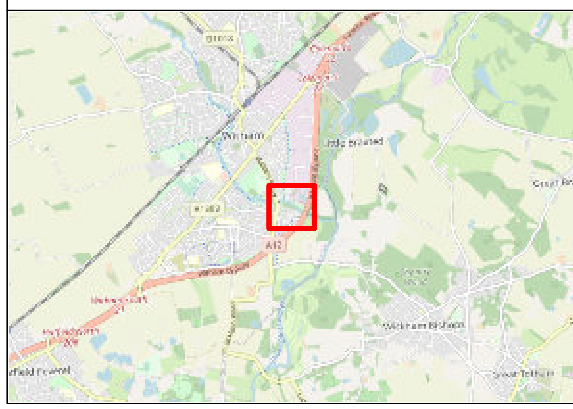
Checked by: HC
Office: Southampton

Figure No. 2.13
Revision No. A

0 20 40 60 80 Meters
Scale 1:2,000 @A3

28 October 2022

NGR: 582650E 213826N



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Refugia Placement Plan
Site 15

A12 Reptile Surveys

Jacobs

F

Legend

Survey site

Reptile refugia location

15

ET ES EU EV ER EW EQ EX EP EY EO EZ EN FA EM FB EL FC EK FD EJ FE DV FF DW EI FG DX DU FH DT FI DY FJ EH EE DZ EC EG ED EA FK EF EB FL GI FM GH FN GG GF GE GD GC GB GA FZ GJ FO FY FP FQ FX FR FT FS FU FW FV

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Notes:

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Figure No. 2.15
Revision No. A

0 20 40 60 80 Meters
Scale 1:2,000 @A3

28 October 2022

NGR: 584206E 216518N

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Refugia Placement Plan
Site 16

A12 Reptile Surveys

Jacobs

F

Legend

Survey site

Reptile refugia location

HA

16

GZ
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Notes:

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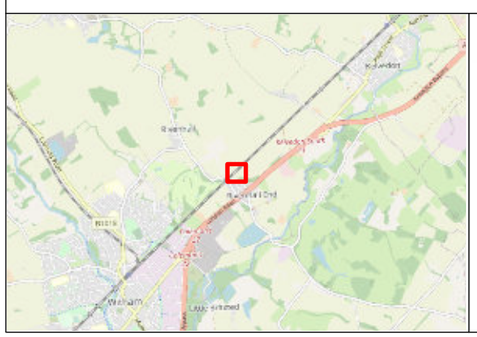
Office: Southampton

Figure No. 2.16
Revision No. A

0 10 20 30 40 Meters
Scale 1:1,000 @A3

28 October 2022

NGR: 583824E 216869N



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Refugia Placement Plan
Site 17

A12 Reptile Surveys

F

Jacobs

Legend

Survey site

Reptile refugia location

Notes:

Drawn by: CHRIS.DAWE

Checked by: HC

Office: Southampton

Figure No. 2.17

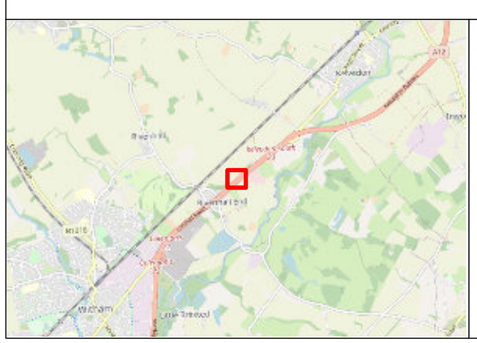
Revision No. A

0 10 20 30 40 Meters

Scale 1:1,000 @A3

28 October 2022

NGR: 584307E 216888N



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Refugia Placement Plan
Site 24

A12 Reptile Surveys

F

Jacobs

Legend

Survey site

Reptile refugia location

Notes:

Drawn by: CHRIS.DAWE

Checked by: HC

Office: Southampton

Figure No. 2.24

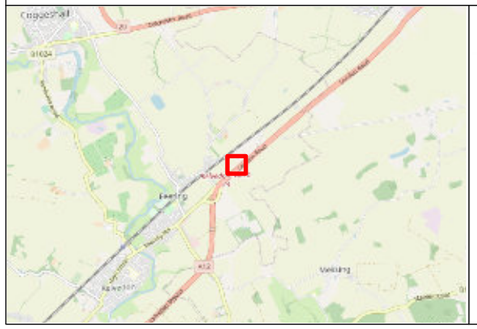
Revision No. A

0 10 20 30 40 Meters

Scale 1:1,000 @A3

28 October 2022

NGR: 588132E 220611N



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Refugia Placement Plan
Site 27

A12 Reptile Surveys

Jacobs

F

Legend

Survey site

Reptile refugia location

Notes:

Drawn by: CHRIS.DAWE

Checked by: HC

Office: Southampton

Figure No. 2.27

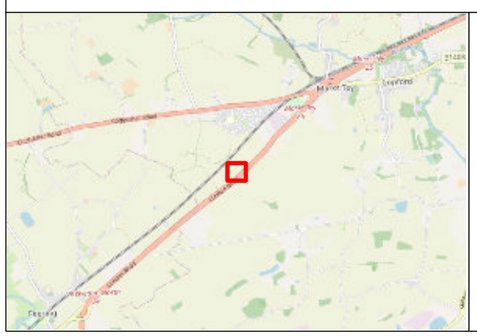
Revision No. A

0 10 20 30 40 Meters

Scale 1:1,000 @A3

28 October 2022

NGR: 590258E 222407N



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Refugia Placement Plan
Site 28

A12 Reptile Surveys

Jacobs

Legend

Survey site

Reptile refugia location

Notes:

Drawn by: CHRIS.DAWE

Checked by: HC

Office: Southampton

Figure No. 2.28

Revision No. A

0 10 20 30 40 Meters

Scale 1:1,000 @A3

28 October 2022

NGR: 591036E 222944N

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Locations of Sites Not Surveyed

A12 Reptile Surveys

Jacobs

Legend

Sites not surveyed

Notes:

Drawn by: ROSIE.DURHAM	Figure No. 3
Checked by: HC	Revision No. A
Office: Southampton	29 November 2022

0 660 1,320 1,980 2,640 Meters

Scale 1:60,000 @A3

British National Grid

NGR: 582154E 215088N

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The report refers, within the limitations stated, to the environment of the site in the context of the surrounding area at the time of the inspections'. Environmental conditions can vary and no warranty is given as to the possibility of changes in the environment of the site and surrounding area at differing times. No investigative method can eliminate the possibility of obtaining partially imprecise, incomplete or not fully representative information. Any monitoring or survey work undertaken as part of the commission will have been subject to limitations, including for example timescale, seasonal and weather-related conditions. Actual environmental conditions are typically more complex and variable than the investigative, predictive and modelling approaches indicate in practice, and the output of such approaches cannot be relied upon as a comprehensive or accurate indicator of future conditions. The “shelf life” of the Report will be determined by a number of factors including; its original purpose, the Client’s instructions, passage of time, advances in technology and techniques, changes in legislation etc. and therefore may require future re-assessment.

The whole of the report must be read as other sections of the report may contain information which puts into context the findings in any executive summary.

The performance of environmental protection measures and of buildings and other structures in relation to acoustics, vibration, noise mitigation and other environmental issues is influenced to a large extent by the degree to which the relevant environmental considerations are incorporated into the final design and specifications and the quality of workmanship and compliance with the specifications on site during construction. Tetra Tech accept no liability for issues with performance arising from such factors.

Once proposals have been finalised this report should be revisited, and the impacts assessed to ensure recommendations are appropriate and valid.

APPENDIX B – GENERAL SITE PHOTOS

Site Number	Photos
1: Semi-improved grassland with scattered trees. This site provided excellent areas of sunlight exposure.	
3: Tall ruderal vegetation located adjacent to the A12 road.	
11:	

The location of where an adult common lizard was found, on a south facing field margin, adjacent to a line of shrubs.	 

13: Site 13 comprised a river which provided an excellent water source for reptiles. The second image shows four adult slow worms, and four juvenile slow worms found underneath an artificial refuge.	 

15: Site 15 consisted of semi-improved grassland with tall ruderal vegetation and shrubs along the margins.	
16: The railway line which ran to the northwest of the site which provided an excellent basking habitat for reptiles. The second image shows a sub-adult common lizard found basking on top of an artificial refuge.	

	
17: Arable field margin located to the north of the A12 road.	

24: An artificial refuge placed at site 24 on tall ruderal vegetation.	
27: This site provided excellent basking and refuge habitats due to the scattered tyres, disused wood, and rubble piles across the site.	

	
28: This site consisted of short grassland with scattered trees and shrubs.	

APPENDIX C – FURTHER SURVEY DETAILS

Site #	Date: 05.09.2022	Weather conditions			Results				
	Survey # and (time): Visit 1 (09:00-11:00)	**Wind**	**Rain**	**Temperature (°C)**	**Grass Snake**	**Adder**	**Common Lizard**	**Slow worm**	**Other**
24	09:45 – 10:01	1	0	18	0	0	0	0	0
27	10:01 – 10:22	1	0	18	0	0	0	0	0
28	10:22 – 10:47	1	0	19	0	0	0	0	0
16	10:47 – 11:17	1	0	19	0	0	0	0	0
17	11:17 - 11:47	1	0	19	0	0	1	0	0

Site #	Date: 06.09.2022	Weather conditions			Results				
	Survey # and (time): Visit 1 (08:00 – 11:00)	**Wind**	**Rain**	**Temperature (°C)**	**Grass Snake**	**Adder**	**Common Lizard**	**Slow worm**	**Other**
15	08:00 – 08:45	2	0	17	0	0	0	0	0
13	08:45 – 09:022	2	0	17	0	0	0	1	0
11	09:22 – 09:57	1	0	18	0	0	0	0	0
3	09:57 – 10:34	1	0	18	0	0	0	0	0
1	10:34 - 11:15	1	0	19	0	0	0	0	0

Site #	Date: 07.09.2022	Weather conditions	Results

	Survey # and (time): Visit 2 (09:00-11:00)	Wind	Rain	Temperature (°C)	Grass Snake	Adder	Common Lizard	Slow worm	Other
24	10:03-10:14	1	0	19	0	0	0	0	0
27	10:21-10:33	1	0	19	0	0	1 Adult	0	0
28	10:41-10:57	1	0	19	0	0	0	0	0
16	11:09-11:17	1	0	19	0	0	0	0	0
17	11:22-11:27	1	0	19	0	0	0	0	0

Site #	Date: 08.09.2022	Weather conditions			Results				
	Survey # and (time): Visit 2 (08:00 – 11:00)	Wind	Rain	Temperature (°C)	Grass Snake	Adder	Common Lizard	Slow worm	Other
15	08:20-08:46	0	0	16	0	0	0	0	0
13	09:00-09:23	1	0	16	0	0	0	0	0
11	09:32-09:47	1	0	18	0	0	0	0	0
3	10:23-10:39	1	0	18	0	0	0	0	0
1	10:48-10:57	1	0	18	0	0	0	0	0

Site #	Date: 09.09.2022	Weather conditions			Results				
	Survey # and (time): Visit 3 (09:00-11:00)	Wind	Rain	Temperature (°C)	Grass Snake	Adder	Common Lizard	Slow worm	Other
24	08:05-08:16	1	0	16	0	0	0	0	0
27	08:25-08:31	1	0	16	0	0	0	0	0

28	08:50-08:54	1	0	16	0	0	0	0	0
16	08:56-09:15	1	0	16	0	0	2 (1 Adult & 1 Juvenile)	0	0
17	09:15-09:29	1	1	17	0	0	0	0	0

Site #	**Date:** 12.09.2022	**Weather conditions**			**Results**				
	Survey # and (time): Visit 3 (09:00-11:00)	**Wind**	**Rain**	**Temperature (°C)**	**Grass Snake**	**Adder**	**Common Lizard**	**Slow worm**	**Other**
15	08:04-08:32	1	0	18	0	0	0	0	0
13	08:45-09:00	1	0	18	0	0	0	4 (3 adult females & 1 juvenile)	0
11	09:15-09:51	1	0	19	0	0	0	0	0
3	09:52-10:18	1	0	19	0	0	0	0	0
1	10:27-10:36	1	0	19	0	0	0	0	0

Site #	**Date:** 13.09.2022	**Weather conditions**			**Results**				
	Survey # and (time): Visit 4 (08:00 – 11:00)	**Wind**	**Rain**	**Temperature (°C)**	**Grass Snake**	**Adder**	**Common Lizard**	**Slow worm**	**Other**
24	08:08-08:15	1	0	16	0	0	0	0	0
27	08:15-08:35	1	0	16	0	0	0	0	0
28	08:36-09:02	1	0	16	0	0	0	0	0
16	09:02-09:45	1	0	17	0	0	0	2 (2 adult males)	0
17	09:45-09:58	1	0	17	0	0	0	0	0

15	10:05-10:18	1	0	18	0	0	0	0	0

Site #	**Date:** 14.09.2022	**Weather conditions**			**Results**				
	Survey # and (time): Visit 4 (09:00-11:00)	**Wind**	**Rain**	**Temperature (°C)**	**Grass Snake**	**Adder**	**Common Lizard**	**Slow worm**	**Other**
13	08:22-08:46	1	0	14	0	0	0	1 (adult male)	0
11	08:47-09:26	1	0	15	0	0	0	0	0
4	09:26-09:48	1	0	15	0	0	0	0	0
1	09:53-10:09	1	0	15	0	0	0	0	0

Site #	**Date:** 15.09.2022	**Weather conditions**			**Results**				
	Survey # and (time): Visit 5 (09:00-11:00)	**Wind**	**Rain**	**Temperature (°C)**	**Grass Snake**	**Adder**	**Common Lizard**	**Slow worm**	**Other**
24	08:36 – 08:45	1	0	14	0	0	0	0	1 x juvenile toad
27	08:57 – 09:13	1	0	14	0	0	0	0	0
28	09:13 – 09:26	1	0	14	0	0	0	0	0
16	09:59 – 10:14	1	0	14	0	0	2 (1 x adult & 1 x juvenile)	0	0
17	10:14 – 10:31	1	0	16	0	0	0	0	1 x hare spotted
15	09:38 – 09:58	1	0	14	0	0	0	0	0

Site #	**Date:** 16.09.2022	**Weather conditions**	**Results**

	Survey # and (time): Visit 5 (08:00 – 11:00)	Wind	Rain	Temperature (°C)	Grass Snake	Adder	Common Lizard	Slow worm	Other
13	08:37 – 09:18	2	0	11	0	0	0	0	0
11	09:18 – 09:54	3	0	11	0	0	0	0	0
3	09:55 – 10:23	3	0	11	0	0	0	0	0
1	10:23 – 10:44	3	0	11	0	0	0	0	0

Site #	Date: 20.09.2022	Weather conditions			Results				
	Survey # and (time): Visit 6 (09:00-11:00)	Wind	Rain	Temperature (°C)	Grass Snake	Adder	Common Lizard	Slow worm	Other
24	08:13 – 08:19	1	0	12	0	0	0	0	0
27	08:29 – 08:38	1	0	12	0	0	4 x adults	0	0
28	08:39 – 08:59	1	0	12	0	0	0	0	0
15	09:14 – 09:41	1	0	13	0	0	0	0	0
16	09:43 – 09:51	1	0	13	0	0	3 x adults	1 x juvenile	0
17	10:09 – 10:20	1	0	13	0	0	0	0	0

Site #	Date: 23.09.2022	Weather conditions			Results				
	Survey # and (time): Visit 6 (08:00 – 11:00)	Wind	Rain	Temperature (°C)	Grass Snake	Adder	Common Lizard	Slow worm	Other
13	08:29 – 09:04	0	2	14	0	0	0	2 x adult	0
11	09:05 – 09:46	0	1	16	0	0	0	0	0

3	09:47 – 10:19	0	2	16	0	0	0	0	0
1	10:19 – 10:27	0	2	16	0	0	0	0	0

Site #	**Date:** 22.09.2022	**Weather conditions**			**Results**				
	Survey # and (time): Visit 7 (09:00-11:00)	**Wind**	**Rain**	**Temperature (°C)**	**Grass Snake**	**Adder**	**Common Lizard**	**Slow worm**	**Other**
24	08:40 – 08:44	1	0	14	0	0	0	0	0
27	08:56 – 09:07	1	0	14	0	0	0	0	0
28	09:08 – 09:28	1	0	14	0	0	0	0	0
15	09:37 – 10:06	1	0	14	0	0	0	0	0
16	10:06 – 10:18	1	0	16	0	0	0	0	0
17	10:20 – 10:31	1	0	16	0	0	0	0	0

Site #	**Date:** 27.09.2022	**Weather conditions**			**Results**				
	Survey # and (time): Visit 7 (08:00 – 11:00)	**Wind**	**Rain**	**Temperature (°C)**	**Grass Snake**	**Adder**	**Common Lizard**	**Slow worm**	**Other**
13	08:53 – 09:16	1	0	9	0	0	0	0	0
11	09:17 – 09:50	2	0	9	0	0	0	0	0
3	09:50 – 10:17	2	0	9	0	0	0	0	0
1	10:18 – 10:30	2	0	9	0	0	0	0	0

Site #	**Date:** 26.09.2022	**Weather conditions**			**Results**				
	Survey # and (time): Visit 8	**Wind**	**Rain**	**Temperature (°C)**	**Grass Snake**	**Adder**	**Common Lizard**	**Slow worm**	**Other**

	(09:00-11:00)								
24	08:12 – 08:21	1	1	12	0	0	0	0	0
27	08:54 – 09:05	1	1	12	0	0	0	0	0
28	09:09 – 09:13	1	1	12	0	0	0	0	0
15	09:13 – 09:46	1	1	12	0	0	0	0	0
16	10:04 – 10:17	1	1	12	0	0	3 x adults	0	0
17	10:17 – 10:34	1	1	12	0	0	0	0	0

Site #	**Date:** 29.09.2022	**Weather conditions**			**Results**				
	Survey # and (time): Visit 8 (08:00 – 11:00)	**Wind**	**Rain**	**Temperature (°C)**	**Grass Snake**	**Adder**	**Common Lizard**	**Slow worm**	**Other**
13	08:53 – 09:16	1	0	9	0	0	0	0	0
11	09:17 – 09:50	1	0	9	0	0	0	0	0
3	09:50 – 10:17	1	0	9	0	0	0	0	0
1	10:17 – 10:30	1	0	9	0	0	0	0	0

Site #	**Date:** 28.09.2022	**Weather conditions**			**Results**				
	Survey # and (time): Visit 9 (09:00-11:00)	**Wind**	**Rain**	**Temperature (°C)**	**Grass Snake**	**Adder**	**Common Lizard**	**Slow worm**	**Other**
24	08:51 – 09:13	1	0	8	0	0	0	0	0
27	09:13 – 09:33	1	0	8	0	0	0	0	0
28	09:33 – 09:54	1	0	8	0	0	0	0	0
15	09:55 – 10:17	2	0	8	0	0	0	0	0

16	10:17 – 10:35	2	0	9	0	0	2 x adults	0	0
17	10:35 – 10:52	2	0	9	0	0	0	0	0

Site #	**Date:** 03.10.2022	**Weather conditions**			**Results**				
	Survey # and (time): Visit 9 (09:00 – 13:00)	**Wind**	**Rain**	**Temperature (°C)**	**Grass Snake**	**Adder**	**Common Lizard**	**Slow worm**	**Other**
13	9:50-10:26	1	0	11	0	0	0	4 x adults, 5 x juveniles	0
11	10:36-11:17	1	0	14	0	0	0	0	0
3	11:38-12:01	0	0	14	0	0	0	0	0
1	12:16-12:37	0	0	16	0	0	0	0	0

Site #	**Date:** 30.09.2022	**Weather conditions**			**Results**				
	Survey # and (time): Visit 10 (09:00-11:00)	**Wind**	**Rain**	**Temperature (°C)**	**Grass Snake**	**Adder**	**Common Lizard**	**Slow worm**	**Other**
24	09:40 – 09:49	1	0	11	0	0	0	0	0
27	09:49 – 10:04	1	0	11	0	0	0	0	0
28	10:04 – 10:16	1	0	11	0	0	0	0	0
15	08:34 – 09:03	1	0	10	0	0	0	0	0
16	09:03 – 09:18	1	0	10	1 x adult grass snake	0	0	0	0
17	09:18 – 09:40	1	0	10	0	0	0	0	0

Site #	**Date:** 05.10.2022	**Weather conditions**	**Results**

	Survey # and (time): Visit 10 (09:00 – 13:00)	**Wind**	**Rain**	**Temperature (°C)**	**Grass Snake**	**Adder**	**Common Lizard**	**Slow worm**	**Other**
13	9:27 – 9:58	4	0	16	0	0	0	5 x adult, 4 x juvenile	0
11	10:01 – 10:34	5	0	15	0	0	0	0	0
3	10:53 – 11:09	5	0	15	0	0	0	0	0
1	11:19 – 11:35	5	0	15	0	0	0	0	0

Site #	**Date:** 04.10.22	**Weather conditions**			**Results**				
	Survey # and (time): Visit 11 (08:30-12:00)	**Wind**	**Rain**	**Temperature (°C)**	**Grass Snake**	**Adder**	**Common Lizard**	**Slow worm**	**Other**
24	8:24 – 8:44	2	0	15	0	0	0	0	0
27	8:55 - 9:35	3	0	14	0	0	0	1 x adult	0
28	9:48 – 10:20	0	0	16	0	0	0	0	0
15	10:22 – 10:52	2	0	16	0	0	0	0	0
16	11:06 – 11:20	0	0	17	0	0	1 x adult, 1 x juvenile	1 x adult	0
17	11:23 – 11:50	4	0	17	0	0	0	0	0

Site #	**Date:** 07.10.2022	**Weather conditions**			**Results**				
	Survey # and (time): Visit 11 (08:00 – 11:00)	**Wind**	**Rain**	**Temperature (°C)**	**Grass Snake**	**Adder**	**Common Lizard**	**Slow worm**	**Other**

13	8:25 – 8:50	1	0	11	0	0	0	3 x adult, 3 x juvenile	0
11	8:56 – 9:25	2	0	12	0	0	0	0	0
3	9:42 – 9:55	0	0	15	0	0	0	0	0
1	10:05 – 10:17	2	0	16	0	0	0	0	0

Site #	**Date:** 06.10.22	**Weather conditions**			**Results**				
	Survey # and (time): Visit 12 (08:30-11:30)	**Wind**	**Rain**	**Temperature (°C)**	**Grass Snake**	**Adder**	**Common Lizard**	**Slow worm**	**Other**
24	8:55-9:07	0	0	0	0	0	0	0	0
27	9:16-9:45	0	0	0	0	0	0	0	0
28	9:53-10:06	0	0	0	0	0	0	0	0
15	10:18-10:40	0	0	0	0	0	0	0	0
16	10:48-10:59	0	0	0	0	0	0	0	0
17	11:00-11:19	0	0	0	0	0	0	0	0

Site #	**Date:** 07.10.2022	**Weather conditions**			**Results**				
	Survey # and (time): Visit 12 (08:00 – 11:00)	**Wind**	**Rain**	**Temperature (°C)**	**Grass Snake**	**Adder**	**Common Lizard**	**Slow worm**	**Other**
13	8:25 – 8:50	1	0	11	0	0	0	3 x adult, 3 x juvenile	0
11	8:56 – 9:25	2	0	12	0	0	0	0	0
3	9:42 – 9:55	0	0	15	0	0	0	0	0
1	10:05 – 10:17	2	0	16	0	0	0	0	0

Site #	Date: 10.10.2022	Weather conditions			Results				
	Survey # and (time): Visit 13	**Wind**	**Rain**	**Temperature (°C)**	**Grass Snake**	**Adder**	**Common Lizard**	**Slow worm**	**Other**
24	09:46 – 09:57	1	1	11	0	0	0	0	0
27	10:02 – 10:27	1	0	13	0	0	0	0	0
28	10:27 – 10:55	1	0	13	0	0	0	0	0
15	10:55 – 11:15	1	0	13	0	0	0	0	0
16	11:15 – 11:21	1	0	13	0	0	0	0	0
17	11:21 – 11:43	1	0	13	0	0	0	0	0

Site #	Date: 11.10.2022	Weather conditions			Results				
	Survey # and (time): Visit 13 (08:00 – 11:00)	**Wind**	**Rain**	**Temperature (°C)**	**Grass Snake**	**Adder**	**Common Lizard**	**Slow worm**	**Other**
13	09:03 – 09:28	1	0	13	0	0	0	3 x adults, 2 x juveniles	0
11	09:28 – 10:04	1	0	13	0	0	0	0	0
3	10:04 – 10:17	1	0	13	0	0	0	0	0
1	10:17 – 10:42	1	0	13	0	0	0	0	0

Site #	Date: 13.10.2022	Weather conditions			Results				
	Survey # and (time): Visit 14 (08:00-11:00)	**Wind**	**Rain**	**Temperature (°C)**	**Grass Snake**	**Adder**	**Common Lizard**	**Slow worm**	**Other**
24	08:59 – 09:11	1	0	11	0	0	0	0	0

27	09:11 – 09:29	1	0	11	0	0	0	0	0
28	09:29 – 09:52	1	0	13	0	0	0	0	0
15	09:52 – 10:42	1	0	13	0	0	0	0	0
16	10:42 – 11:09	1	0	13	0	0	1 x adult	0	0
17	11:09 – 11:37	1	0	13	0	0	0	0	0

Site #	**Date:** 14.10.2022	**Weather conditions**			**Results**				
	Survey # and (time): Visit 14 (08:00 – 11:00)	**Wind**	**Rain**	**Temperature (°C)**	**Grass Snake**	**Adder**	**Common Lizard**	**Slow worm**	**Other**
13	09:04 – 09:28	2	0	13	0	0	0	4 x juveniles, 3 x adults	0
11	09:28 – 10:02	2	0	13	0	0	0	0	0
3	10:02 – 10:23	1	0	13	0	0	0	0	0
1	10:23 – 10:55	1	0	14	0	0	0	0	0

Site #	**Date:** 21.10.2022	**Weather conditions**			**Results**				
	Survey # and (time): Visit 15 (08:00 – 11:00)	**Wind**	**Rain**	**Temperature (°C)**	**Grass Snake**	**Adder**	**Common Lizard**	**Slow worm**	**Other**
13	09:36 – 10:14	1	0	15	0	0	0	2 x adults, 2 x juveniles	0
11	10:22 – 11:12	4	0	15	0	0	0	0	0
3	11:28 – 11:39	2	0	16	0	0	0	0	0

1	11:39 – 12:00	2	0	16	0	0	0	0	0