

# **A46 Newark Bypass**

**TR010065/APP/6.3**

## **6.3 Environmental Statement**

### **Appendix 8.11 Reptile Technical Report**

APFP Regulation 5(2)(a)

Planning Act 2008

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

Volume 6

April 2024

Infrastructure Planning

Planning Act 2008

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

**A46 Newark Bypass**

Development Consent Order 202[x]

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**ENVIRONMENTAL STATEMENT**

**APPENDIX 8.11 REPTILE TECHNICAL REPORT**

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<b>Regulation Number:</b>	Regulation 5(2)(a)
<b>Planning Inspectorate Scheme Reference</b>	TR010065
<b>Application Document Reference</b>	TR010065/APP/6.3
<b>Author:</b>	A46 Newark Bypass Project Team, National Highways

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# 1 Introduction

## 1.1 Background and scope of works

- 1.1.1 As part of the A46 Newark Bypass Scheme (the Scheme), reptile surveys were undertaken to inform the biodiversity assessment reported in Chapter 8 (Biodiversity) of the Environmental Statement (ES) **(TR010065/APP/6.1)**.
- 1.1.2 Chapter 2 (The Scheme) of the ES **(TR010065/APP/6.1)** provides the background and a description of the Scheme. The information described in this report provides a baseline of reptile activity recorded within the Order Limits used to inform the Environmental Impact Assessment (EIA) for the Scheme.
- 1.1.3 This report details the results of reptile surveys undertaken in 2022. Suitable habitats for reptiles were identified through an extended Phase 1 Habitat Survey undertaken for the Scheme in 2022 (see Appendix 8.1 (Extended Phase 1 Habitat Technical Report) of the ES Appendices **(TR010065/APP/6.3)**). All suitable habitats, except those for which land access permission was not available, were surveyed for reptiles with reference to methods given in Section 3 of this report.
- 1.1.4 This report includes:
- Relevant legislation
  - Methods for desk and field-based assessments
  - 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
  - A summary of the collected field data

## 2 Legislation, policy and licenses

### 2.1 Legislation

- 2.1.1 Four widespread species of reptile that are present in the UK include: common lizard *Zootoca vivipara*, grass snake *Natrix helvetica*, slow worm *Anguis fragilis* and adder *Vipera berus* which are protected under Schedule 5 (Sections 9(1) and 9(5)) of the Wildlife and Countryside Act 1981 (as amended)<sup>1</sup> from:
- Intentional or deliberate killing and injury.
  - Selling, offering for sale, possessing, or transporting for the purpose of the sale or publishing advertisements to buy or sell a protected species.
- 2.1.2 Species of UK reptile with higher levels of European protection include the sand lizard *Lacerta agilis* and smooth snake *Coronella austriaca*. This includes their habitat, breeding and resting places which are only found in Surrey, Dorset, Hampshire, and West Sussex.
- 2.1.3 In addition to the above, the Natural Environment and Rural Communities (NERC) Act 2006<sup>2</sup> places additional responsibilities on local planning authorities in discharging their planning duty, namely, to consider impacts on all six reptile species mentioned above, which are listed in Section 41 of the NERC Act as Species of Principal Conservation Importance in England.

### 2.2 Policy framework

- 2.2.1 National policies relevant to biodiversity are not provided here. These are evaluated in Chapter 8 (Biodiversity) of the ES (TR010065/APP/6.1).
- 2.2.2 As protected species, the presence of reptiles is a consideration in the planning process through the application of relevant planning policy.
- 2.2.3 As mentioned above, all native reptiles are listed on the NERC Act 2006, whose conservation is a material planning concern.
- 2.2.4 Slow worm is included as a Priority Species within the Nottinghamshire Biodiversity Action Plan (BAP).<sup>3</sup>

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<sup>1</sup> HMSO, The Wildlife & Countryside Act, 1981. [Wildlife and Countryside \(Service of Notices\) Act 1985 \(legislation.gov.uk\)](#) (Last accessed December 2023).

<sup>2</sup> HMSO, Natural Environment and Rural Communities (NERC) Act, 2006 [Natural Environment and Rural Communities Act 2006 \(legislation.gov.uk\)](#) (Last accessed December 2023).

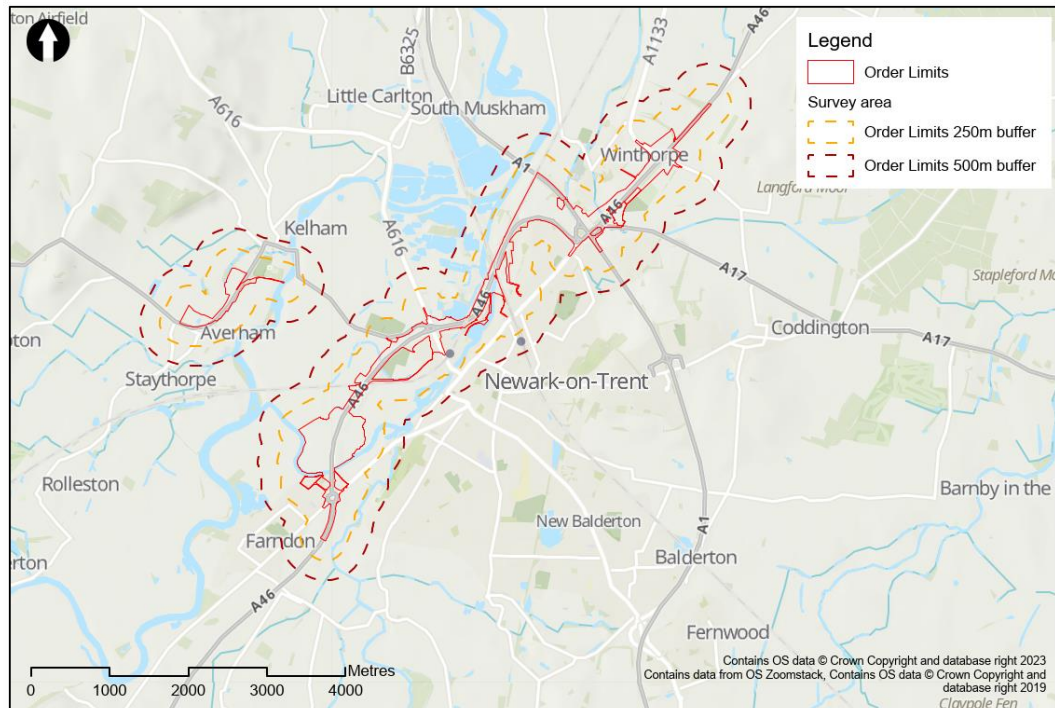
<sup>3</sup> [REDACTED] (Last accessed December 2023).

## 3 Methodology

### 3.1 Survey area

3.1.1 All surveys for reptiles were conducted within the boundaries of the Order Limits, which can be seen in Figure 3-1.

**Figure 3-1: Order limits**



Source: Mott MacDonald, 2023

3.1.2 A scoping assessment was undertaken of all habitats within the Order Limits. The aim was to identify suitable habitats for reptiles which would require further survey effort.

3.1.3 Seven locations within the Order Limits were identified by the methodology outlined in Section 3.2 and 3.3, as providing suitable habitat for reptiles. These locations are shown in Appendix A (Survey Area with Refugia Locations) of this report.

### 3.2 Desk study

3.2.1 A desk study was undertaken in 2022 to identify any records of reptiles within the Order Limits or within 2 kilometres of the Order Limits.

- 3.2.2 Data, including a copy of all protected species data within the search area, was received from Nottinghamshire Biological and Geological Record Centre (NBGRC) in June 2022.
- 3.2.3 A search was also undertaken of freely available resources such as Department for Environment Food and Rural Affairs (Defra's) MAGIC website<sup>4</sup> for statutory and non-statutory sites designated for reptiles within the search area.
- 3.2.4 It should be noted that the absence of records should not be taken as confirmation that a species is absent from the search area.

### 3.3 Reptile habitat suitability assessment

- 3.3.1 A desktop review of the habitats that were considered suitable for common reptiles within the Order Limits was conducted in July 2022. This reptile habitat suitability assessment was based on the results of the extended Phase 1 habitat survey undertaken in 2022 and 2023 (see Appendix 8.1 (Extended Phase 1 Habitat Technical Report) of the ES Appendices **(TR010065/APP/6.3)**).
- 3.3.2 The Extended Phase 1 Report included a review and update of a previous Phase 1 Habitat Survey. The results of the survey were detailed within a Preliminary Ecological Appraisal (PEA) report that was undertaken by a third party in 2019 (Atkins, 2019).<sup>5</sup>
- 3.3.3 The desktop habitat assessment identified areas with suitability for resting and foraging reptiles. The suitability for reptiles was based on the following characteristics as set out by Edgar *et al.* (2010)<sup>6</sup>:
- Location in relation to species range
  - Vegetation structure
  - Insolation (exposure to sun)
  - Aspect
  - Connectivity to other good quality habitat
  - Prey abundance
  - Refuge opportunities
  - Hibernation habitat potential
  - Disturbance
  - Egg-laying site potential (for grass snake only)
- 3.3.4 Various habitats within the survey area were assessed as having suitability or negligible suitability to support reptiles, to see which habitat would be subject to reptile presence/likely absence surveys.

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<sup>4</sup> <https://magic.defra.gov.uk/magicmap.aspx> (Last accessed December 2023).

<sup>5</sup> Atkins. (2019). HE551478-ATK-EBD-XX\_A46-RP-LE-000008. A46 Newark Northern Bypass Preliminary Walkover Survey Technical Note.

<sup>6</sup> Edgar, P. Foster, J. and Baker, J. (2010). Reptile Habitat Management Handbook. Amphibian and Reptile Conservation, Bournemouth.

The areas of habitat assessed as being suitable for reptiles are identified in Appendix A (Survey Area with Refugia Locations) of this report. Each of these habitats with reptile suitability identified were issued with individual identifying numbers to differentiate each of the reptile assessment sites (eg RS01). Each of these reptile assessment sites were scoped in for further presence/likely absence surveys.

### 3.4 Reptile presence/likely absence surveys

- 3.4.1 Reptile presence/likely absence surveys were conducted on suitable habitats along the main alignment between August to September 2022.
- 3.4.2 Surveys were undertaken in suitable reptile habitats at the Kelham and Averham Floodplain Compensation Area (FCA) from March to June 2023.
- 3.4.3 Ecologists used four recognised methods of reptile survey techniques including:
- Use of artificial refugia to attract reptiles
  - Searching of suitable refugia already present
  - Checks for signs of reptile activity including sloughed skins, burrows, egg laying sites etc
  - Sustained visual observation of banks and other suitable habitat
- 3.4.4 The method of survey using artificial refugia was designed with reference to Froglife Advice Sheet 10 (1999)<sup>7</sup> for reptile surveys and the Herpetofauna Workers' Manual (1998).<sup>8</sup>
- 3.4.5 Within each of the suitable areas of habitat identified within the Order Limits, linear transect features were created and artificial reptile refugia were deployed along these (each transect was issued with a second individual identifying number e.g. F001). By issuing each of the areas of suitable reptile habitat with these identifying numbers it allowed surveyors to identify those areas requiring survey effort quickly and accurately (e.g. RS01\_F001, see Table 3-1 below for further examples).
- 3.4.6 Refugia comprised corrugated roofing tiles and roofing felt tiles. These were formed as refugia for surveying the reptile populations, in sizes of 0.5 x 0.5 metres and 0.5 x 1 metres. The number of refugia deployed in each reptile assessment site was calculated using the recommended minimum density of 10 refugia per hectare where possible. Once deployed, the artificial refugia was then left to

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<sup>7</sup> Froglife (1999) Froglife Advice Sheet 10 'Reptile Survey – An introduction to planning, conducting and interpreting surveys for snake and lizard conservation'. Froglife. London.

<sup>8</sup> Gent, A.H. and Gibson, S.D., eds. (1998) Herpetofauna workers' manual. Joint Nature Conservation Committee, Peterborough.



establish for a period of two weeks as recommended by the guidance given by Amphibian and Reptile Conservation (ARC).<sup>9</sup> Following this establishment period, each refugia were checked a total of seven times, with a minimum time of three days between each visit. The locations of the reptile assessment sites within survey area can be seen in Appendix A (Survey Area with Refugia Locations) of this report.

**Table 3-1: Total number of artificial refugia deployed during 2022 and 2023 presence/likely absence surveys**

Reptile survey site	Area of site (Ha)	Feature number	Total number of artificial refugia
RS01	2.73	F001	10
		F002	10
RS02	3.05	F001	10
		F002	20
RS03	2.66	F001	10
		F002	10
RS04	2.72	F001	5
		F002	5
		F003	5
		F004	10
		F005	5
RS06	1.12	F001	5
		F002	5
RS07	0.22	F001	10
RS08	2.08	F001	10
		F002	10

Source: Mott MacDonald, 2023

3.4.7 All artificial refugia were placed within areas of suitable habitat that receive full or partial sun exposure in the morning and/or late afternoon, with preferential targeting of south facing areas. Areas of earth mounds, ditches or banks were also prioritised as these are locations where reptiles are likely to bask.

3.4.8 Temperature forecasts were checked in advance of each survey to avoid undertaking surveys during periods of extreme heat. Efforts were made to survey when temperatures ranged between 10°C and 20°C, when there was little wind and intermittent hazy sunshine, and

<sup>9</sup> Amphibian and Reptile Conservation (2021) Introduction to the National Reptile Survey, v2021.2. Available online at: [\[REDACTED\]](#) (Last accessed December 2023).

avoiding periods of rainfall (representing ideal basking conditions for reptiles).

- 3.4.9 In order to minimise any potential disturbance surveyors approached the refugia slowly and cautiously, recording if any reptiles were basking on top of them. Surveyors also lifted the refugia to identify if any reptiles were resting underneath.
- 3.4.10 Any reptile observations were recorded, noting species, number, and life stage where possible. Other animals, such as amphibians and small rodents, were also recorded. The date, weather conditions and temperature were also recorded during each survey.

### 3.5 Competence of surveyors

- 3.5.1 All field surveys were led by competent ecologists, familiar with reptile ecology and surveying for reptile species; with the lead surveyors for every survey being members of The Chartered Institute of Ecology and Environmental Management (CIEEM) who abided by CIEEM's Code of Professional Conduct.

### 3.6 Limitations

- 3.6.1 Biological records obtained from records centres do not necessarily represent a full and complete species list for a given area and the absence of a species or habitat record does not prove it is not present. Records are not often collected as a result of systematic surveys and therefore geographic, temporal (annual and seasonal) and species coverage is not often representative.
- 3.6.2 Reptile surveys along the 'main alignment' of the Scheme were conducted entirely within the back end of the reptile activity season (undertaken between August to September 2022, rather than March to September). Additional surveys were conducted from March 2023 in similar habitats within the Kelham and Averham FCA. Species likely present during these surveys, are expected to be representative of species already identified on site in 2022, due to the presence of similar habitats and due to their closeness in proximity.
- 3.6.3 The final two visits within one of the reptile assessment sites within the survey area (RS01\_F001) could not be completed within the 2022 survey season due to the landowner mowing the area of rank grassland within which the artificial reptile refugia were located. This resulted in the tiles being destroyed in the process. The final two visits at this location (including the two-week establishment period) were therefore conducted alongside the 2023 reptile presence/likely absence surveys in the Kelham and Averham FCA.

3.6.4 In addition to the above, the spring and summer periods of 2022 in the UK were subject to unseasonably hot and dry conditions. As such, the occurrence of reptiles may have been impacted, and the identification of reptiles may have been under-recorded. This is not deemed a significant limitation as the areas that were sampled spanned a good representation of habitats throughout the Order Limits, which included areas containing wetland habitat features that were likely to be affected by the higher temperatures. Additional surveys at the Kelham and Averham FCA in 2023 have been used to validate the findings of the surveys from the main alignment in 2022.

## 4 Results

### 4.1 Desk study

- 4.1.1 No statutory or non-statutory sites designated for reptiles were recorded within 2 kilometers of the Order Limits.
- 4.1.2 A total of 70 records of reptiles were returned by NBGRC. These consisted of:
- Sixty-five records of grass snake (2000-2020)
  - One record of adder (2005-2006)
  - Two records of common lizard (2004)
  - Two records of slow worm (1995/1996)
- 4.1.3 The locations of these records are summarised in Table 4-1 below.

**Table 4-1: Summary of records returned from NBGRC**

Species	Number of records	Location	Distance from the order limits	Grid reference of record
Grass snake	1	River Devon, Devon Park, Newark	0.4km	SK788528
Grass snake	2	Sconce and Devon Park, Newark	0.5km	SK787525
Grass snake	2	Valley Prospect, NG24 4QH	0.5km	SK787523
Grass snake	1	School Lane, Farndon	0.5km	SK771516
Grass snake	1	Marlborough Court, Newark	0.6km	SK789525
Grass snake	2	Hawton	0.7km	SK785512
Grass snake	1	Newark	0.7km	SK78695149
Grass snake	1	Halton Road Allotments, Newark	0.7km	SK792529
Grass snake	1	Staythorpe, Newark NG23 5PS	0.8km	SK76465316
Grass snake	2	Rivermead, backs on to Sconce Hill Park, Newark	0.8km	SK792528
Grass snake	1	Sconce and Devon Park in Newark	0.8km	SK793532
Grass snake	1	Beacon Hill Road	1.3km	SK813539
Grass snake	2	Newark	1.6km	SK808531
Common lizard	1	Stapleford Woods	1.6km	SK840558
Grass snake	1	Newark	1.7km	SK814534
Grass snake	2	Ballast pond nr, Barnby Gate off Round Avenue,	1.7km	SK809530

Species	Number of records	Location	Distance from the order limits	Grid reference of record
		Newark		
Grass snake	15	Highfields School, London Road, Balderton, Newark on Trent	1.8km	SK810529
Grass snake	1	Trent Lane, Kelham	1.8km	SK781564
Grass snake	2	Hawton House pond, Hawton	1.8km	SK798514
Grass snake	2	A grassland site, Hawton	1.9km	SK7950
Grass snake	2	Southern bank of ballast pond at Sustrans site, Balderton	1.9km	SK809528
Slow worm	2	Bowbridge Road Allotments, Newark	2.0km	SK804523
Grass snake	2	Newark	2.0km	SK817533
Grass snake	11	Balderton Lake, Newark	2.1km	SK8051
Grass snake	2	Newark	2.1km	SK803522
Adder	1	Garden in Balderton	2.1km	SK810525
Grass snake	2	Bowbridge Road Allotments, Newark	2.2km	SK804523
Grass snake	2	The Grove, Comp School, London Road, New Balderton	2.3km	SK815527
Grass snake	2	Stapleford Wood	2.3km	SK849559
Common lizard	1	Langford	2.4km	SK849558
Grass snake	1	Cotham	2.5km	SK796495

Source: Mott MacDonald, 2022-2023

## 4.2 Reptile habitat assessments

- 4.2.1 Ponds and other watercourses, seasonal water filled hollows and areas of exposed drains that have a habitat structural diversity close by (scrub, tall vegetation, scattered trees, hedgerows, and woodland), offer optimal habitat for grass snakes and other reptile species.
- 4.2.2 Using the habitat data recorded by the extended Phase 1 Habitat Surveys, a total of seven suitable areas for reptile presence/likely absence surveys were devised, one of which (RS05) was later scoped out due to the habitat present being unsuitable. RS05 was considered to be unsuitable as the grass meadow that resided in the area had been left unmanaged for the season and had grown into an

area of tall grass with a lack of suitable refugia and no areas of open clearings that would allow reptiles to bask and rest.

4.2.3 The extended Phase 1 Habitat Surveys identified suitable reptile habitat within the Order Limits, which was located:

- West of the site immediately adjacent to the current A46 layout (Target Note 76; central Ordnance Survey (OS) national grid reference SK 80487 56024)
- North of Newark Rugby Club (Target note 1; central OS national grid reference SK 79060 54780)
- Central in the Scheme OS national grid reference SK 79286 54558), (Target Note 40, central OS national grid reference SK 78746 54118)
- Directly east of the A46 (Target Note 115, central OS national grid reference SK 78129 53042)
- Within the Kelham and Averham FCA (central OS national grid reference SK 76491 54766)

4.2.4 These areas are shown in Appendices A and B.

### 4.3 Reptile presence/likely absence surveys

4.3.1 A full list of results for all surveys is given in Appendix B (Full presence/likely absence survey results) of this report. A summary of the survey results is displayed in Table 4-2 below.

4.3.2 From the seven reptile assessment sites that were identified (scoped in) and surveyed, two of the sites were found to support reptiles: RS03 (F002) and RS06 (F001).

4.3.3 A total of three grass snakes were recorded across the two sites between 25 August to 29 September 2022.

4.3.4 The highest peak count for grass snake on any single survey day was one, which was recorded within RS03 (central OS national grid reference SK 79191 54504) on one occasion (recorded on 01/09/2022) and twice within RS06 (central OS national grid reference SK 80423 56018) (recorded on 7 September 2022 and 14 September 2022).

4.3.5 Other vertebrate species were recorded including field vole *Microtus agrestis*, bank vole *Myodes glareolus*, common frog *Rana temporaria* and common toad *Bufo bufo*.

4.3.6 In addition to the results of the presence/likely absence surveys conducted for the Scheme; one incidental record of a juvenile grass snake was identified during other ecological surveys being conducted for the Scheme. This grass snake was identified in an area of improved grassland in the west of the survey area, north of the A46 (central OS national grid reference SK 78317 54230).

**Table 4-2: Summary of reptiles recorded during surveys**

Reptile assessment site	Reptile transect	Matt reference	Easting (X)	Northing (Y)	Survey dates	Species recorded	Number and life stage
RS03	F002	RM05	479064	354464	01/09/2022	Grass snake	1 juvenile
RS06	F001	RM09	480428	356016	07/09/2022	Grass snake	1 juvenile
RS06	F001	RM04	480441	356083	14/09/2022	Grass snake	1 juvenile

Source: Mott MacDonald, 2022-2023

## 5 Summary

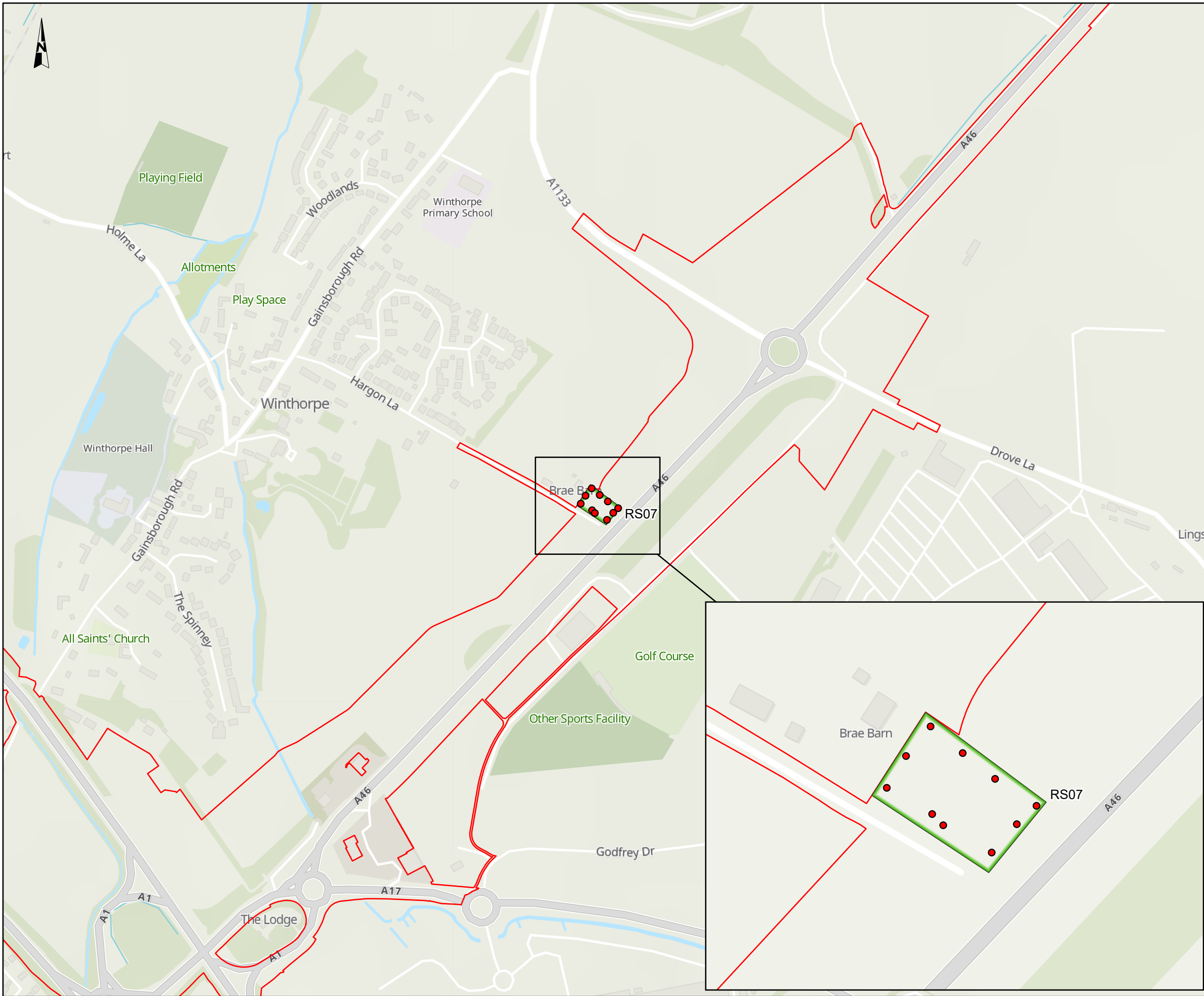
- 5.1.1 A desk study, an extended Phase 1 habitat survey and reptile surveys were undertaken to look for, among other ecological receptors, any evidence of protected and/or notable reptile species.
- 5.1.2 The results of the extended Phase 1 habitat surveys identified the presence of suitable areas of habitat for widespread reptile species.
- 5.1.3 Reptile surveys were recommended along suitable habitats within the Order Limits. These further surveys included the use of reptile habitat suitability assessments and reptile presence/likely absence surveys, which were undertaken over the course of seven visits between August to September 2022 along the main alignment of the Scheme.
- 5.1.4 Further surveys of suitable reptile habitat within the Kelham and Averham FCA (RS08), and within RS01\_F001 were undertaken between March and June 2023.
- 5.1.5 There were three individual records of grass snake located at reptile assessment sites RS03 and RS06, with a maximum peak count of one grass snake being recorded on three occasions. One additional record of reptiles (a juvenile grass snake) was recorded as an incidental sighting during other ecological surveys being conducted for the Scheme.
- 5.1.6 Due to the presence of reptiles at RS03 and RS06, further surveys are required to establish the population size. At least 20 visits in suitable weather per season are required to gain an idea of relative population (Froglife, 1999). These surveys will be conducted pre-construction and the results of these additional surveys will provide additional information on reptile use of the survey area.



## 6 References

- <sup>1</sup> HMSO, The Wildlife & Countryside Act, 1981. [Wildlife and Countryside \(Service of Notices\) Act 1985 \(legislation.gov.uk\)](#) (Last accessed December 2023).
- <sup>2</sup> HMSO, Natural Environment and Rural Communities (NERC) Act, 2006 [Natural Environment and Rural Communities Act 2006 \(legislation.gov.uk\)](#) (Last accessed December 2023).
- <sup>3</sup> [REDACTED] (Last accessed December 2023).
- <sup>4</sup> <https://magic.defra.gov.uk/magicmap.aspx> (Last accessed December 2023).
- <sup>5</sup> Atkins. (2019). HE551478-ATK-EBD-XX\_A46-RP-LE-000008. A46 Newark Northern Bypass Preliminary Walkover Survey Technical Note.
- <sup>6</sup> Edgar, P. Foster, J. and Baker, J. (2010). Reptile Habitat Management Handbook. Amphibian and Reptile Conservation, Bournemouth.
- <sup>7</sup> Froglife (1999) Froglife Advice Sheet 10 'Reptile Survey – An introduction to planning, conducting and interpreting surveys for snake and lizard conservation'. Froglife. London.
- <sup>8</sup> Gent, A.H. and Gibson, S.D., eds. (1998) Herpetofauna workers' manual. Joint Nature Conservation Committee, Peterborough.
- <sup>9</sup> Amphibian and Reptile Conservation (2021) Introduction to the National Reptile Survey, v2021.2. Available online at: [REDACTED] (Last accessed December 2023).

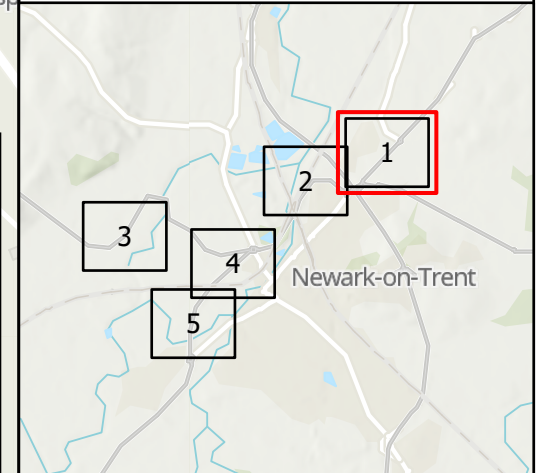
## **A. Appendix: Survey area with refugia locations**



**NOTES**  
**Source**  
 Ecology data collected by Mott MacDonald, 2022-2023.  
**Service Layer Credits**  
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 Contains data from OS Zoomstack

**KEY TO SYMBOLS**

- Order Limits
- Artificial refugia
- Reptile survey area - no reptiles identified



C01	08/12/23	DCO APPLICATION	JB	BC	HF
REV.	DATE	AMENDMENT DETAILS	ORIG	CHKD	APP'D

CLIENT

PURPOSE OF ISSUE  
 DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER  
 TR010065

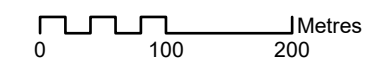
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 A46 NEWARK BYPASS

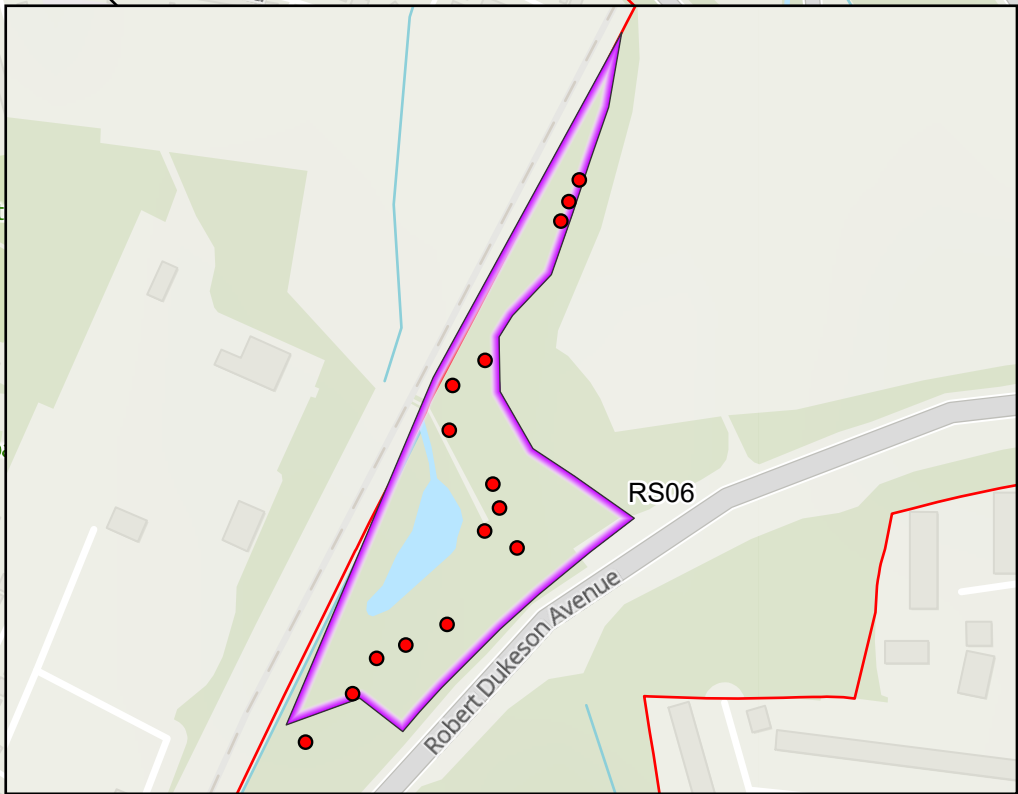
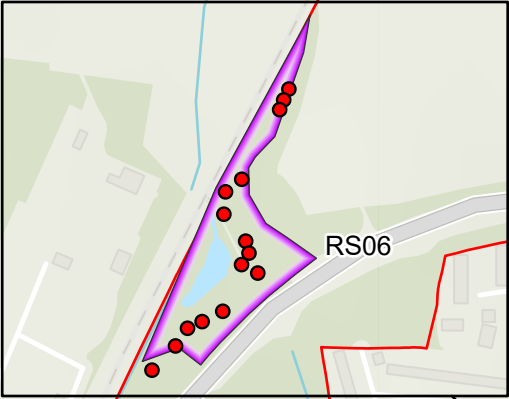
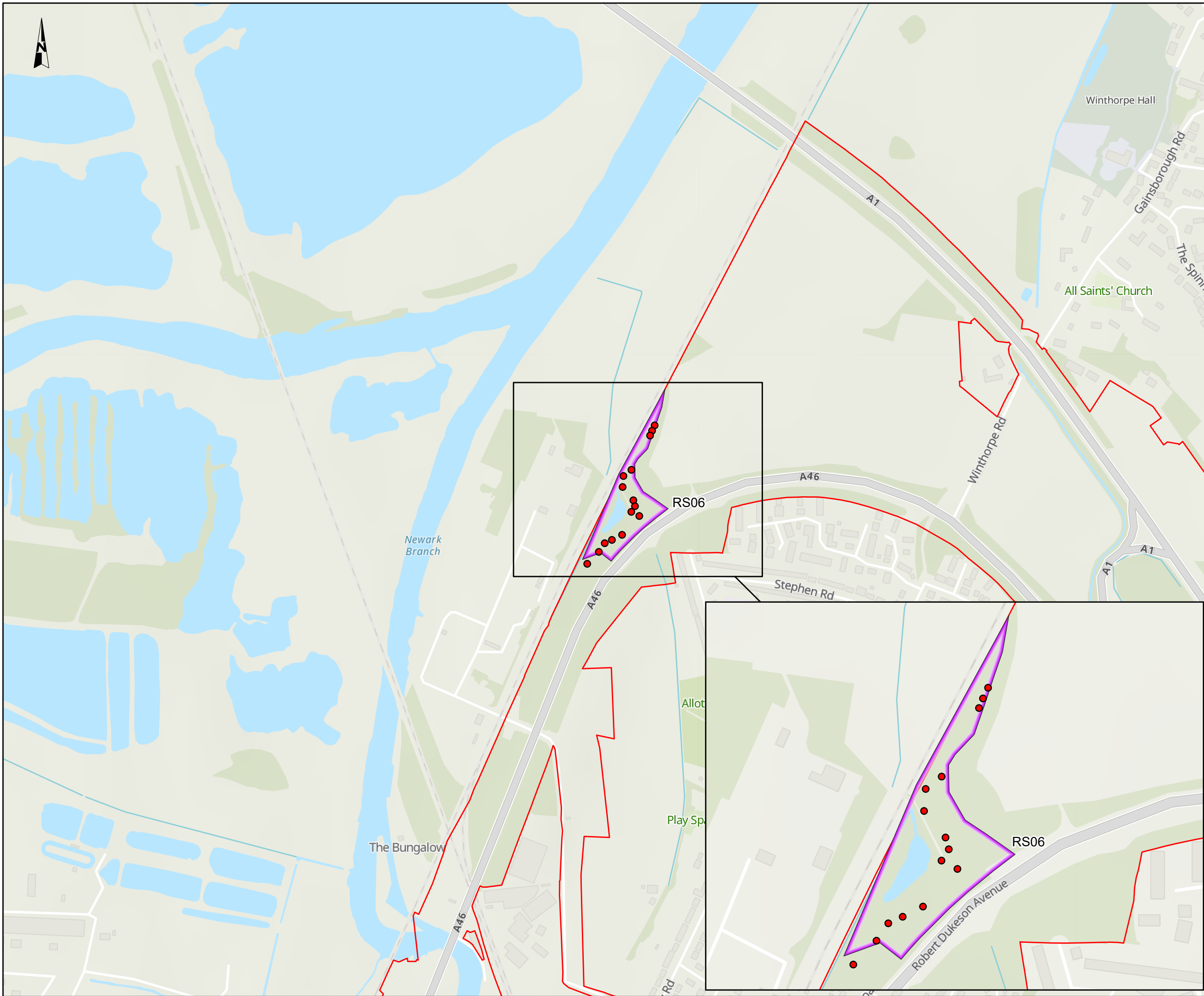
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 Appendix A  
 Survey Area with Refugia Locations  
 Sheet: 1 of 5

ORIGINAL SIZE A3 SCALE 1:6,000

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CONWI_CONW	DR	LE	00104
LOCATION	TYPE	ROLE	NUMBER
			REVISION C01

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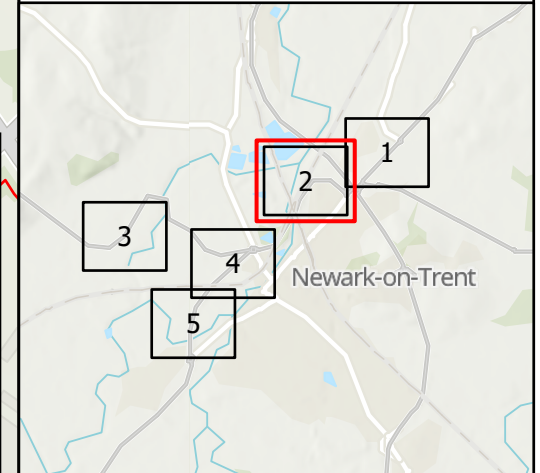




**NOTES**  
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 Contains data from OS Zoomstack

**KEY TO SYMBOLS**

- Order Limits
- Artificial refugia
- Reptile survey area - confirmed presence



C01	08/12/23	DCO APPLICATION	JB	BC	HF
REV.	DATE	AMENDMENT DETAILS	ORIG	CHKD	APP'D

CLIENT

PURPOSE OF ISSUE  
 DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER  
 TR010065

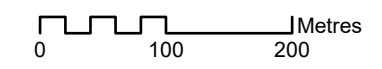
PROJECT TITLE  
 A46 NEWARK BYPASS

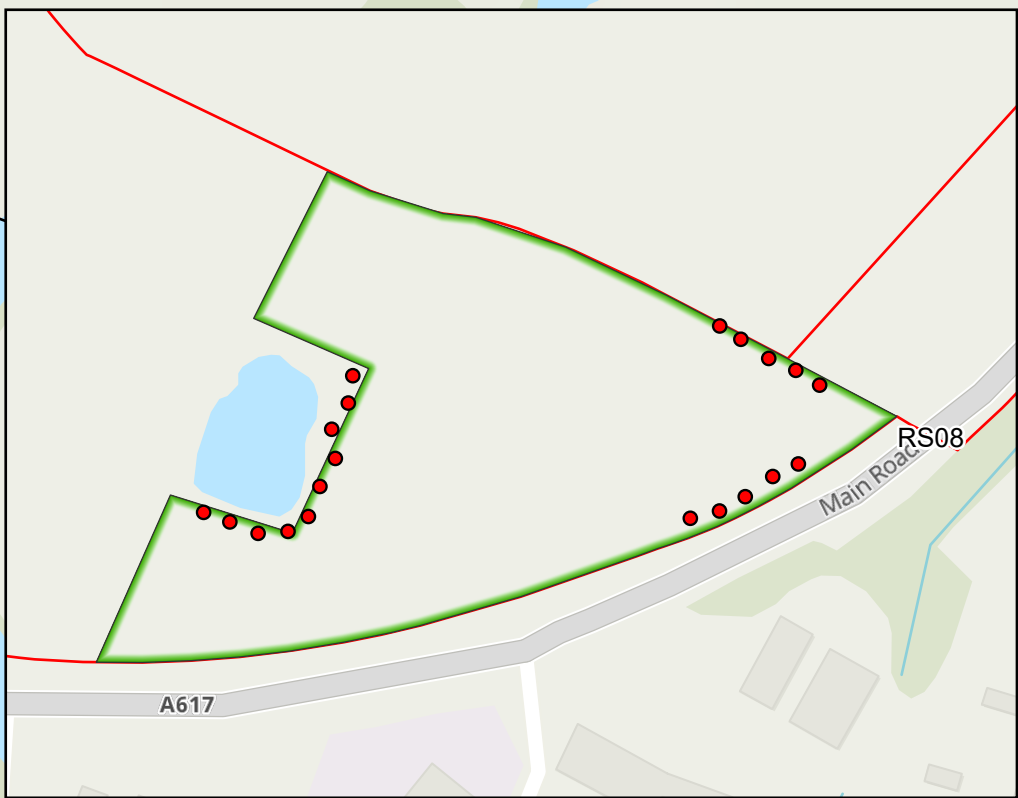
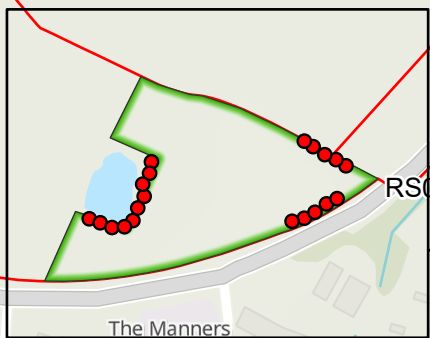
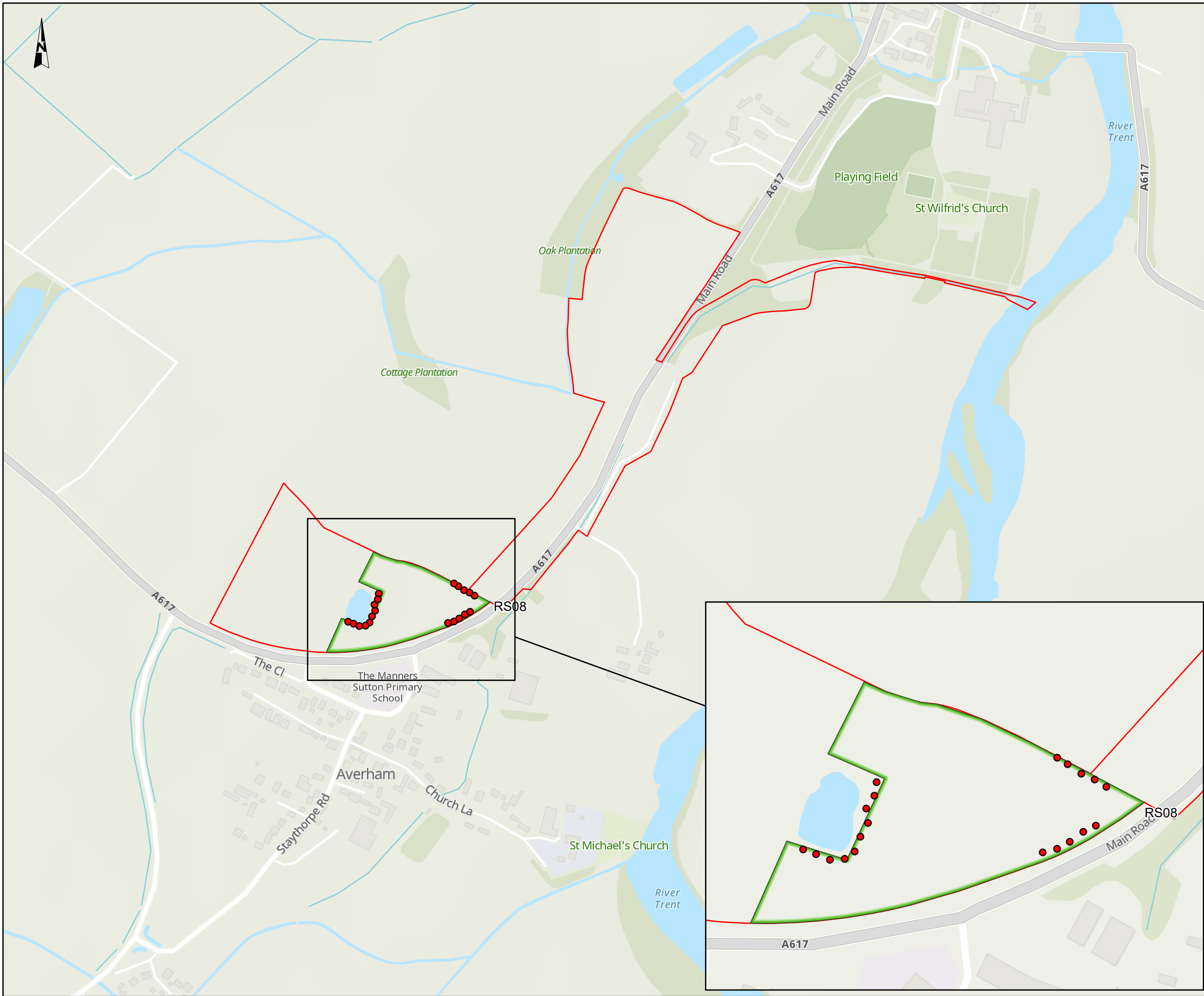
DRAWING TITLE  
 Appendix A  
 Survey Area with Refugia Locations  
 Sheet: 2 of 5

ORIGINAL SIZE A3 SCALE 1:6,000

DRAWING NUMBER HE551478	ORIGINATOR SKAG	VOLUME EBD	PROJECT REF NO. HE551478
CONWI_CONW	DR	LE	00105
LOCATION	TYPE	ROLE	NUMBER
			REVISION C01

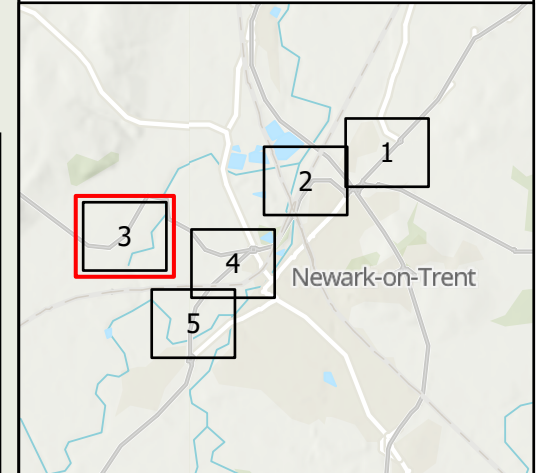
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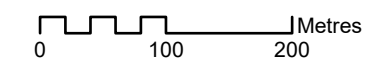
**NOTES**  
 Source  
 Ecology data collected by Mott MacDonald, 2022-2023.  
 Service Layer Credits  
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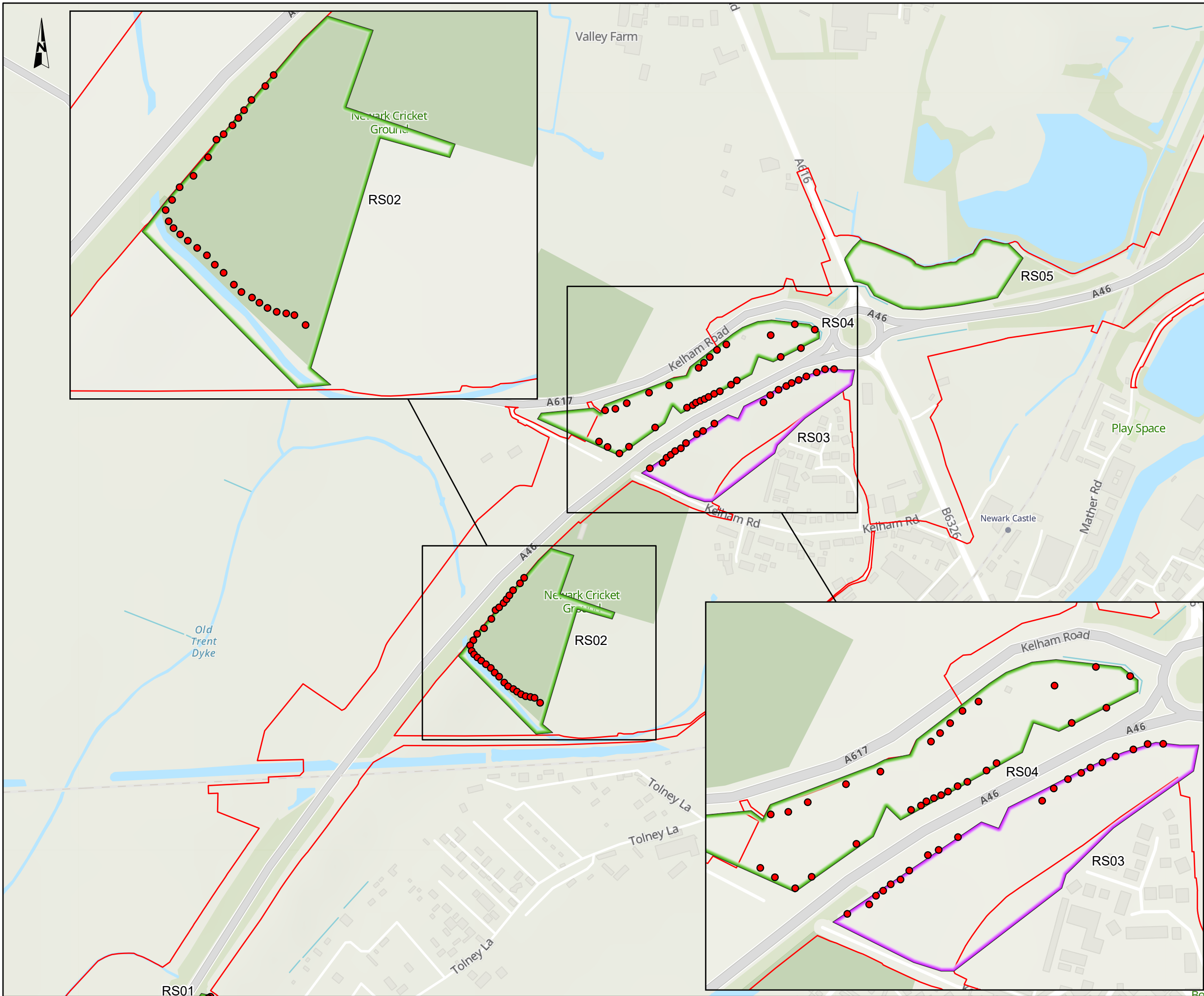
- KEY TO SYMBOLS**
- Order Limits
  - Artificial refugia
  - Reptile survey area - no reptiles identified



C01	08/12/23	DCO APPLICATION	JB	BC	HF
REV.	DATE	AMENDMENT DETAILS	ORIG	CHKD	APP'D
CLIENT					
PURPOSE OF ISSUE					
DCO APPLICATION					
DEVELOPMENT CONSENT ORDER NUMBER					
TR010065					
PROJECT TITLE					
A46 NEWARK BYPASS					
DRAWING TITLE					
Appendix A					
Survey Area with Refugia Locations					
Sheet: 3 of 5					
ORIGINAL SIZE		SCALE			
A3		1:6,000			
DRAWING NUMBER		ORIGINATOR		VOLUME	
HE551478		SKAG		EBD	
CONWI_CONW		DR		LE	
LOCATION		TYPE		ROLE	
				00106	
				NUMBER	
					PROJECT REF NO.
					HE551478
					REVISION
					C01

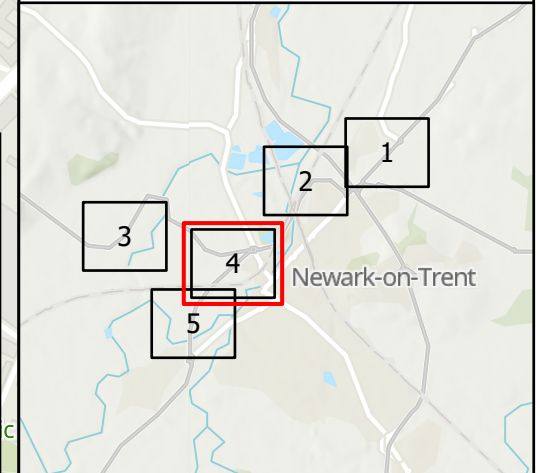
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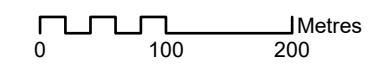
**NOTES**  
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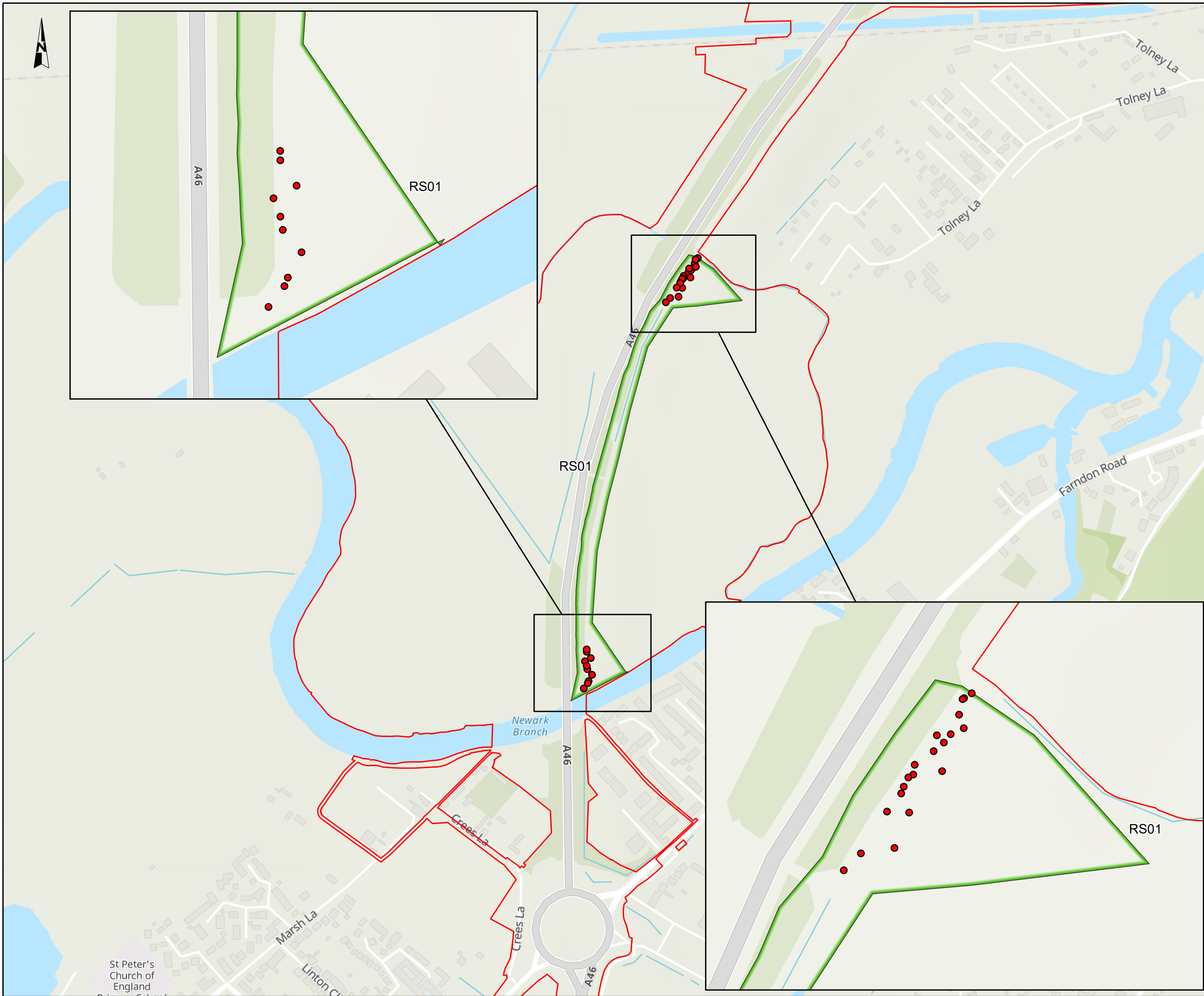
- KEY TO SYMBOLS**
- Order Limits
  - Artificial refugia
  - Reptile survey area - no reptiles identified
  - Reptile survey area - confirmed presence



REV.	08/12/23	DCO APPLICATION	JB	BC	HF
		AMENDMENT DETAILS	ORIG	CHKD	APPD
CLIENT					
PURPOSE OF ISSUE					
DCO APPLICATION					
DEVELOPMENT CONSENT ORDER NUMBER					
TR010065					
PROJECT TITLE					
A46 NEWARK BYPASS					
DRAWING TITLE					
Appendix A					
Survey Area with Refugia Locations					
Sheet: 4 of 5					
ORIGINAL SIZE		SCALE			
A3		1:6,000			
DRAWING NUMBER	ORIGINATOR	VOLUME	PROJECT REF NO.		
HE551478	SKAG	EBD	HE551478		
CONWI_CONW	DR	LE	00107	REVISION	
LOCATION	TYPE	ROLE	NUMBER	C01	

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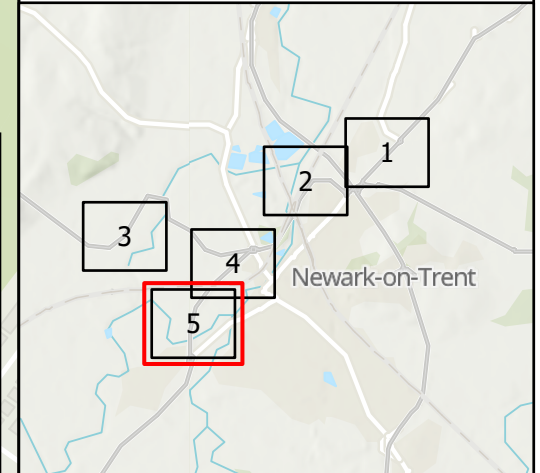




**NOTES**  
**Source**  
 Ecology data collected by Mott MacDonald, 2022-2023.  
**Service Layer Credits**  
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**KEY TO SYMBOLS**

- Order Limits
- Artificial refugia
- Reptile survey area - no reptiles identified



C01	08/12/23	DCO APPLICATION	JB	BC	HF
REV.	DATE	AMENDMENT DETAILS	ORIG	CHKD	APPD

CLIENT

PURPOSE OF ISSUE  
 DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER  
 TR010065

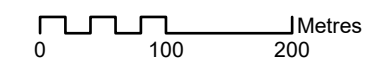
PROJECT TITLE  
 A46 NEWARK BYPASS

DRAWING TITLE  
 Appendix A  
 Survey Area with Refugia Locations  
 Sheet: 5 of 5

ORIGINAL SIZE A3 SCALE 1:6,000

DRAWING NUMBER HE551478	ORIGINATOR SKAG	VOLUME EBD	PROJECT REF NO. HE551478
CONWI_CONW	DR	LE	REVISION C01
LOCATION	TYPE	ROLE	NUMBER

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## B. Appendix: Full presence/likely absence survey results

**Appendix Table B-1: All presence/likely absence results**

Reptile assessment Site	Reptile transect	Survey dates	Species recorded	Number and life stage
RS01	F001	06/09/2022	-	-
		09/09/2022	Bank vole	2
		13/09/2022	-	-
		16/09/2022	Bank vole	1 mature
		20/09/2022	Bank vole	1 mature
		17/04/2023	-	-
		27/04/2023	-	-
RS01	F002	06/09/2022	Bank vole	1
		09/09/2022	Bank vole	3
		13/09/2022	Bank vole	3 mature
		16/09/2022	Bank vole	3 mature
		20/09/2022	-	-
		23/09/2022	Bank vole	2 mature
		27/09/2022	Bank vole	3
RS02	F001	25/08/2022	-	-
		01/09/2022	-	-
		06/09/2022	-	-
		09/09/2022	-	-
		13/09/2022	-	-
		16/09/2022	-	-
		20/09/2022	-	-
RS02	F002	25/08/2022	-	-
		01/09/2022	-	-
		06/09/2022	Common frog	1 mature
		09/09/2022	-	-
		13/09/2022	-	-
		16/09/2022	-	-
		20/09/2022	-	-
RS03	F001	25/08/2022	-	-
		01/09/2022	-	-
		06/09/2022	-	-
		09/09/2022	-	-
		13/09/2022	-	-
		16/09/2022	-	-
		20/09/2022	-	-
RS03	F002	25/08/2022	-	-
		01/09/2022	Grass snake	1 juvenile
		06/09/2022	Bank vole	1
		09/09/2022	-	-
		13/09/2022	Bank vole	1 mature
		16/09/2022	-	-
20/09/2022	-	-		



Reptile assessment Site	Reptile transect	Survey dates	Species recorded	Number and life stage
RS04	F001	26/08/2022	-	-
		01/09/2022	-	-
		08/09/2022	-	-
		14/09/2022	-	-
		21/09/2022	-	-
		26/09/2022	-	-
		29/09/2022	-	-
RS04	F002	26/08/2022	-	-
		01/09/2022	-	-
		08/09/2022	-	-
		14/09/2022	Bank vole	1
		21/09/2022	-	-
		26/09/2022	-	-
		29/09/2022	Bank vole	1 juvenile
RS04	F003	26/08/2022	-	-
		01/09/2022	-	-
		08/09/2022	-	-
		14/09/2022	-	-
		21/09/2022	-	-
		26/09/2022	-	-
		29/09/2022	Bank vole	1
RS04	F004	26/08/2022	-	-
		01/09/2022	-	-
		08/09/2022	-	-
		14/09/2022	-	-
		21/09/2022	-	-
		26/09/2022	-	-
		29/09/2022	-	-
RS04	F005	26/08/2022	-	-
		01/09/2022	-	-
		08/09/2022	-	-
		14/09/2022	-	-
		21/09/2022	-	-
		26/09/2022	-	-
		29/09/2022	Bank vole	1 mature
RS05	F001	26/08/2022	-	-
		01/09/2022	-	-
		08/09/2022	-	-
		14/09/2022	-	-
		21/09/2022	-	-
		26/09/2022	-	-
		29/09/2022	-	-
RS06	F001	26/08/2022	Field vole	1 mature
		01/09/2022	-	-
		08/09/2022	Grass snake	1 juvenile
		14/09/2022	Grass snake	1 juvenile
		21/09/2022	-	-
		26/09/2022	-	-
		29/09/2022	-	-

Reptile assessment Site	Reptile transect	Survey dates	Species recorded	Number and life stage
RS06	F002	26/08/2022	-	-
		01/09/2022	-	-
		08/09/2022	-	-
		14/09/2022	-	-
		21/09/2022	Common toad	1 juvenile
		26/09/2022	Bank vole	1 juvenile
		29/09/2022	Common toad Bank vole	1 mature 1
RS07	F001	25/08/2022	-	-
		01/09/2022	-	-
		06/09/2022	-	-
		09/09/2022	Bank vole	1
		13/09/2022	Bank vole	1
		16/09/2022	-	-
		20/09/2022	Bank vole	4 mature
RS08	F001	17/04/2023	-	-
		27/04/2023	-	-
		02/05/2023	-	-
		09/05/2023	-	-
		15/05/2023	-	-
		22/05/2023	-	-
		29/05/2023	-	-
RS08	F002	17/04/2023	-	-
		27/04/2023	-	-
		02/05/2023	Common toad	1 juvenile
		09/05/2023	-	-
		15/05/2023	-	-
		22/05/2023	-	-
		29/05/2023	Common toad	1 mature

Source: Mott MacDonald, 2022-2023

## C. Appendix: Survey weather conditions

**Appendix table C-1: Weather conditions of survey**

Reptile assessment Site	Date	Temperature	Wind	Cloud cover	Rain
RS01	06/09/2022	16	1	8	0
	09/09/2022	14	1	8	0
	13/09/2022	19	1	4	0
	16/09/2022	14	2	3	0
	20/09/2022	18	1	8	0
	23/09/2022	14	1	7	0
	27/09/2022	14	3	4	0
	17/04/2023	13	1	8	0
	24/04/2023	11	2	8	0
RS02	25/08/2022	17	1	8	0
	01/09/2022	17	2	4	0
	06/09/2022	18	1	8	0
	09/09/2022	15	1	8	0
	13/09/2022	20	1	6	0
	16/09/2022	12	2	0	0
	20/09/2022	18	1	8	0
RS03	25/08/2022	17	1	8	0
	01/09/2022	19	2	6	0
	06/09/2022	17	2	8	0
	09/09/2022	14	1	8	0
	13/09/2022	19	1	6	0
	16/09/2022	13	3	1	0
	20/09/2022	17	1	8	1
RS04	26/08/2022	13	0	4	1
	01/09/2022	19	2	6	0
	08/09/2022	14	1	8	0
	14/09/2022	13	1	0	0
	21/09/2022	14	2	7	0
	26/09/2022	14	1	7	0
	29/09/2022	12	1	8	0
RS06	26/08/2022	16	1	1	0
	01/09/2022	16	1	1	0
	08/09/2022	17	2	7	0
	14/09/2022	14	1	0	0
	21/09/2022	16	2	7	0
	26/09/2022	13	2	8	0
	29/09/2022	12	2	6	0
RS07	25/08/2022	17	1	7	0
	01/09/2022	19	2	6	0
	06/09/2022	18	1	8	0
	09/09/2022	16	2	8	0
	13/09/2022	18	1	6	0
	16/09/2022	13	3	2	0
	20/09/2022	17	1	8	0

<b>Reptile assessment Site</b>	<b>Date</b>	<b>Temperature</b>	<b>Wind</b>	<b>Cloud cover</b>	<b>Rain</b>
RS08	17/04/2023	13	1	8	0
	27/04/2023	11	2	8	0
	02/05/2023	13	2	3	0
	09/05/2023	16	2	8	0
	15/05/2023	16	2	3	0
	22/05/2023	13	1	8	0
	29/05/2023	13	3	8	0

Source: Mott MacDonald, 2022-2023