

Land North of Eastway, Fulwood, Preston, PR2 3LL:  
Local Centre

**APPENDIX A:  
RESULTS OF REPTILE SURVEY AND MITIGATION STRATEGY**

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[ERAP (Consultant Ecologists) Ltd ref: 2017-326]

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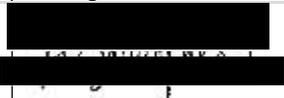
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## Document Control

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## SUMMARY

- i. ERAP Ltd (Consultant Ecologists) carried out a comprehensive reptile survey at land north of Eastway: Local Centre, Fulwood, Preston between March and May 2014. The survey was required in connection with proposals to develop the site for a commercial development.
- ii. The survey was carried out in accordance with standard guidance prepared by Froglife (Froglife, 1999), the *Herpetofauna Workers' Manual* (Gent, 1988) and Natural England guidance.
- iii. The surveys comprised a habitat suitability assessment survey of the site, direct observations of suitable habitats for the detection of basking reptiles, and the setting of 120 artificial refugia (tins and roofing felts), which were checked on eight occasions for basking and sheltering reptiles.
- iv. Any amphibian species detected under the artificial refugia were also recorded in order to determine the level of use of the site by amphibian species.
- v. All surveys were carried out at an optimal time of year and during favourable conditions for the detection of reptile species. The survey area covered the proposed development site and favourable habitats in adjacent land.
- vi. A small population size class of slow-worm, a protected species on Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended), and Priority Species, was detected at the M55 motorway verge adjacent to the site's northern boundary.
- vii. It is concluded that, in the absence of any protective measures and mitigation, the site preparation and clearance operations may cause harm to individual slow-worms and may adversely affect the local population status of slow-worm, resulting in an offence in accordance with the *Wildlife and Countryside Act 1981* (as amended).
- viii. **Section 5.0** and **Figure 3** of this report describe all actions to be implemented to demonstrate:
  - How the development has been designed to avoid/minimise impacts on slow-worm, and other wildlife;
  - Maintenance of habitat continuity and connectivity of habitats;
  - Habitat creation and enhancement to be carried out in connection with the development;
  - Protection of slow-worm during the site preparation and construction works (avoidance of killing and injury); and
  - Proposals for the future management of the habitats for slow-worm.
- ix. The Reptile Mitigation Strategy provided within this report demonstrates that the proposed development off Eastway, Preston can be achieved in accordance with the current requirements of UK wildlife legislation, Natural England guidance and best practice. Satisfactory implementation of the specifications will ensure all reasonable actions to avoid the killing or injury of slow-worm are applied during the works.
- x. The National Planning Policy Framework (NPPF) requires that new planning application seek opportunities for the enhancement of biodiversity and the incorporation of features for the benefit of biodiversity. The measures detailed in this mitigation strategy fulfil the requirements of Section 11 of the NPPF and significant habitat enhancement comprising habitat conservation, habitat creation and long-term management of habitats for slow-worm will be achieved.

## 1.0 INTRODUCTION

### 1.1 Background and Rationale

- 1.1.1 ERAP Ltd (Consultant Ecologists) was commissioned by Hollins Strategic Land to carry out an ecological survey and assessment of land north of Eastway: Local Centre, Fulwood, Preston (hereafter referred to as the 'site').
- 1.1.2 An extended Phase 1 Habitat Survey was undertaken at the site in 2013 and the results are presented at *ERAP Ltd, Land North of Eastway, Fulwood, Preston, Ecological Survey and Assessment* (ERAP Ltd, 2013), hereafter referred to as the '2013 ecology report'.
- 1.1.3 The results of the updated ecological survey and assessment undertaken in 2015 are presented at *ERAP Ltd (November 2013 (updated March 2015)), Land North of Eastway, Fulwood, Preston: Fulwood Neighborhood Centre, Ecological Survey and Assessment* (ERAP Ltd, 2015), hereafter referred to as the '2015 ecology report.'
- 1.1.4 A further updated survey was undertaken in September 2017 and the results are presented at *ERAP (Consultant Ecologists) Ltd, Land North of Eastway, Fulwood, Preston: Fulwood Local Centre, Ecological Survey and Assessment* (ERAP (Consultant Ecologists) Ltd, 2017), hereafter referred to as the '2017 ecology report'.
- 1.1.5 Examination of data obtained from the Lancashire Environment Record Network (LERN) as part of the 2013 ecology report revealed a single record of slow-worm associated with the motorway boundary, which lies adjacent to the northern site boundary, refer to **Table 3.1**.

### 1.2 Scope of Works and Objectives

- 1.2.1 This report presents the results of a comprehensive reptile survey and assessment carried out at the site and adjacent land between March and May 2014.
- 1.2.2 As reptile species were detected adjacent to the site, a comprehensive mitigation strategy has been prepared, refer to **Section 5.0**, to demonstrate:
- How reptiles will be protected from harm during site clearance and construction activities; and
  - How habitats suitable for use by reptiles will be conserved at the site and the local area in the long-term.
- 1.2.3 The principles and structure of this report has been discussed with the client. The information presented in this document is in accordance with *Natural England's Standing Advice Species Sheet: Reptiles*.

### 1.3 Relevant Legislation

- 1.3.1 The four common reptile species (common lizard, grass snake, adder and slow-worm) are listed under Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended), in respect of Section 9(5) and part of 9(1). This protection was extended by the Countryside and Rights of Way Act 2000.
- 1.3.2 The legislation makes it an offence to:
- Intentionally, or recklessly, kill or injure any of the above species, and/or;
  - Sell, or attempt to sell, any part of the species, alive or dead.
- 1.3.3 The sand lizard and smooth snake and their respective habitats are fully protected under Schedule 5 (Section 9) of the *Wildlife and Countryside Act 1981* (as amended) and under *The Conservation of Habitats & Species Regulations 2017*. It is illegal to kill, injure, capture, handle or disturb them, and the places they use for breeding, resting, shelter and protection are protected from being damaged or destroyed. It is also illegal to obstruct these animals from using such areas. The sand lizard is also identified as a Priority Species (all British reptiles are listed as Priority Species).

## 1.4 Reptile Ecology

- 1.4.1 There are six species of reptile native to mainland Britain comprising four more common and widespread species, and two rarer species with restricted distributions.
- 1.4.2 The four more common species are grass snake (*Natrix natrix*), adder (*Vipera berus*), common lizard (*Zootoca vivipara*) and slow-worm (*Anguis fragilis*). The rarer species are the sand lizard (*Lacerta agilis*) and smooth snake (*Coronella austriaca*).
- 1.4.3 The four more common species have patchy but widespread distribution throughout England, Wales and Scotland (excluding grass snake). Smooth snake and sand lizard have much tighter habitat requirements and consequently are confined to suitable lowland heath sites in the south of England. Sand lizard is also present along the coastal sand dunes of north-west England and north Wales.
- 1.4.4 Reptiles are ectothermic (cold blooded), and need to bask in the sun in order to raise their body temperature to have enough energy to move, forage and find mates. Reptiles are active during the spring, summer and autumn and hibernate during the winter. During the spring and autumn, air temperatures are lower which means that reptiles need to invest time in basking to raise their body temperature. Basking involves finding a sunny spot, often within or close to cover where they rest, and lying there until sufficiently warm that they have the energy to move around. During the summer months, air temperatures are usually sufficiently high that the time invested in basking is much less, and it may be only necessary first thing in the morning and towards the end of the evening.
- 1.4.5 Reptiles use a range of habitats including coarse grassland, wet and dry heath, scrub, woodland and wetland habitats. Suitable reptile habitat typically comprises a combination of different habitat types and features. These features include:
- Basking sites with diversity of vegetation to provide a variety of micro-climates between which reptiles can move to regulate their body temperature;
  - Refuges where reptiles can shelter such as dense scrub, rocks, logs, tree roots and subterranean structures;
  - Foraging areas where reptiles can hunt (generally encompass a range of basking sites and refugia);
  - Hibernation sites such as rocks, logs and vegetation piles, rock fissures, disused mammal burrows and other subterranean structures that are free-draining structures and usually on south facing slopes; and
  - Egg laying and breeding sites.
- 1.4.6 All reptile species hibernate (typically from October until March).

## 2.0 METHOD OF SURVEY

### 2.1 Desktop Study and Data Search

- 2.1.1 The following sources of information and ecological records were consulted for information:
- MAgiC: A web-based interactive map which brings together geographic information on key environmental schemes and designations, including details of statutory nature conservation sites;
  - The Lancashire Environment Records Network (LERN); and
  - The Lancashire Biodiversity Action Plan (BAP).

### 2.2 Habitat Suitability Assessment

- 2.2.1 During the Extended Phase 1 Habitat Survey carried out in November 2013 all habitats within the site and the adjacent fields were assessed for their suitability for use by breeding and sheltering reptile species, particularly, common lizard and slow-worm. The habitat suitability assessment guidance detailed in the

Reptile Mitigation Guidelines (TIN102) prepared by Natural England in September 2011 was referred to during the assessment.

2.2.2 As part of the 2013 Ecology Report the site was assessed in terms of its suitability for use by reptiles in accordance with the important characteristics outlined in the draft document *'Reptile Mitigation Guidelines'* (Natural England, September 2011, since withdrawn) and the *Reptile Habitat Management Handbook* (Edgar, et al., 2010).

2.2.3 The following characters that influence reptile habitat suitability were assessed:

**Table 2.1: Key Habitat Characteristics for Reptile Species**

1. Location (in relation to species range)	7. Connectivity to nearby good quality habitat
2. Vegetation Structure	8. Prey abundance
3. Insolation	9. Refuge opportunity
4. Aspect	10. Hibernation habitat potential
5. Topography	11. Disturbance regime
6. Surface geology	12. Egg-laying site potential

## 2.3 Presence/Likely Absence Survey

### Survey Area

2.3.1 The survey area comprised the land within the site boundary and land adjacent to the eastern site boundary. The motorway verge adjacent to the northern site boundary was not accessed due to health and safety. However artificial refugia were placed on the motorway verge via leaning over the fence which separates the verge from the site.

### Survey Approach

2.3.2 A presence/absence survey for reptile species was carried out in accordance with standard survey methodology detailed in Froglife (1999) and Gent and Gibson (1998).

2.3.3 Two methods of detection were applied between March and May 2014 inclusive:

- a. Direct observations; and
- b. Use of artificial refugia 'traps'.

### Direct Observations

2.3.4 Visual searches for basking reptiles were carried out by visiting the site at an appropriate time of day (between 08.30 am and 11.30 am between March and May 2014 during suitable weather, refer to **Table 3.3**) and quietly walking suitable areas of the site scanning 3 to 4 metres ahead for basking reptiles.

### Artificial Refugia 'Traps'

2.3.5 120 artificial refugia were strategically placed throughout the 3.3 hectare survey area (2 hectare site and 1.3 hectares of land adjacent to the eastern site boundary) area on 24<sup>th</sup> March 2014 to form a trapping density of approximately 36 refugia per hectare. This is considered a high trapping density; between 5 and 10 traps per hectare are recommended in the Froglife guidance. The locations of the traps are presented at **Figure 2**.

2.3.6 Refugia were placed in areas which were assessed to be suitable and attractive for use by sheltering and basking reptiles, and areas which were considered to be away from disturbance from local walkers, cattle and dogs.

2.3.7 Refugia consisted of 0.25 by 0.25 metre squares of roofing felt.

- 2.3.8 All refugia locations were recorded for subsequent identification using a Garmin eTrex *h* GPS receiver to facilitate finding the refugia during the inspections.
- 2.3.9 The traps were left for 14 days to ‘bed-in’ and inspected on seven occasions between 8<sup>th</sup> April 2014 and 9<sup>th</sup> May 2014 during favourable weather conditions (refer to **Table 3.3**). Inspections were carried out before 11.30 am, as recommended in the guidance.
- 2.3.10 Checking of refugia involves quietly approaching each refugia, observing from a distance to check for reptiles basking on top, before lifting each felt from the edge, away from the sun to avoid casting a shadow. Where required stones were placed on top of the roofing felt traps to prevent them from blowing away.

### Personnel

- 2.3.11 A suitably experienced ecologist set and inspected the reptile refugia traps and conducted direct observations. The surveyor (Mr. Aiden Pickering) is familiar with the ecology and life history of the reptile species that could occur in the Preston area namely common lizard and slow-worm.

## 2.4 Survey Limitations

- 2.4.1 No survey limitations were encountered and a thorough survey and assessment suitable for the purposes of informing the planning application was conducted.
- 2.4.2 All traps were easily located during the subsequent visits. 12 traps were vandalised between 24<sup>th</sup> March and 8<sup>th</sup> April 2014, these traps were replaced during the refugia check on 8<sup>th</sup> April. No further traps were tampered with.

## 3.0 SURVEY RESULTS

### 3.1 Data Search

- 3.1.1 Examination of the known biological records within one kilometre of the centre of the site revealed the records of reptiles summarised at **Table 3.1**, below.

**Table 3.1: Summary of Reptile Records Obtained from LERN**

Species and Protection	Date	Notes
Slow-worm (WCA 1981 & Priority Species)	2005	One record associated with motorway verge adjacent to the northern site boundary.
	2002	One record approximately 685 metres north-west of the site boundary.
	2009	One record approximately 750 metres south of the site boundary.

### 3.2 Brief Description of the Site and Assessment of its Suitability for Reptile Species

#### Description of Habitats

- 3.2.1 As described in the 2017 ecology report the site comprises species poor semi-improved, a strip of tall-herb vegetation and two hedgerows. The OS grid reference at the centre of the site is SD 5247 3391. The site covers an area of approximately two hectares.
- 3.2.2 The conditions and management at the site had not changed since the 2013 and 2015 surveys. The site is a grazed semi-improved pasture with hedgerows at its southern and eastern boundaries, refer to **Photo 1**. At the time of the 2017 survey the field was grazed by sheep. The vegetation is characterised by constant and frequent Creeping Bent (*Agrostis stolonifera*), Common Mouse-ear (*Cerastium fontanum*), Red Fescue (*Festuca rubra*), Yorkshire-fog (*Holcus lanatus*), Soft-rush (*Juncus effusus*), Perennial Rye-grass (*Lolium perenne*), Meadow Buttercup (*Ranunculus acris*), Creeping Buttercup (*Ranunculus repens*) and White Clover (*Trifolium repens*).

3.2.3 The grazed semi-improved pasture is characteristic of an *MG10 Yorkshire-fog – Soft-rush* (Rodwell, 1992) pasture community of the NVC.



**Photo 1:** Field 1 (September 2017)

3.2.4 The M55 motorway and associated motorway verges lie directly beyond the northern site boundary. Existing and ongoing residential development lies to the east and south of the site boundary. Beyond the western site boundary lies a grazed pasture similar in vegetative structure to that of the site.

#### Assessment of Habitat Suitability for Reptiles

3.2.5 The results of the habitat suitability assessment are presented in **Table 3.2**, below.

**Table 3.2: Results of Habitat Suitability Assessment**

Characteristic	Site Description
1. Location (in relation to species range)	One record of slow-worm directly adjacent to northern site boundary. Two further records of slow-worm are present for the wider area (beyond 600 metres from the site boundary).
2. Vegetation Structure	Varied. The site contains a mixture of hedgerows, trees and shrubs, grassland and off-site pond.
3. Insolation	The site is not shaded by its boundaries and is open.
4. Aspect	The site is more-or-less flat and does not slope in any direction.
5. Topography	The site has a level topography.
6. Surface geology	The site is composed of brown earth soils.
7. Connectivity to nearby good quality habitat	The motorway verge directly beyond the northern site boundary is suitable for use by reptile species, and there is one record of slow-worm being present. The motorway verge connects the site to a railway cutting located approximately 290 metres west of the site, which is suitable for use by reptile species. One record of sand lizard is recorded approximately 685 metres north of the site; however the M55 motorway acts as a barrier to dispersal from this site. Further, sand lizards are now exceedingly rare in Great Britain and restricted to coastal habitats. One record of slow-worm is also present approximately 750 metres south of the site, however existing residential developments act as a barrier to dispersal toward the site. Habitat to the west and south of the site boundary is not suitable for use by reptile species as the habitats contain existing and ongoing residential developments.
8. Prey abundance	The site contains suitable habitats for a variety of invertebrates including spiders, grasshoppers, crickets, bugs, flies, slugs and worms.
9. Refuge opportunity	No habitats favourable for sheltering reptiles are present within the site, although some suitable shelter may be present under the hedgerows at the site boundaries.

10. Hibernation habitat potential	No habitats favourable for hibernating reptiles are present within the site, although some hibernation potential may be present at tree roots at the site boundaries.
11. Disturbance regime	The site is grazed (at the time of the 2017 survey the site is grazed by sheep), however the site is not otherwise regularly disturbed.
12. Egg-laying site potential <sup>1</sup>	None
<sup>1</sup> Characteristic 12 is relevant to grass snake and sand lizard only	

3.2.6 In summary, habitats within the site are of low suitability for basking, foraging and sheltering reptile species, including slow-worm. However the habitat directly adjacent to the northern site boundary is suitable for reptile species and there is a record of slow-worm close to the site boundary from 2005; a reptile presence/likely absence survey, in accordance with recognised guidance, was recommended by the 2013 ecology report.

### 3.3 Presence/Likely Absence Survey 2014

3.3.1 The results of the direct observation and artificial refugia surveys are presented in **Table 3.3**, below. Records of amphibians are also reported in order that an assessment may be made on the use of the terrestrial habitats within the site by amphibian species, and, and the likely size of any amphibian species population associated with the site.

3.3.2 Traps were set on 24<sup>th</sup> March 2014; the results relating to this survey date relate to direct observations only.

**Table 3.3: Results of Reptile Presence/Likely Absence Survey 2014**

Date	Weather	Temp. °C	Reptiles & location	Amphibians	Notes
24 <sup>th</sup> March 2014	Sunshine, dry calm	10.0	0	0	Site set up visual and debris search carried out
8 <sup>th</sup> April 2014	Sunshine, intermittent showers, Calm	11.5	0	1 adult smooth newt, northern margin	12 traps vandalised and replaced
14 <sup>th</sup> April 2014	Intermittent sunny spells, dry, calm	12	0	1 adult common toad, eastern margin	Debris search carried out
16 <sup>th</sup> April 2014	Sunshine, dry, calm	15	0	1 adult common toad, eastern margin	Debris search carried out
23 <sup>rd</sup> April 2014	Intermittent sunny spells, calm	12.5	0	1 adult common toad, eastern margin	Debris search carried out
27 <sup>th</sup> April 2014	Intermittent sunny spells, calm	14	0	0	Debris search carried out
6 <sup>th</sup> May 2014	Bright sunny spells, calm	17.5	0	0	Debris search carried out
9 <sup>th</sup> May 2014	Intermittent sunny spells	14.5	<b>1 female slow-worm beneath artificial refugia trap at northern margin, on the motorway side of the fence boundary</b>	0	Debris search carried out

### 3.4 Interpretation of Results

3.4.1 One species of reptile (slow-worm) was detected on one survey repetition. The location of the detected slow-worm is annotated on **Figure 2**.

3.4.2 Whilst the slow-worm was recorded outside the site boundary, and none were recorded within the site, it is considered likely that slow-worm may make occasional use the site due to the fact that the site is adjacent

to the motorway verge and the timber motorway fence line is not a barrier to reptile movements. The presence of slow-worm within the site cannot be reasonably discounted.

- 3.4.3 It is concluded that reptile use of the site will be occasional, and the survey results indicate that a **small** population size class is present, in accordance with Table 9 of the *Reptile Mitigation Guidelines* (Natural England 2011).
- 3.4.4 Low numbers of common toad (a Priority Species) and a single smooth newt were detected within the site. It is concluded that the terrestrial habitats within the site do not support significant numbers of terrestrial amphibians and the proposed development will not remove a significant amount of favourable terrestrial habitat for amphibian species. The Method Statement presented below is suitable for the protection of individual amphibians during the construction phase of the proposed development.

## 4.0 IMPACT ASSESSMENT

### 4.1 Killing and Injury

- 4.1.1 In the absence of mitigation, the construction preparation works, which will involve the clearance of vegetation which may be used by sheltering slow-worm (such as Bramble scrub), is likely to directly harm or injure slow-worm and would be an offence under the *Wildlife and Countryside Act 1981* (as amended).
- 4.1.2 Site clearance with no mitigation will adversely affect individual slow-worm and will have a negative and direct impact on the local slow-worm population.

### 4.2 Habitat Loss

- 4.2.1 The proposed development will involve the removal of approximately 2 hectares of species poor semi-improved grassland and a single hedgerow. Not all of this area supports habitat favourable for use by sheltering slow-worm but slow-worm will use the grassland habitats to feed and move between Bramble patches.
- 4.2.2 The loss of habitat is considered to have a minor to negligible impact upon the slow-worm population, which are associated with the more favourable habitats of unmanaged grassland on the motorway verge.

### 4.3 Fragmentation and Isolation

- 4.3.1 The development of the site is unlikely to cause a significant fragmentation and isolation effect on the slow-worm, which are associated with the motorway verge. No significant habitats suitable for use by reptiles will be severed.

### 4.4 Disturbance

- 4.4.1 The habitats within the site will be disturbed during the construction period. During this period the operational construction site poses as a risk of harm to slow-worm that may enter the operational area.

### 4.5 Post-development Impacts

- 4.5.1 No significant post-development impacts are expected. In the absence of mitigation, no long-term changes would occur to the management of the motorway verge as a consequence of the proposed development.

### 4.6 Summary and Conclusion

- 4.6.1 The impacts of the proposed development are limited to the potential to harm individual slow-worm during the construction stage. The Method Statement presented below demonstrates how individual slow-worm (and amphibian species) will be protected prior to site clearance and during the proposed development of

the site, and how the proposed development may incorporate features to conserve and enhance habitats within the site for reptile and amphibian species in the long term.

## 5.0 MITIGATION & ENHANCEMENT

### 5.1 Mitigation Strategy

#### Objectives

- 5.1.1 This mitigation strategy provides detailed information with regard to the following:
- How the development has been designed to avoid/minimise impacts on slow-worm, and other wildlife;
  - Protection of slow-worm during the site preparation and construction works (avoidance of killing and injury);
  - Maintenance of habitat continuity and connectivity of habitats;
  - Habitat creation and enhancement to be carried out in connection with the development; and
  - Proposals for the future management of the habitats for slow-worm.
- 5.1.2 The principles of this Mitigation Strategy are in accordance with current Natural England guidance outlined in the *Reptile Mitigation Guidelines* Natural England 2011 (since withdrawn) and the *Standing Advice Species Sheet: Reptiles* prepared by Natural England.

#### Avoidance of Impacts/Habitats

- 5.1.3 As identified in the 2017 ecology report the habitats associated with the motorway verge beyond the northern site boundary are suitable for use by reptile species.
- 5.1.4 It is recommended that the land beyond the site boundary is protected throughout construction, and that further, suitable habitats are created within the site, linked to the motorway verge, as enhancement for reptile species as part of the proposed development.
- 5.1.5 Demarcation fencing will be installed at the northern site boundary, and all personnel will be made aware of its purpose, the presence of a protected species, and the legal protection afforded to that species (refer to **Section 1.3**).

#### Capture and Exclusion Prior to Site Clearance

- 5.1.6 A reptile exclusion fence will be installed along the northern site boundary to prevent re-colonisation and prevent reptiles from entering the site during construction.
- 5.1.7 Translocation to an ex-situ distant receptor site is not proposed in connection with this scheme; rather, it is proposed to move and displace the slow-worm from the proposed development site into optimal habitats to the north of the site, where the slow-worm was identified. As the exclusion fencing along the northern site boundary is proposed inside of the proposed hedgerow, the reptiles will be placed within suitable habitats next to their known population and at an area within the ownership of the development site (and not on Highways owned land).
- 5.1.8 Based in the small size of the site and the homogenous terrain it is not proposed to divide up the site with reptile fencing during the capture period other than to ring fence the more favourable areas of reptile habitat.
- 5.1.9 The principles of the capture and exclusion are described below. A Work Schedule is presented in **Section 5.3** and a specification of the fencing is presented on **Figure 3**.
- 5.1.10 These measures are to be taken over and above the Reasonable Avoidance Measures proposed for the protection of common toad as presented in the 2017 ecology report.

- a. Vegetation along the route of the reptile exclusion fencing along the northern site boundary will be trimmed/brush cut. A temporary reptile exclusion fence will be installed. The fencing will have 'curl backs' at each end to prevent reptiles from entering the construction site from the edges;
- b. A total length of 405 metres of fencing is proposed. 81 refugia (i.e. approximately one every 5 metres of fencing) will be placed in suitable habitats and alongside the fencing in the site and permitted to 'bed in';
- c. The capture and exclusion activities may be conducted between April and September inclusive, but should not be conducted between October and March, when reptiles are likely to be hibernating;
- d. After two weeks the refugia will be checked and any captured reptiles will be carefully translocated to favourable habitats outside the reptile exclusion fencing;
- e. Capture will be undertaken each morning for at least two weeks, and until no reptiles have been caught/located under an artificial refuge for at least five days;
- f. Once trapping is complete a destructive search of the hedgerow and any other features will be carried out. Once the Ecologist is confident that all reasonable actions have been carried out to capture and remove reptiles from the construction site, the ring fencing at the hedgerow will be removed (the northern fencing will be retained until the end of the proposed development) and the full site clearance operations will be permitted; and,
- g. The Reasonable Avoidance Measures presented at Section 5.5 of the 2017 Ecology Report will be followed during the construction of the site.

5.1.11 All contractors will be made aware of the presence of reptiles and the protection afforded to them under wildlife legislation.

5.1.12 The reptile exclusion fence along northern boundary will be maintained throughout the construction period to prevent reptiles from entering the site from the wider area.

5.1.13 After the completion of construction the reptile exclusion fencing will be removed taking care to ensure any slow-worm that might be sheltering between the fencing and the earth are safely removed.

#### **Conservation of Habitat Connectivity**

5.1.14 As presented below at **Figure 4**, the development of the site, in conjunction with the implementation of the measures detailed in this Mitigation Strategy, will not fragment favourable habitats used by slow-worm. No habitats or links to favourable/identified good quality habitat will be severed.

5.1.15 The scheme proposes the protection of the identified areas of good quality habitats, and will create further habitats suitable for use by slow-worm as part of the proposed development, such as a hedgerow along the northern site boundary and western site boundaries.

5.1.16 Connectivity of habitats between the identified areas of good quality habitats will be retained. Slow-worms do not typically travel far and it is important to maintain good habitat connectivity to prevent adverse impacts such as in-breeding which can occur if habitats become isolated.

#### **5.2 Habitat Creation/Enhancement of Habitats**

5.2.1 In addition to the conservation of existing habitats at the site and the recommendations proposed at Section 5.0 of the 2017 ecology report, it is proposed that one further hibernacula will be located within the woody planting proposed at the north-western corner of the site. The hibernacula will be suitable for use by sheltering, breeding and hibernating slow-worm.

5.2.2 The hibernacula will comprise of log and stone piles following the guidance and specifications in the *Design Manual for Roads and Bridges (DMRB)* and *Froglife GCN Conservation Handbook* (refer to **Figure 4**).

5.2.3 Suggested locations for the hibernacula are annotated on **Figure 4**.

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**Ownership**

- 5.2.4 The motorway verge to the north of the site is outside the development site and outside the ownership/control of Hollins Strategic Land.
- 5.2.5 All land and habitat creation within the development site is within the control of Hollins Strategic Land.

**Responsibility**

- 5.2.6 The responsibility for the long-term management of the proposed new habitats and hibernacula will be passed to a Management Company to be appointed by Hollins Strategic Land.

**Monitoring**

- 5.2.7 In accordance with the *Reptile Mitigation Guidelines* (Natural England 2011) there is no requirement for any long-term monitoring of the reptile population at the post-development stage.

## 5.3 Works Schedule

**Table 5.1: Works Schedule**

Time	Action	Responsibility
Winter 2017 / 2018	Maintain current conditions and management at site	Hollins Strategic Land
Spring 2018	Plant the proposed compensatory hedgerow along the northern site boundary and create one new hibernacula at north-western site boundary.	Hollins Strategic Land & Ecologist
Mid-March 2018	Lay out 120 refugia around suitable habitat and adjacent to proposed fence locations within the site and permit to 'bed-in'	Ecologist
	Install a temporary reptile exclusion fence at northern site boundary and ring fence Hedgerow 2, refer to <b>Figure 3</b> .	Hollins Strategic Land under supervision of Ecologist
April 2018 (first part of first week)	Commence daily checks of the refugia and capture any reptiles. Reptiles to be carefully translocated to favourable habitats outside the reptile exclusion fencing at northern site boundary. 14 days trapping proposed.	Ecologist
April 2018 (second part of second week)	Check the refugia and capture any reptiles. Reptiles to be carefully translocated to favourable habitats outside the reptile exclusion fencing.	Ecologist
	Carry out a destructive search of any remaining habitats/features and rescue any reptiles.	Ecologist
	Site will now all be strimmed and cleared of habitats suitable for use by reptiles. The exclusion fencing along the northern site boundary will prevent reptile movement into the construction site.	-
April 2018 and throughout construction works	Reptile exclusion fencing to be protected and repaired as required.	Hollins Strategic Land
At completion of construction	Reptile exclusion fencing can be removed taking care to ensure no slow-worm are sheltering between the fencing and the earth.	Hollins Strategic Land under supervision of Ecologist

## 6.0 CONCLUSION

- 6.1 The proposed development has the potential to impact upon slow-worm, a protected species, due to the presence of a small population at the motorway verge, adjacent to the north of the site. The Reptile Mitigation Strategy contained in this report demonstrates how the proposed development can be achieved in accordance with the current requirements of UK wildlife legislation, Natural England guidance and best practice. Satisfactory implementation of the specifications will ensure all reasonable actions to avoid the killing or injury of slow-worm are applied during the works.
- 6.2 The National Planning Policy Framework (NPPF) requires that new planning application seek opportunities for the enhancement of biodiversity and the incorporation of features for the benefit of biodiversity. The measures detailed in this mitigation strategy fulfil the requirements of Section 11 of the NPPF and significant

habitat enhancement comprising habitat conservation, habitat creation and long-term management of habitats for slow-worm will be achieved.

## 7.0 REFERENCES

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**8.0 APPENDIX: FIGURES**

**Figure 1: Google Earth Image to Illustrate the Site Boundary and Pond Location**



Figure 2: 2013 Phase 1 Habitat and Vegetation Map, Locations of Refugia and Records of Slow-worm

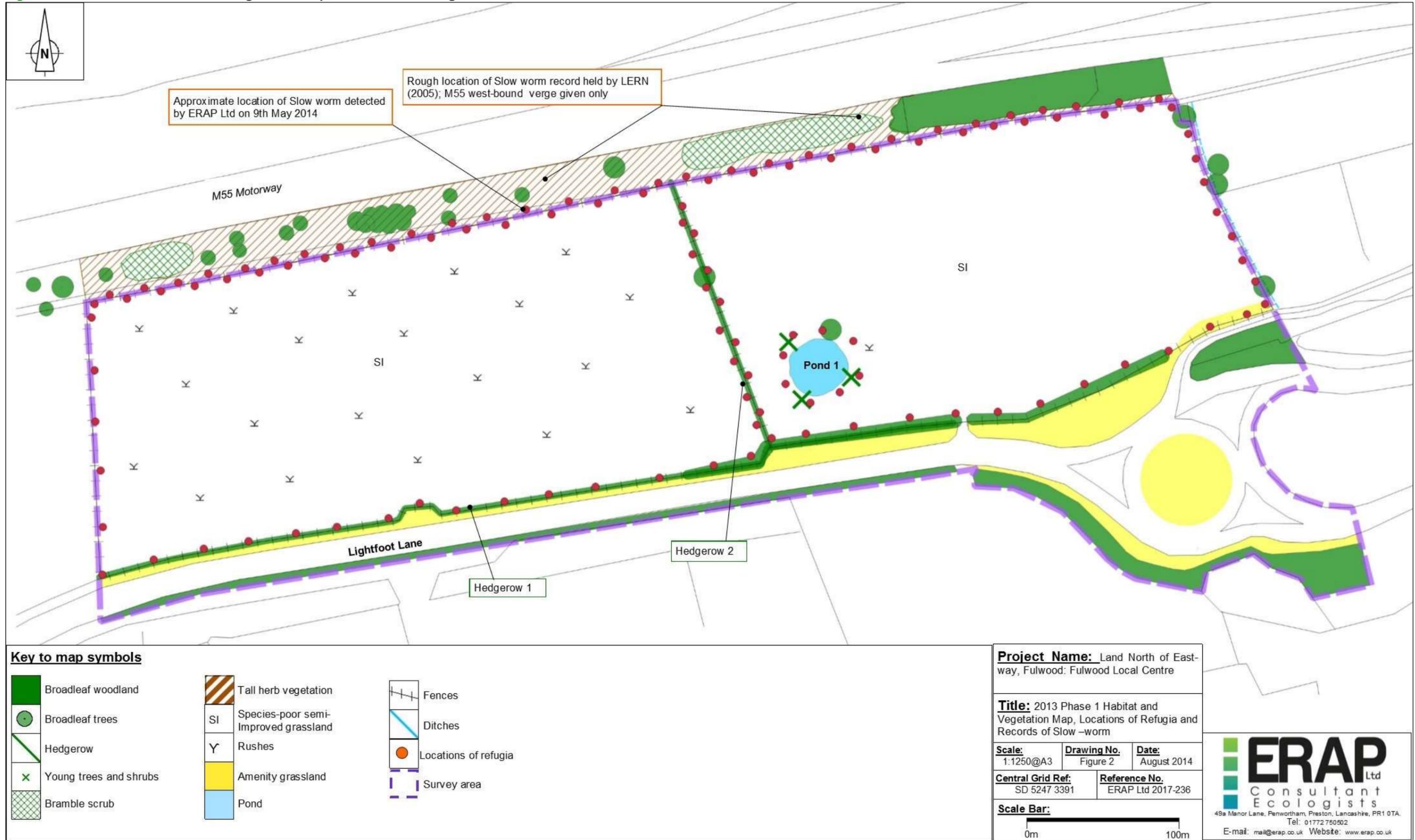


Figure 3: Trapping Effort, Receptor Site and Fencing Location

