

# **A1 in Northumberland: Morpeth to Ellingham**

**Scheme Number: TR010041**

## **6.8 Environmental Statement – Appendix 9.9 Reptile Assessment Report**

**Part B**

APFP Regulation 5(2)(a)

Planning Act 2008

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

June 2020

Infrastructure Planning

Planning Act 2008

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

**The A1 in Northumberland: Morpeth to Ellingham  
Development Consent Order 20[xx]**

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**Environmental Statement - Appendix**

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## 1. INTRODUCTION

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- 1.1.1. The A1 in Northumberland: Alnwick to Ellingham (Part B) aims to increase capacity along an approximately 8 km section of the existing A1 between Alnwick and Ellingham, in Northumberland. Part B includes widening the existing A1 from single carriageway to a dual carriageway. Part B also includes improving the existing junction at Charlton Mires with a new grade-separated junction and a new accommodation overbridge at Heckley Fence. Part B aims to increase capacity, enhance resilience, improve safety and improve journey times along the route. Details of the Part B location are provided on the **Location Plan** of this Environmental Statement (ES) (**Application Document Reference: TR010041/APP/2.1**).
- 1.1.2. Part B comprises dualling of the existing A1 single carriageway; a new southbound carriageway would be constructed to the east of the existing A1, and the existing A1 would act as a new northbound carriageway. A number of private means of access would need to be stopped up and replaced with new access routes including new roads for East and West Linkhall, and from the B6347 and Rock South Farm. To facilitate the construction of Part B, a length of an extra high voltage cable, utility pipes and telecommunication cables would need to be diverted. Additionally, a construction compound would be constructed within the Lionheart Enterprise Park adjacent to Highways England Gritting Depot, and a Main Compound constructed by Thirston. Part B also includes new drainage features, new and extended culverts, and temporary and permanent Public Rights of Way (PRoW) diversions, together with new and/or improved ancillary features.
- 1.1.3. This appendix details the methods, results, impact assessment, and recommended mitigation to ameliorate adverse impacts upon reptiles in respect of Part B.
- 1.1.4. Within this document, Part B comprises three elements. The Part B Main Scheme Area refers to the Order Limits north of Alnwick and south of Ellingham only. The Order Limits also includes the Lionheart Enterprise Park Compound (eastern and western sites), located to the south of Alnwick, and the Main Compound, which is located within the A1 in Northumberland Morpeth to Felton (Part A).

## 1.2. ECOLOGICAL BACKGROUND

- 1.2.1. An extended Phase 1 Habitat assessment of Part B and the surrounding areas was undertaken between May and June 2016 (**Ref. 1**). This assessment included a desk-based study and field surveys. Desk study data from publicly accessible data sources, the regional biological records centre and wildlife charities provided no records of reptiles within 2 km of the 2016 survey area (encompassing the existing A1 carriageway and several Part B options at that time). Field surveys identified that habitats suitable for reptiles were present within the survey area. Based on the results of the assessment, it was concluded that a reptile survey was required to determine the presence or likely absence of reptiles within the Order Limits.

### 1.3. BRIEF AND OBJECTIVES

- 1.3.1. The brief was to complete a reptile survey in accordance with good practice guidance (**Ref. 2**) to:
- a. Establish whether reptiles are present or likely absent from survey areas (a selection of habitats assessed as offering the most suitable habitat to support reptile species) in respect of Part B; and
  - b. If present, evaluate the importance of the Order Limits for reptiles and make recommendations as to how proposals should account for reptiles with respect to legislation, planning and biodiversity policy.
- 1.3.2. The results of these surveys, and subsequent recommendations, are included within this report.

## 2. METHODOLOGY

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### 2.1. DESK STUDY

- 2.1.1. Records of reptiles within 2 km of the Order Limits (hereafter known as the Study Area) were requested from the Environmental Records Information Centre (ERIC) North East, and North East Reptile and Amphibian Group (NERAG) in September 2019.
- 2.1.2. The desk study included results within the last ten years (2009-2019), as anything earlier was not considered to be ecologically relevant.
- 2.1.3. The presence of statutory and non-statutory protected sites, with reptiles as qualifying features or a contributing reason for designation, was also included as part of the desk study.

### 2.2. FIELD SURVEY

#### REPTILE PRESENCE/LIKELY ABSENCE SURVEY

- 2.2.1. Reptile surveys were undertaken on a selection of land parcels identified as containing suitable reptile habitat, up to 50 m from the Order Limits (the Survey Area).
- 2.2.2. Nine land parcels identified as containing habitats suitable to support reptiles were subject to a presence/likely absence survey. The survey comprised seven visits to each land parcel, each incorporating two elements:
  - a. Survey of artificial refugia; and
  - b. Visual observation of habitats and natural refugia present.
- 2.2.3. The land parcels identified were distributed along the length of Part B to provide a representative sample. Two land parcels were located to the east of Part B, six to the west, and one to the south. The surveyed land parcels are hereafter referred to as the 'Sites' and are labelled Sites 1-9. The Sites are shown on **Figure 9.20: Reptile Survey Site Locations, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**).
- 2.2.4. In total, 621 artificial refugia<sup>1</sup> were deployed across the Sites, divided in such a way that the amount of refugia per Site was in accordance with current guidance (**Ref. 2** and **Ref. 3**). Based on the hectareage of each Site, the minimum total number of artificial refugia recommended to be utilised across all nine Sites would be 310. However, based on the conditions and accessibility of each Site, it was possible to deploy more than the minimum

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<sup>1</sup> Artificial refugia, comprising roofing felt tiles, are used to assist with the detection of reptiles within suitable habitat. The material warms up and retains heat quicker than the surrounding environment and is therefore attractive to basking reptiles. A 'bedding in' period following deployment of artificial refugia, allows favourable conditions to develop (i.e. suitable humidity and temperature gradient to develop and for reptiles present within the habitat to become aware of the refugia).

recommended. Utilising a higher density of artificial refugia increased the chances of finding reptiles.

- 2.2.5. The recommended minimum bedding in period for refugia is two weeks. A total of 621 refugia were deployed and allowed to 'bed down' for two weeks prior to the beginning of survey visits in line with best practice. Initial refugia deployment was undertaken at Sites 1 to 7 in August 2018, with deployment of refugia at Sites 8 completed in April 2019, and at Lionheart Enterprise Park Compound location in July 2019. All refugia deployed to each Site were GPS referenced at the time of deployment. Site locations and refugia deployed at each site are shown on **Figure 9.20: Reptile Survey Site Locations, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**).
- 2.2.6. All artificial refugia comprised bitumen felt mats, approximately 0.5 m by 0.5 m in size. Artificial refugia were sited in suitable basking spots (e.g. clearings in wooded areas, adjacent to rock faces or on rocky outcrops, field margins adjacent to scrub), close to cover, within habitat parcels identified to provide suitable conditions and habitat to support reptiles.
- 2.2.7. The survey approach consisted of pre-determined walking routes around the refugia at each Site in the morning and/or evening when temperatures were most suitable (between 9-18°C). Weather data was recorded at the beginning and end of each survey. Surveyors approached each of the refugia cautiously, visually inspecting the surface of the mat and surrounding area for the presence of basking reptiles, before lifting refugia and recording details of any reptiles observed, including species, sex, and whether adult or juvenile.
- 2.2.8. All surveys were completed within the appropriate season (recognised as March to October), primarily completed between August to October 2018 and April, May and August 2019. As far as possible, surveys were undertaken on sunny days with low cloud cover and little wind to maximise the probability of recording reptiles. Where ambient air temperatures were towards the upper end of the temperature range, days of higher cloud cover were targeted.



### 3. ECOLOGICAL IMPACT ASSESSMENT (ECIA) METHODOLOGY

- 3.1.1. This section describes the methodology used to ultimately identify significant effects of impacts on the relevant ecological receptors and identify suitable mitigation. The Ecological Impact Assessment (ECIA) adopts guidance from Chartered Institute of Ecology and Environmental Management (CIEEM) (Ref. 4) and the Design Manual for Roads and Bridges (DMRB) Interim Advice Note (IAN) 130/10 ‘Ecology and Nature Conservation: Criteria for Impact Assessment’ (Ref. 5).
- 3.1.2. Ecological receptors have been subject to nature conservation evaluation. The significance of effects has then been assessed taking into account the characterisation of potential impacts (including duration, extent and reversibility) and their consequent effects on important ecological receptors.

### 3.2. NATURE CONSERVATION EVALUATION

- 3.2.1. Ecosystems, habitats and species are assigned levels of importance for nature conservation based on the criteria detailed within CIEEM guidance (Ref. 4), IAN 130/10 (Ref. 5) and summarised in Table 3-1 of this appendix. The rarity, ability to resist or recover from environmental change and uniqueness of an ecological receptor, function/role within an ecosystem and level of legal protection or designation afforded to a given ecological receptor are all factors considered in determining its importance. Consideration has also been given to the importance of the species or habitat and its conservation status at a geographic level taking population size, life cycle, rarity and/or distribution into account.
- 3.2.2. In addition, the importance of an ecological receptor takes into account any statutory or non-statutory designations, the intrinsic importance of the ecological receptor and whether it supports legally protected or notable species.

**Table 3-1 - Importance Criteria**

Importance	Criteria
International or European	Ecosystems and Habitats - Ecosystems or habitats essential for the maintenance of: <ul style="list-style-type: none"> <li>– Internationally designated areas or undesignated areas that meet the criteria for designation; and/or</li> <li>– Viable populations of species of international conservation concern.</li> </ul> Species: <ul style="list-style-type: none"> <li>– Species whose presence contributes to the maintenance of qualifying habitats, communities and assemblages that occur within internationally designated sites or within undesignated areas that meet the criteria for such designation;</li> </ul>

Importance	Criteria
	<ul style="list-style-type: none"> <li>– Resident, or regularly occurring, populations of species that may be considered at an International or European level including those listed on Annexes II, IV and V of the Habitats Directive (<b>Ref. 6</b>) and Annex I of the Birds Directive (<b>Ref. 7</b>), where:</li> <li>– The loss of the population would adversely affect the conservation status or distribution of the species at this geographical stage; or</li> <li>– The population forms a critical part of a wider population at this scale; or</li> <li>– The species is at a critical phase of its life cycle at this scale.</li> </ul>
UK or National	<p>Ecosystems and Habitats - Ecosystems or habitats essential for the maintenance of:</p> <ul style="list-style-type: none"> <li>– Qualifying communities and assemblages that occur within nationally designated sites or within undesignated areas that meet the criteria for such designation; and/or</li> <li>– Viable populations of species of national conservation concern;</li> <li>– Areas of ancient woodland;</li> <li>– Habitats listed for their principal importance for biodiversity in Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (<b>Ref. 8</b>).</li> </ul> <p>Species:</p> <ul style="list-style-type: none"> <li>– Species whose presence contributes to:</li> <li>– The maintenance of qualifying habitats, communities and assemblages that occur within nationally designated sites or within undesignated areas that meet the criteria for such designation; or</li> <li>– The maintenance and restoration of biodiversity and ecosystems at a national level, as defined in the NERC Act 2006 Section 41 requirements.</li> <li>– Resident, or regularly occurring, populations of species that may be considered at an International/European (as detailed above), National or UK level including those receiving legal protection (listed within Schedules 1, 5 and 8 of the Wildlife and Countryside Act 1981 (<b>Ref. 9</b>)) or listed for their principal importance for biodiversity or conservation status, where:</li> </ul>

Importance	Criteria
	<ul style="list-style-type: none"> <li>– The loss of the population would adversely affect the conservation status or distribution of the species at this geographical stage; or</li> <li>– The population forms a critical part of a wider population at this scale; or</li> <li>– The species is at a critical phase of its life cycle at this scale.</li> </ul>
Regional	<p>Ecosystems and Habitats - Ecosystems or habitats essential for maintenance of:</p> <ul style="list-style-type: none"> <li>– Populations of species of conservation concern within the region.</li> </ul> <p>Species:</p> <ul style="list-style-type: none"> <li>– Species whose presence contributes to the maintenance and restoration of biodiversity and ecosystems within the region.</li> <li>– Resident, or regularly occurring, populations of species that may be considered at an International, European, UK or National level (as detailed above), where:                             <ul style="list-style-type: none"> <li>– The loss of the population would adversely affect the conservation status or distribution of the species at this geographical stage; or</li> <li>– The population forms a critical part of a wider population at this scale; or</li> <li>– The species is at a critical phase of its life cycle at this scale.</li> </ul> </li> </ul>
County	<p>Ecosystems and Habitats - Ecosystems or habitats essential for the maintenance of:</p> <ul style="list-style-type: none"> <li>– Populations of species of conservation concern within the authority area.</li> </ul> <p>Species:</p> <ul style="list-style-type: none"> <li>– Species whose presence contributes to the maintenance and restoration of biodiversity and ecosystems within a relevant area such as Northumberland.</li> <li>– Resident, or regularly occurring, populations of species that may be considered at an International, European, UK or National level (as detailed above), where:                             <ul style="list-style-type: none"> <li>– The loss of the population would adversely affect the conservation status or distribution of the species at this geographical stage; or</li> </ul> </li> </ul>

Importance	Criteria
	<ul style="list-style-type: none"> <li>– The population forms a critical part of a wider population at this scale; or</li> <li>– The species is at a critical phase of its life cycle at this scale.</li> </ul>
Local	<p>Ecosystems and Habitats - Ecosystems or habitats essential for the maintenance of:</p> <ul style="list-style-type: none"> <li>– Populations of species of conservation concern within the local area (for example a Local Nature Reserve).</li> </ul> <p>Species:</p> <ul style="list-style-type: none"> <li>– Species whose presence contributes to the maintenance and restoration of biodiversity and ecosystems at a local level.</li> <li>– Resident, or regularly occurring, populations of species that may be considered at an International, European, UK or National level (as detailed above), where:                             <ul style="list-style-type: none"> <li>– The loss of the population would adversely affect the conservation status or distribution of the species at this geographical stage; or</li> <li>– The population forms a critical part of a wider population at this scale; or</li> <li>– The species is at a critical phase of its life cycle at this scale.</li> </ul> </li> </ul>
Less than Local	Ecosystems or habitats that do not meet the above criteria, i.e., supporting at least populations of species of conservation concern within the local area.

## IMPACT ASSESSMENT

### Characterisation of Potential Impacts

- 3.2.3. CIEEM (Ref. 4) notes that impacts that are likely to be relevant in an assessment are those that are predicted to lead to significant effects (adverse or beneficial) on important ecological receptors. Significant effects are those that undermine the conservation status<sup>2</sup>

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<sup>2</sup> Conservation status for habitats is determined by the sum of the influences acting on the habitat and its typical species that may affect its long-term distribution, structure and function as well as the long-term distribution and abundance of its population within a given geographical area. Conservation status for species is determined by the sum

of important ecological receptors. Knowledge and assessment of construction methods and operational activities, together with the ecological knowledge of ecologists with experience of similar large-scale infrastructure schemes, has been used to identify the potential impacts of the project on ecological receptors.

- 3.2.4. Habitats and species that are considered to have a nature conservation importance of less than local are not considered important ecological receptors<sup>3</sup> in the context of this assessment. Any impact on such a feature as a result of Part B is considered unlikely to have a significant effect on the conservation status of such habitats or species on a local, regional, national or international scale. Therefore, features assessed to be of less than local nature conservation importance have been scoped out of the EclA.
- 3.2.5. Characterisation of potential impacts has considered the processes that could lead to effects on ecological receptors, using the range of standard parameters from IAN 130/10 (**Ref. 5**), as well as others deemed appropriate (informed by CIEEM's Guidelines). These included whether the impact was positive (beneficial) or negative (adverse), the probability of the impact occurring (certain, probable, unlikely), its complexity (direct, indirect, cumulative), extent, size, duration, reversibility and timing/duration.

### Significance of Effects

- 3.2.6. Having characterised importance and potential impacts, proposals for mitigation and compensation have been considered, with the aim of avoiding, preventing, reducing or, if possible, offsetting any identified significant adverse effects. After the application of mitigation proposals, where significant effects are likely to occur, the overall significance of the effect has been assessed.
- 3.2.7. For the purpose of EclA, 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' (explained in Chapter 4 of CIEEM guidance (**Ref. 4**)) or for biodiversity in general. IAN 130/10 (**Ref. 5**) does not prescribe a method for determining the significance of ecological effects but does propose significant effect categories which are aligned with other topic areas in the DMRB. These are Neutral, Slight, Moderate, Large or Very Large (Table 3 of IAN 130/10) and are reproduced in **Table 3-2** below.
- 3.2.8. In all instances, when determining the level of significance of the ecological effect, **Table 3-2** has been used as a guide in association with professional judgement (this is consistent with guidance in IAN 130/10). For example, an effect on an ecological receptor of county level importance could be considered Large if a particularly high proportion of the county

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of influences acting on the species concerned that may affect the long-term distribution and abundance of its population within a given geographical area.

<sup>3</sup> An ecological receptor is considered important based on many factors including its rarity, diversity, naturalness, context in the wider landscape, size and distribution as set out in A Nature Conservation Review (**Ref. 10**).

resource were to be affected. To determine whether an effect is significant or not, CIEEM's Guidelines would also be considered (in lieu of comparable guidance in the DMRB).

**Table 3-2 – Significance Categories of Effects on Ecological Receptors**

<b>Significance Category</b>	<b>Typical Descriptors of Effect (Nature Conservation)</b>
Very Large	An impact on one or more receptor(s) of International, European, UK or National importance.
Large	An impact on one or more receptor(s) of Regional importance.
Moderate	An impact on one or more receptor(s) of County or Unitary Authority Area importance.
Slight	An impact on one or more receptor(s) of Local importance.
Neutral	No significant impacts on key nature conservation receptors.

### 3.3. MITIGATION

3.3.1. The principles of the mitigation hierarchy have been applied when considering potential impacts and subsequent effects on ecological receptors; through the following sequential actions:

- a.** Avoidance;
- b.** Mitigation;
- c.** Compensation; and
- d.** Enhancement.

3.3.2. For the purpose of this assessment, mitigation refers to measures that are considered essential to avoid and reduce adverse impacts of Part B. Compensation refers to measures taken to offset the loss of, or permanent damage to, biological resources through the provision of replacement areas.

3.3.3. The mitigation measures described within this EclA have been incorporated into the design and construction programme and taken into account in the assessment of residual effects. The mitigation prescribed aims to avoid or negate impacts on ecological receptors in accordance with best practice guidance and UK, English and local government environmental impact, planning and sustainability policies. These mitigation measures include those required to achieve the minimum standard of established good practice together with additional measures to further reduce any adverse impacts of Part B. The mitigation measures include those required to reduce or avoid the risk of committing legal offences.

- 3.3.4. Mitigation measures set out in this ES are captured in the **Outline Construction Environmental Management Plan (Outline CEMP) (Application Document Reference: TR010041/APP/7.3)** as environmental commitments to ensure implementation by the main contractor. The **Outline CEMP** shall be used to inform a Construction Environmental Management Plan (CEMP) produced by the main contractor.
- 3.3.5. Impacts that are not significant (including those where compliance with regulation is required) would be expected to be avoided or reduced through the application of measures detailed within a CEMP, including best working practice (e.g. mitigation of potential pollution impacts through adherence to standard best practice and guidelines). Significant ecological impacts are expected to be mitigated through a combination of best practice and typical, proven mitigation methods along with mitigation targeted to specific locations as described in this assessment.

### 3.4. ASSUMPTIONS AND LIMITATIONS

- 3.4.1. Site 6 contained very dense vegetation overgrowth as well as a number of well-established trees. A small clearing in the southern section of the Site provided the only suitable area in which to deploy refugia. This accounts for the low density of refugia deployed to this Site. However, this is not considered to have negatively impacted the overall results of the survey or conclusions within this appendix.
- 3.4.2. Due to unexpected access restrictions and presence of livestock, Site 8 was moved from its originally chosen location on to a new location. It is not considered to have impacted the survey findings or conclusions.
- 3.4.3. Due to unseasonal weather and strong winds, displacement of refugia from their georeferenced locations occurred during the process of the seven survey visits. The displacement of a number of mats at different Site locations has not negatively impacted the results or this assessment, with densities of mats distributed above what would be required for the size of the Sites surveyed.
- 3.4.4. Site 7 was subject to reduced survey effort (6 visits in total) due to health and safety concerns on Visit 7, 11 October 2018, resulting in an abandoned survey. Given that no reptiles were recorded during the previous six survey visits, the reduced survey effort is not considered to have impacted the survey findings or conclusions of this assessment.

## 4. RESULTS

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### 4.1. DESK STUDY

- 4.1.1. The desk study returned 64 records for reptiles within the Study Area; 46 of these were of common lizard *Zootoca vivipara* and 18 of adder *Vipera berus*. The dates for the records were between July and September 2014 and listed as the same 10 x 10 km grid reference (NU10). Specific locations listed for 40 of the recordings (Edlingham crags, Longframlington Common and Widehope Wood,) are over 8.5 km from the Part B Main Scheme Area. No specific locations within NU10 are listed for the remaining 24 records.
- 4.1.2. The minimum distance of NU10 from the Order Limits is 800 m north of the Main Compound and 1 km south of the Lionheart Enterprise Park Compound (eastern and western sites).
- 4.1.3. Reptiles were not noted as a qualifying feature or as a contributing reason for the designation of statutory and non-statutory protects sites within the Study Area.
- 4.1.4. Reptile surveys were recommended due to the large amount of suitable habitat identified at the time of the Phase 1 habitat survey (Ref. 1). During the course of the ecological surveys undertaken between 2016-2017 no incidental records of reptiles were reported.

### 4.2. FIELD SURVEY

- 4.2.1. A map of the habitats identified during the extended Phase 1 habitat survey is shown on **Figure 9.3: Phase 1 Habitat Survey, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**). Detailed maps of each Site inclusive of the locations of each refugia deployed are shown on **Figure 9.20: Reptile Survey Site Locations, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**).
- 4.2.2. No reptiles were recorded at any of the Sites during the surveys in 2018 or 2019. Records of common toad *Bufo bufo* and common shrew *Sorex araneus* were collected during surveys.

#### INCIDENTAL OBSERVATIONS

- 4.2.3. A single incidental observation of a single common lizard was recorded at Site 8 during ground-based tree assessments during the week of the 18 March 2019. The location of the observation is highlighted on **Figure 9.20: Reptile Survey Site Locations, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**). Site 8 was subject to seven survey visits as part of the suite of reptile surveys and were completed within habitat in the area of the incidental sighting. However, no records of reptiles were returned from any survey visit.



## 5. NATURE CONSERVATION EVALUATION

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- 5.1.1. Aside from the single incidental sighting of a common lizard at Site 8, no reptiles or evidence of reptiles were found. Therefore, reptiles are considered to be absent from the majority of the Survey Area, with an extremely small population remnant within the isolated woodland strip at Site 8.
- 5.1.2. Using the importance criteria in **Table 3-1**, reptiles within the Survey Area are assessed to be of **Local** importance.

## 6. POTENTIAL IMPACTS

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- 6.1.1. Given the incidental record at Site 8, potential impacts upon reptiles as a direct result of Part B during construction include mortality (by vehicles), disturbance (from light, noise and vibration) and loss of habitat (associated with construction affiliated activities).
- 6.1.2. Whilst reptiles may be subject to mortality from vehicles during the operational stage, this does not constitute a new impact on lizards present in this area as Part B is for widening of an existing road.

## 7. MITIGATION

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- 7.1.1. Reptiles are mobile species that could potentially colonise areas within the Order Limits in the future. Because of the incidental record of a single common lizard at Site 8, it is recommended that a Precautionary Method of Works (PMW) be implemented.
- 7.1.2. The PMW would include searching suitable habitat by hand before any clearance is to take place, with vegetation then strimmed to 10 cm in height; followed by a second hand-search for the presence of any reptiles, before vegetation being strimming to ground level.
- 7.1.3. Features with the potential to support hibernating reptiles, such as logs, log piles, or rocks/stone walls would be removed by hand. Any reptiles encountered during vegetation clearance of feature removal would be captured by hand and translocated away from the construction area to a preidentified release site with suitable supporting habitat.
- 7.1.4. All works personnel would be made fully aware of the potential for reptiles through Toolbox Talks and the procedures to follow in the unlikely event they are encountered elsewhere beyond Site 8. If reptiles are found, works should cease immediately within the vicinity and an ECoW/suitably experienced ecologist contacted.
- 7.1.5. All Part B mitigation commitments can be found in **Table 7-1** below.

**Table 7-1 - Part B Mitigation Commitments**

Measure Type	Measure Reference	Approximate Location	Timing of Measure	Description	Mitigation Purpose or Objective	Specific Consultation or Approval Required
<b>Delivery Mechanisms and Preliminary Activities</b>						
Delivery Mechanism and Preliminary Activity	EC01	Throughout Part B	Pre-Construction	All permits and assents would be requested and granted prior to the commencement of works. This may include for example, but not limited to, an Environment Agency Permit for works in and around watercourses.	To protect sites, habitats and fauna.	Natural England/Environment Agency
Delivery Mechanism and Preliminary Activity	EC02	Throughout Part B	Pre-Construction	Pre-construction surveys would be undertaken to verify and, where required, update the baseline ecological conditions set out in this ES. The scope of the pre-construction surveys would be discussed with Natural England prior to being undertaken and would be specific to each ecological receptor under consideration.	To update the baseline ecological conditions set out in this ES.	Natural England
Delivery Mechanism and Preliminary Activity	EC03	Throughout Part B	Pre-Construction	<p>Prior to construction a suitably qualified (or team of suitably qualified) ECoW and a named bat licensed ecologist would be appointed and would be responsible for implementation of the Ecological Management Plan (EMP) and measures within the <b>Outline CEMP (Application Document Reference: TR010041/APP/7.3)</b> and subsequent CEMP prepared by the main contractor. The ECoW would:</p> <ul style="list-style-type: none"> <li>– Provide ecological advice over the entire construction programme, at all times as required;</li> <li>– Undertake or oversee pre-construction surveys for protected species in the areas affected by Part B;</li> <li>– Monitor ecological conditions during the construction stage to identify additional constraints that may arise as a result of natural changes to the ecological baseline over time.;</li> <li>– Provide an ecological toolbox talk to site personnel to make them aware of ecological constraints and information, identify appropriate mitigation developed do minimise impacts and make site personnel aware of their responsibility with regards to wildlife. The toolbox talk would include, as required, all ecological receptors considered within this ES;</li> <li>– Monitor the implementation of mitigation measures during the construction stage to ensure compliance with protected species legislation and commitments within this ES.</li> </ul>	To ensure the implementation of the EMP.	None required

Measure Type	Measure Reference	Approximate Location	Timing of Measure	Description	Mitigation Purpose or Objective	Specific Consultation or Approval Required
				The ECoW would have previous experience in similar ECoW roles, be approved by the Applicant, and be appropriately qualified for the role. The ECoW would be appointed in advance of the main construction programme commencing to ensure pre-construction surveys are undertaken and any advance mitigation measures required are implemented.		
Delivery Mechanism and Preliminary Activity	EC04	Throughout Part B	Pre-Construction	The main contractor would obtain and comply with the requirements of any protected species derogation licences in respect of works that have the potential to breach applicable conservation legislation necessary to construct Part B. Licensing may be for UK and/or European protected species.	To comply with conservation legislation.	Natural England
Delivery Mechanism and Preliminary Activity	EC05	Throughout Part B	Pre-Construction & Construction	Any tree felling would be carried out by experienced contractors to reduce direct mortality of protected species according to agreed felling methods between contractors and the ECoW.	To protect fauna during removal of habitat.	None required
Delivery Mechanism and Preliminary Activity	EC06	Throughout Part B	Pre-Construction	A pre-commencement inspection by the ECoW would be undertaken within woodland prior to any felling to confirm the absence of dreys between February to September. Where deemed necessary, felling would be supervised by the ECoW.	To protect red squirrel.	None required
Delivery Mechanism and Preliminary Activity	EC07	Throughout Part B	Pre-Construction and Construction	Implementation of and adherence to the measures contained within the <b>Outline CEMP (Application Document Reference: TR010041/APP/7.3)</b> that details efforts taken to avoid, minimise and reduce impacts as a result of Part B construction. This is considered particularly important for works in and around watercourses. This includes measures to avoid disturbance of sensitive species and habitats by noise, dust and air pollution.  A pre-commencement walkover survey would be undertaken to confirm the absence of invasive non-native species. Should invasive species be recorded within the construction area, this would be addressed through implementation of the Biosecurity Method Statement (EC08), to be developed at detailed design. These measures have been included within the <b>Outline CEMP (Application Document Reference: TR010041/APP/7.3)</b> .	To protect flora and fauna.	None required
Delivery Mechanism and	EC08	Throughout Part B	Construction	Given the presence of Schedule 9 invasive non-native species, a Biosecurity Method Statement would be developed and implemented throughout construction. The Method	To prevent the spread of invasive species.	None required

Measure Type	Measure Reference	Approximate Location	Timing of Measure	Description	Mitigation Purpose or Objective	Specific Consultation or Approval Required
Preliminary Activity				Statement would detail the location and extent of any invasive species or other biosecurity concerns, appropriate measures to control or eradicate the species from an area (if applicable), measures to prevent the spread of the species and good site hygiene practices (such as Check, Clean, Dry ( <b>Ref. 11</b> )).		
<b>General Mitigation</b>						
General	EC09	Throughout Part B	Pre-Construction & Construction	<p>Site/ vegetation clearance and tree felling would be kept to a minimum and only where essential to facilitate construction, to reduce the impacts of habitat loss and fragmentation. Areas of clearance, particularly those within temporary works, shall be identified within a method statement and agreed with the ECoW.</p> <p>Site clearance of dense vegetation would be undertaken carefully (use of hand tools) and by experienced contractors to reduce the risk of mortality to wildlife. Care should be afforded to dense stands of bramble or similar vegetation, which may be used by sheltering hedgehog or other wildlife, particularly during the winter months.</p>	To reduce the impact to fauna and flora.	None required
General	EC10	Throughout Part B	Pre-Construction, Construction & Post-Construction	Plant and personnel would be constrained to a prescribed working corridor through the use of, where practicable, temporary barriers to minimise damage to habitats and potential direct mortality and disturbance to animals located within and adjacent to the Order Limits.	To protect habitats and fauna.	None required
General	EC11	Throughout Part B	Pre-Construction & Construction	Stand-off distances around watercourses and other sensitive habitats (such as woodland) would be implemented prior to commencement of works and clearly demarked on site through the use of physical barriers (fencing, tape or similar). The buffer around trees/ woodland/ hedgerows would be in accordance with good practice to take into account root protection zones ( <b>Ref. 12</b> ).	To protect habitats and fauna.	None required
General	EC12	Throughout Part B	Construction	Works during the construction period would be undertaken during daylight hours (07:00 to 19:00), Monday to Friday to reduce the impact to nocturnal and crepuscular species; particularly bats, barn owl and badger. However, extended hours, including nighttime, would be required for some construction operations. Should night working be required, this would be discussed with the ECoW and appropriate mitigation put in place (particularly concerning lighting). Appropriate mitigation would be determined by the ECoW but is likely to include:	To reduce disturbance impacts during construction.	None required

Measure Type	Measure Reference	Approximate Location	Timing of Measure	Description	Mitigation Purpose or Objective	Specific Consultation or Approval Required
				<ul style="list-style-type: none"> <li>- Avoidance of direct lighting on any buildings or trees that contain bat roosts or barn owl nest/roost sites;</li> <li>- Avoidance of artificial lighting of watercourses, particularly during the hours of darkness to prevent impacts to fish behaviour or passage;</li> <li>- Avoidance of light spill using directional and or baffled lighting;</li> <li>- The use of movement triggers, thus lighting only turns on when people (large objects) move through the area (use within compound);</li> <li>- Reducing the height of lighting columns to reduce light spill onto adjacent habitats;</li> <li>- Variable lighting regimes (VLR) - switching off when human activity levels are low i.e. 21:00 to 05:30; and/or</li> <li>- Avoid use of blue-white short wavelength lights and high UV content. Work during hours of darkness would be avoided as far as practicable and where necessary directed lighting would be used to minimise light pollution/glare.</li> <li>- Temporary lighting used for construction would be switched-off when not in use and positioned so as not to spill on to adjacent land, sensitive receptors or retained vegetation within the area surrounding the works.</li> <li>- Directed lighting would be used to minimise light pollution/glare, including for construction compounds.</li> <li>- Lighting levels would be kept to the minimum necessary for security and safety.</li> </ul>		
General	EC13	Throughout Part B	Construction	<p>To prevent entrapment of wildlife, any trenches or voids would be excavated and infilled within the same working day. If this is not possible, the void would be securely covered overnight, or a suitable means of escape provided (such as a ramp at no greater than a 45° angle). Any void would then be visually inspected prior to re-starting works to confirm the absence of entrapped wildlife. All escape measures would be discussed and agreed with the ECoW to ensure they are suitable for the size of void and wildlife that may become trapped. If deemed appropriate, the ECoW may enforce additional measures, such as the installation of temporary amphibian/reptile fencing around the void to prevent entry.</p>	To protect wildlife.	None required

Measure Type	Measure Reference	Approximate Location	Timing of Measure	Description	Mitigation Purpose or Objective	Specific Consultation or Approval Required
General	EC14	Throughout Part B	Construction & Post-Construction	Planting of detention basins to include a diverse floral community and enhance their attraction to wildlife. A diverse floral community refers to providing a range and mixture of floral species, including flowering plants and grasses, that provide resources and niches to a variety of invertebrates which in turn provide a resource for species that prey on the invertebrates. This would be achieved using a native and locally appropriate seed mix.	To improve the value of detention basins to support biodiversity.	None required
General	EC15	Throughout Part B	Operation	Implementation of an Ecological/Environmental Management Plan to detail the monitoring and maintenance of habitat and mitigation/compensation features following creation and installation. The Ecological/Environmental Management Plan would be developed at detailed design. The requirement for an Ecological/Environmental Management Plan is captured within the <b>Outline CEMP (Application Document Reference: TR010041/APP/7.3)</b> .	To maintain the ecological value of retained and created habitats long-term.	None required
<b>Ecological Receptor Specific Mitigation</b>						
Reptiles	RE01	Reptile Survey Site Location 8 – Rock Midstead	Construction	<p>A PMW would be developed for enabling works and construction associated with the vegetation clearance at Rock Midstead shelterbelt (approximate chainage 58300) (refer to <b>Figure 9.20: Reptile Survey Site Locations – Sheet 9, Volume 6</b> of this ES (<b>Application Document Reference: TR010041/APP/6.6</b>)). The PMW is identified within the <b>Outline CEMP (Application Document Reference: TR010041/APP/7.3)</b>.</p> <p>The PMW would detail a prescribed works method to ensure the safety of any reptiles that might be present, which is likely to include:</p> <ul style="list-style-type: none"> <li>– Hand search for reptiles in area to be cleared;</li> <li>– Strim of vegetation to 10 cm;</li> <li>– Second search by hand for reptiles;</li> <li>– Strim of vegetation to ground level; and</li> <li>– Removal by hand, any features with potential to support reptiles (e.g. log piles, rubble piles, stone walls).</li> </ul> <p>In the event that reptiles are encountered at any time, they would be captured by hand and translocated away from the construction area to a predefined release area within suitable supporting habitat. The release site shall be identified by the ECoW.</p>	To protect reptiles, present within suitable supporting habitat.	None required



## 8. RESIDUAL IMPACTS

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### 8.1. CONSTRUCTION

- 8.1.1. This impact assessment assumes the adoption of the mitigation measures detailed in **Table 7-1** and as such detailed assessment is only provided on residual impacts. Pre-mitigation impact characterisation is provided for clarity, whilst those features assessed as of '**Less than Local**' importance have not been assessed further.
- 8.1.2. Residual impacts are limited to the permanent loss of small area of suitable reptile habitat associated with land adjacent to the carriageway at Site 8. However, provided the PMW is adhered to, and any reptiles discovered on Site at the time of works are translocated appropriately, it is not considered that this residual impact would negatively impact upon the extremely small reptile population in this area.
- 8.1.3. There are currently no residual impacts anticipated at any other Site as reptiles have been assessed as likely to be absent from these areas.
- 8.1.4. In the event reptiles are recorded during preliminary construction works, the impact of Part B and any implementation of mitigation should take into account any potential for residual impacts upon reptile's post construction and during operation of Part B.

### 8.2. OPERATION

- 8.2.1. As Part B represents the widening of an existing road, reptiles are likely to be acclimatised to existing pressures of traffic movements. As such, no residual impact is predicted with regards to mortality.

## 9. CONCLUSIONS

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- 9.1.1. No records of reptiles were returned within the Study Area during the desk study and no reptiles were recorded during any reptile surveys completed in 2018 and 2019. An incidental observation of a single common lizard was made at Site 8 during other ecological survey works in March 2019.
- 9.1.2. Taking account of the incidental record at Site 8, it is recommended that a PMW is devised and adhered to during construction (including enabling works) at Site 8.
- 9.1.3. Native and widespread reptile species are afforded protection under Schedule 5 of the Wildlife and Countryside Act (**Ref. 9**). Therefore, it would be necessary for a suitably qualified ecologist (ECoW) to re-assess the situation should reptiles be found during construction of Part B at locations other than Site 8.

## REFERENCES

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**Ref. 1:** Jacobs (2018). *A1 in Northumberland – B2104700/OD/264 – Extended Phase 1 Habitat Survey Report*. Version 2, April 2018.

**Ref. 2:** Froglife (1999). *Reptile Survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation*. Froglife Advice sheet 10. Froglife, Halesworth.

**Ref. 3:** Gent, A. and Gibson, S. (1998). *Herpetofauna Workers Manual*. Joint Nature Conservation Committee, Peterborough.

**Ref. 4:** Chartered Institute of Ecology and Environmental Management (CIEEM) (2018). *Guidelines for Ecological Impact Assessment in the UK and Ireland*. CIEEM, Winchester. Available at: <https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-Sept-2019.pdf> Accessed: August 2019.

**Ref. 5:** Highways England. Interim Advice Note 130/10. *Ecology and Nature Conservation: Criteria for Impact Assessment*.

**Ref. 6:** Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and wild fauna and flora.

**Ref. 7:** Directive 2009/147/EC of the European Parliament and the Council of 30 November 2009 on the conservation of wild birds.

**Ref. 8:** UK Public General Acts 2006 c.16 Natural Environment and rural Communities Act 2006.

**Ref. 9:** UK Public General Acts 1981 c.69 Wildlife and Countryside Act 1981.

**Ref. 10:** Ratcliffe, D.A. (1977) *A Nature Conservation Review (Volumes 1 and 2)*, Cambridge University Press.

**Ref. 11:** GB Non-Native Species Secretariat Check, Clean, Dry campaign. Available at: <http://www.nonnativespecies.org/checkcleandry/> Accessed: August 2019.

**Ref. 12:** British Standards Institution (2012). *BS5837:2012 Trees in relation to design, demolition and construction. Recommendations*. April 2012.

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