



# Longfield Solar Farm

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Appendix 8F: Reptile Survey Report

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# 1. Introduction

## 1.1 Background

1.1.1 AECOM (on behalf of Longfield Solar Farm Ltd) undertook a Preliminary Ecological Appraisal (PEA) (**Appendix 8B: Preliminary Ecological Appraisal** of the Environmental Statement (ES) [EN010118/APP/6.2]) for the proposed Longfield Solar Farm (hereafter referred to as the Scheme). This PEA identified the need for follow-up surveys to determine the potential impacts of the Scheme on protected and notable<sup>1</sup> species, including reptiles. Therefore, AECOM was instructed to undertake a reptile survey within the terrestrial habitat of the Scheme boundary (hereafter referred to as the 'Order limits') (see **Figure 1**) to determine the presence or absence of reptiles.

## 1.2 Order limits Description

1.2.1 The Order limits is located in Essex, within the administrative areas of Braintree District Council and Chelmsford City Council.

1.2.2 The Order limits is centred on National Grid Reference (NGR) TL 74891 14202 and is located approximately 1.3km to the West of the village of Terling (**Figure 1-1: Scheme Location** of the ES [EN010118/APP/6.3]).

1.2.3 The Order limits comprises of several parcels of land separated by several areas of woodland, and roads. The Order limits is approximately 453ha in size.

1.2.4 The landscape features within the Order limits consist of agricultural fields mainly under arable production, with some small parcels of pasture, interspersed with individual trees, hedgerows, tree belts (linear) small woodland blocks and farm access tracks. The hedgerows within the Order limits range between lengths of dense tall vegetation (shrub and tree species) and thin lines of vegetation with sporadic trees present, although the former is a dominant feature. The arable fields are of small to moderate size, some of which are of irregular shape.

1.2.5 The landscape features immediately surrounding the Order limits comprise a number of villages, including Fuller Street approximately 300m to the north, Gamble's Green and Terling 500m and 1.1km to the East, Boreham 500m to the South-West, Hatfield Peverel 1.5km to the South-East and the large city of Chelmsford 5.7km to the South-West. Boreham Road runs North to South along the Western edge of the Order limits, with the A12 carriageway abutting and bounding the Southern edge of the Order limits.

1.2.6 The northern part of the Order limits and surrounding area consists of undulating and relatively elevated landform, as part of the River Ter valley. The landform rises steeply northwards from the river and Terling Spring, between 35 metres (m) Above Ordnance Datum (AOD) to 50m AOD along parts of Braintree Road. It culminates at a ridgeline at 70m AOD at Rank's Green, in the northern part of the study area. To the south of the River Ter, the landform also rises steeply, across Sandy Wood, to a ridgeline at 55m AOD.

1.2.7 To the west of the Order limits, the landscape consists of a varied pattern of landform, reflecting past sand and gravel extraction and engineered flat terrain

<sup>1</sup> A notable species is a species with a conservation designation, but no legal protection.  
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across Boreham airfield, which is situated at 55m AOD approximately 800m to the west of the Order limits. From the airfield, the landform falls very gradually eastwards to the River Ter, which flows southwards between Terling and the northern part of Hatfield Peverel, at approximately 20m AOD.

- 1.2.8 The River Chelmer is present 2.5km to the south of the study area, at approximately 15m AOD. There are several large-scale reservoirs and lakes adjacent to the river. From the river, the landform rises consistently northwards, to form a ridgeline around 40m AOD at Boreham, and southwards, across Little Baddow, to an elevated ridgeline at 100m AOD, approximately 3km from the Order limits.
- 1.2.9 Most of the southern and central part of the Order limits is located across flat and low-lying landform at approximately 45m AOD, between Waltham Road / Boreham Road and Terling Road. The northern part of the Order limits is located within part of the River Ter valley, where there is rising land to the north and south of Terling Spring and adjacent to Braintree Road.

### 1.3 Description of the Scheme

- 1.3.1 Longfield Solar Farm is a new solar farm scheme that would connect to the national electricity transmission network. Longfield will use ground mounted solar photovoltaic (PV) panel arrays to generate electricity energy from the sun and combine these with a Battery Energy Storage System (BESS). The Scheme will be connected to the national electricity transmission network by an underground cable. The Scheme will be located within the Order limits as shown on **Figure 1-2: Order limits** of the ES [EN010118/APP/6.3].
- 1.3.2 The principal infrastructure will be located within the Order limits and will include:
- a. Solar PV modules;
  - b. PV module mounting structures;
  - c. Inverters;
  - d. Transformers;
  - e. Switchgears (housed inside a building);
  - f. On-site cabling;
  - g. One or more BESS (expected to be formed of lithium ion batteries storing electrical energy);
  - h. An electrical compound comprising a substation and control building;
  - i. Fencing and security measures; and
  - j. Access tracks.
- 1.3.3 During the construction phase, one or more temporary construction compound(s) will be required as well as temporary roadways to facilitate access to all land within the Order limits.
- 1.3.4 Further information on the Scheme is provided in **Chapter 2: The Scheme** of the ES [EN010118/APP/6.1].

## 1.4 Scope of this Report

1.4.1 The purpose of the reptile survey, reported in this document, was to determine the presence or absence of reptiles within the Order limits and, if present, appropriate mitigation can be developed to ensure legal compliance.

1.4.2 This report includes the following information:

- a. Relevant legislation and policy;
- b. Methodologies for desk and field-based assessments undertaken in 2020;
- c. Limitations to the surveys undertaken and any assumptions made as a result of incomplete data;
- d. Survey results;
- e. The approach for determining the nature conservation importance of reptile populations recorded during the assessments; and
- f. Conclusions.

## 2. Relevant Legislation and Policy

### 2.1 Legislation

2.1.1 All reptiles native to the UK are listed under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended) (Ref 2). The four most widespread species of reptile: Adder *Vipera berus*, Grass Snake *Natrix helvetica*, Common Lizard *Zootoca vivipara* and Slow Worm *Anguis fragilis* are protected under Section 9 (1 and 5) of the Act.

2.1.2 This prohibits:

- a. Intentional injuring or killing of a reptile;
- b. Selling, offering or exposing for sale, or having in possession or transporting a reptile for the purpose of sale, any live or dead wild animal or any part of, or anything derived from, such an animal; or
- c. Publishing or causing to be published any advertisement likely to be understood as conveying, buying or selling, or intending to buy or sell, any of those things.

2.1.3 There are no licensing provisions within the Act for development activities affecting these species. However, developers are expected to take adequate precautions to avoid breaches of the legislation, including undertaking adequate surveys and mitigation to avoid or minimise the risk of killing or injuring reptiles.

### 2.2 National and Local Planning Policy

2.2.1 National and local planning policy, relevant to nature conservation is provided in detail in the PEA report for the Scheme (Ref 2, see **Appendix 8A: Preliminary Ecological Appraisal** of the ES [EN010118/APP/6.2]).

### 2.3 Priority Species

2.3.1 The Natural Environment and Rural Communities (NERC) list of Species of Principal Importance is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under Section 40 of the NERC Act (2006); under Section 40 every public authority (e.g. a local authority or local planning authority) must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.

2.3.2 In addition, with regard to those species on the list of Species of Principal Importance listed under Section 41 (S41), the Secretary of State must:

- “(a) take such steps as appear to the Secretary of State to be reasonably practicable to further the conservation of the living organisms and types of habitat included in any list published under this section, or*
- (b) promote the taking by others of such steps.”*

2.3.3 The UK Biodiversity Action Plan (UKBAP) was launched in 1994 and established a framework and criteria for identifying species and habitat types of conservation concern. From this list, action plans for priority habitats and species of conservation concern were published and have subsequently been

succeeded by the *UK Post-2010 Biodiversity Framework* (July 2012). The UK Post 2010 Development Framework is relevant in the context of Section 40 of the Natural Environment and Rural Communities (NERC Act) 2006, meaning that Priority Species and Habitats are material considerations in planning. These habitats and species are identified as those of conservation concern due to their rarity or a declining population trend.

- 2.3.4 Common Lizard, Grass Snake, Slow Worm and Adder were added to the UK Biodiversity Action Plan (UKBAP) as priority species in September 2007 and subsequently were included as Species of Principal Importance in England under Section 41 of the NERC Act (2006) (as well as Sand Lizard *Lacerta agilis* and Smooth Snake *Coronella austriaca*) meaning that they are of material consideration in planning.

## 2.4 Essex Biodiversity Action Plan

- 2.4.1 Reptile species are not included on The Essex Biodiversity Action Plan (Ref 5). They are included as UKBAP priority / NERC Act 2006 species under habitat plans for heathland and ancient and/or species rich hedgerows and green lanes.



## 3. Methods

### 3.1 Desk Study

- 3.1.1 A desk study was undertaken in July 2020 through Essex Wildlife Trust Records Centre (EWTRC) to obtain records of reptiles within the last ten years and within a 2 km radius of the Scheme (see **Appendix 8B: Preliminary Ecological Appraisal** of the ES [EN010118/APP/6.2]). Additional data was requested in January 2021 through Essex Field Club within 2km of the Order limits (see **Appendix 8L: Essex Field Club Desk Study** of the ES [EN010118/APP/6.2]).
- 3.1.2 Only records up to ten years old were considered within the assessment, as any records older than ten years are unlikely to be still representative of reptile presence in the local area.

### 3.2 Field Survey

#### *Habitat Suitability Assessment*

- 3.2.1 A Habitat Suitability Assessment (HSA) for reptiles was undertaken using existing desk-based study data, which included a review of the Phase 1 map and aerial photographs. The assessment considered the following characters for assessing the suitability of habitat for reptiles:
- Location in relation to species range;
  - Vegetation structure;
  - Insolation (sun exposure);
  - Aspect;
  - Topography;
  - Connectivity to nearby good quality habitat;
  - Refuge opportunity;
  - Hibernation potential;
  - Disturbance; and
  - Egg-laying site potential (Grass Snake only).
- 3.2.2 For each habitat type or discrete area, the output of the HSA graded each habitat for its potential to support reptiles, based on the above factors. Table 1 shows the definitions used in the HSA and habitat grading.

**Table 1: Habitat suitability assessment for reptiles**

Habitat Grading	Definition
Poor	Habitat which is unfavourable for reptiles based on most of the habitat assessment characters listed above or is limited in size and highly isolated from other areas of suitable habitat.

Habitat Grading	Definition
Good	Habitat which is favourable or sub-optimal for many of the habitat assessment characters listed above; or is sub-optimal for some of the characters and has good connectivity with areas of more suitable habitat.
Exceptional	Habitat which is favourable for reptiles based on most of the habitat assessment characters listed above.

### **Reptile presence / absence survey**

#### Survey Area

3.2.3 The survey area included suitable terrestrial habitat for reptiles within the Order limits, which included ephemeral / short perennial, scrub edges, semi-improved grassland and ditches. For ease of analysis in consideration of the size of the Scheme, geographical location and representative habitat types within the Scheme boundary, the survey area was split into a total of ten survey areas. With the amended Order limits (January 2022), seven of the reptile areas (1 to 7) are within the Order limits and three survey areas (8 to 10) are now outside of the new boundary (see limitations Section 3.3 and **Figure 1, Annex A**). All of the 10 areas selected were classified in the HSA as Good.

#### Refugia Surveys

- 3.2.4 The field surveys utilised two recognised methods to record reptile presence / absence within the Scheme Order limits:
- Refugia surveys; and
  - Visual observation of banks or other suitable habitat within the Scheme.
- 3.2.5 Refugia surveys were carried out in April and May 2020 (spring) and in August to October 2020 (late summer to early autumn). All refugia surveys were carried out in accordance with Froglife's Advice Sheet 10 for Reptile Surveys (Ref 6) and Natural England's Standing Advice Sheet for Reptiles (Ref 7).
- 3.2.6 Artificial refugia, in the form of sheets of bitumen roofing felt, measuring approximately 0.5m<sup>2</sup> in size, were placed in likely basking spots for reptiles. These areas included un-shaded patches next to cover, in areas of suitable grassland and adjacent to potential hibernation sites such as piles of rubble, logs, rabbit burrows and near vegetation waste such as arisings from grass cutting and wood chips.
- 3.2.7 On the 24<sup>th</sup> and 25<sup>th</sup> of April 2020, an experienced AECOM ecologist placed 194 artificial reptile refugia (roofing felt approximately 1 m<sup>2</sup>) in all areas of suitable reptile habitats within the survey area. The location of the refugia encompassed those parts of the survey area that had the potential to support reptile populations; particularly the rough grassland and scattered debris and scrub in the north-west of the Order limits.
- 3.2.8 The number of refugia sheets placed in each survey area are displayed in **Table 2**.

**Table 2: Survey area information and number of artificial refugia deployed**

Survey Area	Size (ha) of survey area	Number of artificial refugia sheets per survey area	Density of refugia per hectare
1	0.65	20	31
2	0.32	20	62.5
3	0.15	10	66
4	0.44	20	45
5	0.3	20	67
6	0.23	20	87
7	1.78	34	19
8	0.03	10	333
9	0.9	20	22
10	0.3	20	67

- 3.2.9 The density of sheets exceeded the guidance from Froglife (Ref 6), which recommends 10 artificial refugia sheets per hectare. The locations of each survey area within the Scheme are detailed in **Figure 1, Annex A**.
- 3.2.10 Following placement of sheets in each survey area, the artificial refugia were left in situ for two weeks and were then checked on seven separate occasions. Any existing hibernation sites within the survey area, such as rubble piles or wood piles, were, where possible, also searched for reptiles during checks of artificial refugia.
- 3.2.11 Reptile activity is greatly influenced by weather conditions, with reptiles most likely to use artificial refugia in temperatures of between 9°C and 18°C (Ref 6) and in hazy or intermittent sunshine with light winds (Ref 8). The optimal survey period for reptiles (as recommended in the Herpetofauna Worker's Manual (Ref 4) is April, May and September. Reptiles are also active in June, July and August; however, they will need to spend less time basking so may be more difficult to find (Ref 4).
- 3.2.12 The age and sex of each reptile found was also recorded using the Amphibian and Reptile Conservation Trust (ARC) Reptile Identification Guide (Ref 8).
- 3.2.13 The dates of reptile surveys and weather conditions during these surveys are shown in **Table 3**. All surveys were conducted by experienced AECOM ecologists.

### Visual Inspections

3.2.14 Whilst carrying out other ecological surveys across the Scheme and checking artificial refugia within the reptile survey areas any areas of suitable reptile habitat were searched in order to ‘spot’ basking Common Lizards. This species will often sit on top of grass tussocks, debris and felts and will quickly move from sight upon disturbance. Consequently, spotting this species can be more effective than searching under artificial refugia. Common Lizards are often very territorial and will often reuse favourite basking sites (Ref 10). Once these sites are known, spotting can become a relatively successful method of lizard recording.

### **Population Assessment**

3.2.15 Where reptiles are present, estimating population sizes of reptiles can be undertaken using guidance within Froglife’s advice sheet Number 10 (Ref 6) This advice sheet provides a simple means of evaluating a species population as ‘low’, ‘good’, or ‘exceptional’ on the basis of the maximum number of adult reptiles (of each species) recorded during a single visit (see **Table 3** below).

**Table 3: Population estimates of reptile (taken from Froglife, 1999 (Ref 6))**

<b>Species</b>	<b>Low Population</b>	<b>Good Population</b>	<b>Exceptional Population</b>
<b>Adder</b>	<5	5 – 10	>10
<b>Grass Snake</b>	<5	5 – 10	>10
<b>Common Lizard</b>	<5	5 – 20	>20
<b>Slow Worm</b>	<5	5 – 20	>20

3.2.16 This method of population size estimate uses the assumption of a reptile survey using a density of 10 reptile sheets per hectare, although it can be difficult to determine a population size through interpretation of data using peak counts and densities. An average score across all survey visits will provide a more robust estimate of the population size of each reptile species present within suitable on-site habitat.

## **3.3 Assumptions and Limitations**

### **Desk Study**

3.3.1 The aim of a desk study was to help characterise the baseline context of the Scheme and provide valuable background information that would not be captured by site surveys alone. Information obtained during the course of a desk study was dependent upon people and organisations having made and submitted records for the area of interest. As such, a lack of records for a particular species does not necessarily mean that the species does not occur in the study area. Likewise, the presence of records for particular species does

not automatically mean that these still occurred within the area of interest or were relevant in the context of the Scheme.

### **Field Survey**

- 3.3.2 Survey areas were chosen to provide a representative sample of the Order limits, based on the best quality in terms of potential reptile habitat which could be impacted as a result of the Scheme (*i.e.*, mainly arable/livestock fields). Note that since the surveys, the Scheme Order limits have changed slightly, resulting in some areas being not completely covered and three survey areas 8, 9 and 10 now present outside the Order limits (see **Figure 1, Annex A**). This is not a significant limitation as similar habitats are present close to the Scheme and the data are still useful for assessing the wider presence/absence of reptiles and any potential landscape scale effects. Any gaps in the survey should be covered through additional surveys where impacts are predicted.
- 3.3.3 Not all habitats were surveyed in detail. No woodland, wetlands or hedgerows were surveyed in detail, as they were either outside the footprint of the Scheme (*i.e.*, retained and buffered from the Scheme). All areas of representative of the Scheme were surveyed in detail including those that were chosen for reptile survey. No access has been made to grid connection land to the southwest of the Order limits, and therefore no surveys were carried out within these areas. There may be permanent or temporary habitat loss or disturbance within these areas and further surveys may be required in these areas where impacts to reptile habitat is likely.
- 3.3.4 The majority of ecological data is valid only for short periods due to the inherently transient nature of the subject (Ref 10). On this basis, it is recommended that surveys for reptiles will need repeating in two years (*i.e.*, in 2022).

## 4. Results

### 4.1 Desk Study

4.1.1 The desk study data returned records 33 records of reptiles within 2km of the Order limits, of these records four of the six UK species are represented in the results: Grass Snake, Slow-worm, Adder and Common Lizard. There are no records of any reptiles within the Order limits boundary, the closest record to the Order limits was a Common Lizard outside the Order limits boundary at TL756114 South West of the Order limits.

### 4.2 Survey Results

4.2.1 No Reptiles were recorded during the reptile survey. The data collected are presented within **Table 4**.

**Table 4: Reptile Survey Results**

Visit Number	Date (2020)	Temperature (°C; Start/ Finish)	Weather Conditions	Reptiles recorded
1	29 <sup>th</sup> April	14/14	Wind SW 8-14mph, 80% cloud cover.	None
	1 <sup>st</sup> May	12/14	Wind W 11mph, 80% cloud cover.	None
2	13 <sup>th</sup> May	10/14	Wind NE 8-12mph, 10-80% cloud cover.	None
3	20 <sup>th</sup> May	18/20	Wind S 10mph, 50% cloud cover.	None
4	25 <sup>th</sup> May	18/21	Wind NE 8mph, 10% cloud cover.	None
5	27 <sup>th</sup> August	18	Wind W 9mph, 20% cloud cover.	None
6	10 <sup>th</sup> September	16/18	Wind NW 7mph, 10% cloud cover.	None
7	1 <sup>st</sup> October	13/15	Wind W 7mph, 60% cloud cover.	None

## 5. Conclusions

- 5.1.1 Four species of reptile (Grass Snake, Slow-worm, Adder and Common Lizard) have been recorded within 2km of the Order limits, but no records of reptiles have been recorded within the Order limits. No reptiles were recorded during the 2020 field surveys.
- 5.1.2 As reptiles are present in the wider area there is a possibility of the presence of occasionally/transitory reptiles within the Order limits and general precautions during vegetation clearance will be required.

## 6. References

- Ref 1 AECOM, 2020. Longfield Solar Farm Preliminary Ecological Appraisal August 2020.
- Ref 2 Anon, 1981. Wildlife & Countryside Act 1981. HMSO.
- Ref 3 English Nature (2004) Reptiles: guidelines for developers. English Nature (now Natural England), Peterborough.
- Ref 4 Gent, A.H. and Gibson, S.D., eds. (1998) Herpetofauna workers' manual. Joint Nature Conservation Committee, Peterborough.
- Ref 5 Essex Field Club. Essex Biodiversity Action Plan.
- Ref 6 Froglife, 1999. Froglife Advice Sheet 10, Reptile Survey.
- Ref 7 Natural England, 2015. Reptiles: surveys and mitigation for development projects.
- Ref 8 ARC, 2016. Reptile Identification Guide. Amphibian and Reptile Conservation Trust.
- Ref 9 Beebee, T. and Griffiths, R., 2000. Amphibians and Reptiles. Collins New Naturalist Library, Book 87.
- Ref 10 CIEEM: Advice Note on the lifespan of ecological surveys and reports.

## 7. Annexes

### 7.1 Annex A - Figures



### Figure 1: Survey Area Locations

(Note: Figure is based on a previous iteration of the site boundary which was valid at the time of writing)







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**LEGEND**

Site Boundary

**Reptile Tile**

- Area 3
- Area 4

**NOTES**

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**ISSUE PURPOSE**  
 FINAL

**PROJECT NUMBER**  
 60624362

**SHEET TITLE**  
 Reptile Survey

**SHEET NUMBER**  
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