# Royal Haskoning Sizewell Power Station ISFSI and Car Park Extension Reptile Survey Report 2008

# 1. Introduction

#### 1.1 Background

Entec UK Ltd have been commissioned by Royal Haskoning (working on behalf of British Energy) to provide ecological support for an Environmental Impact Assessment for a new proposed development that will be located within and immediately adjacent to the existing Sizewell B nuclear plant. The proposed development comprises two components;

- The creation of a new independent spent fuel storage installation (ISFSI) to the south of the existing Sizewell 'B' Power Station (located on an existing car park); and
- A car park extension to the north of the existing western car park servicing Sizewell 'B' (to replace the car park lost as a result of the ISFSI).

The location of the proposed development site is shown in **Figure 1.1**.

The first phase of ecological works comprised an Extended Phase 1 Habitat Survey, carried out in August 2008. The results of this survey are illustrated in **Figure 1.2** and a summary is included within the Ecological Scoping Report already issued (Entec Doc. Reg. 23693cw005r, 2008). During the survey, the presence of common lizards (*Zootoca vivipara*) was recorded within the proposed footprint of the car park extension and habitats with the potential to support reptiles were noted within this area. A reptile survey to determine which species were present and the relative size of any populations was therefore recommended.

#### 1.2 Site Description and Context

The site of the new ISFSI is primarily an existing car park and therefore predominantly comprises hard-standing. The current site boundary overlaps with a small electricity substation building which is surrounded by gravel and hard-standing. Adjacent to this part of the proposed development area are further areas of hard-standing, amenity grassland and a small strip of introduced shrub (located to the west). This area was considered to have negligible potential to support reptiles, and was therefore excluded from the survey.

The site of the proposed car park (central OS Grid Reference TM 470 634) comprises an open area of poor, semi-improved grassland of about 0.4ha, that has either regenerated or been reseeded following the construction of the Power Station and which supports species indicative of calcareous substrates. The majority of the grassland and herb sward is short and disturbed by fairly extensive grazing by rabbits and trampling, especially in the central and eastern section. Although some scattered tall ruderal plants also occur, this area of the survey area is considered unlikely to support reptiles due to the lack of cover provided by the vegetation present.



The western section of the grassland is less grazed, rougher and damper, with a more complex sward structure. Beyond the western site boundary the land drops away to a wooded valley. The upper part of this bank is un-shaded and there are several small log piles and areas of scattered scrub. Given the habitat structure, this area is by far the most suitable to support reptiles within the survey area.

The grassland is bordered to the south by dense and scattered scrub, introduced shrub and scattered trees. These are generally characterized by sparse ground flora, offering little shelter for reptiles. To the east a sparse, narrow 'hedge' with very little ground flora borders the grassland. This hedge is planted on a 30-50cm high bank, located on the grassland and is supported by logs and stones, several of which are loose providing small gaps into the bank. Some potential for reptiles was noted here, though little vegetation cover is present.

Immediately to the west of the wooded valley, approximately 30m from the development area, lies the Sizewell Marshes SSSI, which covers an area of 104ha. This site was designated on the basis of the large area of lowland unimproved wet meadow it contains. Associated with the wet meadows are outstanding assemblages of invertebrates, breeding birds and several nationally scarce plant species. The SSSI is on an area of deep fen peat with a permanently high water table. There is an extensive ditch system and the area is prone to flooding.

The main Sizewell 'B' Power Station (and associated hard-standing) lies to the east of the survey area. Areas of hard standing are also present to the north and south of the site. Linear, semi-natural habitats occur to the north of the survey area in the form of grass borders and scrub, which link the survey area to suitable reptile habitats to the north of the power station.

#### 1.3 Legislation

All the common, native species of reptiles (common or viviparous lizard, adder *Vipera berus*, grass snake *Natrix natrix* and slow worm *Anguis fragilis*) are listed under Schedule 5 of The Wildlife and Countryside Act (1981). Part of Section 9(1) and all of Section 9(5) apply. As such it is an offence to:

- Intentionally kill or injure an individual of these species; and
- Transport for sale or exchange, or offer for sale or exchange a live or dead an individual or any part of an individual of these species.

All native reptile species are listed on the new UK BAP Priority Species list published in 2007, as well as on the List of Species of Principal Importance under Section 41 of the NERC Act 2006<sup>1</sup>. The Suffolk BAP lists adder as a character species.

Entec has interpreted 'intentionally' as meaning 'not taking steps to avoid' in line with current interpretation of legal terminology (Simpson, 2007). It is therefore necessary for proposed developments to take account of potential effects on reptiles.



<sup>&</sup>lt;sup>1</sup> The Secretary of State for Environment, Food and Rural Affairs was required under Section 41(1) of the NERC Act 2006 to prepare a list of the species and habitats considered to be of principal importance for the purpose of conserving biodiversity in England. It replaces the list published by Defra in 2002 under Section 74 of the Countryside and Rights of Way (CRoW) Act 2000.

#### 1.4 Purpose of Survey Work

The implication of the legislation is that proposed developments need to take account of potential effects on reptiles. In areas where suitable habitat exists, and in the absence of contemporary baseline data existing for the species (that is directly relevant to a proposed development site), survey work is necessary to establish whether reptiles are present, and if present to determine an indicative population size. This enables appropriate mitigation, translocation, habitat enhancement and creation initiatives to be planned and incorporated into the design of the development concerned, and ensures that there is no significant negative effect on the conservation status of the species at local level. The presence of reptiles within the area is well documented (refer to section 3.1). The aim of the survey work in this case was to determine which species currently use the area of the proposed car park extension and in what relative numbers.

# 2. Methods

# 2.1 Desk Study

Existing information regarding reptiles within the Sizewell Estate and surrounding land was obtained from the following sources:

- Multi-Agency Geographical Information System website (www.magic.gov.uk);
- Suffolk Wildlife Trust (SWT);
- ADAS and SWT: Sizewell Land Management Report Annual Review 2007-2008 and 2006-2007;
- British Energy (including the Integrated Land Management Plan [ILMP] and studies undertaken by ecological consultants, SWT, the Environment Agency, universities and colleges, special interest groups and individuals; and
- Suffolk Amphibian and Reptile Group. Suffolk Amphibian and Reptile Atlas Provisional (2007) by Martin Sanford (Suffolk Biological Records Centre) and John Baker (Suffolk Amphibian and Reptile Group).

#### 2.2 Field Surveys

The survey methodology followed guidance provided in Froglife's Advice Sheet 10 – Reptile Survey, an introduction to planning, conducting and interpreting surveys for snake and lizard conservation (Froglife, 1999) and took into account additional guidance provided by Gent & Gibson (2003).

#### 2.2.1 Survey Area

The proposed car park extension site consists of roughly 0.5ha. The areas within this targeted by the reptile survey include the areas of rough grassland on the western section of the site, the more open areas of grassland on the upper part of the slope and the areas of scrub bordering the site as a whole. Photographs of representative areas of habitat are included in **Appendix A**.



#### 2.2.2 Artificial Refugia

Artificial refugia, comprising of 0.5m x 1m roofing felt and corrugated tin sheets, were laid out within the preliminary works area in locations considered to have the highest potential to support reptiles on the 8<sup>th</sup> September 2008.

When conducting survey work aimed at deriving indicative population sizes for reptiles, Froglife (1999) recommend placing 5-10 refugia per hectare (ha) of suitable habitat. A total of 40 reptile refugia were used for this survey of 0.5ha, significantly exceeding the recommended density. All the refugia were numbered and mapped for ease of data recording. **Figure 2.1** illustrates the locations and numbers of these refugia on the site.

The surveys were not limited to refugia checks. While moving between tiles, surveyors recorded any reptile flushed, basking or otherwise seen. For ease of data interpretation, these were recorded as being located at the nearest tile.

For each individual reptile sighted, the following data was recorded: refugia number, species, age class and sex.

#### 2.2.3 Timing of Survey and Weather Conditions

Thirteen survey visits were made between 12<sup>th</sup> September and 3<sup>rd</sup> October 2008. Although a variety of weather conditions occurred on the survey days, these were suitable for surveying the reptile populations. Weather conditions were recorded in detail on each visit and these are included in the survey data in **Appendix B**.

#### 2.2.4 Survey Limitations

The surveys were carried out within the time of year and weather conditions recommended by Froglife guidelines (1999) and are considered sufficient to characterise the reptile population present. The guidance recommends that surveys are carried out between March and October, with March, April and September being the most productive months, given suitable weather conditions. A suitable air temperature for surveys should be between 9° and 18° C (HGBI, 1999). These conditions were met throughout this survey, though low night time temperatures (5°-7° C) during the latter days at the beginning of October may have resulted in lower numbers of individual reptiles being observed, though the species present are all likely to have been recorded accurately.

It is not always possible to identify the species or sex of an animal in the time afforded by brief glimpses during a survey when reptiles are disturbed. On one occasion a brief sighting of a snake was made which could not be confirmed to species level with certainty. It was likely to have been a juvenile grass snake, based on the size and colour of the tip of the tail that was observed, and has therefore been recorded as such.

#### 2.3 Biodiversity Evaluation

#### 2.3.1 Population Classification

The Froglife (1999) guidelines set out a method for obtaining a population class for reptile species, based on the maximum number of adults recorded on a single survey visit. This is also the basis for the selection of Key Reptile Sites. Certain sites may qualify for Key Reptile Site status and this may in turn lead to their designation as a County Wildlife Site (CWS). **Table 2.1** below summarises the method used for calculating class size.



Table 2.1. Classification of the Reptile Populations

| Species       | Low Population<br>(Score 1 point) | Good Population (Score 2 points) | Exceptional Population (Score 3 points) |
|---------------|-----------------------------------|----------------------------------|-----------------------------------------|
| Common lizard | < 5                               | 5 – 20                           | > 20                                    |
| Slow worm     | < 5                               | 5 – 20                           | > 20                                    |
| Adder         | < 5                               | 5 – 10                           | > 10                                    |
| Grass snake   | < 5                               | 5 – 10                           | > 10                                    |

N.B. Figures in the table refer to maximum number of adults seen by observation and/or under tins (placed at a density of 10 per hectare), by one person in one day.

To qualify for the Key Reptile Site Register a site must meet at least one of the following criteria:

- It supports three or more reptile species;
- It supports two snake species;
- It supports an exceptional population of one species;
- It supports an assemblage of species scoring a total of at least 4 points; or
- The site does not satisfy the above criteria but is of particular regional importance due to local rarity.

This population class assessment is also used to quantify any subsequent mitigation required, such as the recommended duration of any translocation exercises that may be necessary, as detailed by the Herpetofauna Groups of Britain and Ireland (HGBI, 1998). A population class assessment as outlined above was carried out for each reptile species found to be present within the survey area.

#### 2.3.2 Habitat Evaluation

The value of the habitats present for reptiles within the survey area at Sizewell will be assessed based on the findings of the survey results as well as on contextual information, such as previous records, connectivity to suitable habitat outside the survey area and the status of each species within the local area, the county and across the country.

In terms of biodiversity conservation value, species' populations, habitats and sites have been valued using the geographical frame of reference described below, which have been adapted from those set out by IEEM (2007):

- International;
- UK;
- National (i.e. England);
- Regional (i.e. East of England);
- County (i.e. Suffolk);



- District;
- · Parish; and
- Less than parish.

The above frame of reference is intended to standardise the evaluation process and ensure that the scale of any impacts can be clearly understood.

With reference to these IEEM categories, when attempting to value the importance of a site to reptiles the consultant must ultimately make an informed decision based on professional judgement. To inform the process of evaluation, a wide ranging desk study is required to complement the results of survey work and subsequent estimations of relative population size, as this will inform as to whether the site is:

- Typical of the county, region or area;
- To what extent the indicative size of the populations of the reptile species supported are notable; and
- Where the site is located in relation to other areas of nearby suitable reptile habitat (i.e. it could comprise sub-optimal habitat on the edge of more suitable habitat or it could provide an important link for a reptile population that could otherwise become fragmented).

Habitat quality, including structural and floristic diversity, the extent of the habitat available, its fragility and rarity, can also be factored into the evaluation process. Other tools that can be used for guidance include criteria for the selection of County Wildlife Sites and the Reptile Key Sites Criteria published by Froglife and summarised above.

## 3. Results

#### 3.1 Desk Study

## Historical Information relating to the Sizewell Estate

The Sizewell Land Management Report Annual Review 2007-2008 and 2006-2007 by ADAS and SWT indicate that slow worm, common lizard, adder and grass snake are all present within an area surveyed at Goose and Kenton Hills, 900 m to the north-west of the proposed development site.

SBRC indicates that all four common reptile species are widespread throughout the Sizewell Estate and beyond. All four species have been recorded within the estate within the last 9 years with many recent records for common lizard, adder and grass snake. However, only seven records exist for slow worms dating back to 1980.

#### **Previous Entec Surveys of parts of the Sizewell Estate (2007)**

A reptile survey undertaken by Entec in 2007 (in relation to the new nuclear build proposals) found that all four common reptile species were present within the area surveyed (which is located to the north of the existing Power Station and proposed development site) with exceptional (as defined by Froglife, 1999) populations of adders and slow worms, a good



population of common lizard and a low population of grass snake present. This indicates the quality and continuity of reptile habitat within the Sizewell Estate.

Common lizards where observed throughout the survey period. The results show a clear concentration of this species in the habitats closer to the coastline, most notably the un-grazed, improved grassland swards and within the coastal grassland habitats. Common lizards were observed in low numbers at isolated locations within the plantation woodland of Dunwich Forest and Goose Hill, but records were absent further west.

In contrast to the common lizard distribution, high numbers of slow worms were recorded in greater densities and more frequently within the woodland habitats along ride edges. This distribution was fairly even across the plantation woodland habitats. An absence of records is apparent in more open habitats towards the coastline with only a few observations made within the un-grazed grassland within the potential new build area. These observations were made primarily in areas close to dense scrub and/or woodland habitats that provided denser cover.

Adders were observed in both the open grassland habitats to the east of the area surveyed and within the plantation woodland habitats, with no clear distinction between the two. There appear to be hubs of greater densities of this species within Dunwich Forest, with lower numbers elsewhere. Grass snakes, although slightly more frequently recorded, exhibit a similar distribution to the adder population recorded within the survey.

During this survey, all four species were recorded ~500m north from the proposed car park extension site, in an area connected to the site by further suitable habitat.

#### **Information Relating to the Wider Area**

Extensive records of common lizard, adder and grass snake exist for the land surrounding the estate, with the majority of the observations being made by Robin Harvey at the Minsmere RSPB Reserve located to the north. A study of aerial photography and knowledge of the habitats present gained through other survey work carried out for BE (in relation to the potential new nuclear build) indicate that there is connecting habitat suitable for reptiles between Minsmere and the Sizewell Estate.

Allan Miller and Carl Powell of the SWT<sup>2</sup> were contacted formally by Entec in January 2008 in relation to the potential new nuclear build. They supplied the results of the ongoing reptile surveys at Leiston Common, which lies about 900m to the west of the site. All four species were found to be present here.

At a county level, common lizard, grass snake and slow worm are general fairly widespread and all show a wide distribution within the area around the Sizewell Estate along the coastal habitats (Suffolk ARG, 2007). However, adder populations in Suffolk are nearly entirely restricted to sandy heathland areas (SWT, adder information fact sheet and Suffolk ARG, 2007). The adder population present within the Sandlings is of at least regional level biodiversity importance for the species, given the geographical continuity and size of the population. This area now covers about 2000ha in total, consisting of areas of remnant heath, which stretch along the Suffolk coast from Ipswich to Southwold.



<sup>&</sup>lt;sup>2</sup> Allan Miller and Carl Powell are conservation managers of the Sizewell Estate and have considerable knowledge of the area.

#### 3.2 Field Survey

A summary of the survey data is presented in **Appendix B**.

The surveys confirmed the presence of common lizard within the study area, with a maximum of 1 adult per visit (totalling 5 sightings, all females). However, higher numbers were recorded during the Extended Phase 1 Survey of the site and surrounding area, when six common lizards, of which at least 4 were adults, were seen. A possible sighting of a juvenile grass snake was also noted during the reptile surveys. The distribution of the reptile sightings was not uniform and most were made in the rough grassland at the top of the western slope.

Furthermore a dead adult adder, probably a road casualty, was found ~30m to the south-east of the survey area, within an area of gravel, adjacent to the main access roads. This individual is likely to have originated from the site, as this the nearest suitable habitat to where the carcass was found.

#### 3.3 Biodiversity Evaluation

#### 3.3.1 Population Classification

From the results of the survey it has been confirmed that, given the numbers of adult reptiles observed, a low population of common lizard is present. It is possible that very small numbers of adder and grass snake (i.e. 1 or 2 individuals) may also occur, based on the likely sighting of a juvenile grass snake and the dead adder found nearby. However, usage of the site by grass snake and adder is only likely to be occasional, given the size of the habitat available and because both snake species can range widely between hibernation and mating/summer foraging areas (Beebee and Griffiths, 2000).

Therefore, based on the survey results, the site does not currently qualify as a Key Reptile Site, as the adults of only one species were recorded here. Whilst it is acknowledged that both grass snake and adder are likely to occasionally use the site, and this would therefore meet the criteria of a Key Reptile Site, it is considered more appropriate to consider the potential development site as a small, peripheral area of the wider Sizewell Estate (which from the desk study data would clearly qualify as a Key Reptile Site) and not as a Key Reptile Site in its own right.

Given the site's size (0.5ha) and the low quality of habitat available, it does not qualify as a County Wildlife Site.

#### 3.3.2 Habitat Evaluation

About 75% of the site (the central, eastern, northern and southern sections) comprises habitat which is considered unlikely to support reptiles, given the extent of rabbit grazing and lack of cover available for foraging or hibernating.

Therefore, a total of approximately 0.1ha of suitable reptile habitat exists on site. Optimum habitat is present on the slope on the western section of the site, in the form of the rough grassland, scrub and wood piles. This area has greatest potential for use during hibernation as it is free draining and supports mammal burrows and log piles. However, low numbers of reptiles were recorded in this area during the survey, suggesting it is unlikely to support large numbers of hibernating reptiles.

The rough grassland on the flatter areas is also suitable for reptiles, particularly during the times of year of peak activity, as is the southern margin of the site, which due to the vegetation cover it provides is likely to be used for foraging by small numbers of reptiles.



The low bund on the eastern boundary of the site may be suitable for hibernating reptiles, however little vegetation cover for reptiles is present immediately around this, resulting in a low probability of this area being found and subsequently used by reptiles.

Overall, based on the amount and quality of the habitat available for reptiles, the site is considered to be of no more that parish value for this species group.

## 4. Conclusions

Low numbers of common lizard were recorded during the surveys, concentrated around the slope on the western boundary of the site. Adder and grass snake are also likely to be present in very low numbers.

Because of the connective habitat to areas offsite, the survey area can not be considered to support a reptile population in its own right, rather a number of individuals which are part of the populations in the wider area. These individuals are linked through suitable connective habitat with the population to the north recorded during the previous survey conducted by Entec (Entec Doc. Reg. 19801cr166).

# 5. Recommendations

The loss of the central area of the site would not result in a detrimental effect to the reptile populations of the area, and may not even affect individual animals, due to the poor quality habitat present. Therefore, neither mitigation nor compensation would be required for development that avoids the best areas of reptile habitat.

Should areas of suitable reptile habit be affected (particularly the western area) by works to reinforce the bank for example, it would represent at least a short-term loss of a small area of suitable habitat. If it were to be lost entirely, a long-term loss of habitat would occur and compensatory measures are recommended.

Loss of suitable reptile habitat could be compensated for by modifying the management of the grass banks west of the existing car park to the south of the survey area. These are currently maintained as amenity grassland, offering little potential as reptile habitat. Even if the management were limited to stopping scrub encroachment and reducing mowing with the aim of obtaining a more diverse and longer grass sward, the local reptile population would benefit greatly. This new area of habitat would also still be linked to the SSSI to the east. The area to the west of the car park extension could also be managed in this way to maintain connectivity to reptile habitats to the north. This would minimise the habitat loss and potentially result in a conservation gain for the proposed car park development.

In order to avoid injury to individual reptiles, a phased clearance of the development area supervised by an ecologist from Entec UK is recommended ahead of the construction works. This should occur during the summer months when reptiles not in hibernation and could be achieved through strimming of grassland, manual cutting of scrub and a turf strip (destructive searching) and will encourage any reptiles present to move away from construction site. This is particularly important if it is necessary to clear the western area of the site and areas of scattered or dense scrub.



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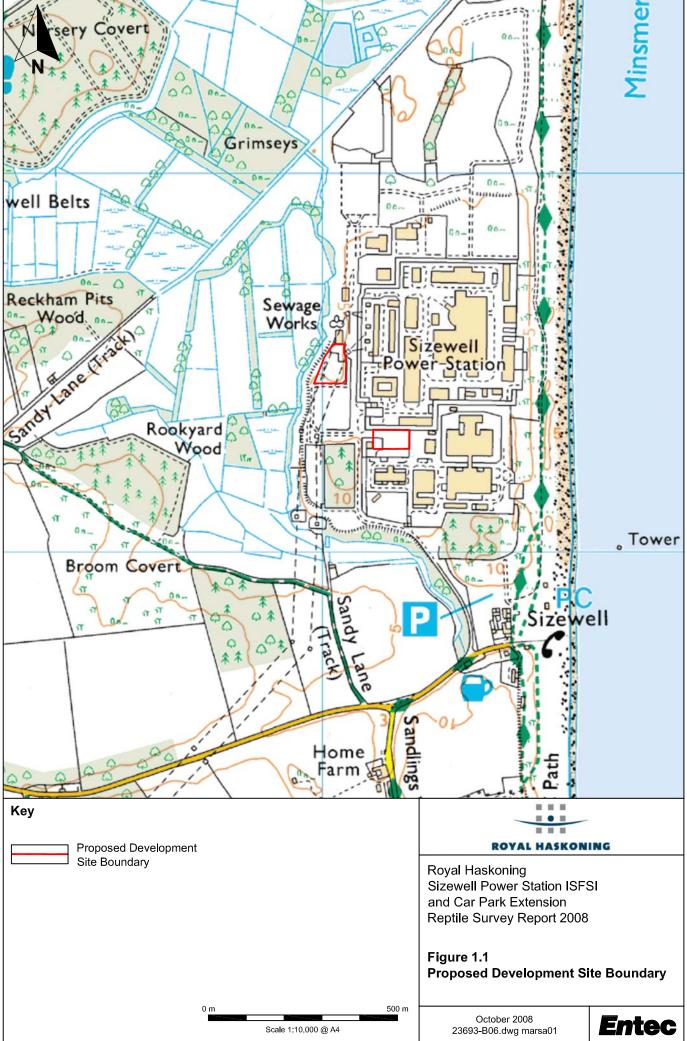
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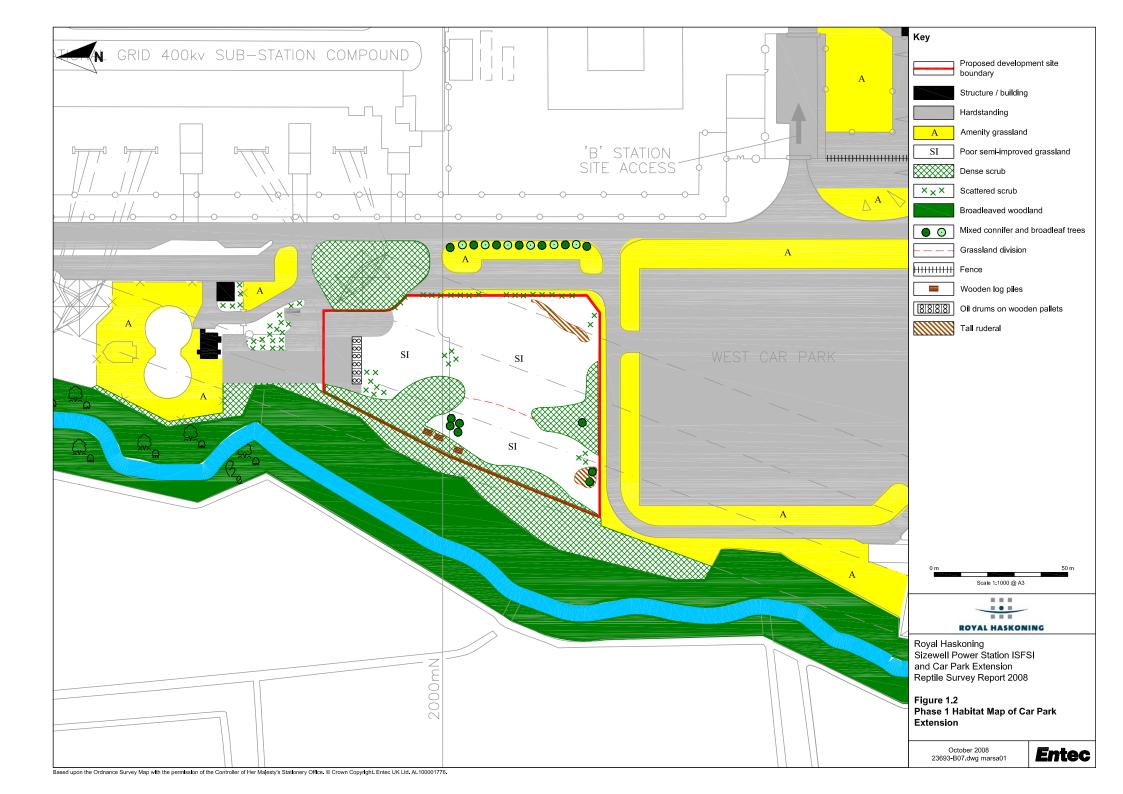
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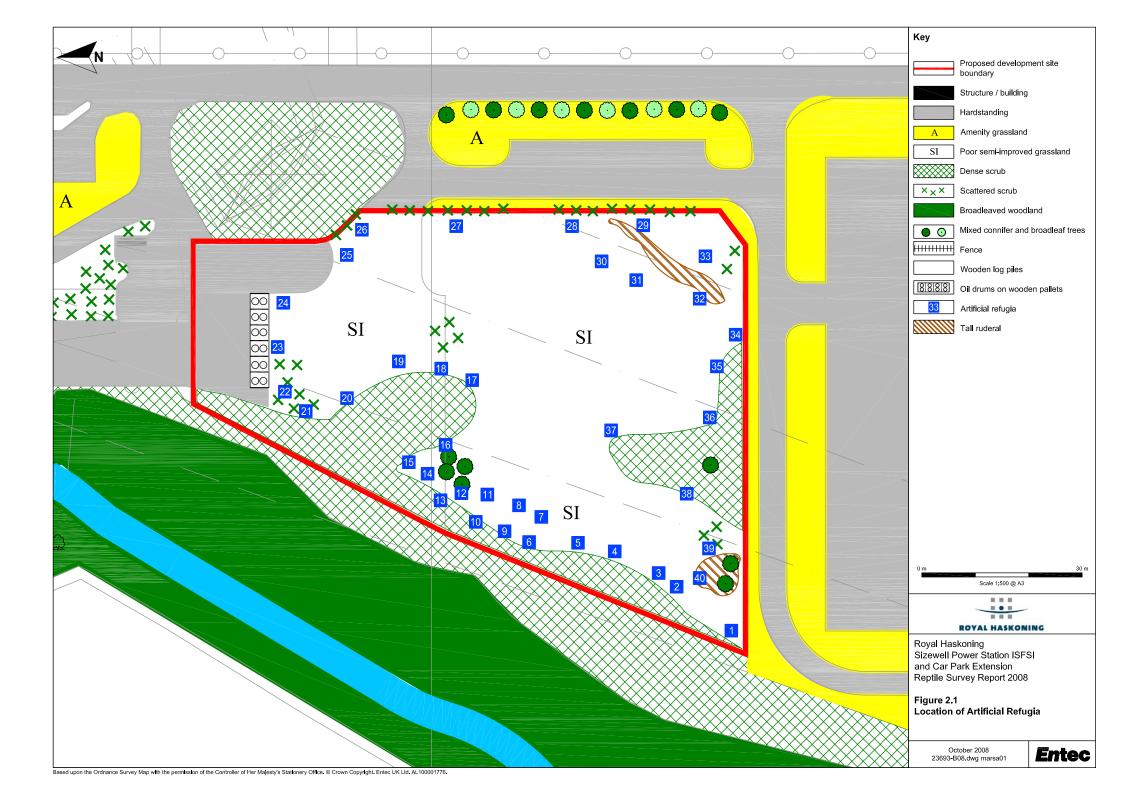
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# **Appendix A Photographs Illustrating Habitats Surveyed**

**Photograph 1.** View of slope to the west of the grassland area.



Photograph 2. View of central area of semi-improved grassland.



# **Appendix B Summary of Reptile Survey Results**







#### Sizewell Power Station ISFSI and Car Park Extension Reptile Survey Report 2008

| Survey Day | Date       | Start time |           | Weather conditions |           |               |                               | Surveyor | Common lizard (adults) total | Slow worm (adults) total | Grass snake<br>(adults)<br>total | Adder<br>(adults)<br>total | All species' adult total | All species' total (with juvs) |
|------------|------------|------------|-----------|--------------------|-----------|---------------|-------------------------------|----------|------------------------------|--------------------------|----------------------------------|----------------------------|--------------------------|--------------------------------|
|            |            |            | Temp.     | Wind               | Cloud (%) | Ground        | Rain                          |          |                              |                          |                                  |                            |                          |                                |
| 1          | 12/09/2008 | 15:00:00   | 15 - 16 C | None               | 95        | Wet           | Earlier in day                | JB       |                              |                          |                                  |                            |                          |                                |
| 2          | 13/09/2008 | 9:00:00    | 16        | None               | 25        | Damp          | None                          | RC       |                              |                          |                                  |                            |                          |                                |
| 3          | 14/09/2008 | 09:45:00   | 17        | 2-3E               | 40        | Damp          | None                          | RC       |                              |                          |                                  |                            |                          |                                |
| 4          | 16/09/2008 | 12:30:00   | 16        | None               | 95        | Dry           | None                          | JB       | 1                            |                          |                                  |                            | 1                        | 1                              |
| 5          | 20/09/2008 | 11:00:00   | 19 - 20 C | 0-1 SE             | 25        | Damp          | Overnight, none during survey | RC       | 1                            |                          |                                  |                            | 1                        | 1                              |
| 6          | 21/09/2008 | 11:30:00   | 18- 19 c  | 0-1 SE             | 25        | Damp          | None                          | RC       | 1                            |                          |                                  |                            | 1                        | 2                              |
| 7          | 24/09/2008 | 13:00:00   | 15        | 1-2 NE             | 90        | Wet           | Earlier in day, light         | JB       |                              |                          |                                  |                            |                          |                                |
| 8          | 26/09/2008 | 12:00:00   | 17        | 0 -1               | 0.5       | Dry           | None                          | JB       |                              |                          |                                  |                            |                          |                                |
| 9          | 27/09/2008 | 11:30:00   | 18-19     | 0-1 SE             | 15        | Damp from dew | None                          | RC       | 1                            |                          |                                  |                            | 1                        | 1                              |
| 10         | 28/09/2008 | 12:30:00   | 14        | 2 to 3             | 70        | Dry           | None                          | JB       |                              |                          |                                  |                            |                          | ,                              |
| 11         | 29/09/2008 | 10:30:00   | 14        | None               | 25        | Dew           | None                          | ET       |                              |                          |                                  |                            |                          |                                |
| 12         | 01/10/2008 | 12:30:00   | 14        | 2 to 3             | 70        | Dry           | None                          | JB       | 1                            |                          |                                  |                            | 1                        | 1                              |
| 13         | 03/10/2008 | 12:00:00   | 10        | 1-2 N              | 90        | Wet           | Some as survey finished       | JB       |                              |                          |                                  |                            |                          |                                |