

EDF Energy

**Sizewell C New Nuclear Power Station:
Terrestrial and Freshwater Ecology, and
Ornithology**

DRAFT Coronation Wood Reptile Survey Report 2012

November 2012

AMEC Environment & Infrastructure UK Limited

Report for

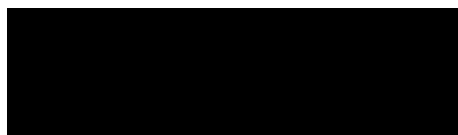
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Doc Reg No. 28130-CR424

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Certificate No. FS 13881



Certificate No. EMS 69090

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Document Revisions

No.	Details	Date
1	First Draft to Client	Nov 2012

Contents

1.	Introduction	1
1.1	Purpose of this Report	1
1.2	Site context	1
1.3	Legislation	1
2.	Desktop Study	3
2.1	Methods	3
2.2	Results	3
3.	Field Survey	5
3.1	Methods	5
3.2	Results	5
4.	Evaluation	7
4.1	Methods	7
4.2	Results	7
5.	Conclusion and Recommendations	9
5.1	Conclusions	9
5.2	Recommendations	9
Table 3.1	Summary of Reptile Survey Results	6
Appendix A Figures		
Appendix B Full Reptile Survey Results		

1. Introduction

1.1 Purpose of this Report

An area of land directly north of Sizewell B Nuclear Power Station, which is located near Leiston in Suffolk, has been identified as having the potential to accommodate the proposed development of one or more new nuclear reactors. This proposed development is known as Sizewell C. The site of the proposed development has an approximate central National Grid Reference (NGR) of TM473640.

AMEC Environment & Infrastructure UK Ltd (formerly Entec UK Ltd) was commissioned by EDF Energy in 2012 to undertake a reptile survey of Coronation Wood (a block of woodland located adjacent to the west of Sizewell A Power Station) and suitable habitats bordering the existing car parks to the west and north of Sizewell B. The area surveyed is hereafter called 'the site'.

The purpose of this report, which details the findings of survey work undertaken for reptiles in 2012, is to provide baseline information on the value of the site for reptiles, to inform the design of Sizewell C and the Environmental Statement for the scheme. The report documents the methods used to determine reptile presence on the site, and the results of the survey undertaken; brief recommendations are also made for mitigation and enhancement works appropriate to the proposed redevelopment of the site.

1.2 Site context

The site forms part of the Sizewell estate and is located adjacent to the west and north of the Sizewell power station. The area surveyed for reptiles consists predominantly of woodland edge habitat which comprises small areas of scattered scrub, tall ruderal vegetation, patches of rough grassland, and small woodland glades within an area of conifer plantation comprising of rough grassland and small patches of scrub.

1.3 Legislation

The four widespread¹ species of reptile that are native to Britain, namely viviparous lizard (*Zootoca vivipara*), slow worm (*Anguis fragilis*), adder (*Vipera berus*) and grass snake (*Natrix natrix*), are listed on Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and are afforded limited protection under Section 9 of this Act. This makes it an offence, inter alia, to intentionally kill or injure any of these species.

¹ The two other native species of British reptile (sand lizard *Lacerta agilis* and smooth snake *Coronella austriaca*) receive a higher level of protection under the *Wildlife and Countryside Act 1981* (as amended). However, the distribution of these species is restricted to a limited number of sites in particular geographic locations.

In addition to the legislation relating to reptiles, the National Planning Policy Framework ((NPPF) 2012 states that the planning system should contribute to and enhance the natural and local environment by “*minimising impacts on biodiversity and providing net gains in biodiversity where possible*”; that planning permission for developments should be refused if significant biodiversity harm cannot be “*avoided (through locating on an alternative site with less harmful impacts), adequately mitigated or, as a last resort, compensated for*”; and that “*opportunities to incorporate biodiversity in and around developments should be encouraged*”.

2. Desktop Study

2.1 Methods

Existing information regarding reptiles within the Sizewell estate and the surrounding land was obtained from the following sources (further detail is provided in the Sizewell Desk Study report):

- Suffolk Biodiversity Records Centre (SBRC) 2012; and
- Entec UK (2007). British Energy Group PLC Sizewell Reptile Survey Report 2007.

2.2 Results

The 2007 reptile surveys conducted across the Sizewell estate confirmed the widespread presence of all four common reptile species. The population classification indicated that an exceptional population of both adder and slow worm are present within the Sizewell estate, with good populations of grass snake and common lizard. Additionally the desktop studies also confirmed the presence of all four species within 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 Birds reserve located to the north. The study of aerial photography indicates that there is connective habitat suitable for reptiles between Minsmere and the study area.

In addition to these formal records, a large number of incidental observations of reptiles have been made by AMEC surveyors across the Sizewell estate between 2007 and 2012 whilst undertaking survey work for other species.



3. Field Survey

3.1 Methods

A presence/absence survey for reptiles was carried out on the site within habitat highlighted by the initial ecological survey² to have the potential to support reptiles. The survey involved seven visits to the site between August and early October 2012. Survey visits comprised the following methods, based on those recommended by Griffiths and Inns², and Froglife³:

- Direct observation - during each survey visit to the site the locations of any reptiles observed basking in the open were recorded;
- Refugia searches - any existing potential refugia on the site were carefully searched for reptiles, especially log-piles, rubble and discarded wood or old carpet; and
- Artificial refugia - artificial refugia were placed across the site, as shown in Figure 3.1 (Appendix A). The survey was set up on 4 July, with 54 refugia positioned across the site. Refugia were placed along margins of scrub, rough grassland, bramble and ruderal vegetation, which are optimal reptile habitat, and also within open glades within the coniferous woodland plantation. The artificial refugia comprised 48 0.5m x 1.0m sheets of roofing felt and 6 0.5m x 0.5m sheets of corrugated metal. All reptiles observed on, alongside or under the refugia were recorded during each survey visit.

Reptile activity is very dependent on the weather and time of year, as reptiles are ectotherms and therefore must bask in order to warm themselves and become active. April, May and September are key months for basking reptiles, as more continuous mid-summer heat means reptiles require less basking time to become active¹. Successful surveys may still be carried out from June to August and October, however, if weather conditions are suitable. Optimum conditions are intermittent sunshine with little or no wind, particularly after a spell of cooler or wetter weather. Individual species have some specific preferences but generally it is preferable to survey when the temperature is between 10°C and 17°C².

The weather conditions encountered during the survey period are considered to be suitable for surveying and assessing reptile populations. Weather conditions were recorded in detail on each visit, as were the species, age class and sex of reptiles observed.

3.2 Results

The results of the field survey are summarised in Table 3.1. Reptile distribution across the site is illustrated in Figure 3.2 (Appendix A) and full results are presented in Appendix B.

² Griffiths, R. and Inns, H. (1998). Surveying. In: Gent, A. H. and Gibson, S. D. eds. *Herpetofauna workers' manual*. Joint Nature Conservation Committee, Peterborough, pp1-13.

³ Froglife (1999). *Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation*. Froglife Advice Sheet 10. Froglife, Halesworth.

Table 3.1 Summary of Reptile Survey Results

Survey visit no.	Date	Weather conditions	Reptiles recorded			
			Viviparous lizard	Slow worm	Adder	Grass snake
1	17/08/12	Cloud cover: 20%. Wind speed: light. Ground moisture: dry. Rain: none. Temperature: 17-19°C.	4M, 3F	1M	-	-
2	19/9/12	Cloud cover: 15%. Wind speed: light. Ground moisture: dry. Rain: none. Temperature: 14-15°C.	3M, 3F, 1A	1F	1 F	-
3	21/09/12	Cloud cover: 90%. Wind speed: light. Ground moisture: Dry. Rain: none. Temperature: 15-15°C.	4M, 2F, 2A	1F	-	-
4	28/09/12	Cloud cover: 10%. Wind speed: light. Ground moisture: moist. Rain: intermittent. Temperature: 14-15°C.	1M, 1F, 1A	1M	-	-
5	02/10/12	Cloud cover: 20%. Wind speed: Moderate. Ground moisture: damp. Rain: none. Temperature: 17-18°C.	9M, 6Juv	1M, 2F	-	1A
6	03/10/12	Cloud cover: 80%. Wind speed: light. Ground moisture: wet. Rain: none. Temperature: 18 -18°C.	2M, 2F, 5Juv	-	-	-
7	04/10/12	Cloud cover: 0%. Wind speed: Still. Ground moisture: dry. Rain: none. Temperature: 17-19°C.	-	-	-	-
Maximum survey count per species		Adult	9	3	1	1
		Juvenile	6	0	0	0

Key: M = Male, F = Female, Juv = Juvenile, A = Adult but sex unknown⁴, Temperature=(start temp.)°C-(Finish temp.)°C, NR=Not recorded.

⁴ In instances where it was not possible to determine either sex (brief/unclear sighting), total number of individuals with a size class was noted.

4. Evaluation

4.1 Methods

Evaluation of the reptile populations at Coronation wood is based on the availability of suitable habitats, and the findings of both the desk and field studies. This information has been interpreted using professional judgement in order to define whether or not the species' populations can be considered a 'valued ecological receptor', i.e. of sufficiently high value in terms of biodiversity conservation that an effect upon it could be significant in terms of favourable conservation status. That said, regardless of whether or not reptile populations are considered to be valued ecological receptors, there is a need to recognise that they are legally protected and measures must be taken to ensure that contravention of the relevant legislation is avoided.

4.2 Results

All four common native reptile species have been confirmed to be present on this part of the Sizewell estate, with maximum adult counts of 3 slow worms, 9 viviparous lizards, 1 grass snake and 1 adder recorded during the survey. The desk study revealed multiple records of viviparous lizard, slow worm, adder and grass snake within the study area. A full population estimate has not been undertaken; however, the results indicate the presence of a good viviparous lizard population and low populations of slow worm, grass snake and adder according with the Froglife⁴ survey assessment criteria.

Reptiles within the survey area are distributed along the western boundary of the site/woodland edge and within the woodland glades that have minimal shading from trees. The habitats in these areas consist of rank improved grassland, scrub and patches of tall herbs which offer suitable habitat for sheltering, basking and foraging. The remaining areas of habitat comprise conifer plantation and offer little in the way of suitable habitat for reptiles. There is little to no ground vegetation beneath the canopy of the pine trees and these areas are heavily shaded.

All four species were recorded during the survey; however, only viviparous lizards were recorded within the pine plantation on the north of the survey area. All of the reptiles observed within this area were within the open glades, which comprise rough tussocky grassland. This part of the survey area is considered to be suboptimal for slow worms as they are a burrowing species and the hard dry ground conditions provide little burrowing potential. The conditions within this part of the site are also considered suboptimal for grass snake, due to the absence of suitable water bodies, which are a favoured hunting ground for this species. A number of Adders have been observed on the bund to the east of the pine plantation and within the areas of semi-improved grassland to the north during site walkovers. No observation of adder were made within the glades of the pine plantation, although it is considered likely that lower numbers of adder may use this part of the site due to the presence of suitable prey species and basking sites.

Both slow worm and viviparous lizard were also recorded along the entrance road/car park to the west of the site where patches of bramble scrub and a strip of unmanaged grassland offer

suitable habitat. These species are less susceptible to human disturbance than the other two common reptile species, and can often be found in similar edge habitats.

Grass snake and adder were only recorded in the southwestern part of the survey area. This part of the survey area is screened off from the power station by a large block of woodland. These species do not tolerate high levels of disturbance and as a result of the presence of suitable terrestrial habitat and in the case of grass snake suitable aquatic habitat also, this part of the site is optimal for these species.

In accordance with Froglife guidelines⁵, as the site supports all four common native reptile species, it meets their criteria for a Key Reptile Site. However, the survey findings indicate that only a good population of viviparous lizards is likely to be present, with low populations of the other three reptile species present. The reason for this is likely that the majority of the site is suboptimal for reptiles due to both the high levels of disturbance from human activity at the power station and the limited availability of optimal reptile habitat with reptile populations restricted mainly to small areas including the woodland glades and areas of scrub and unmanaged habitat around the periphery of the site.

Given the low densities of reptiles present, the limited area of suitable habitat, and the fact that large areas of habitat optimal for reptiles is present with the Sizewell estate and wider area, the area of habitat at Coronation wood is not regarded as a 'valued ecological receptor' for reptiles. Notwithstanding this, there is still a requirement to ensure that any development works on-site comply with the legislation that relates to these species (see section 1.4).

5. Conclusion and Recommendations

5.1 Conclusions

The results of the presence/absence survey of Coronation Wood for reptiles indicate the presence of a good population of viviparous lizard and low populations of grass snake, adder and slow worm. The majority of the site, however, is currently suboptimal for reptiles due to a combination of poor habitat suitability across most of the site and the high level of disturbance from activities at the power station including site maintenance work, with reptile populations restricted to the woodland edge and the open glades within the woodland. The site is therefore not regarded a 'valued ecological receptor' for reptiles.

Best practice guidelines recommend that 20 survey visits should be undertaken in order to make a population estimate. However, provided development proposals are limited principally to areas of suboptimal reptile habitat, AMEC does not consider that any additional useful information would be gained from increasing the survey effort to this level.

The results of this survey work should be used to inform the design and implementation of any proposed development with the ultimate aim being to 'design out' any adverse effects on the reptile populations. If this is not possible there will be a need to produce and execute a comprehensive mitigation strategy prior to any development works. This should ensure the avoidance of harm to reptiles, thus avoiding contravention of the legislation regarding these species, as well as fulfilling local and regional policy requirements in respect of biodiversity conservation and enhancement.

5.2 Recommendations

It is recommended that an ecologist is involved in the development planning process from an early stage. This will allow the ecologist to work closely with other members of the design team to best address the issues related to reptiles.

Planning must aim to protect reptiles from any harm that might arise during the development work and show consideration of NPPF which stipulates a need to '*minimising impacts on biodiversity and providing net gains in biodiversity where possible*'.

In order to adequately address these requirements, the new development will likely need to implement a comprehensive reptile mitigation strategy, taking into account available guidance^{5,6,7} prior to any works commencing on-site as well as incorporating features within the

⁵ English Nature (2004). *Reptiles: guidelines for developers*. English Nature, Peterborough.

⁶ Herpetofauna Groups of Britain and Ireland (1998). *Evaluating local mitigation/translocation programmes: maintaining best practice and lawful standards*. HGBI advisory notes for Amphibian and Reptile Groups (ARGs). HGBI, c/o Froglife, Halesworth.

⁷ Clemons, J. and Langton, T. (1998). Species translocations. In: Gent, A. H. and Gibson, S. D. eds. *Herpetofauna workers' manual*. Joint Nature Conservation Committee, Peterborough, pp107-112.

development design to enhance the habitats not only for herpetofauna, but also for biodiversity in general.

Mitigation

Principally the design should look to avoid the removal of optimal reptile habitat, identified as being the woodland edge habitat and the open glades within the woodland. Ideally the mitigation strategy would involve retaining and managing these on-site habitats as a nature area for reptiles. By designing out adverse effects on optimal reptile habitat the mitigation strategy can avoid the necessity for extensive mitigation measures described below which include the location and creation of compensatory habitat and translocation of whole reptile populations.

Where impacts on optimal habitat can not be avoided the design must provide compensatory habitat of sufficient quality, quantity and connectivity to accommodate the reptile population with no net loss of local reptile conservation status. Compensatory habitat should ideally be provided either on or directly adjacent to the site.

Enhancement and preparation works on compensatory habitat would need to be implemented prior to any development work affecting reptile habitats. A translocation exercise may then be required to trap and relocate reptiles from the areas being affected by the development into the newly created habitats. The translocation exercise can take between 2 and 6 months with works seasonally constrained, being limited to the April-early October period.

If impacts on optimal habitat can be avoided then mitigation will still be required for all vegetation removal required as part of the development including the removal of less optimal habitat for reptiles, such as the pine woodland plantation. Mitigation works will likely involve manually strimming vegetation in two stages to ground level followed by a destructive search. This would involve searching through vegetation and debris and removing topsoil using a suitable excavator. A suitably qualified ecologist would supervise such works and catch any reptiles that may be disturbed.

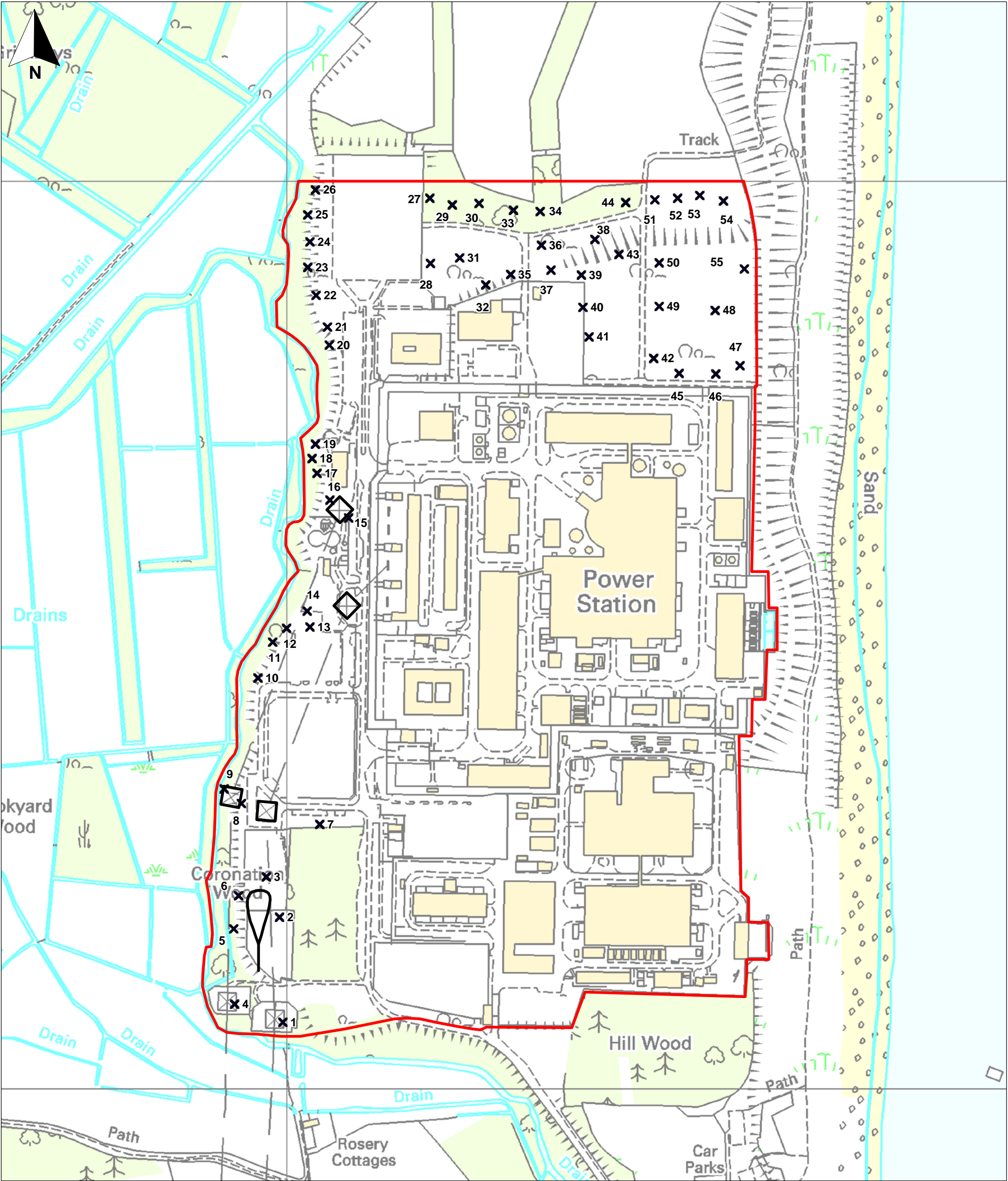
Enhancement

In order to meet the criteria of NPPF policies the habitats on the site can be easily managed to enhance their value to reptiles and biodiversity in general. Such features may involve:

- Periodic thinning of heavy scrub cover in areas of optimal habitat such as the south western corner of the site, to increase basking opportunities and prevent a reduction in habitat quality over time;
- Installing hibernacula in areas of optimal habitat to increase opportunities for hibernation and shelter.

Appendix A

Figures

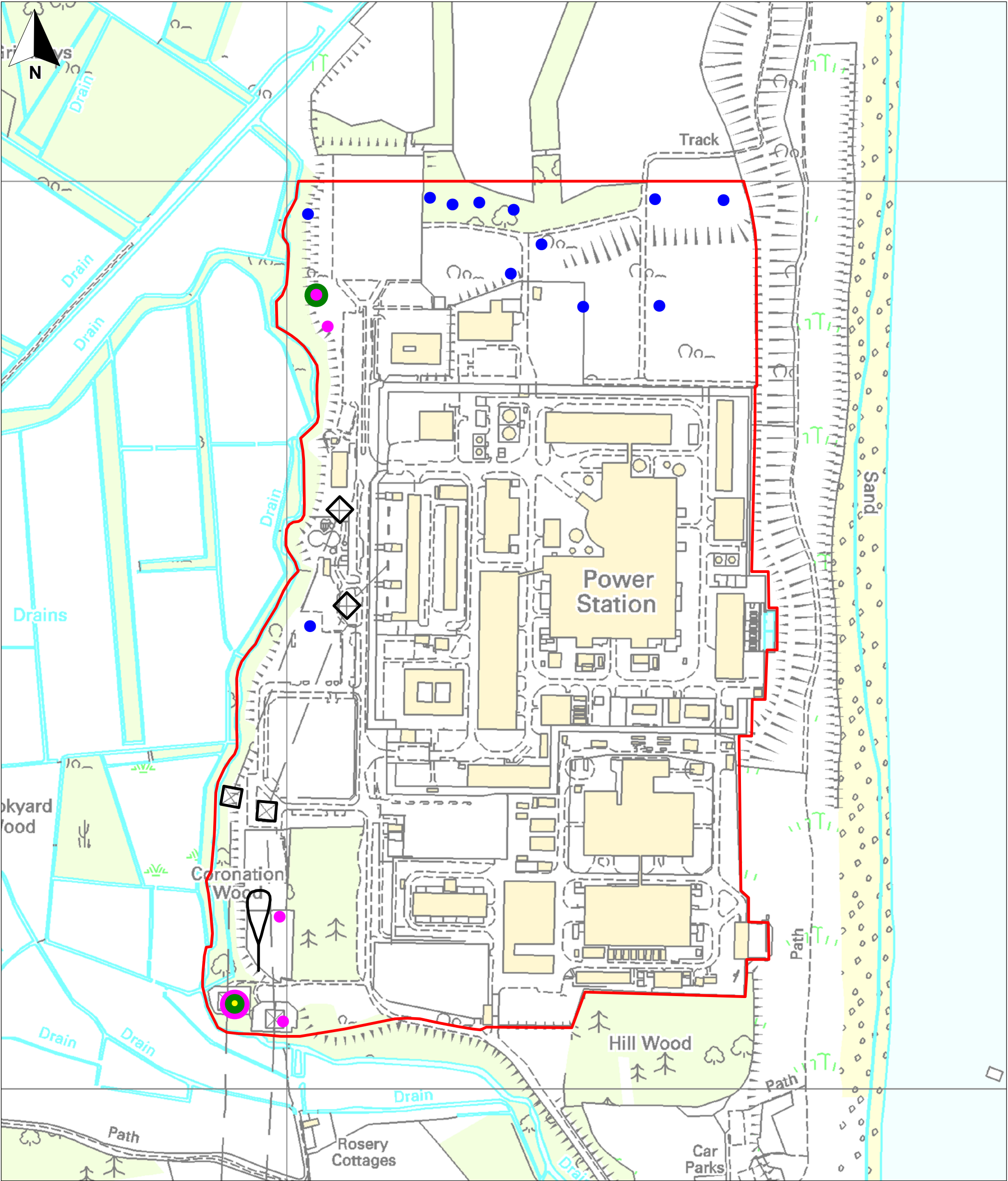




Sizewell Coronation Wood
Reptile Survey Report 2012

Figure 3.1
Survey Area and Refugia Locations

November 2012
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<p>Key:</p> <ul style="list-style-type: none"> Survey area Slow worm Common lizard Grass snake Adder X Pylon 	<div style="text-align: center;">  <p>EDF</p> </div> <p>Sizewell Coronation Wood Reptile Survey Report 2012</p> <p>Figure 3.2 Reptile Distribution Map</p> <div style="display: flex; justify-content: space-between; align-items: center;"> <div> <p>November 2012 28130-A473.wor tugwc</p> </div> <div>  </div> </div>
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Appendix B

Full Reptile Survey Results

Date of survey visit	Weather	Refugium no.	Reptiles observed
17/08/12	Cloud cover: 20%. Wind speed: light. Ground moisture: dry. Rain: none. Temperature: 17-19°C.	2	1 adult male slow worm
		4	1 adult ale common lizard
		27	1 adult male common lizard
		29	1 adult male + 1 female common lizard
		30	1 adult male + 1 female common lizard
		54	1 female common lizard
19/9/12	Cloud cover: 15%. Wind speed: light. Ground moisture: dry. Rain: none. Temperature: 14-15°C.	4	1 adult female slow worm
			1 adult female Adder
		13	1 adult female common lizard
		25	1 adult male + 1 female common lizard
		35	1 adult male common lizard
		36	1 adult male common lizard
		49	1 adult common lizard
21/09/12	Cloud cover: 90%. Wind speed: light. Ground moisture: Dry. Rain: none. Temperature: 15-15°C.	51	1 adult female common lizard
		13	1 adult male + 1 female common lizard
		21	1 adult female slow worm
		27	2 adult male + 1 female + 2 adult common lizard
		36	1 adult male common lizard
28/09/12	Cloud cover: 10%. Wind speed: light. Ground moisture: moist. Rain: intermittent. Temperature: 14-15°C.	51	1 adult common lizard
		22	1 adult male slow worm
		27	1 adult common lizard
		27	1 adult male common lizard
		35	1 adult female common lizard

Date of survey visit	Weather	Refugium no.	Reptiles observed
02/10/12	Cloud cover: 20%. Wind speed: Moderate. Ground moisture: damp. Rain: none. Temperature: 17-18°C.	1	2 adult female slow worm
		2	1 adult male common lizard
		4	1 adult male slow worm
			1 adult grass snake
		13	1 adult male common lizard
		29	1 adult male common lizard
		30	6 juvenile common lizard
		33	2 adult male common lizard
		40	1 adult male common lizard
		51	1 adult male common lizard
03/10/12	Cloud cover: 80%. Wind speed: light. Ground moisture: wet. Rain: none. Temperature: 18 -18°C.	54	2 adult male common lizard
		2	1 adult female common lizard
		4	1 adult female common lizard
		27	2 juvenile common lizard
		30	3 juvenile common lizard
		29	1 adult male common lizard
04/10/12	Cloud cover: 0%. Wind speed: Still. Ground moisture: dry. Rain: none. Temperature: 17-19°C.	40	1 adult male common lizard
		-	none