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Wylfa Newydd

Horizon Nuclear Power (Wylfa) Ltd

Reptile Technical Summary Report

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Executive Summary

Horizon Nuclear Power Wylfa Ltd. (Horizon) is currently planning to develop a new nuclear power station on Anglesey (the Wylfa Newydd Generating Station) as identified in the National Policy Statement for Nuclear Power Generation (EN-6). The Wylfa Newydd Project (the Project) will require a number of applications to be made under different legislation to different regulators. Jacobs UK Ltd (Jacobs) was commissioned to collect baseline data to inform the various applications, assessments and permits that will be submitted for approval to construct and operate the Wylfa Newydd Generating Station.

This technical summary report provides a single resource for all of the survey and background data for reptiles within the Wylfa Newydd Development Area and from sites within a 500m buffer zone around the boundary; this is referred to as the 'study area' in this report. The data sources reviewed for this report include:

- previous reptile surveys carried out in 2010, 2011, 2013 and 2014;
- incidental reptile sightings; and
- records from a background data search.

The results of the reptile surveys showed that within 27 sites, there were three small populations of adders and nine small populations of common lizards. The results also suggest that grass snakes and slow worms are absent from the study area as no records of either species have been found as part of this study; it is therefore unlikely that either will be affected by the proposed development works.

Site 2 is east of the Existing Power Station and supported the highest number of adders with five recorded on one visit. Adders were also found at Site 4a and Site 7.

Common lizards were more widely distributed and were found at low population densities, with only one or two individuals generally being recorded on each visit. Sites with populations of common lizards were found from the southernmost Site 15 near Groes Fechan and Cae Gwyn Site of Special Scientific Interest (SSSI), and in most sites in the north-western corner of the study area.

The survey data was in agreement with the records of incidental sightings and those received from the local records centre in that low numbers of adders and common lizards were generally recorded, and there were no records of slow worms or grass snakes. The background data showed a focus in recording effort around Cemlyn Bay lagoon, which accounted for a higher number of records in this area.

The background data and incidental sighting records also showed that there is a high likelihood that there are low populations of adders and common lizards scattered throughout the study area and therefore a high probability of these species being found in unsurveyed areas of suitable habitat.

It is therefore recommended that adders and common lizards should be considered in any future environmental impact assessment for the site. Given the nature of their distribution it is also considered that by assessing the amount of suitable habitat present, an impact assessment can be made without the need for further surveys being undertaken. However, further survey would be required if there were significant changes in habitat management which could lead to any changes in the numbers or distribution of these species in the study area e.g. a cessation of grazing leading to significant increases in the amount of rank and tussocky grassland, a habitat that is favoured by reptiles.

1. Introduction

This report provides a technical summary of the data collected on reptiles within the Wylfa Newydd Development Area and from sites within a 500m buffer zone around the boundary of the Wylfa Newydd Development Area.

1.1 Overview

Horizon Nuclear Power Wylfa Ltd. (Horizon) is currently planning to develop a new nuclear power station on Anglesey as identified in the National Policy Statement for Nuclear Power Generation (EN-6). The Wylfa Newydd Project (the Project) comprises the proposed new nuclear power station (the Wylfa Newydd Generating Station), including the reactors, associated plant and ancillary structures and features, together with all of the development needed to support its delivery, such as highway improvements, worker accommodation and specialist training facilities. The Project will require a number of applications to be made under different legislation to different regulators. As a nationally significant infrastructure project under the Planning Act 2008, the construction and operation must be authorised by a development consent order.

Jacobs UK Ltd (Jacobs) was commissioned by Horizon to undertake a full ecological survey programme within the vicinity of the Power Station Site. This work has included the gathering of baseline data to inform the various applications, assessments and permits that will be submitted for approval to construct and operate the Power Station and Associated Development.

1.2 Wylfa Newydd Project

The Project includes the Wylfa Newydd Generating Station and Associated Development¹. The Wylfa Newydd Generating Station includes two UK Advanced Boiling Water Reactors to be supplied by Hitachi-GE Nuclear Energy Ltd, associated plant and ancillary structures and features. In addition to the reactors, development on the Power Station Site (the indicative area of land and sea within which the majority of the permanent Wylfa Newydd Generating Station buildings, plant and structures would be situated) will include steam turbines, control and service buildings, operational plant, radioactive waste storage buildings, ancillary structures, offices and coastal developments. The coastal developments will include a Cooling Water System (CWS) and breakwater, and a Marine Off-Loading Facility (MOLF).

1.3 Site Description

The Wylfa Newydd Development Area (the indicative areas of land and sea, including the Power Station Site, the Wylfa NPS² Site and the surrounding areas that would be used for the construction and operation of the Wylfa Newydd Generating Station) covers an area of approximately 380ha. It is bounded to the north by the coast and the existing Magnox power station (the Existing Power Station). To the east, it is separated from Cemaes by a narrow corridor of agricultural land. The A5025 and residential properties define part of the south-east boundary, with a small parcel of land spanning the road to the north-east of Tregele. To the south and west, the Wylfa Newydd Development Area abuts agricultural land, and to the west it adjoins the coastal hinterland.

The Wylfa Newydd Development Area includes the headland south of Wylfa Head candidate Wildlife Site. There is one designated site for nature conservation within the Wylfa Newydd Development Area; Tre'r Gof Site of Special Scientific Interest (SSSI). It is also within 1km of the Cae Gwyn SSSI, Cemlyn Bay Special Area of Conservation (SAC) and SSSI, and the Ynys Feurig, the Skerries and Cemlyn Bay Special Protection Area (SPA).

¹ Development needed to support delivery of the Wylfa Newydd Generating Station is referred to as Associated Development. This includes highway improvements along the A5025, park and ride facilities for construction workers, Logistics Centre, Temporary Workers' Accommodation, specialist training facilities, Horizon's Visitor Centre and media briefing facilities.

² The site identified on Anglesey by the National Policy Statement for Energy EN-6/NPS EN-6 as potentially suitable for the deployment of a new nuclear power station.

Tre'r Gof is a small basin mire adjacent to the Existing Power Station, west of Cemaes. The area receives mineral-enriched waters from the surrounding boulder clay leading to the development of notable flora. It is the botanical interest that provides the reason for the designation of the site as a SSSI.

Cae Gwyn SSSI is located immediately to the south of the site to the west of Llanfechell. The site comprises two wetland areas separated by an outcrop of rock with heathland vegetation. The southern wetland is confined by a rock basin and is dominated by bogmoss *Sphagnum spp.* and a wide variety of common wetland herbs. The northern wetland has a different flora containing denser areas of willow *Salix spp.* and common reed *Phragmites communis*.

1.4 Report Aims and Objectives

This report is intended to provide a technical summary of the data collected on reptiles within the Wylfa Newydd Development Area plus a 500m buffer zone around its boundary. The Wylfa Newydd Development Area and 500m buffer zone combined are referred to as the 'study area' in this report (figure 6.1.)

This report collates all data from previous surveys and background data searches and uses them to assess the distribution of reptiles throughout the study area.

1.5 Previous Work

The following reptile surveys have previously been carried out within the study area:

- reptile surveys were carried out by RSK as part of the decommissioning works at the Existing Power Station in 2008 (RSK, 2008);
- Arup conducted reptile surveys within the Wylfa Newydd Development Area in 2010 and 2011 (Arup, 2012a and Arup, 2012b);
- a baseline survey was carried out by Cambrian Ecological Partnership (CEP) in 2013 on behalf of Jacobs, this targeted all accessible land within the Wylfa Newydd Development Area (Jacobs, 2013a); and
- in 2014 Jacobs surveyed suitable areas of habitat within a 500m buffer of the Wylfa Newydd Development Area (Jacobs, 2014).

A background data search exercise was also completed by Jacobs in 2013. This included a request to Cofnod (North Wales Environmental Information Service) who provided a spreadsheet containing all plant and animal species records from within 2.5km of the study area (Cofnod, 2013). Additionally, Jacobs have been collecting records of non-target species recorded incidentally during other surveys. Both datasets were used in this report to inform an understanding of the study area.

1.6 Legal Status

All reptiles receive protection under the Wildlife and Countryside Act 1981 (as amended) making it illegal to intentionally injure or kill these animals.

In Wales, the adder (*Vipera berus*) is identified as a species of conservation concern in accordance with the provisions of 'Section 42' of the Natural Environment and Rural Communities Act 2006 (NERC). Under this legislation all 'Competent Authorities' have an obligation to give consideration to the species on this list in all of their activities, including planning issues.

2. Methodology

2.1 Survey Locations

The extent of the study area has evolved since the start of the reptile surveys in 2010. At the start of the survey programme the surveys generally only included the Wylfa Newydd Development Area, whereas the 2014 surveys included sites from within the 500m buffer zone. The reason for the extension to the study area was to provide more context to the results gathered within the Wylfa Newydd Development Area, and to provide information regarding the use of suitable habitat in the buffer zone as future potential mitigation for reptile populations potentially affected by the project.

Survey locations within the study area were selected based on their potential to support reptiles. This information was taken from previous surveys conducted in 2008 by RSK (RSK, 2008), and in subsequent years from Phase 1 Habitat Survey Reports (Walsh, 2009 and Jacobs, 2013b). Sites were then visited to confirm their suitability, and surveys were carried out using artificial refugia at selected sites.

The locations of survey sites are given in figure 6.1 and show that across four years of survey there have been 27 survey sites. These sites have been identified differently within each baseline report. Therefore, in order to enable clear interpretation of the results, the sites have been re-numbered so they can be shown on a single figure and can be clearly described.

The survey site descriptions are given from the most up-to-date report which includes a survey from that area, with references given in each case.

2.2 Desktop Study

This report interrogated the spreadsheet from Cofnod (Cofnod, 2013) to determine how the field data compares to historical reptile data from the local area. Records were obtained from the Wylfa Newydd Development Area plus a 2.5km buffer surrounding this.

2.3 Survey Methodology

All reptile surveys involved a combination of visual checks of the survey site and the use of artificial refugia in areas of suitable habitat. While the precise methodology and field equipment used for artificial refugia surveys did vary between survey sites and survey years, a review of all previous data was made in 2013 to ensure that it was fit for purpose and had been collected in accordance with best practice guidelines (HGBI, 1998) and the Herpetofauna Workers' Handbook (Gent and Gibson, 2003).

In addition to reptile data collected during dedicated surveys, any incidental sightings made within the study area by field staff were also recorded.

2.4 Limitations

The limitations for each survey conducted were documented in each survey report, with the most common limitations being sub-optimal weather conditions, restricted land access and missing artificial refugia (moved/destroyed).

A full review of limitations has not been provided in this report. This is because it is considered that these limitations are unlikely to significantly alter the conclusions of this report. This is primarily due the quantity of data available from four years of survey data, coupled with background data from Cofnod and incidental sightings.

3. Results

3.1 Background Data Search

The background data search (Cofnod, 2013) returned records for both adders and common lizards (appendix B and appendix C). No records of any other reptile species were returned.

There were 50 adder records made between 1986 and 2012 inclusive (figure 6.2, appendix A). The highest number of individuals recorded at any one sighting was seven, at Cemlyn lagoon in 1998. This number was particularly high, with one to three individuals being recorded at the majority of the other locations.

There were 63 common lizard records between 1983 and 2013 inclusive (figure 6.2, appendix A). The majority of records were sightings of individual lizards. However, some of the records represent daily totals for an area and range from three to seven lizards. The highest count of lizards in any one day (seven) was recorded at Cemlyn lagoon in 2005.

A data search undertaken by Arup of information contained on the National Biodiversity Network Gateway database revealed the presence of common lizard, grass snake (*Natrix natrix*) and slow worm (*Anguis fragilis*) on Anglesey (Arup, 2012a). After consultation with the Countryside Council for Wales (CCW) Arup concluded that grass snakes appeared to be only present at very low density (Arup, 2012a).

3.2 Study Area Description and Field Survey Data

A total of 27 sites were surveyed for reptiles over four years (figure 6.1). A summary of the results is presented in table 3.1 below. A description of each site and its potential to support reptiles is included in table 3.2; this information has been taken from the most recent visit to the site. Table 3.2 also shows the maximum species count for a site, which is the maximum number of individuals recorded during any of the site visits during the survey season. Where juveniles were found at a site this has been taken as an indication that reptiles are breeding there, and has been indicated in the 'Breeding Confirmed' column.

In addition to the survey data, any incidental sightings of reptiles made by field staff were recorded, the details of which can be seen in appendix D and appendix E. There were four incidental sightings of adders, with only one adult (male or female) recorded each time. There were also seven incidental records of common lizards with the number of individual lizards seen ranging from one to three. No incidental records of any other reptile species were made.

The following abbreviations are used in table 3.1 and table 3.2:

- Zv – Common lizard (*Zootoca vivipara*);
- Vb – Adder (*Vipera berus*);
- A – Adult (sex not determined);
- J – Juvenile (sex not determined);
- M – Male;
- F – Female; and
- “–” – Not surveyed.

Table 3.1 Summary of reptile survey results

Species	Number of sites where species was recorded	Max. count on any one visit		Number of sites where breeding was confirmed
		Count	Site No.	
Adder	3	3F; 2M	2	3
Common lizard	9	2A	16	1

Table 3.2 Habitat description and reptile records for each survey site

Site	Site/habitat description	Maximum species count				Breeding confirmed Yes (spp. code) / No
		2010	2011	2013	2014	
1	Site 1 was an area of grazed grassland dotted with stands of gorse <i>Ulex europaeus</i> and fringed on the southern and eastern boundaries with dense bramble <i>Rubus fruticosus</i> agg. Although adders were recorded on Site 1 during the decommissioning survey (RSK, 2008), the potential of this area to support a robust population of this species is limited by heavy grazing of the improved grassland which dominates the habitat. This grazing would be a limiting factor with regards to potential prey biomass. This area was however relatively open giving plenty of opportunities for basking and there was cover in the form of dense gorse in some areas combined with bramble on the eastern boundary. The stone wall on the northern boundary offered a safe location for hibernation and opportunities for basking.	No reptiles recorded	No reptiles recorded	-	-	No
1a	This area was relatively open giving plenty of opportunities for basking and there was cover in the form of dense gorse in some areas combined with bramble on the eastern boundary. The stone wall on the northern boundary offered a safe location for hibernation and opportunities for basking and it was in the vicinity of this wall that adders were recorded during previous surveys. Although adders were recorded on this site during the decommissioning survey (RSK, 2008), the potential of this area to support a robust population was thought to have been reduced by heavy grazing of the improved grassland, which limited the potential presence of prey species such as small mammals.	-	-	No reptiles recorded	-	No
2	This area was un-grazed, with good cover from bramble, gorse and sea buckthorn <i>Hippophae rhamnoides</i> and a south-facing aspect and rocky areas providing ideal basking opportunities, making this area optimal reptile habitat.	1 Vb A	1 Vb A	3 Vb F, 2 Vb M; 1 Zv F	-	Vb

Site	Site/habitat description	Maximum species count				Breeding confirmed Yes (spp. code) / No
		2010	2011	2013	2014	
3	Site 3 was the area surrounding the 'Manor Car Park' which was an open scrubby area dominated by bramble and cock's-foot <i>Dactylis glomerata</i> with numerous opportunities for basking and hunting. The car park was surrounded by stone walls which could potentially be used for hibernation. This habitat was suitable for adders, slow worms ³ and common lizards. Due to the close proximity of the wetland of the Tre'r Gof SSSI, there was also the potential for grass snakes ⁴ to be present.	No reptiles recorded	-	-	-	No
4	Site 4 was in the Wylfa Head candidate Wildlife Site, refugia were located in more open, sunny areas between the gorse and on the south-facing woodland edge. Site 4 was a combination of dense gorse with rocky outcrops and open areas for basking at the northern end of the site. This area was also ungrazed and represented optimal adder habitat. Towards the southern end, the site was dominated by broadleaved plantation with a coniferous stand to the west. These habitats could be described as sub-optimal although there was the potential for adders and slow worms ³ to be present on the woodland edges. The potential of this area to support reptiles will however progressively diminish as the trees increase in size, reducing ground temperatures and basking opportunities.	No reptiles recorded	No reptiles recorded	-	-	No
4a	Site 4a was in a nature reserve, the refugia were located in more open, sunny areas between the gorse and on the south-facing woodland edge.	-	-	1 Vb J	-	Vb
5	Site 5 included the surroundings of the sports field where the refugia were placed in sunny positions in rough grassland on the edge of the coniferous planting. Site 5 had a very open aspect giving ample opportunities for basking. The sports field in the centre of the site was closely mown and consequently limited in its potential to support reptiles which would also be susceptible to fatalities from machinery. The woodland edges and less intensively managed areas of grassland where the refugia were located did however have the potential to support a limited population of slow worms ³ .	No reptiles recorded	-	-	-	No

³ This description is taken from 2010, before the evidence from background data searches and extensive surveys had proved likely absence of slow worm from the study area (see section 4).⁴ This description is also taken from 2010 before the likely absence of grass snakes from the study area had been established (see section 4).

Site	Site/habitat description	Maximum species count				Breeding confirmed Yes (spp. code) / No
		2010	2011	2013	2014	
6	Site 6 comprised two distinct habitats. The predominantly wetland area, dominated by soft rush <i>Juncus effusus</i> had the potential to support an amphibian population which would in turn provide prey for grass snakes ⁴ . The drier field to the west was dominated by cock's-foot and at the time of the planning of the 2010 survey was deemed to be potential slow worm habitat ³ . The removal of grazing and all active management from this area however resulted in a very dense growth of vegetation leaving very little opportunity for basking. This part of Site 6 was probably largely unsuitable for reptile occupation with the exception of areas immediately adjacent to the access track where vegetation was less dense.	No reptiles recorded	-	No reptiles recorded	-	No
7	Site 7 was an ungrazed, open location to the immediate south of the Visitor Centre in which adders were recorded during decommissioning surveys (RSK, 2008). This area was actively managed with periodic strimming of the grass which could have been an inhibiting factor with regards to constant adder occupation. Keeping the grass short would certainly reduce prey biomass and the use of machinery could also result in snake fatalities. This area was therefore considered sub-optimal reptile habitat.	No reptiles recorded	No reptiles recorded	2 Vb F	-	Vb
8	Site 8 was an area of increasing scrub and ruderal vegetation density opposite Tan yr Allt which had no active management. There were however open, sunny areas suitable for basking. During previous survey planning, Site 8 was deemed to be suitable reptile habitat, being a patchwork of scrub and rough grassland. The habitat however had no active management and had declined in suitability over time as habitat became overgrown. The area was therefore considered unsuitable to support reptiles and was not surveyed from 2013 onwards.	No reptiles recorded	-	-	-	No

Site	Site/habitat description	Maximum species count				Breeding confirmed Yes (spp. code) / No
		2010	2011	2013	2014	
9	Site 9 was in the field directly below Rhwng Dau Fynydd, and was originally considered potential slow worm ³ and grass snake ⁴ habitat being a combination of rough grass and wetland. However, the removal of all active management of the site throughout the summer months saw a rapid change in the habitat composition, with dense tussocks of cock's-foot developing in the drier areas of the field. The result of this growth was that basking opportunities were very limited making the habitat unsuitable to support reptiles. This area was therefore not surveyed from 2013 onwards.	No reptiles recorded	-	-	-	No
10	The habitat on Wylfa Head candidate Wildlife Site was a combination of grazed grassland and coastal heath with areas of dense bracken and gorse. The potential of the habitats on Wylfa Head to support a robust population of adders was limited by periodic heavy grazing. This grazing would be a limiting factor with regards to potential prey biomass. The area was however relatively open giving plenty of opportunities for basking and there was cover in the form of dense gorse and bracken. The stone wall on the southern boundary offered a location for hibernation.	-	No reptiles recorded	-	-	No
10a	A combination of grazed grassland and coastal heath with areas of dense bracken <i>Pteridium aquilinum</i> and gorse. This habitat extended in a narrow strip along the coast in an easterly direction. The potential to support a robust population of reptiles was limited by the introduction of a large number of cattle, which resulted in heavy grazing and disturbance rendering the habitat generally unsuitable for reptile occupation.	-	-	No reptiles recorded	-	No

Site	Site/habitat description	Maximum species count				Breeding confirmed Yes (spp. code) / No
		2010	2011	2013	2014	
11	This site was located near to Pen Carreg to the west of the study area. The habitats present included a wetland area to the north dominated by bogbean <i>Menyanthes trifoliata</i> and a field of cattle grazed pasture separated from the road to the south by a dry-stone wall. The eastern and western ends of the wetland were found to be higher and drier and dominated by willow <i>Salix</i> spp. woodland with occasional gorse patches. The refugia were placed in a single line strategically located in order to attract reptiles from all of the habitats present.	-	-	No reptiles recorded	1 Zv F	No
12	A mosaic of gorse scrub and heavily grazed coastal grassland. The potential to support a robust population of reptiles was limited by the introduction of a large number of cattle to Site 12 in August 2013, which resulted in heavy grazing and disturbance rendering the habitat generally unsuitable for reptile occupation. Refugia placed in this area were subject to trampling from cattle and were therefore removed after six visits.	-	-	No reptiles recorded	-	No
12a	A mosaic of gorse scrub and heavily grazed coastal grassland. The potential to support a robust population of reptiles was limited by the introduction of a large number of cattle, which resulted in heavy grazing and disturbance rendering the habitat generally unsuitable for reptile occupation.	-	-	1 Zv A	-	No
13	An area of gorse scrub and grazed pasture with a small wetland area behind Caerdegog Isaf. In this case the grazing was previously by horses but more recently a few sheep and alpaca had been present. Site 13 had limited potential to support reptiles, due to heavy grazing by a combination of sheep and alpacas.	-	-	No reptiles recorded	-	No
14	A patchwork of grazed agricultural land and gorse scrub at Mynydd Ithel. Site 14 had limited potential to support reptiles due to heavy grazing by horses.	-	-	No reptiles recorded	-	No

Site	Site/habitat description	Maximum species count				Breeding confirmed Yes (spp. code) / No
		2010	2011	2013	2014	
15	An additional area adjacent to the Cae Gwyn SSSI surveyed on a single occasion. The land included some unimproved and semi-improved areas, with occasional gorse scrub and rocky areas. This additional land adjacent to the Cae Gwyn SSSI was judged to offer excellent basking opportunities on rocky outcrops, along with good cover from gorse patches and scrub. The nearby SSSI also offered excellent amphibian, invertebrate and small mammal prey.	-	-	1 Zv A	-	No
16	This area was located to the south of Cemlyn Lagoon to the west of the study area. The habitats present comprised scrub on the edges of cattle grazed pasture dominated by bramble and gorse. The refugia were placed on the western edges of the field in the transitional pasture scrub habitats which are favoured by common lizards.	-	-	-	2 Zv A	No
17	This site was located to the south-east of the car park at Cemlyn Bay. The habitats present included a triangular shaped area of rough grassland dominated by cock's-foot and an area of gorse-dominated scrub located on higher ground further to the east.	-	-	-	1 Zv M	ZV
18	Site 18 comprised refugia placed either side of the track leading up to Felin Gafnan cottage. Common lizards had been seen incidentally during other surveys in this area throughout 2014. The lizards had been seen most frequently on the south-facing side of the wall that separates the track from the adjacent field. The habitats here comprised rough grassland dominated by false oat-grass <i>Arrhenatherum elatius</i> with frequent patches of bramble and rose scrub.	-	-	-	1 Zv A	No
19	This area was located to the south of Cestyll Mill and west of the small area of plantation woodland. Two lines of refugia were placed among the rocky outcrops in areas of thicker vegetation with the potential to support reptiles.	-	-	-	1 Zv F	No

Site	Site/habitat description	Maximum species count				Breeding confirmed Yes (spp. code) / No
		2010	2011	2013	2014	
20	This area was located to the south of Porth-y-felin and was surveyed using two lines of refuges placed in adjacent fields north of Felin Gafnan cottage. The refugia were placed around the edges of gorse and bracken-dominated patches of scrub. The refugia were placed in habitats that generally had south-facing aspects to increase their likelihood of use.	-	-	-	No reptiles recorded	No
21	This site was located to the east of the plantation that borders the road which leads to the car park at Wylfa Head candidate Wildlife Site. This is also near to the demolished property previously known as Ty Croes. The habitats present included rank grassland and gorse-dominated scrub along the boundaries of the cattle and sheep-grazed fields. The site was also connected to the Tre'r Gof SSSI by strips of habitat, including defunct hedges, wet ditches and dry stone walls.	-	-	-	No reptiles recorded	No
22	Site 22 included the western extremity of the Tre'r Gof SSSI. The habitats present in much of the SSSI had previously been described as being very wet and unlikely to support reptiles. This is due to the high water table preventing sheltering or hibernating by reptiles underground (Jacobs, 2013b). However, to the west of the SSSI the habitats were drier due to the elevated ground formed by defunct hedges and collapsed cloddiau (traditional stone-faced earth boundary banks). It is considered that these habitats could sustain reptile populations which would probably use the wetter areas for foraging alone. In addition other habitats present at this site included diverse rush and sedge-rich wet marsh and grassland-dominated areas transitional between pasture and willow wet woodland.	-	-	-	1 Zv F	No
23	A combination of grazed grassland and coastal heath with areas of dense bracken and gorse. This habitat extended in a narrow strip along the coast in an easterly direction. Although Site 23 had the potential to support reptiles, this was limited by the fragmented nature of the habitat. This site was bordered by sea and heavily grazed pasture.	-	-	No reptiles recorded	-	No

4. Discussion

The data from four years of reptile surveys and incidental sightings from within the study area show that adders and common lizards are sparsely distributed across the whole study area and that there is a moderate to high probability that they will be found in all areas of suitable habitat. The results also show that where they persist in this part of northern Anglesey, they do so in very small populations.

This broad summary of the data serves to substantiate the findings of the Jacobs 2014 reptile survey, which indicated that the reptile populations present across the study area were at risk of extinction due to their small size and scattered distribution. Small populations are much more vulnerable to stochastic extinction events making the reptile community within the survey area very fragile and potentially non-viable in the long term.

The background data search returned records of both adders and common lizards. The data was in agreement with the field survey data in that the number of individuals recorded at each sighting was generally low. The background data records were slightly skewed because the majority of the records were from around Cemlyn lagoon. This is part of a nature reserve with public access which probably accounts for the focus in recording effort here.

A full review of the literature pertaining to the population of reptiles on Anglesey has not been carried out as it does not form part of the scope of this report. It is also considered unlikely to provide further insight into the likely effects on the species group. This is because Anglesey is well within the normal geographical range of both adder and common lizard and so their presence is not unexpected in areas of suitable habitat. However, some context can be obtained from other survey data on Anglesey. Other surveys carried out by Jacobs on an Associated Development site near to Junction 4 of the A55 to the south, found that reptiles were completely absent (Jacobs, 2014b). This area is dominated by improved grassland fields, but does have rank grassland margins where populations of reptiles could be expected to persist. However, no reptiles were found, potentially indicating that areas more extensive than field margins alone are required to support viable populations of the species group. Tentatively this could suggest that the risk of reptiles being present in less suitable habitats in the study area could be somewhat reduced.

In summary, it is considered that the results from the four years of survey data and incidental sightings, when combined with the background data search, are sufficient to be able to inform an Environmental Impact Assessment for the Project. This would provide an analysis of all impacts and the mechanisms by which they can be avoided, reduced or compensated for. For the Project, the precise details of the likely mitigation measures have yet to be established. However, discussions with local landowners nearby have been started with a view to establishing receptor sites for displaced animals. The means of translocation are also in process of being determined as the details of the clearance and construction are released. This is likely to include a combination of ecological watching briefs in lower risk areas, and daily checks of refugia in higher risk locations. The goal of the mitigation strategy will ultimately aim to preserve viable populations of reptiles adjacent to the study area. Habitat connectivity will then be managed in such a way that as the new landscape develops and matures (as designed in the Project Landscape Environment Master Plan), reptiles will be able to quickly recolonise the green spaces within the Wylfa Newydd Development Area.

5. Conclusions

The primary conclusion of this work is that the combined evidence from all reptile surveys indicates that there is a high likelihood that adders and common lizards will be found wherever there is suitable habitat present across the study area. These species should therefore be considered as receptors likely to be affected by any development of the study area and appropriate mitigation should be implemented prior to any works taking place that might result in an offence under the legislation protecting reptiles.

Evidence of slow worms or grass snakes was not found as a part of this study, and they are therefore unlikely to be affected by the proposed development works. As such, mitigation or surveys specific to these species are not considered necessary.

The recommendations from this report are that further surveys of suitable habitat are unlikely to provide any further information likely to significantly alter the findings of an EIA for the Project and associated development. This is provided that there are no significant changes in land management within the study area. If changes in the management of significant areas of land likely to be affected by the proposed development results in the creation of additional habitats that are suitable for reptiles (e.g. increases in areas of tussocky rough grassland due to a cessation in grazing), then this assessment will need to be updated.

6. References

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Appendix A. Figures

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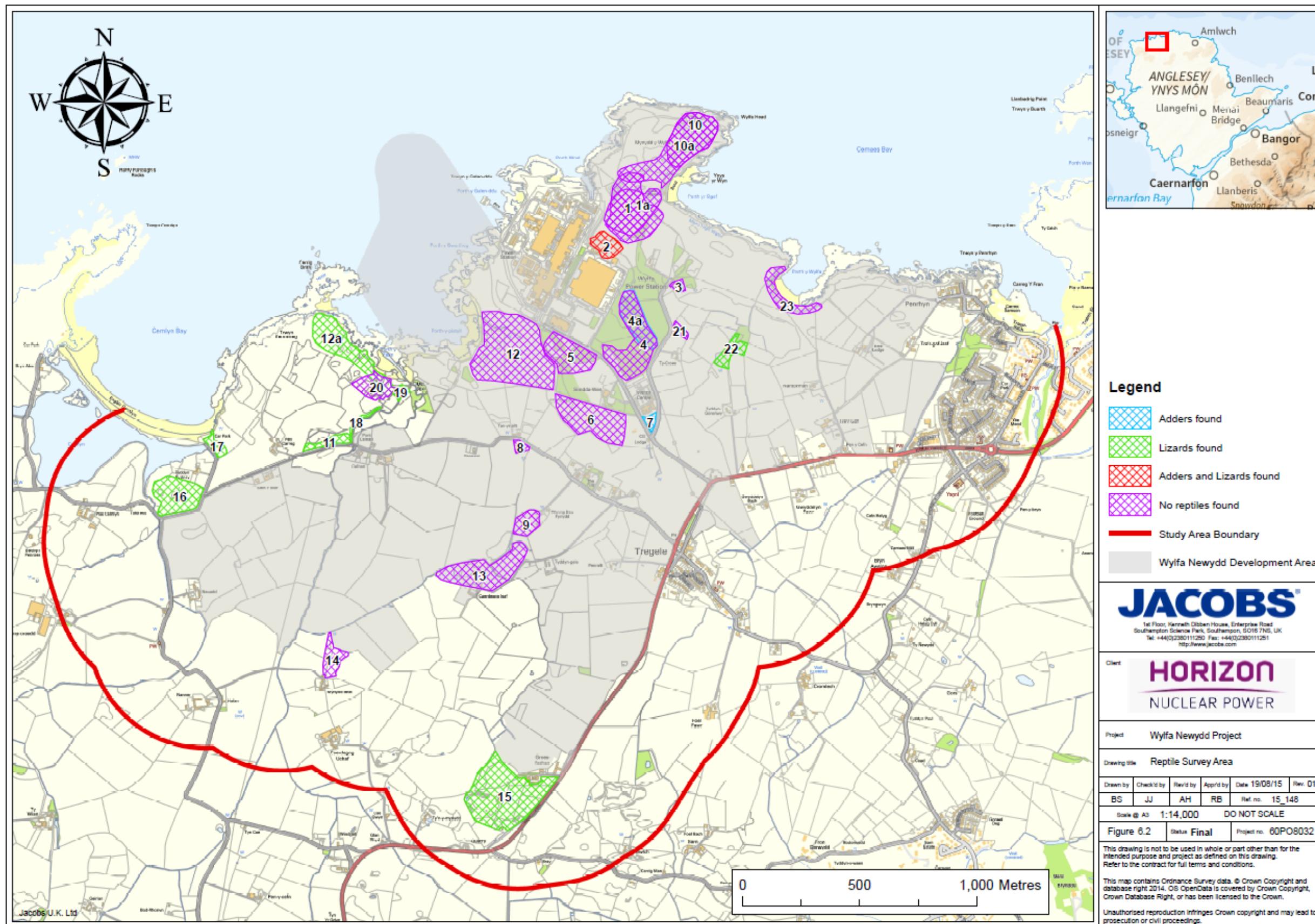


Figure 6.1 Map of the 27 survey locations showing where adders and common lizard were found

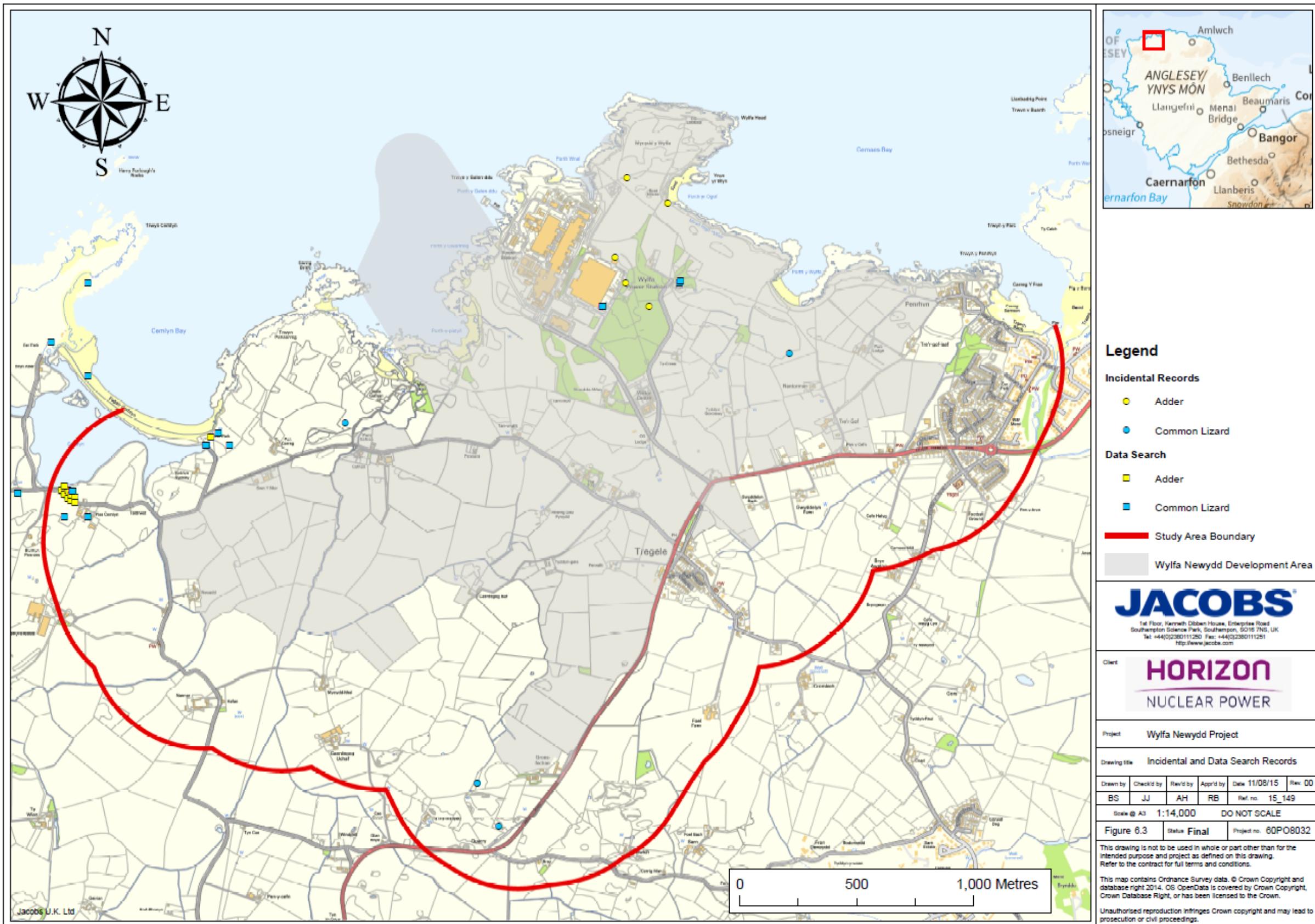


Figure 6.2 Map of the incidental and background data search records

Appendix B. Background Data Search Results – Adder

Record no.	Location	Grid reference	Date	Description ⁵	Max. count
1	Wylfa Power Station	SH353937	01/08/1986	Not recorded	Not recorded
2	Wylfa Power Station	SH353937	01/08/1986	Not recorded	Not recorded
3	Wylfa	SH353937	01/08/1986	Not recorded	Not recorded
4	Wylfa Power Station	SH353937	01/08/1986	Scrub	Female; Male
5	Cemlyn	SH3393	May 1994 – August 1994	At least two, perhaps three different individuals seen at least seven times along the old wall in Morfa.	2
6	Cemlyn	SH3393	19/05/1994	1 light, small; 1 dark, long. Seen coiled up together	2
7	Cemlyn	SH3393	20/06/1994	An entire sloughed skin was found.	Not recorded
8	Cemlyn	SH3393	04/05/1995	Seen along the old wall in Morfa (between c3 and c56).	1 Male
9	Cemlyn	SH3393	24/06/1995	Seen along the old wall in Morfa (between c3 and c56).	1
10	Cemlyn	SH3393	29/06/1995	Seen along the old wall in Morfa (between c3 and c56).	1
11	Cemlyn	SH3393	17/05/1996	On walled border between c3 and c56.	1
12	Cemlyn	SH3393	18/05/1996	On walled border between c3 and c56.	1 Male
13	Cemlyn	SH3393	14/05/1997	Slithered out of hole in the grass thatch in c42.	1
14	Cemlyn	SH3393	Spring 1998 – Summer 1998	Seen regularly on the stone wall through the middle of c3, up to 7 seen basking at a time. Present in the grassy tussocks in c3, a coil of 3 seen there in early May. Present in c42, with one coil of 3 and one individual seen on July 21st.	7

⁵ References to compartment locations e.g. c3, c56 in the description column have not been used or referred to in this report as they are particular to the recorder of each submission to Cofnod.

Record no.	Location	Grid reference	Date	Description ⁵	Max. count
15	Cemlyn	SH3393	24/06/1999	The first adder seen. As we approached it moved below the stones in the stone wall in c3. A snake skin was also seen along the same wall; a couple of metres down.	1
16	Cemlyn	SH3393	30/06/1999	An adder of around half a metre in length in c3.	1
17	Cemlyn	SH330932	01/07/2002	There were no adder sightings this season, in spite of carrying out regular searches. However, a recently shed skin was on the road by Bryn Aber in late July.	0
18	Cemlyn	SH3393	2004	Seen basking in the sun on 5 occasions throughout the season, on the wall between the bridge and c3 and on another wall behind c3.	Not recorded
19	Cemlyn	SH3393	2006	Adders were seen on a regular basis basking on the low stone wall on the Bryn Aber side of the bridge (C3). Two females and a male were recorded at this site.	Not recorded
20	Cemlyn	SH3393	16/06/2007	Three were seen on the 16th June underneath one of the new tin sheets put into place this year in c3. These only represent a small corner of c3.	3
21	Cemlyn	SH3393	22/07/2007	The actual number could be a lot higher as five individuals were seen basking on the wall on the 22nd of July the highest count so far for the reserve.	5
22	Cemlyn	SH3393	2007	1 or 2 individuals were seen on the low wall next to the bridge in front of c3.	1 or 2
23	Cemlyn	SH330932	11/05/2008	One juvenile/young adult, found in lane near Tyn Llan turning. Road casualty.	1 Juvenile, dead
24	Cemlyn	SH330932	19/07/2008	Seen regularly under refugia and on the wall.	7
25	Cemlyn	SH3393	Before March 2009	Basking.	Not recorded

Record no.	Location	Grid reference	Date	Description ⁵	Max. count
26	Cemlyn	SH3393	2009	Not seen as regularly as last year possibly because May was very wet and it has been very hot during June. Seen more frequently during July. Mainly seen on the wall by the lay-by in front of C3.	Not recorded
27	Cemlyn	SH3393	02/05/2010	Mainly seen on the wall by the lay-by in front of C3, with counts up to three daily.	1
28	Cemlyn	SH3393	03/05/2010	Mainly seen on the wall by the lay-by in front of C3, with counts up to three daily.	1
29	Cemlyn	SH3393	05/05/2010	Mainly seen on the wall by the lay-by in front of C3, with counts up to three daily.	1
30	Cemlyn	SH3393	17/05/2010	Mainly seen on the wall by the lay-by in front of C3, with counts up to three daily.	1
31	Cemlyn	SH3393	18/05/2010	Mainly seen on the wall by the lay-by in front of C3, with counts up to three daily.	1
32	Cemlyn	SH3393	19/05/2010	Mainly seen on the wall by the lay-by in front of C3, with counts up to three daily.	1
33	Cemlyn	SH3393	20/05/2010	Mainly seen on the wall by the lay-by in front of C3, with counts up to three daily.	1
34	Cemlyn	SH3393	29/06/2010	Mainly seen on the wall by the lay-by in front of C3, with counts up to three daily.	2
35	Cemlyn	SH3393	02/07/2010	Mainly seen on the wall by the lay-by in front of C3, with counts up to three daily.	1
36	Cemlyn	SH3393	03/07/2010	Mainly seen on the wall by the lay-by in front of C3, with counts up to three daily.	1
37	Cemlyn	SH3393	04/07/2010	Mainly seen on the wall by the lay-by in front of C3, with counts up to three daily.	1

Record no.	Location	Grid reference	Date	Description ⁵	Max. count
38	Cemlyn	SH3393	05/07/2010	Mainly seen on the wall by the lay-by in front of C3, with counts up to three daily.	1
39	Cemlyn	SH3393	07/07/2010	Mainly seen on the wall by the lay-by in front of C3, with counts up to three daily.	1
40	Cemlyn	SH3393	11/07/2010	Mainly seen on the wall by the lay-by in front of C3, with counts up to three daily.	1
41	Cemlyn	SH3393	16/07/2010	Mainly seen on the wall by the lay-by in front of C3, with counts up to three daily.	3
42	Cemlyn	SH3393	17/07/2010	Mainly seen on the wall by the lay-by in front of C3, with counts up to three daily.	2
43	Cemlyn	SH3393	20/07/2010	Mainly seen on the wall by the lay-by in front of C3, with counts up to three daily.	2
44	Cemlyn	SH3393	25/07/2010	Mainly seen on the wall by the lay-by in front of C3, with counts up to three daily.	2
45	Cemlyn	SH3393	29/07/2010	Mainly seen on the wall by the lay-by in front of C3, with counts up to three daily.	2
46	Cemlyn	SH3393	31/07/2010	Mainly seen on the wall by the lay-by in front of C3, with counts up to three daily.	2
47	Cemlyn	SH3393	01/08/2010	Mainly seen on the wall by the lay-by in front of C3, with counts up to three daily.	1
48	Cemlyn	SH3393	02/08/2010	Mainly seen on the wall by the lay-by in front of C3, with counts up to three daily.	3
49	Cemlyn	SH3393	04/08/2010	Mainly seen on the wall by the lay-by in front of C3, with counts up to three daily.	1
50	Cemlyn – Compartment 21	SH3302093234	02/06/2012	Not recorded	1 Juvenile, dead

Appendix C. Background Data Search Results – Common Lizards

Record no.	Location	Grid reference	Date	Description ⁶	Max. count
1	Cemlyn Bay Reserve	SH328929	05/05/1983	Wet Grassland. 2km W Tregele.	Not recorded
2	Cemlyn NR	SH328929	05/05/1983	Data received via CCW.	Not recorded
3	Cemlyn Bay N.T.	SH328929	05/05/1983	Not recorded	Not recorded
4	Cemlyn	SH3393	1984	Occasionally seen.	Not recorded
5	SSSI: Cemlyn Bay	SH331934	Summer 1984	Occasionally seen.	Not recorded
6	Cemlyn – Compartment 532; Plas Cemlyn	SH331928	1986	Seen on road.	1
7	Cemlyn – Compartment 52; Trwyn	SH331938	05/06/1986	Not recorded	1
8	Wylfa Power Station	SH353937	01/08/86	Scrub.	Not recorded
9	Wylfa	SH353937	01/08/86	Data received via CCW.	Not recorded
10	Wylfa Power Station	SH353937	01/08/86	Not recorded	Not recorded
11	WYLFA POWER STATION	SH353937	01/08/86	Not recorded	Not recorded
12	Cemlyn	SH3393	18/06/1988	Seen by the old coal buildings.	1
13	Cemlyn; C540	SH3393	23/06/1988	Not recorded	1
14	Cemlyn (Compartment 13)	SH331932	Before September 1990	Phase 1 Habitat Code: H7.	Not recorded
15	Cemlyn	SH3393	02/05/1994	On roadside near C43.	1 Female
16	Cemlyn	SH3393	07/05/1994	Along roadside towards East car park.	3

⁶ References to compartment locations e.g. c3, c56 in the description column have not been used or referred to in this report as they are particular to the recorder of each submission to Cofnod.

Record no.	Location	Grid reference	Date	Description ⁶	Max. count
17	Cemlyn	SH3393	09/05/1994	(1 young one) On roadside near C539.	2
18	Cemlyn; C3	SH3393	19/05/1994	Along old wall in Morfa.	1
19	Cemlyn	SH3393	26/05/1994	Young one on old wall, Morfa.	1
20	Cemlyn	SH3393	08/07/1994	On old wall, Morfa.	1 Male
21	Cemlyn; C41	SH3393	11/07/1994	Heavily pregnant. In long grass in C41.	1 Female
22	Cemlyn; C530	SH3393	12/07/1994	Among rocky outcrops.	1 Male
23	Cemlyn	SH3393	20/07/1994	On roadside towards East car park.	1 Female
24	Cemlyn	SH3393	04/05/1995	Seen basking on wall opposite Ty'n Sydney entrance.	1 Male
25	Cemlyn	SH3393	05/05/1995	Not recorded	4
26	Cemlyn	SH3393	26/06/1995	A dead squashed lizard was found on the road near the junction and section 43.	1
27	Cemlyn	SH3393	16/06/1996	1 road casualty near Bryn Aber.	1
28	Cemlyn	SH3393	16/06/1996	1 on road near c534.	1
29	Cemlyn	SH3393	14/07/1996	1 female next to road near c43.	1 Female
30	Cemlyn	SH3393	18/07/1996	1 next to Bryn Aber in c41.	1
31	Cemlyn	SH3393	04/06/1997	Crossing the road in c42.	1
32	Cemlyn	SH3393	12/07/1997	On the road beside c3.	1
33	Cemlyn	SH3393	Spring 1998 – Summer 1998	These were seen on most sunny days. The roadside hedgerow along c540 was a regular haunt; individuals were also seen in the roadside hedgerow bordering c532 and c534. One seen under the slates in the Coal Sheds (c77), and another seen on the clawdd wall.	Not recorded

Record no.	Location	Grid reference	Date	Description ⁶	Max. count
34	Cemlyn	SH3393	27/05/1999	Observed in the old stone wall in c3 adjacent to the lagoon inlet.	1
35	Cemlyn	SH3393	30/05/1999	In the stone wall situated in c3 adjacent to lagoon inlet.	1
36	Cemlyn	SH3393	12/06/1999	Seen in the wall of the road bridge traversing the lagoon inlet.	1
37	Cemlyn	SH330932	2002	One found dead on the road between Hen Blas and the Post Box.	1
38	Cemlyn	SH330932	19/06/2002	One was seen basking in c51 on 19th June.	1
39	Cemlyn	SH330932	2003	Only one dead common lizard was recorded this season.	1 dead
40	Cemlyn	SH3393	27/05/2004	Two sightings, one on the wall in c51 on the 27th of May.	1
41	Cemlyn	SH3393	29/07/2004	One in Bryn Aber garden on the 29th of July.	1
42	Cemlyn	SH3393	20/06/2005	One was seen on the road between c43 and c74 on 20th June.	1
43	Cemlyn	SH3393	08/07/2005	On the 8th July, 7 were observed basking around the reserve in c540, c541, c534, c3 and c529.	7
44	Cemlyn	SH3393	16/07/2005	On the 16th July, 3 were observed in c516 and c3.	3
45	Cemlyn	SH3393	28/04/2006	A dead Lizard was found on the bridge on the 28th of April.	1 dead
46	Cemlyn	SH3393	25/05/2006	Common lizards were recorded on hot sunny days on 8 occasions through the season, mostly on the stone walls around the reserve. A maximum of three were seen on the 25th May.	3

Record no.	Location	Grid reference	Date	Description ⁶	Max. count
47	Cemlyn	SH3393	2007	Common lizards were seen on 9 occasions in several different locations these were c43, c51, c63 and c532. All locations were either on rocks or walls that are in full sun.	Not recorded
48	Cemlyn	SH330932	01/05/2008	1 adult on Bryn Aber wall.	1 Adult
49	Cemlyn	SH330932	01/05/2008	1 juvenile in the lane near Bryn Aber doorway.	1 Juvenile
50	Cemlyn	SH3393	11/06/2009	An individual has been seen almost daily from 11th June on the wall by the lay-by in front of C3.	1 individual
51	Cemlyn; Near the Trwyn	SH3393	08/08/2010	Known to be present on the reserve but very hard to locate. One was seen sunning itself near the Trwyn.	1
52	Cemlyn	SH3393	20/06/2011	Not recorded	1
53	Cemlyn	SH3393	20/06/2011	Not recorded	1
54	Cemlyn	SH3393	30/06/2011	Not recorded	1
55	Cemlyn	SH3393	30/06/2011	Not recorded	1
56	Cemlyn; Plas Cemlyn	SH330928	01/07/2011	Dead on road	1 Dead
57	Cemlyn	SH3393	11/07/2011	Not recorded	1
58	Cemlyn	SH3393	11/07/2011	Not recorded	1
59	Cemlyn – Car Park (North)	SH3294393545	02/06/2012	Not recorded	1
60	Wylfa Power Station	SH3562993799	31/03/2013	Not recorded	1 Adult
61	Wylfa Power Station	SH3563493808	31/03/2013	Not recorded	1 Adult
62	Cemlyn	SH3393	02/05/2013	Not recorded	1
63	Cemlyn	SH3393	02/06/2013	Not recorded	1

Appendix D. Incidental Common Lizard Records

Number	Location	Grid reference	Description	Date	Max. count
1	Above the boathouse	SH 35580 94141	Coastal scrub	2011	1 M
2	Behind the Existing Power Station	SH 35355 93908	On a bank	2011	1 F
3	Near the sewage plant	SH 35405 94248	Hunting near the dense gorse along the stone wall	2011	1 M
4	Nature trail	Not recorded	Basking on grass	15/04/2014	1
5	Coastal Path entrance near contractor's compound	Not recorded	Not recorded	12/05/2015	1 M dead

Appendix E. Incidental Adder Records

Number	Location	Grid reference	Description	Date	Max. count
1	Private land	SH 34765 91661	Not recorded	01/07/2013	1
2	Private land	SH 34765 91661	Not recorded	01/07/2013	1
3	South of Cae Gwyn SSSI	SH 34856 91475	Not recorded	15/07/2013	1
4	Nature Trail	Not recorded	Basking on grass	15/05/2014	1
5	Track next to Felin Gafnan	Not recorded	Basking by wall	24/03/2014	1
6	East side of SSSI	Not recorded	2 x fallen into old fence-post hole, 1 x seen nearby.	22/04/2015	3