



ENVIRONMENTAL STATEMENT
VOLUME 2
APPENDIX 9.6 – REPTILE SURVEY REPORT



Great Wolf Resorts

BICESTER GOLF COURSE

Reptile Survey Report





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Great **Wolf Resorts**

BICESTER GOLF COURSE

Reptile Survey Report

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EXECUTIVE SUMMARY

WSP was commissioned by Great Wolf Resorts (GWR) to undertake a suite of ecological surveys to support proposals to develop land to the north-west of Bicester Golf Course. This development will hereafter be referred to as the 'Proposed Development'. The Proposed Development comprises the construction of a resort hotel with access to be taken from A4095, which runs along the northern boundary of Bicester golf course.

The Site is situated on a golf course with pocketed areas of grassland and woodland, which alongside the numerous waterbodies, provide suitable habitat for reptiles.

The reptile survey was undertaken between August and October 2018 in accordance with published guidance. Sixty-six refugia were placed in areas of habitat which were suitable for supporting reptile species. Refugia were checked on seven separate survey visits and reptiles found were recorded along with weather conditions. Incidental reptile sightings were also recorded whilst surveyors were undertaking unrelated survey work.

Native, widespread reptile species are protected under The Wildlife and Countryside Act (1981) Furthermore, all species of reptile are also listed as a Species of Principal Importance (SPI) for the Conservation of Biodiversity in England in accordance (NERC) Act 2006.

The survey results indicate a 'low' population of grass snake, concentrated in the north easterly area of the Site. Overall, based on the survey results, habitats present and landscape context, the Site is considered to be of value for reptiles at a Local level.

Outline recommendations for mitigation have been provided. Where possible, retention of habitat important to reptiles should be a priority. These areas include the semi neutral grassland to the western boundary of the Site along with the central waterbodies. When retention is not possible, mitigation measures can include possible displacement or translocation of reptiles into replacement habitats. Ecological enhancement measures which could be introduced include 'reptile friendly' land management system.

1. INTRODUCTION

1.1. PROJECT BACKGROUND

1.1.1. Great Wolf Resorts (GWR) is planning a redevelopment of land to the north-west of the Bicester Golf Hotel and Spa located off the A4095. The 'Proposed Development' includes a redevelopment of land in the north west of the golf course by means of:

- the creation of a 500-bed all-inclusive resort hotel, with an indoor pool and leisure complex, targeted at families and golf enthusiasts; and
- the creation of an access road to be taken from A4095 road.

1.1.2. The land which would be affected by the Proposed Development is hereafter referred to as 'the Site' and is shown on Figure 1.

1.1.3. It is understood that a planning application will be submitted for the Proposed Development prior to any works.

1.2. ECOLOGICAL BACKGROUND

1.2.1. A Preliminary Ecological Appraisal (PEA) was carried out with respect to the Proposed Development in February/March 2018 (WSP, 2018). This included a desk study which found slow worm *Anguis fragilis* and grass snake *Natrix helvetica* (formerly *Natrix natrix*) within 2km of the Site in the records returned by Thames Valley Environmental Records Centre (TVERC). All records for reptiles were over 10 years old.

1.2.2. WSP (2018) also details that a small population of slow worm were recorded to the east of the Site during a previous planning application for nearby a development.

1.2.3. The PEA found that less managed areas of the Site provided suitable habitat for common reptile species including slow worm, grass snake, common lizard *Zootoca vivipara* and adder *Vipera berus*. These less managed areas included semi natural grassland, piles of rubble and logs, and waterbodies which all provide foraging habitat. As these habitats will be affected through the construction of the Proposed Development, the PEA report advised that reptile surveys should be undertaken.

1.3. BRIEF AND OBJECTIVES

1.3.1. GWR commissioned WSP to complete a reptile survey in accordance with good practice guidance (Froglife, 1999 and Gent and Gibson, 1998) to:

- Establish whether reptiles were present or likely absent from the Site.
- Determine, if present, which species are present and the distribution of these species.
- If present, evaluate the value of the Site for reptiles.
- Provide a report with outline recommendations in relation to the project and reptiles (with reference legislation and planning policy relevant to this species).

1.3.2. The results of this survey, and subsequent recommendations, are included within this report.

2. METHODS

2.1. OVERVIEW

- 2.1.1. The reptile survey to determine presence/likely absence of reptile species from the Site comprised two main elements; the checking of artificial refugia and visual observation of habitats and natural refugia present. This survey comprised seven survey visits between August 2018 and October 2018.
- 2.1.2. The reptile survey to determine presence/likely absence was completed with regard for guidance within the Herpetofauna Workers' Manual (1998) and the methodology within Froglife's Reptile Survey Advice Sheet 10 (1999).

2.2. REPTILE PRESENCE/LIKELY ABSENCE SURVEY

- 2.2.1. Sixty-six refugia were deployed within suitable habitat for reptiles. These areas included unmanaged woodland edges, less managed grassland and water body perimeters. Refugia were deployed on Site in 22 May 2018 and allowed to bed down prior to the beginning of the survey visits.
- 2.2.2. A mixture of materials sized approximately 0.5m x 0.5m or 0.5m x 1m were used as artificial refugia, these included bitumen felt, corrugated metal and corrugated bitumen. Refugia were sited in suitable basking spots, close to cover, within habitat parcels identified to provide suitable conditions for reptiles during an initial site walkover.
- 2.2.3. Due to the hedgerows surrounding the Site, refugia were approximated on a linear scheme which guidance suggests as one refugia every 20 meters across all linear features. Sixty-six refugia were used in total following the linear hedgerows and also placed in the aforementioned areas of suitable habitat. The density exceeded the minimum density as recommended by good practice guidance (Froglife, 1999). This guidance states the number of refugia used 'will depend on many factors, such as likelihood of disturbance, size of site and what the survey is attempting to achieve' and recommends a minimum of 5-10 refugia per hectare for 'general survey purposes'.
- 2.2.4. Reptiles are ectothermic animals, deriving their body heat from the external environment. Therefore, the timing of the survey visits was dictated by weather conditions. All surveys were completed within the appropriate season (March to October) and within the appropriate ambient air temperature range (10-18°C). As far as possible, surveys were undertaken on sunny days with low cloud cover and little wind to maximise the probability of recording reptiles, should they be present; where ambient air temperatures were towards the upper end of the temperature range, days of higher cloud cover were targeted.

2.3. DATES OF SURVEY AND PERSONNEL

- 2.3.1. The reptile survey was set up by an experienced consultant ecologist who is an Associate Member of the Chartered Institute for Ecology and Environmental Management (ACIEEM). Subsequent surveys were completed by a range of surveyors all of whom are competent in reptile survey, including species identification.
- 2.3.2. Surveys were completed on the following dates in Table 1.

Table 1 - Survey Dates

Survey Visit	Date
1	29 August 2018
2	5 September 2018
3	12 September 2018
4	20 September 2018
5	25 September 2018
6	4 October 2018
7	10 October 2018

2.4. EVALUATION

- 2.4.1. The value of the Site for reptiles was evaluated using the CIEEM guidance (CIEEM, 2018). This guidance recommends that valuation of site importance is made with reference to a geographical framework, e.g. a site is of local, regional, national value etc. To inform the assessment in this report the number of species recorded and peak counts of adults were considered in the context of the distribution and abundance of each species locally and nationally, the quality of habitat present and the abundance of such species on other sites.
- 2.4.2. Froglife guidance (1999) was used to inform the population size class estimates. However, due to certain limitations of the guidance, which does not include consideration of variables such as site size, whether both visual observation and refugia survey contribute to peak counts and individual reptile species ecology, professional judgement has been applied to avoid misinterpretation of data.

2.5. NOTES AND LIMITATIONS

- 2.5.1. Two of the refugia were removed between the 2nd and 3rd survey visit. They were situated in open grassy areas where they could have potentially been visible to members of the public. These refugia were replaced and the surrounding areas were checked on survey visits. This limitation is not considered to affect the survey data as the number of refugia over exceeded the minimum stated in the guidance; Froglife (1999).

3. RESULTS AND EVALUATION

3.1. RESULTS OF REPTILE SURVEY

- 3.1.1. One species of reptile were recorded during the presence/likely absence surveys; grass snake. No other reptile species were recorded during the survey and therefore, other species are likely to be likely absent from the Site. The results of the reptile presence/likely absence surveys are summarised in Table 2 below, with raw data included in Appendix A.
- 3.1.2. Incidental sightings were recorded by WSP surveyors whilst carrying out other species survey work. These comprised one adult and one juvenile grass snake in mid-June 2018. The locations of these sightings are shown on Figure 2.
- 3.1.3. Weather conditions during surveys ranged between 12°C and 18°C in temperature, with cloud cover of between 2 and 5 oktas; full details are included in Appendix B.

Table 2 - Reptile Species Survey Count

Survey Visit	Grass Snake	
	Adult Count	Juvenile/ Sub-adult Count
1	1	-
2	4	1
3	1	1
4	-	-
5	2	-
6	1	-
7	1	-
Total	9	2

3.2. EVALUATION OF THE SITE FOR REPTILES

- 3.2.1. Referring to the factors recommended within the CIEEM EclA Guidelines (2018), an assessment of the importance of the Site for reptiles has been made.
- 3.2.2. A low population of grass snake were recorded within the Site. All grass snake recorded were found to the north east of the Site under similar refugia in the same locations as shown in Figure 2.
- 3.2.3. Grass snake are a common/ widespread reptile species throughout the UK and most of Europe. However, they are locally threatened in some areas due to habitat fragmentation, agricultural intensification and water pollution affecting frog population numbers; which make up their main source of prey (IUCN, 2019). Grass snake are likely to be relatively common at county and district levels, though may be more constrained by habitat availability at a local level (particularly presence at ponds). Overall it is considered appropriate to value the population of grass snake present at the Site at a Local level.

4. IMPLICATIONS FOR DEVELOPMENT

4.1. OVERVIEW

- 4.1.1. Reptiles are protected from killing and injury under UK legislation; in addition, planning policy affords further protection within the planning system, as described below. As grass snake have been confirmed to be present on Site, it will be necessary to adopt appropriate avoidance and, or mitigation measures as part of the Proposed Development, as outlined within Section 5.

4.2. LEGAL COMPLIANCE

- 4.2.1. Native, widespread reptile species (common or viviparous lizard, adder, grass snake and slow worm) are partially protected under Schedule 5 of The Wildlife and Countryside Act (1981), under part of Section 9(1) and all of Section 9(5). As such it is an offence to:
- *'Intentionally or recklessly kill or injure' an individual of these species; or*
 - *'Sell, offer or expose for sale, or [have in] possession or transport for the purpose of sale, any live or dead [individual] or any part of, or anything derived from' an individual of these species'.*
- 4.2.2. All species of reptile are also listed as a Species of Principal Importance (SPI) for the Conservation of Biodiversity in England in accordance with Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Under Section 40 of the NERC Act (2006) public bodies, including local planning authorities have a duty to have regard for SPI when carrying out their functions, including determining planning applications.
- 4.2.3. As grass snake has been confirmed to be present on Site, it will be necessary to adopt appropriate avoidance and, or mitigation measures as part of the Proposed Development to minimise the risk of an offence under the legislation protecting reptiles.

4.3. PLANNING POLICY COMPLIANCE

- 4.3.1. At the national level the National Planning Policy Framework (NPPF) (2018) forms the basis for planning system decisions with respect to conserving and enhancing the natural environment, including reptiles; the ODPM circular 06/2005 also provides supplementary guidance, including confirmation that 'the presence of a protected species is a material consideration when a planning authority is considering a development proposal'.
- 4.3.2. The NPPF sets out, amongst other points, how at an overview level the 'planning system should contribute to and enhance the national and local environment by:
- *'...recognising the wider benefits of ecosystem services; and*
 - *Minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures...'*
- 4.3.3. A list of principles which local planning authorities should follow when determining planning applications is included in the NPPF, and includes the following:
- *'- if significant harm resulting from a development cannot be avoided...adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
 - *- ...opportunities to incorporate biodiversity in and around developments should be encouraged;*

- *- planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland...unless the need for, and benefits of, the development in that location clearly outweigh the loss...'*

4.3.4. At a local level, Cherwell local plan 2011-2031; Cherwell Policy ESD 10 – Protection and Enhancement of Biodiversity and the Natural Environment states (Cherwell District Council 2015):

- *'Development proposals will be expected to incorporate features to encourage biodiversity, and retain and where possible enhance existing features of nature conservation value within the site. Existing ecological networks should be identified and maintained to avoid habitat fragmentation, and ecological corridors should form an essential component of green infrastructure provision in association with new development to ensure habitat connectivity.'*
- *'Relevant habitat and species surveys and associated reports will be required to accompany planning applications which may affect a site, habitat or species of known or potential ecological value.'*

5. RECOMMENDATIONS

5.1. AVOIDANCE AND MITIGATION MEASURES

- 5.1.1. In the first instance it is recommended that where possible, habitat known to support reptiles is retained within the Proposed Development designs. Although the habitat of widespread reptile species is not directly protected by law, habitat removal or alteration has potential to cause death or injury to individual reptiles which should be avoided to ensure legal compliance (see Section 4.2). The areas on site of most importance to reptiles include the semi-neutral grasslands along the western boundary and the central waterbodies, as well as the waterbodies supporting amphibian prey. This is supported by the results shown in Figure 2.
- 5.1.2. Where it is not possible to avoid effects upon reptiles, it will be necessary to provide mitigation measures to avoid killing and, or injury of individual animals and avoid detrimental effects upon the local populations. The following measures should form part of the mitigation strategy:
- Identification of a suitable receptor habitat: This should be of equivalent or greater in size and habitat quality to the area of suitable reptile habitat to be lost, and not contain an existing reptile population; or alternatively sufficient enhancements should be possible to ensure additional individuals can be supported within the habitat area available. The wider golf course site includes significant areas of managed amenity grassland, which has limited or no value to reptiles. Some of this could be enhanced to form receptor habitat. Such enhancements should include provision of tussocky/ less managed grassland, waterbodies to support amphibian prey and creation of permanent artificial refugia such as log piles to provide shelter for reptiles as well as providing suitable habitat for hibernation.
 - Displacement of reptiles from the development area. For smaller areas and where created habitat is contiguous, this may be achieved by following methods outlined in Appendix C. For larger areas, trapping and translocation of reptiles may be necessary. This would proceed as follows.
 - The perimeter of the works area adjacent to suitable habitat should be fenced with reptile exclusion fencing¹, and all suitable reptile habitat where reptiles have been recorded 'trapped out'. The trapping should comprise deployment of a high density of artificial refugia (i.e. 100 per hectare) which are then checked daily by a surveyor trained to capture any reptiles present and translocate them to the designated receptor habitat, created in advance of translocation. Guidelines advise that translocations are undertaken between March and September. It is likely that exclusion for this Site would take a minimum of 30 - 60 suitable² days (HGBl, 1998).
 - Completion of the translocation and maintenance of the exclusion area: Once five suitable days have passed in which no reptiles have been captured, a destructive search should be completed to confirm the absence of reptiles (see Appendix C). Both throughout the trapping period, and following completion it is imperative that the exclusion fencing is maintained to prevent any reptiles from habitat adjacent to the works area re-entering the exclusion area,

¹ Also referred to as 'temporary amphibian fencing' (TAF) which serves the same purpose for amphibian translocations.

² Days on which weather conditions are suitable for surveying reptiles, between 10 and 18°C, with sunny spells.

this should be checked on a regular basis during the season in which reptiles are active (March-October) and repaired as necessary.

- 5.1.3. In the longer term, newly created receptor habitat should be managed to provide habitat for reptiles during the operational phase of the Proposed Development. Long term maintenance should include a 'reptile friendly' cutting regime, and maintenance of long sward levels during summer months. It is recommended that this is set out in a habitat management plan, which includes a commitment to monitoring the reptile population present.

5.2. ECOLOGICAL ENHANCEMENT MEASURES

- 5.2.1. National and local planning policy requires ecological enhancement measures to be designed into new development schemes. Therefore, it is recommended that enhancement measures are incorporated into the proposals which seek to achieve net gain in habitat available to reptiles on site, and enhance habitat connectivity within the landscape. It is advised that the following measures should be considered for inclusion within the Proposed Development:
- Allowing the development of broad hedgerow margins adjacent to retained hedgerows, with some scrub cover extending out into the grassland, creating interface habitat which is of particular value to reptiles.
 - Development of a low intensity, 'reptile friendly' cutting regime along retained and created hedgerows and other interface scrub habitats, allowing long grass to provide cover for reptile species during summer months.
 - Ensuring created habitats within the Proposed Development are connected to high quality habitat areas outside the Site, thus allowing for the potential colonisation by reptiles in the future of these areas, and enhancing habitat connectivity in the local area.
 - The provision of 'egg laying heaps' for grass snakes. These are primarily piles of rotting vegetation in which grass snakes lay their eggs (usually in the early summer) and which provide protection from predation, as well as a constant temperature in which the eggs can develop. Additional vegetative material should be added each year to ensure the long-term maintenance of high quality habitat.

6. CONCLUSIONS

- 6.1.1. WSP has undertaken presence/absence surveys across the Site of the Proposed Development. Given the distribution of grass snake recorded under certain refugia across multiple visits, it is considered that a small population of grass snake were reported to be utilising the habitat in the north-west area of the Site.
- 6.1.2. Grass snakes receive legislative protection against killing and injury from under the Wildlife and Countryside Act 1981 (as amended) and are an SPI.
- 6.1.3. Recommendations for this site include retention of important reptile habitat wherever possible. These areas include the semi-neutral grassland along the western boundary and the waterbodies in the centre of the Site. Where retention of these areas is not possible do to the nature of the Proposed Development, mitigation and ecological enhancement techniques have been included.

7. REFERENCES

7.1. PROJECT REFERENCES

- WSP (March 2018) Great Wolf Resorts, Bicester Golf Course PEA Report.
- WSP (September 2018) Great Crested Newt Report.

7.2. TECHNICAL REFERENCES

- Froglife (1999) Reptile Survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice sheet 10. Froglife, Halesworth.
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- UK Biodiversity Action Plan Priority Species List. Available at: <http://jncc.defra.gov.uk/page-5717>. [Accessed October 2018].
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- IUCN Red List for Endangered Species Grass snake (2019): <https://www.iucnredlist.org/species/14368/4436775> [Accessed October 2018].
- Cherwell District Council (2015) The Cherwell Local Plan 2011 – 2031 [Accessed November 2018].
- Ministry of Housing, Communities and Local Government (2018) National Planning Policy Framework (NPPF).



8. FIGURES

Figure 1 - Site Location Plan

Figure 2 - Reptile Survey Results



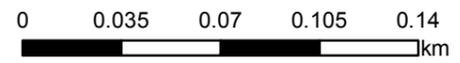
N

Key

- Site boundary

Grass snake Presence/Absence

- Absence
- Presence
- Incidental sightings



Client:	Great Wolf Resorts
Project:	Bicester
Title:	Reptile Survey Results

Drawing No:	Figure 2	Drawn:	RD
Date:	March 2019	Checked:	LR
Scale:	2,500 @ A3	Approved:	AH

Appendix A



RAW DATA

Table A-1 - Reptile Survey Results

Results³							
Refugia No. or Visual Observation Location	Survey Number (date)						
	1 29.08.18	2 05.09.18	3 12.09.18	4 20.09.18	5 25.09.18	6 04.10.18	7 10.10.18
13	/	1AGS	1JuvGS	/	2AGS	/	/
19	/	2AGS	/	/	/	/	/
32	/	/	1AGS	/	/	/	/
36	/	/	/	/	/	/	1AGS
38	1AGS	1AGS 1JuvGS	/	/	/	1AGS	/

³ Key to abbreviations within Table 2. AGS = Adult Grass snake. Juv = Juvenile.

Appendix B

WEATHER CONDITIONS



Table B-1 - Weather Conditions During Survey

Survey Visit Number		1	2	3	4	5	6	7
Date		29.08.18	05.09.18	12.09.18	20.09.18	25.09.18	04.10.18	10.10.18
Start	Time	16:00pm	09:00am	09:30am	08:30am	15:10pm	09:30am	09:30am
	Air Temp. (°C) (shade)	18	12	13	17	16	14	15
	Cloud Cover (oktas)	3	2	3	5	0	5	1
Finish	Time	17:30pm	11:30am	10:45am	11:30am	16:40pm	11:00am	10:45am
	Air Temp. (°C) (shade)	18	16	16	22	14	15	18
	Cloud Cover (oktas)	3	1	2	4	0	4	1
Description / Notes		Bright and sunny. Constant temperature and weather throughout survey.	Sunny & humid, no rain. Bright clear sky.	Female GCN juvenile found under refugia 20.	Sunny and warm with some cloud cover. Slight breeze.	Clear but Cold with some wind.	Cloudy and windy, felt cold.	Bright and sunny, little wind. Weather consistent throughout survey.

Appendix C

DESTRUCTIVE SEARCH METHODS 

The following destructive search methods should only be used during the reptile active season when it is considered there is low potential for reptiles to be encountered (i.e. following trapping and translocation of reptiles or where very minimal areas of suitable habitat are due to be affected).

TOOL BOX TALK

The ecologist will give a tool box talk to the vegetation clearance contractors; this will include:

- A brief introduction to the widespread reptile species which potentially may be discovered on the Site; and
- Working methods to be employed, and permitted equipment types.

VEGETATION CLEARANCE:

Vegetation clearance must be completed using hand tools (these can include mechanised hand tools such as brush cutters or chainsaws). Clearance must move towards retained habitat on or adjacent to the Site (where not all habitat is due to be removed and connecting habitat is available). The steps listed below must be completed:

- Hand search by ecologist for reptiles within vegetation to be cleared;
- Clearance of vegetation to 200mm above ground level using hand tools;
- Re-inspection of vegetation by ecologist; and
- Clearance to ground level (or as close as is practicable).

Any active reptiles found must be captured by the suitably qualified ecologist and placed into a soft cloth bag before being moved to the receptor site or adjacent suitable habitat lying outside the working area. To reduce the chances of predation, any captured animals must be placed under suitable natural or artificial refugia.

SOIL STRIPPING:

Once the vegetation has been reduced to ground level (or as close as is practicable) land within the Proposed Development area should be soil-stripped under an ecological watching brief. This should entail use of a 360-degree tracked excavator (7 tonne or similar) using a small toothed bucket to carefully scrape back the remaining vegetation and 150mm of topsoil. The topsoil and any debris must be spread on to the ground to allow the ecologist to search for any remaining reptiles, in the unlikely event that animals are present.



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