

Appendix 9.9
REPTILE SURVEY

FORT HALSTEAD, KENT

REPTILE SURVEY

A Report to: CBRE Ltd

Report No: RT-MME-127947-09 Rev A

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Triumph House, Birmingham Road, Allesley, Coventry CV5 9AZ

Tel: 01676 525880 Fax: 01676 521400

E-mail: admin@middlemarch-environmental.com Web: www.middlemarch-environmental.com

REPORT VERIFICATION AND DECLARATION OF COMPLIANCE

This study has been undertaken in accordance with British Standard 42020:2013 “Biodiversity, Code of practice for planning and development”.

Report Version	Date	Completed by:	Checked by:	Approved by:
Rev A	12/09/2019	Hannah Train GradCIEEM (Senior Ecological Consultant)	Tom Docker MSc CEcol MCIEEM (Associate Director, EIA)	Dr Philip Fermor CEnv MCIEEM (Managing Director)
Final	26/10/2018	Harry Stone MSc (Ecological Project Officer) & Jamie Fletcher BSc (Hons) (Ecological Consultant)	Tom Docker MSc MCIEEM (Ecological Impact Assessment Manager)	Dr Philip Fermor CEnv MCIEEM (Managing Director)

The information which we have prepared is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management’s Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

DISCLAIMER

The contents of this report are the responsibility of Middlemarch Environmental Ltd. It should be noted that, whilst every effort is made to meet the client’s brief, no site investigation can ensure complete assessment or prediction of the natural environment.

Middlemarch Environmental Ltd accepts no responsibility or liability for any use that is made of this document other than by the client for the purposes for which it was originally commissioned and prepared.

VALIDITY OF DATA

The findings of this study are valid for a period of 24 months from the date of survey. If works have not commenced by this date, it may be necessary to undertake an updated survey to assess any changes in the status of reptile species on site, and to inform a review of the conclusions and recommendations made.

NON-TECHNICAL SUMMARY

Middlemarch Environmental Ltd was commissioned by CBRE Ltd to undertake a reptile survey at Fort Halstead in Kent. This assessment is required to inform a hybrid planning application associated with the proposed redevelopment of the site, which will involve the demolition of the majority of existing industrial buildings and the construction of a new employment-led mixed-use village.

Three separate populations of reptiles were recorded. The grazed semi-improved calcareous grassland at Transect F was found to have a low population of slow-worms. The semi-improved calcareous grassland at Transect C was found to have a good population of slow-worms and a good population of common lizards. The semi-improved neutral grassland at Transect E was found to have an exceptional population of slow-worms and a low population of common lizards.

The habitat area at Transect C and at Transect E meet the criteria for a Key Reptile Site.

All native reptile species receive protection under UK law and are capable of being material considerations in the planning process. The following recommendations are made:

- R1** In order to ensure that works proceed in compliance with wildlife legislation and planning policy, a reptile method statement is required. This statement will detail how the works will proceed without breaching wildlife legislation, and will ensure that:
- Reptiles will be protected from harm that might arise during development work; and,
 - Sufficient quality, quantity and connectivity of habitat is provided to accommodate the reptile population, either on-site or at an alternate site, with no net loss of favourable conservation status.

The scope of the reptile method statement should be agreed with the local authority ecologist prior to any works commencing.

- R2** Future management regimes of proposed wildlife areas, particularly those identified by this report as Key Reptile Sites, should pay due attention to the negative effects of grazing on reptile populations.
- R3** It is recommended that continued ecological monitoring of the site be undertaken during and post development. This will monitor the impact of the proposed development on reptile populations. This will also highlight the efficacy of any management activities undertaken on site and will enable management actions to be altered/amended as necessary.
- R4** Hibernacula creation is recommended (Edgar *et al.*, 2010). This is to compensate for the assumed removal of miscellaneous debris which are currently providing potentially suitable hibernacula and refugia habitat for reptiles.
- R5** The proposed creation of ponds should be done in a way which maximises their suitability for grass snakes *Natrix natrix*. An abundance of macrophyte cover, particularly emergent plants, will reduce predation pressure on grass snakes while also improving the general ecological integrity of ponds. Ponds should be appropriately connected to edge habitats and wildlife corridors, and exposed habitat such as amenity grassland should be avoided as the lack of cover exposes grass snakes to predation. Broadly speaking, measures to improve habitat for amphibians will benefit grass snakes, as frogs and toads form the basis of grass snake diets (Gregory and Isaac, 2005; Luiselli *et al.*, 2005).

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1. INTRODUCTION

1.1 PROJECT DESCRIPTION

Middlemarch Environmental Ltd was commissioned by CBRE Ltd to undertake a reptile survey at Fort Halstead in Kent. The purpose of this survey was to determine the presence/absence of reptiles on and adjacent to the site and to establish population levels.

This assessment is required to inform a hybrid planning application associated with the proposed redevelopment of the site, which will involve the demolition of the majority of existing industrial buildings and the construction of a new employment-led mixed-use village. It is understood that the new village will comprise business areas (Use Classes B1a/b/c with energetic testing operations), development of up to 750 residential dwellings, a village centre (Use Classes A1/A3/A4/A5/B1a/D1/D2), a one form entry primary school, use of the Fort Area and bunkers as an Historic Interpretation Centre (Use Class D1), together with amenity space, landscape and ecological enhancements both on the site and on the adjacent land within the Applicants ownership.

It is understood that a suite of baseline surveys have been completed by Waterman Group between 2006 and 2013, the results of which are provided in an Ecological Appraisal (Report EED12715-102.R.2.3.7.LM) and Protected Species and Habitat Survey (Report EED12715-102.R.3.3.6.LM), and summarised in the ecology chapter of an EIA associated with a previous application, for which outline planning consent was granted.

Due to the amount of time that has elapsed since the previous surveys were completed, updated ecological surveys were required for the current planning application. In addition, Middlemarch Environmental Ltd has been commissioned to undertake the following assessments:

- Preliminary Ecological Appraisal (Report RT-MME-127947-01);
- Preliminary Bat Roost Assessment (Report RT-MME-127947-02);
- Nocturnal Emergence and Dawn Re-entry Bat Surveys (Report RT-MME-127947-03);
- Bat Activity Surveys (Report RT-MME-127947-04);
- Badger Survey (Report RT-MME-127947-05);
- Breeding Bird Survey (Report RT-MME-127947-06);
- Botanical Survey (Report RT-MME-127947-07);
- Terrestrial Invertebrate Survey (Report RT-MME-127947-08);
- Dormouse Survey (Report RT-MME-127947-10);
- Winter Bird Survey (Report RT-MME-127947-11);
- Pre-development Arboricultural Survey (Report RT-MME-128206-01); and,
- Arboricultural Impact Assessment (Report RT-MME-128206-02).

All native reptile species receive protection under UK law and are capable of being material considerations in the planning process. Further information about the legislation that protects reptile species is provided in Appendix 1. This section also provides some brief information on the ecology of reptile species in the UK.

1.2 DEVELOPMENT SITE DESCRIPTION AND CONTEXT

The site is located off Star Hill Road in Halstead, Kent, centred at National Grid Reference TQ 4970 5922. It is an irregular shaped parcel of land that measures 131.89 ha in size.

At the time of the survey, the site comprised a defence research facility which contained a number of buildings with associated areas of hardstanding, surrounded by parcels of semi-natural and plantation woodland. Areas of neutral grassland, calcareous grassland and amenity grassland were also present, as well as patches of scrub and tall ruderal vegetation.

The site was bordered by the A224 Polhill to the north-east and Star Hill Road to the south-west. A mixture of arable and pastoral fields, pockets of woodland and farm buildings surround the site. The wider landscape was dominated by a rural setting, consisting of agricultural land interspersed with pockets of woodland and small settlements.

1.3 DOCUMENTATION PROVIDED

The conclusions and recommendations made in this report are based on information provided by the client regarding the scope of the project. Documentation made available by the client is listed in Table 1.1.

Document Name / Drawing Number	Author
Fort Halstead – Design and Access Statement: 00556I	John Thompson and Partners
Site Location Plan: 00556I_S01 Rev D5	John Thompson and Partners
Land Use and Green Infrastructure Plan: 00556I_PP01 Rev D10	John Thompson and Partners
Building Heights Plan: 00556I_PP02 Rev D10	John Thompson and Partners
Access and Movement: 00556I_PP03 Rev D9	John Thompson and Partners
Demolition Plan: 00556I_PP04 Rev D8	John Thompson and Partners
Ecological Appraisal: EED12715-102.R.2.3.7.LM	Waterman Group
Protected Species and Habitats Survey: EED12715-102.R.3.3.6.LM	Waterman Group
Environmental Statement - Ecology and Nature Conservation	Waterman Group
Decision Notice (planning application number SE/15/00628/OUT)	Sevenoaks District Council

Table 1.1: Documentation Provided by Client

2. METHODOLOGIES

2.1 DESK STUDY

A desk study was undertaken to determine the presence of records of reptiles within a 2 km radius of the site. The consultee for the desk study was Kent and Medway Biological Records Centre.

Middlemarch Environmental Ltd then assimilated and reviewed the desk study data provided by these organisations. The data collected from these consultees are discussed in Chapter 3. In compliance with the terms and conditions relating to its commercial use, the full desk study data is not provided within this report.

2.2 SITE SUITABILITY ASSESSMENT

An assessment of the suitability of the site to support reptile species was undertaken, based on a review of habitat characteristics and other parameters known to influence reptile distribution. The following parameters were considered:

- Location of site in relation to species range of native reptiles;
- Site management and disturbance;
- Topography and aspect of site;
- Vegetation type and structure;
- Likely prey abundance;
- Presence of refugia and potential hibernation habitat;
- Egg-laying site potential (grass snake and sand lizard only); and,
- Connectivity to surrounding habitat of potential value to reptiles.

The suitability assessment was used to design the route of survey transects for the presence/absence survey (see Section 2.3).

2.3 PRESENCE/ABSENCE SURVEY

A presence/absence survey for reptiles was undertaken in accordance with the best practice methodology detailed in the Herpetofauna Workers Manual (Gent and Gibson, 2003). This consisted of the following works:

- An initial assessment of the potential reptile habitat characteristics was undertaken, in order to identify features and habitats of potential value to reptile species.
- Survey transects through the site were identified to ensure all suitable habitats were covered by the survey.
- Checks of any natural refugia present within the survey area, such as log piles or rubble piles, were undertaken.
- A series of artificial refugia were installed within the site to facilitate detection of reptiles (further detailed below).
- Seven survey visits to the site were undertaken to inspect natural and artificial refugia in suitable weather conditions.

500 artificial survey refugia were installed within the site during the first survey visit. 259 refugia were installed within the main site (156 at transect A, 50 at transect B, 53 at transect C). 241 refugia were installed in the wider site (transects D, E and F). These refugia consisted of squares of roofing felt approximately 500 mm x 500 mm.

Reptiles are ectotherms, deriving their body heat from the external environment. Therefore, the timing of the survey visits was dictated by the time of year and weather conditions. Where possible, surveys were undertaken on warm sunny days with little cloud cover and wind to maximise the probability of recording reptiles within the site. Suitable weather conditions for undertaking refugia checks are outlined in the Herpetofauna Workers Manual, and are summarised in Table 2.1.

Parameter	Value
Temperature	9 - 17° C
Sunshine	Preferable
Cloud	Little or None
Wind	Low/None

Table 2.1: Suitable Weather Conditions for Reptile Surveys

2.4 ASSESSMENT OF SITE IMPORTANCE FOR REPTILES

Current best practice guidance recognises that undertaking detailed population assessments for reptile species is difficult, as the number of survey visits required to give an accurate assessment is prohibitive for the majority of projects.

It is desirable, however, to attempt to judge the overall importance of the survey site for reptiles. In order to provide a basic assessment of site importance, the results of the survey were analysed in the context of Advice Sheet 10 - Survey Assessment: Key Reptile Sites (Froglife, 1999). This provides a simple methodology for assessing the value of a site to reptile species, based upon the number of species recorded on site and the peak adult count for each species per hectare, when refugia are installed at a density of up to 10 per hectare.

The guidelines for assessing the value of the site to reptile species are summarised in Table 2.2.

Reptile Species	Low Population Score 1	Good Population Score 2	Exceptional Population Score 3
Adder	<5 individuals/ha	5-10 individuals/ha	>10 individuals/ha
Grass snake	<5 individuals/ha	5-10 individuals/ha	>10 individuals/ha
Common lizard	<5 individuals/ha	5-20 individuals/ha	>20 individuals/ha
Slow worm	<5 individuals/ha	5-20 individuals/ha	>20 individuals/ha

Table 2.2: Key Reptile Site Population Class Assessment and Scoring Criteria

Froglife define a Key Reptile Site as one that meets any of the following criteria:

1. Site supports at least three reptile species;
2. Site supports two snake species;
3. Site supports an 'exceptional population' of one species (see Table 2.2);
4. Site supports an assemblage of species scoring at least 4 (see Table 2.2); or,
5. Site does not satisfy Points 1-4 but is of particular regional importance due to local rarity.

Sites that support populations of either smooth snake or sand lizard are also considered to be Key Reptile Sites.

3. DESK STUDY

3.1 BIOLOGICAL RECORDS

Desk study records of reptiles within a 2 km radius of the survey area are summarised in Table 3.1.

Species	No. of Records	Most Recent Record	Proximity of Nearest Record to Study Area	Species of Principal Importance	Legislation / Conservation Status
Common lizard <i>Zootoca vivipara</i>	13	2015	On site	✓	WCA 5 S9(1) WCA 5 S9(5)
Slow worm <i>Anguis fragilis</i>	12	2015	On site	✓	WCA 5 S9(1) WCA 5 S9(5)
Grass snake <i>Natrix natrix</i>	16	2016	380 m east	✓	WCA 5 S9(1) WCA 5 S9(5)
Adder <i>Vipera berus</i>	6	2014	610 m east	✓	WCA 5 S9(1) WCA 5 S9(5)
<p>Key: WCA 5: Schedule 5 of Wildlife and Countryside Act 1981 (as amended). Protected animals (other than birds). WCA 5 S9(1): Schedule 5 Section 9(1) of Wildlife and Countryside Act 1981 (as amended). Protected animals (other than birds). Protection limited to intentional killing, injury or taking. WCA 5 S9(5): Schedule 5 Section 9(5) of Wildlife and Countryside Act 1981 (as amended). Protected animals (other than birds). Protection limited to selling, offering for sale, processing or transporting for purpose of sale, or advertising for sale, any live or dead animal, or any part of, or anything derived from, such animal.</p> <p>Note. This table does not include reference to the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats), the Bonn Convention on the Conservation of Migratory Species of Wild Animals or the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).</p>					

Table 3.1: Summary of Reptile Records Within 2 km of Survey Area

3.2 PREVIOUS REPTILE SURVEYS

A previous reptile survey was carried out on site in 2012 by Waterman Energy, Environment & Design Limited (Project number EED12715-102), which recorded an 'exceptional' population of slow-worms and a 'good' population of common lizards.

Further detail relating to the previous reptile survey undertaken on site was not available.

4. RESULTS

4.1 INTRODUCTION

The reptile habitat assessment and presence/absence survey were undertaken between 5th June and 18th July 2018 by Jamie Fletcher (Ecological Consultant) and Harry Stone (Ecological Project Officer).

4.2 SURVEY CONSTRAINTS

Due to issues surrounding health and safety and security it was not possible to undertake survey work within the Old Fort, and as such the presence of reptiles and any population estimates for this this area remains unknown.

A small number of reptile tiles were damaged or destroyed by police patrol dogs and landscaping activities in Transects A and B during the survey period. Reptile tiles were similarly damaged, relocated or destroyed by sheep and members of the public within Transect F.

4.3 SITE SUITABILITY ASSESSMENT

The habitat characteristics of the site with regard to suitability to support reptile species are summarised in Table 4.1. Photographs of the habitats present on site are provided in Chapter 8.

Reptile Habitat Characteristic	Description
Location of site in relation to species range of native reptiles	<p>The site falls within the known distribution for all native reptiles apart from sand lizards (<i>Lacerta agilis</i>) and smooth snakes (<i>Coronella austriaca</i>). Previous ecological surveys suggest the site is likely to have an exceptional population of slow-worms (<i>Anguis fragilis</i>) and a good population of common lizards (<i>Zootoca vivipara</i>).</p> <p>Recent records suggest that adders (<i>Vipera berus</i>) are present approximately 610 m east of the site, however the M25 is likely to act as a major dispersal barrier for populations that are known to exist beyond this feature to the east. The site lacks waterbodies, making the presence of grass snakes on site (<i>Natrix natrix</i>) less likely, though recent records indicate the species is present approximately 310 m east of the site.</p>
Site management and disturbance	<p>The grassland located at transects A and B (north and south of the west gate, within the main site) appear to be mown occasionally, with the grass being allowed to grow to approximately 30-50 cm.</p> <p>The unimproved calcareous grassland located in the wider site at Transect F is grazed by a low density of sheep. Transect C is an associated calcareous grassland with scrub sections located immediately north of Transect F within the main site (the two areas are separated by the fence line, but outlined in the proposals as one area) and appears to be lightly managed and occasionally mown by the on-site landscaping contractors. As Transect F experiences grazing pressure from sheep, but Transect C does not, it is perhaps useful to consider these two areas of unimproved calcareous grassland as different habitats.</p> <p>The base of numerous security fences on the site appear to be routinely sprayed with herbicide. The main site and wider site are mostly undisturbed, except for police dog patrols and occasional walkers in the wider site area.</p>
Topography and aspect of site	<p>The unimproved calcareous grassland at transects C and F are significantly sloped and south-facing. The rest of the site is mostly flat.</p>
Vegetation type and structure	<p>The unimproved calcareous grassland located to the south of the site is botanically species rich with lots of tussocky sections. In the sheep-grazing field the grassland borders woodland to the west and hedgerow to the south, south-east and south-west.</p> <p>In the western section and at the old helipad (Transects A, B and D) the grassland borders woodland and hedgerow/scrub sections.</p>

Table 4.1: Summary of Reptile Habitat Characteristics (Cont.)

Reptile Habitat Characteristic	Description
Likely prey abundance	An abundance of invertebrates was observed in all surveyed areas, along with the presence of small mammals.
Presence of refugia and potential hibernation habitat	Many small mammals and rabbits were observed on site during the course of the survey period, with such species providing burrows that could be exploited for hibernation purposes. Furthermore logs and vegetation piles were found throughout the site, in addition to miscellaneous waste including wooden boards and plastic sheets, with all such features suitable for basking.
Egg-laying site potential (grass snake and sand lizard only)	In the area of grassland to the north of the west gate (Transect A) there are large vegetation piles (dead leaves, wood chips, etc). These could provide potentially suitable egg laying habitat for grass snakes, though as mentioned the presence of grass snakes on site is considered unlikely due to an absence of waterbodies.
Connectivity to surrounding habitat of potential value to reptiles	For reptiles, Transect F and Transect C are connected (reptiles are easily able to pass through the chain link fence). The site is moderately connected to arable land and woodland to the north and east, but disconnected to suitable habitat to the east and south due to the presence of roads including the M25 and A224.

Table 4.1: (Cont.) Summary of Reptile Habitat Characteristics

It should be noted that the presence of good quality reptile habitat (e.g. habitat providing features of value to reptiles) does not confirm that reptiles will be present at the site, just as the presence of low quality habitat does not confirm that reptiles will be absent.

4.4 PRESENCE / ABSENCE SURVEY

Weather conditions at the time of each of the survey visits are presented in Table 4.2.

Date/Time	Parameter	Cloud cover (%)	Air temperature (°C)	Precipitation	Wind speed (F)
05-06-2018*	Preceding survey	Clear and sunny, possible light rain previous night (wet in long grass)			
	During survey	50	11	Nil	F0
13-06-2018	Preceding survey	Clear and sunny			
	During survey	25	16	Nil	F0-F1
27-06-2018	Preceding survey	Clear and sunny			
	During survey	0	17	Nil	F1
02-07-2018	Preceding survey	Clear and sunny			
	During survey	0	17	Nil	F0
04-07-2018	Preceding survey	Clear and sunny			
	During survey	50	17	Nil	F1-F2
06-07-2018	Preceding survey	Clear and sunny			
	During survey	0	17	Nil	F0
16-07-2018	Preceding survey	Clear and sunny			
	During survey	0	17	Nil	F0
18-07-2018	Preceding survey	Clear and sunny			
	During survey	50	17	Nil	F0

*Artificial refugia set out

Table 4.2: Weather Conditions During Survey Visits

The findings of the presence/absence survey are detailed in Tables 4.3, 4.4 and 4.5. The location of reptile survey transects are plotted on Drawing C127947-09-01 in Chapter 7.

No reptiles were recorded on Transects A, B and D, and therefore these results are not presented in table format. The results from Transects C, E and F are presented in separate tables because they are indicative of separate populations and management regimes. Transect E is geographically separated from proximate reptile populations by approximately 200 m of woodland. While transects C and F are only separated by chain link fencing, the presence of grazing sheep in the southern area (Transect F) clearly has an effect on the reptile population, and/or sampling methods.

Visit	Date	Common Lizard	Slow-worm	Grass Snake	Adder	Smooth Snake	Sand Lizard
1	13-06-2018	1 ♂; 1 ♀	8 ♂; 3 ♀	-	-	-	-
2	27-06-2018		♂ 4; 2 Juv	-	-	-	-
3	02-07-2018	4 ♂; 5 ♀	4 ♂; 8 ♀; 4 Juv	-	-	-	-
4	04-07-2018	3 ♂; 3 ♀	4 ♂; 17 ♀; 1 Juv	-	-	-	-
5	06-07-2018	2 ♂	1 ♂; 6 ♀; 1 Juv	-	-	-	-
6	16-07-2018	1 ♂; 2 ♀	♂ 4; ♀ 2 Juv	-	-	-	-
7	18-07-2018	2 ♂	♂ 3; 2 Juv	-	-	-	-

Key
♂: Male, ♀:Female, Juv – Juvenile

Table 4.3: Presence/Absence Survey Results for Transect C

Visit	Date	Common Lizard	Slow-worm	Grass Snake	Adder	Smooth Snake	Sand Lizard
1	13-06-2018	♂1♀	4♂; 4♀; 3Juv	-	-	-	-
2	27-06-2018	♂1♀	4♂; 15♀; 1Juv	-	-	-	-
3	02-07-2018	-	6♂; 15♀; 6Juv	-	-	-	-
4	04-07-2018	-	6♂; 24♀; 5Juv	-	-	-	-
5	06-07-2018	-	2♂; 8♀; 2Juv	-	-	-	-
6	16-07-2018	-	1♂; 6♀	-	-	-	-
7	18-07-2018	-	5♂; 5♀; 2Juv	-	-	-	-

Key
♂: Male, ♀:Female, Juv – Juvenile

Table 4.4: Presence/Absence Survey Results for Transect E

Visit	Date	Common Lizard	Slow-worm	Grass Snake	Adder	Smooth Snake	Sand Lizard
1	13-06-2018	-	3 ♂; 5 ♀	-	-	-	-
2	27-06-2018	-	2 ♂; 5 ♀	-	-	-	-
3	02-07-2018	-	1 ♂; 6 ♀	-	-	-	-
4	04-07-2018	-	2 ♂; 5 ♀; 1 Juv	-	-	-	-
5	06-07-2018	-	1 ♂; 2 ♀	-	-	-	-
6	16-07-2018	-	♂ 2	-	-	-	-
7	18-07-2018	-	1 ♂; 4 ♀	-	-	-	-

Key
♂: Male, ♀:Female, Juv – Juvenile

Table 4.5: Presence/Absence Survey Results for Transect F

An abundance of slow worms and numerous common lizards were recorded on site. These reptiles were recorded in three main locations: within the main site both species were recorded on Transect C, and within the wider survey area both species were recorded on Transects E, while only slow worms were recorded on Transect F. No reptiles were recorded on Transects A, B or D.

4.5 ASSESSMENT OF SITE IMPORTANCE FOR REPTILES

The results of the presence/absence survey were assessed using Froglife's site valuation methodology, outlined in Section 2.3. The results of this assessment are detailed in Tables 4.6, 4.7 and 4.8.

Species	Maximum Count of Individuals*	Number of Individuals / ha	Estimate of Population Level During Survey	Key Reptile Site Score
Common lizard	9	5	Good	2
Slow-worm	22	12.22	Good	2
Grass snake	-	-	-	-
Adder	-	-	-	-
* Maximum count of adults recorded by surveyor on one visit			Total Score	4

Table 4.6: Reptile Population Estimate for Transect C

Species	Maximum Count of Individuals*	Number of Individuals / ha	Estimate of Population Level During Survey	Key Reptile Site Score
Common lizard	1	0.71	Low	1
Slow-worm	35	25	Exceptional	3
Grass snake	-	-	-	-
Adder	-	-	-	-
* Maximum count of adults recorded by surveyor on one visit			Total Score	4

Table 4.7: Reptile Population Estimate for Transect E

Species	Maximum Count of Individuals*	Number of Individuals / ha	Estimate of Population Level During Survey	Key Reptile Site Score
Common lizard	-	-	-	-
Slow-worm	8	2.29	Low	1
Grass snake	-	-	-	-
Adder	-	-	-	-
* Maximum count of adults recorded by surveyor on one visit			Total Score	1

Table 4.8: Reptile Population Estimate for Transect F

Transects C and E meet the criteria outlined in Section 2.4 to be considered Key Reptile Sites (Froglife, 1999). This is due to the population assemblages of common lizards and slow-worms, although for Transect E the exceptional population of slow-worms is enough in itself to qualify the area as a Key Reptile Site.

There is a dramatic difference in the abundance of slow-worms and presence of common lizards between Transects C and F, which are only separated by a chain link fence. This difference may be the result of survey constraints, specifically the fact that over half of the reptile mats in Transect F were disturbed by sheep. However, it seems likely that the presence of grazing sheep is likely to have a detrimental effect on the reptile population, as the 2012 Amphibian & Reptile Conservation (ARC) research report into the effect of grazing on reptile populations concludes:

The single most important, and incontrovertible, conclusion of this review is that, in sites where reptile conservation is the primary objective, grazing by domestic livestock, particularly cattle and ponies, is not and should not be considered to be, an appropriate form of habitat management as it will ultimately result in their eradication rather than their conservation.

(Jofré & Reading, 2012 – emphasis not added)

Therefore, it is reasonable to assume that the presence of grazing sheep in the wider site area acts a major dispersal barrier, potentially disconnecting the site to nearby suitable habitat that could potentially support reptile species.

5. DISCUSSION AND CONCLUSIONS

5.1 SUMMARY OF SITE PROPOSALS

The proposals for the site are as follows:

Hybrid planning permission comprising:

In detail:

- *Demolition of existing buildings;*
- *Change of use and works to buildings Q13 and Q14 (including landscaping and public realm);*
- *Primary and secondary accesses.*

In outline:

- *Development of business space (use classes B1a/b/c) of up to 27,659 sq m GEA;*
- *Works within the 'X' enclave relating to energetic testing operations, including fencing, access, car parking;*
- *Development of up to 750 residential dwellings;*
- *Development of a mixed-use village centre (use classes A1/A3/A4/A5/B1a/D1/D2);*
- *Development of a one form entry primary school;*
- *Change of use of Fort Area and bunkers to Historic Interpretation Centre (use class D1) with workshop space;*
- *Roads, pedestrian and cycle routes, public transport infrastructure, car parking, utilities infrastructure, drainage;*
- *Landscaping, landforming and ecological mitigation works.*

5.2 HABITAT ASSESSMENT

The habitat at Transects C, E and F are suitable for reptiles. The area of calcareous grassland grazed by sheep however (Transect F) is noticeably less suitable than the un-grazed habitat at Transects C and E. In all three of these areas the grassland is allowed to grow to suitable length for reptiles, and has thick tussocky sections. Areas of grassland fading to scrub and tall ruderal are also noted throughout (though less so in the grazed area). Transects C and F are south facing, improving basking opportunities for reptiles. Mammal burrows, log piles, vegetation piles and other miscellaneous items provide suitable refugia and hibernacula.

In the area of grassland to the north of the west gate (Transect A) there are large vegetation piles (dead leaves, wood chips, etc). These could provide potentially suitable egg laying habitat for grass snakes (*Natrix natrix*). The development proposals involve the construction of ponds close to these large vegetation piles, which would further enhance the suitability of the area for grass snakes. The site is adjacent to but separated from arable land and woodland by Star Hill Road to the north and west, but disconnected to suitable habitat to the east and south due to the presence of roads including the M25 and A224.

5.3 FINDINGS OF REPTILE SURVEY AND KEY REPTILE SITE ASSESSMENT

The grazed semi-improved calcareous grassland at Transect F was found to have a low population of slow-worms. The semi-improved calcareous grassland at Transect C was found to have a good population of slow-worms and a good population of common lizards. The semi-improved neutral grassland at Transect E was found to have an exceptional population of slow-worms and a low population of common lizards.

The habitat areas at Transect C and Transect E meet the criteria for a Key Reptile Site.

5.4 CONCLUSIONS AND SUMMARY OF POTENTIAL IMPACTS

The development proposals indicate that the areas surveyed for reptiles are not scheduled to be developed upon. The plans further indicate that all of the nearby trees are "trees of value" and as such are to be retained. The proposals clearly state that the area of semi-improved grassland to the south of the site (Transects C and F, labelled as "6" in the proposals) will have its long-term integrity and ecological value

secured through the adoption of an appropriate management regime by a suitable body. Furthermore, public access is to be restricted.

Similarly, for the area of semi-improved neutral grassland at Transect E (labelled as “7” in the proposals), the proposals clearly state that the diversity of grassland sward will be improved through the adoption of an appropriate management regime and public access will be restricted. Furthermore, ponds are to be created nearby in order to “enhance biodiversity and/or provide amenity benefit”. The area of neutral grassland south of Crow Drive (Transect B, labelled as “8b” in the proposals) is to be enhanced ecologically and managed as a wildlife area. Access to certain areas may be controlled by fencing.

Regarding the suitability of habitat for reptiles, these proposals are positive and likely to result in habitat enhancement and creation, as well as an increase in habitat connectivity in the southwest of the site. The identified Key Reptile Sites at Transect C and Transect E (“6” and “7” in the proposals) are to be retained and ecologically enhanced through the adoption of appropriate management regimes.

The creation of ponds on site will be particularly beneficial for wildlife, and in relation to reptiles they will improve the suitability of the area for grass snakes *Natrix natrix*. It is worth reiterating that the large piles of vegetation (leaves, wood chips, etc.) located north of Crow Drive (Transect A, labelled as “8a” in the proposals) provide potentially suitable egg-laying habitat for grass snakes. Removing these vegetation piles would make the area less suitable for grass snakes, however no grass snakes were recorded during this survey or previous reptile surveys, and as such they are not considered to be currently inhabited by grass snakes or other reptiles.

Despite the predicted beneficial impact on reptile populations a precautionary method statement should be compiled to ensure that potential direct or indirect adverse impacts on reptiles are avoided. A recommendation is made in Chapter 6.

Within the main site, miscellaneous debris currently provide potential refugia and hibernacula habitat for reptiles. It is assumed that much of this debris will be considered as rubbish during the development and removed. To compensate for this loss of habitat it is recommended that hibernacula are created (Edgar *et al.*, 2010)

Details of proposed appropriate management regimes are not provided, presumably because they have not yet been established. These future management regimes should pay due attention to the negative effects of grazing on reptile populations (Jofré and Reading, 2012). Scientific studies as well as the results of this survey strongly indicate that current and potential future regimes involving grazing may be inappropriate and likely to result in decreases in and eventual eradications of reptile populations.

6. RECOMMENDATIONS

All recommendations provided in this section are based on Middlemarch Environmental Ltd's current understanding of the site proposals, correct at the time the report was compiled. Should the proposals alter, the conclusions and recommendations made in the report should be reviewed to ensure that they remain appropriate.

R1 In order to ensure that works proceed in compliance with wildlife legislation and planning policy, a reptile method statement is required. This statement will detail how the works will proceed without breaching wildlife legislation, and will ensure that:

- Reptiles will be protected from harm that might arise during development work; and,
- Sufficient quality, quantity and connectivity of habitat is provided to accommodate the reptile population, either on-site or at an alternate site, with no net loss of favourable conservation status.

The scope of the reptile method statement should be agreed with the local authority ecologist prior to any works commencing.

R2 Future management regimes of proposed wildlife areas, particularly those identified by this report as Key Reptile Sites, should pay due attention to the negative effects of grazing on reptile populations.

R3 It is recommended that continued ecological monitoring of the site be undertaken during and post development. This will monitor the impact of the proposed development on reptile populations. This will also highlight the efficacy of any management activities undertaken on site and will enable management actions to be altered/amended as necessary.

R4 Hibernacula creation is recommended (Edgar *et al.*, 2010). This is to compensate for the assumed removal of miscellaneous debris which are currently providing potentially suitable hibernacula and refugia habitat for reptiles.

R5 The proposed creation of ponds should be done in a way which maximises their suitability for grass snakes *Natrix natrix*. An abundance of macrophyte cover, particularly emergent plants, will reduce predation pressure on grass snakes while also improving the general ecological integrity of ponds. Ponds should be appropriately connected to edge habitats and wildlife corridors, and exposed habitat such as amenity grassland should be avoided as the lack of cover exposes grass snakes to predation. Broadly speaking, measures to improve habitat for amphibians will benefit grass snakes, as frogs and toads form the basis of grass snake diets (Gregory and Isaac, 2005; Luiselli *et al.*, 2005).

7. DRAWINGS

Drawing C127947-09-01 – Survey Transects

Legend

- - - Site boundary
- ↔ Reptile tile transect
- Not surveyed
- Phase 1 habitats:**
- x Scattered scrub
- Scattered trees
- Fence
- ||||| Native species-rich hedge and trees
- Species-poor defunct hedgerow
- Species-poor intact hedgerow
- A Amenity grassland
- SI Semi-improved neutral grassland
- SI Semi-improved calcareous grassland
- Unimproved calcareous grassland
- Bracken
- Tall ruderal
- Broad-leaved semi-natural woodland
- Broad-leaved plantation woodland
- Coniferous plantation woodland
- Mixed plantation woodland
- SI Poor semi-improved grassland
- Other habitat: Built-up area with scattered trees present in abundance throughout site



Project		Fort Halstead	
Drawing		Reptile Survey Transects	
Client		CBRE Ltd	
Drawing Number	C127947-09-01	Revision	00
Scale @ A3	1:8,000	Date	June 2018
Approved By	JF	Drawn By	NE

MIDDLEMARCH ENVIRONMENTAL

Triumph House, Birmingham Road, Allesley, Coventry CV5 9AZ
 T:01676 525880 F:01676 521400
 E:admin@middlemarch-environmental.com

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APPENDIX 1

LEGISLATION

All of the UK's native reptiles are protected by law. The two rarest species – sand lizard *Lacerta agilis* and smooth snake *Coronella austriaca* – benefit from the greatest protection.

Common lizard *Zootoca vivipara*, slow-worm *Anguis fragilis*, adder *Vipera berus* and grass snake *Natrix natrix* are protected under the Wildlife and Countryside Act 1981 (as amended) from intentional killing or injuring.

Sand lizard and smooth snake are protected under The Conservation of Habitats and Species Regulations 2010 (as amended) and the Wildlife and Countryside Act 1981 (as amended) which together make it illegal to kill, injure, capture, handle or disturb these animals. Places they use for breeding, resting, shelter and protection are protected from being damaged or destroyed. It is also illegal to obstruct these animals from using such areas.

All native reptile species are listed as Species of Principal Importance on the UK Post-2010 Biodiversity Framework (2012), and as such are material considerations in the planning process.

This is a simplified description of the legislation. In particular, the offences mentioned here may be absolute, intentional, deliberate or reckless. Note that where it is predictable that reptiles are likely to be killed or injured by activities such as site clearance, this could legally constitute intentional killing or injuring.

The reader should refer to the original legislation for the definitive interpretation.