FINESHADE WOOD

Ecology Assessment

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EXECUTIVE SUMMARY

RPS Planning and Development Limited (RPS) was commissioned by Countrywide Park to carry out a reptile survey and NVC survey of an area of land at Fineshade Wood, Corby, Northamptonshire.

The site location, the locations of the reptile refugia and the survey results are shown on Figure 1.

The objectives of the reptile survey were to:

- Establish presence or likely absence of reptiles within areas of suitable habitat within the site;
- Determine whether any reptile population present was viable (i.e. reproducing); and
- Determine the population size class of any reptile population present.

The four common reptile species native to Britain (slow worm, common lizard, adder and grass snake) are partially protected under the Wildlife and Countryside Act 1981 (as amended). Under this legislation, it is an offence to intentionally or recklessly kill or injure any of these species. They are also listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act as they have been identified as species of principal importance for conservation of biological diversity in England.

The areas surveyed within the land at Fineshade Wood were considered to have potential as reptile habitat.

All four of the common species of reptile were recorded during the survey; slow worm and common lizard populations were considered to be of a 'good' size. The populations of adder and grass snake were all categorized as 'low'. The proposals for the site would result in removing areas of suitable reptile habitat. As a result, a suitable mitigation strategy would be required to ensure that the reptiles are protected during any works. The mitigation strategy would involve a translocation and destructive search of the construction zone, details of which are provided in this report.

A receptor site would need to be created as part of the translocation. As suitable reptile habitat is being lost from the site, it should be recreated elsewhere on site to compensate for the area that is being lost to the development. Recommendations for habitat creation and enhancement are provided within this report and shown on Figure 3.

The associated NVC categories of survey results are shown in Figure 2.

The grassland across the site was identified as a mix of MG6 *Lolium perenne – Cynosurus cristatus* grassland and W24a *Rubus fruiticosus – Holcus lanatus* underscrub, *Cirsium arvense – Cirsium vulgare* sub-community. Along the northern external perimeter, the grassland was identified as OV25 *Urtica dioica – Cirsium arvense* community.

No rare or endangered plant species were identified during the survey and the NVC habitats identified do not warrant any special protection in terms of their botanical quality.

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1 INTRODUCTION

1.1 RPS Planning and Development Limited (RPS) was commissioned by Countrywide Park Homes to carry out an ecological assessment of proposals to install holiday lodges of an area of land at Fineshade Wood, Corby, Northamptonshire.

1.2 The ecological assessment was informed by additional ecology surveys on the site comprising a reptile survey and National Vegetation Classification (NVC) survey.

1.3 A Preliminary Ecological Appraisal of the site (RPS, 2019) identified that the areas of long grass and tall ruderal vegetation provided suitable reptile habitat. This was mainly found along the north of the site, the roadside verge and a few swards in the south east corner of site. The areas along the north of the site provided good connectivity to further suitable areas of reptile habitat outside of the site boundary.

1.4 The site location and locations of reptile refugia are shown on Figure 1.

1.5 The objectives of the reptile survey were to:

- Establish whether reptiles were present or likely absent within areas of suitable habitat found on site;
- Determine whether any reptile population present was viable (i.e. reproducing); and
- Determine the population size class of any reptile population present.

1.1.1 The NVC aims to:

- Identify the species that occur on site;
- Establish the habitat communities present within the boundary of the development;
- Determine whether the habitats present on site meet the requirement to receive certain levels of protection i.e. UKBAP habitat; and
- Identify the quality of the grassland to identify whether any mitigation would be required for its loss.

1.6 This report describes the methods used in the surveys (Chapter 2), presents the results that were obtained (Chapter 3) and draws conclusions about the presence of reptiles within the site and the value of the habitats present and if they could be affected by the proposals (Chapter 4). Mitigation measures are also described in Section 4.

Legislation

1.7 The four common UK reptiles (slow worm, grass snake, common lizard and adder) are partially protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), making it illegal to kill or injure a common reptile or trade in them. They are all also listed under Section 41 of the NERC Act (2006) as they have been identified as species of principal importance for conservation of biological diversity in England.

2 METHODOLOGY

2.1 The reptile survey followed the recommended methodology described in the Herpetofauna Worker's Manual (JNCC, 2003) and Froglife's Surveying for Reptiles (Froglife, 2016). It was undertaken by experienced ecologists and was conducted in areas of the site identified as containing the most favourable habitat for reptiles.

2.2 An initial assessment to identify habitats with potential to support reptiles was undertaken during a Phase 1 habitat survey of the site (RPS, 2018).

Reptile Survey Method

2.3 Reptiles are best surveyed from April following hibernation until June and then again in September. At this time of year, the sun is often shining but air temperatures are low, so reptiles spend a long time basking and are therefore more easily observed.

2.4 The reptile survey was conducted using artificial refugia made from corrugated tin and roofing felt measuring 50cm x 50cm and 50cm x 100cm. These provide shelter and basking opportunities for reptiles, which can be recorded on or under the refugia in suitable weather conditions.

2.5 On the 2nd April 2019 reptile refugia was placed in areas identified as providing the greatest suitability for reptiles and which had optimal basking opportunities. The locations of the refugia are shown on Figure 1.

2.6 The refugia were left undisturbed for 10 days prior to the first survey being undertaken in order to allow them to bed down and to give them time for reptiles to find them. In order to conform to best practice guidelines, the refugia was inspected on seven separate survey visits and a visual search was undertaken when the refugia were being laid.

2.7 On each of the visits every refugia was inspected for reptiles basking on top and was then lifted to identify any reptiles beneath. The number, species, age class and where possible, sex of each reptile observed was recorded.

2.8 Visit times were selected to coincide with suitable weather conditions and times of day when refugia would be acting as heat traps which would attract reptiles to use them whilst basking. Periods of strong wind or heavy rain were avoided, and surveys were typically undertaken during periods of sunshine and when air temperatures were between 10°C and 18°C.

2.9 Froglife (1999) provides a basic index of relative abundance of reptiles based on peak survey counts (Table 1). The figures in the table refer to the maximum number of adults seen by direct observation and/or on or under refuges by one person in one day.

Table 1: Reptile Population Class Sizes

Species	Low population	Good population	Exceptional population
Adder	<5	5-10	>10
Grass snake	<5	5-10	>10
Common Lizard	<5	5-20	>20
Slow worm	<5	5-20	>20

NVC Survey

2.10 A National Vegetation Classification (NVC) survey was carried out following the methodology and guidelines detailed in the JNCCs NVC User's Handbook (Rodwell et al. 2006).

2.11 Fieldwork was carried out on the 5th June 2019 by Alex Powell GradCIEEM, a qualified ecologist and botanist. The survey was undertaken during the optimal time for grassland botanical surveys.

2.12 A general walkover of the site was carried out to identify homogenous stands of vegetation within the survey boundary.

2.13 Quadrat data was collected (1m x 1m quadrats) from within their represented stands of homogenous vegetation. Plant species within their quadrats were recorded following the nomenclature in Stace (2010). Percentage cover and DOMIN values were also recorded for each species. A breakdown of DOMIN values and their estimated percentage cover are outlined in Table 1.

2.14 The habitat community was identified for each homogenous stand of vegetation using the computer programme TABLEFIT. The TABLEFIT programme computes 'Goodness of Fit' between quadrat data (from sampled vegetation) and the published NVC tables (which define the NVC communities and sub-communities). This gives an initial indication of which NVC types the data are most likely to have been drawn from – the highest coefficient does not necessarily indicate the correct NVC diagnosis.

2.15 It was then necessary to identify the NVC type through careful consideration of the NVC descriptions in British Plant Communities (Rodwell 1991, 1992, 1995, 2000 and Rodwell et al., 2000). In particular, there is no guarantee that the highest coefficient corresponds to the 'correct' NVC diagnosis.

Table 2: DOMIN scale and percentage cover estimates

Cover (%)	DOMIN value
<4 % (few individuals)	1
<4 % (several individuals)	2
<4% (many individuals)	3
4 – 10 %	4
11 – 25 %	5
26 – 33 %	6
34 – 50 %	7
51 – 75 %	8
76 – 90 %	9
90 – 100 %	10

Limitations

NVC Survey

2.16 It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no investigation can ensure the complete characterisation and prediction of the natural environment.

2.17 The species identified on site were recorded on one day, and although the survey was undertaken in the optimal survey period, it does not illustrate a comprehensive list of species due to seasonal differences in plant growing times.

Analysis

NVC software such as MATCH and TABLEFIT give an initial indication of which NVC types the data are most likely to have been drawn from. There is no guarantee that the highest coefficient corresponds to the 'correct' NVC diagnosis.

3 RESULTS

3.1 The results of the reptile and NVC surveys are described in this section.

Reptile survey

Background

3.2 A desk study (RPS, 2018) identified 12 records of adder, four records of common lizard and six records of slow worm within 2km of the site.

Habitat Assessment

3.3 The Phase 1 Habitat Survey (RPS, 2018) identified a range of habitats within the site. The site predominantly consists of poor semi-improved grassland pasture with areas of ruderal nettles scattered across the site. Another field with a similar composition lies directly adjacent to the south east of the site, both of which are grazed by sheep.

Survey Results

3.4 Survey visits were undertaken on the following dates: 18th April, 24th April, 7th May, 24th May, 30th May, 3rd June and 5th June.

3.5 Each visit included checking artificial refugia and undertaking a visual search of suitable habitat on site.

3.6 The results of the survey are detailed in Table 3 below and shown on Figure 1.

Table 3: Reptile Survey Results

Survey	Date	Weather	Species found
1	18/04/2019	16C, dry, partial sun with a light breeze	2 CL, 2 male SW, 4 female SW
2	24/04/2019	20C, dry, sunny with a light breeze	3 sub-adult CL, 2 CL, 6 female SW, 2 male SW, 2 juvenile SW
3	07/05/2019	9C, dry, sunny patches with a light breeze	4 CL, 1 juvenile CL, 1 SW sloughed skin, 1 male SW
4	24/05/2019	20C, dry, sunny, warm and a moderate breeze	2 adult Adder, 2 CL, 2 female SW, 2 male SW
5	30/05/2019	18C, dry, sunny with a light breeze	1 adult GS, 11 adult SW, 2 juvenile SW and 2 sub-adult SW
6	03/06/2019	17C, Dry, sunny with scattered cloud and a strong breeze	1 sub-adult GS, 10 adult SW and 2 juvenile SW
7	05/06/2019	15C, dry, sunny with some cloud and a fresh breeze	4 female SW, 5 male SW, 3 sub-adult SW, 4 juvenile SW, 1 sub-adult AD and 4 CL

3.7 A peak count of one adult grass snake, 16 slow worms, two adders and five common lizards were identified during a single site visit. Following the population class size assessment (Table 1), there was considered to be an ‘good’ sized population of slow worm and ‘low’ sized populations of common lizard, grass snake and adder.

3.8 Juvenile and sub-adult common lizard, grass snake, adder and slow worm were recorded indicating that viable breeding populations of all reptile species was present.

3.9 The majority of the reptiles were recorded along the northern site boundary and roadside verge, this area comprised taller grassland with bramble spreading through the scattered grass. Common lizard and slow worm were also recorded amongst the taller vegetation in the south west corner of the site.

NVC Survey

Homogenous Stand 1

3.10 The grass verge that ran along the external perimeter of the fence was much longer in habit due to the different approach in management. Whereas the field is occasionally grazed, the grass verge undergoes minimal management with occasional strimming. Due to this the grass verge was found to be much more floristically diverse than the field with a higher proportion of wild flowers

3.11 The dominant graminoid species is this stand was Tall Fescue, with forb species ranging in dominance along the stand. Common Vetch *Vicia sativa*, Ribwort Plantain *Plantago lanceolate* and Meadow Cranesbill *Geranium pratense* were the most abundant of the forb species

Table 4: Results of TABLEFIT Analysis – Stand 1

Rank	NVC Community	GOF
1	**W24b** Rubus fruiticosus - *Holcus lanatus* underscrub, *Arrhenatherum elaitus – Heracleum sphondylium* sub-community	41
2	**OV25** *Urtica dioica – Circium arvense* community	40
3	**OV25c** *Urtica dioica – Circium arvense* community, *Lolium perenne – Papaver rhoeas* sub-community	37

3.12 TABLEFIT suggested W24b Rubus fruiticosus - *Holcus lanatus* underscrub, *Arrhenatherum elaitus – Heracleum sphondylium* sub-community and OV25 *Urtica dioica – Circium arvense* community as the communities with the highest affinity within Stand 1.

3.13 Stand 1 shows low affinity with both communities, which is shown in the low Goodness of Fit (GOF) value in Table 4.

3.14 The species composition of Stand 1 has a closer fit to that of OV25 than that of W24b. this is due to Common Nettle, Creeping Thistle and Common Thistle being frequent to dominant throughout the stand, as described in OV25.

3.15 OV25 is associated with disturbed areas of nitrogen rich soils and with that of poorly managed pastures. This fits with Stand 1 in that it is grazed pasture and would have a high nutrient content.

3.16 Stand 1 is less likely to be classified as W24b. This is due to the presence of Bramble, which is a constant species in W24b, not being found to be dominant within stand one.

Homogenous Stand 2

3.17 Within the field there is an area of noticeably different vegetation. Stand 2 comprised a linear area with a differing species composition, compared to the wider field. There was also a higher number of Common Nettle *Urtica dioica* suggesting higher levels of nitrogen were present. This is most likely down to the presence of sheep that graze on the field.

3.18 The dominant graminoid in this stand was Soft Brome *Bromus hordeaceus* and Rough Meadow-grass *Poa trivialis* with the dominant forb species being White clover and Common Nettle *Urtica dioica.*

Table 5: Results of TABLEFIT Analysis – Stand 2

Rank	NVC Community	GOF
1	**MG12a** *Festuca arundinacea* grassland, *Lolium perenne – Holcus lanatus* sub-community	25
2	**W24a** Rubus fruiticosus - Holcus lanatus underscrub, Circium arvense – Circium vulgare sub-community	25
3	**MG8** Cynosurus cristatus – Caltha palustris grassland	24

3.19 TABLEFIT ranked both MG12a *Festuca arundinacea* grassland, *Lolium perenne – Holcus lanatus* sub-community and W24a *Rubus fruiticosus - Holcus lanatus* underscrub, *Circium arvense – Circium vulgare* sub-community as the best fit NVC categories.

3.20 Tall Fescue *Festuca arundinacea* was a constant species across the site and was found in 13 out of the 15 quadrats. However, MG12a is associated with costal and salt marsh communities therefore this community has been ruled out.

3.21 W24a has the same value GOF to that of MG12a as shown in Table 5 above. Out of these communities W24a is a better fit due to the presence of Creeping Thistle and Common Thistle.

Homogenous Stand 3

3.22 The majority of the site had a consistent make up of plant species and therefore was considered as one continuous, homogenous stand.

3.23 The grassland was dominated by a mix of Tall fescue *Festuca arundinacea* and Rough Meadow-grass *Poa trivialis*, with dominant forb species such as White Clover *Trifolium repens*, and Creeping Cinquefoil *Potentilla reptans*. From the high numbers of White Clover there is clear nitrogen improvement from the grazing of sheep.

Table 6: Results of TABLEFIT Analysis – Stand 3

Rank	NVC Community	GOF
1	**MG8** Cynosurus cristatus – Caltha palustris grassland	41
2	**MG6** Lolium perenne – Cynosurus cristatus grassland	36
3	**MG12a** *Festuca arundinacea* grassland, *Lolium perenne – Holcus lanatus* sub-community	36

3.24 MG8 had the highest GOF value as shown in Table 6 above. However, this community is associated with inundated pasture on sloping land near streams and rivers. Although Stand 3 is pasture, the habitat is not the same as described for MG8 therefore this community has been ruled out.

3.25 MG6 is also described as pasture and the constant species match that of stand three with Red Fescue, Yorkshire Fog and White Clover all present and wide spread across the stand.

3.26 As the species recorded fit this community and it was suggested by TABLEFIT this is the most likely community for Stand 3.

4 CONCLUSIONS

Reptiles

4.1 A peak count of 16 slow worms was recorded during a single survey visit. This was considered to be a 'good' size population of slow worms. Five common lizards, two adders and one grass snake were also recorded during a single survey visit. These were considered to be a 'low' population size.

4.2 The northern boundary of the site, including the road side verge was found to support the greatest number of reptiles. The south western part of the site that comprised tall ruderal and taller areas of grass also had reptiles present. The southern boundary of the site had much fewer reptiles recorded along it.

4.3 In conclusion, the areas of grassland that were not sheep grazed were found to support more reptiles than grazed areas. However, reptiles were also utilising small patches of taller vegetation within the grazed field.

4.4 Further areas of suitable habitat, comprising taller grassland and ruderal vegetation of similar structure to those on site, were present in the south east, as a continuation of the roadside verge of the northern boundary and in the fields and old orchard north of the site. These were well connected and it is likely that the reptile population recorded also utilises the similar habitat outside of the site boundary.

4.5 The proposed development would result in the loss of the following areas of suitable habitat for reptiles:

- The areas of taller vegetation within the grass field where the proposed holiday lodges and associated access routes would be located;
- The northern section of the site, that is grazed grassland, next to the roadside verge would be temporarily lost to landscaping; and
- Two small areas of taller grass and scattered scrub along the roadside would be lost to make a new access in the south east of the site and a cycle path in the north of the site.

4.6 Therefore, to protect the reptile populations present, a number of mitigation measures are recommended.

NVC Survey

4.7 Three homogenous stands were identified during the NVC survey: the strip of grassland on the external boundary along the road; a section of 'rough grassland' within the centre of the field; and the remaining area of grassland within the field.

4.8 The NVC analysis revealed that the most likely NVC categories were OV25 for Stand 1, W24a for Stand 2 and MG6 for Stand 3.

4.9 The NVC categories suggested using TABLEFIT for Stand 1 and 3 fit the in-situ habitat description and are likely to be an accurate representation of the site.

4.10 Stand 2 has a low GOF value suggesting a poor fit. This is most likely from the high levels of nitrogen in the soil from grazing. This would encourage the growth of species such as nettle and thistle, which out-compete other species.

4.11 The NVC categories identified are not associated with any level of protection.

4.12 No rare or endangered plant species were recorded during the survey.

Mitigation Measures

4.13 The aims of the mitigation strategy would be to:

- Protect reptiles from injury of death during the development of the site;
- Provide suitable alternative habitat capable of supporting the reptile populations identified;
- Maintain connectivity to existing off-site habitats; and
- Provide suitable areas for wildflowers to develop and thrive.

4.14 The loss of suitable habitats during the construction phase would put reptiles at risk of injury or death, therefore a relocation exercise would be required to move reptiles from the areas affected to a receptor area before work starts.

Reptiles

Receptor Site Selection

4.15 Guidance suggests a receptor site should be as close as possible to the existing site and with suitable habitats of a similar size to the donor site. It must be under a stable ownership which will be managed in a sensitive way on an ongoing basis. Management should not include substantial grazing, nor should the receptor site be an area which encourages substantial amounts of public access.

4.16 The proposed receptor site is under the ownership of Countrywide Park Homes Ltd. who would be committed to managing it in the long-term as suitable reptile habitat.

4.17 The site should not have a substantial existing population of reptiles. It may be acceptable for a small population to be present, providing that the site is clearly capable of supporting the anticipated numbers of translocated animals.

4.18 A description of the receptor site is provided below. The receptor site comprises an area of high value reptile habitat along the roadside verge which continues from the development site. No reptiles would be translocated to this area at it is already likely to support a substantial population of reptiles and is likely to already be part of the reptile populations habitat.

4.19 The grassland field to the south east is likely to already support low numbers of reptiles within patches of taller vegetation that is not grazed but is unlikely to support a substantial part of the reptile population due to grazing pressures. Therefore, there is an opportunity to enhance the field into higher value habitat to allow it to support reptiles displaced from the proposed lodge site.

Receptor Site

4.20 The receptor site chosen is part of the field directly south east of the site boundary which connects to the site along the north east boundary. There is a natural corridor as it joins part of the wide roadside verge, where the majority of the reptiles were found during the survey. The field is of a similar composition to the site comprising sheep-grazed grassland, with some patches of taller vegetation. This would suggest that the population of reptiles found within the survey area would also already be utilising this adjacent field in a similar way to the development site, with low numbers of reptiles utilising taller areas of vegetation.

4.21 The existing roadside verge along the northern boundary, comprising taller rough grassland and creeping bramble scrub would be retained along the full length of the development site and the receptor site. The verge would not form part of the receptor site but would connect to it as it already supports substantial populations.

4.22 The receptor area would be managed to provide a mosaic of favourable habitat structures. This would incorporate areas of grassland with tall tussock swards which would be left to provide reptiles with shelter as well as areas of shorter more open grassy areas to provide basking opportunities. Discrete areas of scrub would be incorporated but managed, thus providing more sheltering opportunities for reptiles without out-competing the grassland habitat.

4.23 To achieve the desired mosaic vegetation the receptor site would be managed sensitively through low density grazing of sheep seasonally. The grazing density would be reduced to less than current levels to allow a greater diversity of sward heights to develop.

4.24 If this was not possible the same mosaic effect would be achieved through a cutting regime. There would be several stages to this regime and an annual cut of the grassland late in the season (late autumn/early winter) once reptiles are in hibernation. This would be on a rotational basis every year with half the field managed as described above first, leaving the other half to grow and then, the following year, the second half would be managed as described above with the first half left to grow. This would enable tall vegetation to be present at all times, providing plenty of shelter for reptiles.

4.25 The receptor site would be further enhanced for reptiles through the creation of refugia and hibernacula constructed from rubble and logs.

4.26 The receptor site and creation of refugia would be established before any reptile fencing or translocations were installed and started.

4.27 The habitat enhancement would particularly focus on providing replacement habitats for slow worm and common lizard as they were recorded in the highest numbers and their populations are likely to be largely confined to the fields south and east of the road (although there is likely to be some movement into nearby habitats to the north).

4.28 Adder and grass snake are considered to be more mobile species that would utilise habitats within a much wider area. However, ensuring the common lizard and slow worm populations were maintained would ensure a food source for both snake species was available and the habitats created would also be suitable for these species.

4.29 The reptile mitigation plan is shown in Figure 3.

Reptile Exclusion Fencing

4.30 Reptile exclusion fencing would be installed around the field where the proposed holiday lodges would be located. This would incorporate the new road entrance and bicycle path as well as any associated landscaping areas.

4.31 The fencing would be installed during appropriate weather conditions when reptiles are likely to be active and have emerged from hibernation, i.e. when it was dry and when temperatures were above 5°C.

4.32 The installation of the fencing, and any vegetation clearance necessary to clear the route of the fence, would be overseen by an experienced ecologist to ensure that any reptiles encountered were not harmed and were collected and moved to the receptor site.

4.33 Once the ground was clear of vegetation and the ecologist was satisfied that no reptiles were present a trench would be excavated along the fence line and the fence and posts installed.

4.34 Where practicable, trenches would be dug by hand. If it were necessary to use machinery, the type used would be kept as small as possible and the access routes used would be hand searched in detail by the ecologist for reptiles.

4.35 The fence should be made of UV proof polythene sheet to prevent degradation and be supported by soft wood timber stakes at approximately 2m intervals. The polythene should be no less that 60cm high and be buried to a depth of at least 15cm to prevent any reptiles burrowing under it and gaining access to the development area. The polythene should be folded over at the top and facing outwards from the site to provide an overhang making movement by reptiles over the top of the fence more difficult. The polythene should be laid horizontally at the base of the trench facing into the site before being covered in compacted soil to prevent reptiles from burrowing underneath it.

4.36 The fencing should be retained and maintained throughout the construction phase of the development to prevent reptiles from outside of the site from moving into the development area. Vegetation should be regularly strimmed to prevent it from growing up beside the fence which may aid reptile movement over it.

4.37 Following the destructive search (details later in this section), the site should be maintained as bare ground to prevent suitable habitat reoccurring. Once all construction and landscaping activities have been completed the fencing should be removed under the watching brief of an ecologist, before reptiles hibernate.

Translocation Exercise

4.38 Prior to the commencement of the translocation survey, artificial refugia comprising roofing felt and corrugated metal tins measuring 50cm x 50cm or 50cm x 100cm would be positioned within suitable habitat across the site. This would be done after the exclusion fencing had been installed.

4.39 The minimum recommended density of approximately 50 refugia per hectare of suitable habitat would be increased to 100 refugia per hectare to optimise opportunities for capturing reptiles.

4.40 The refugia would be left in-situ for a period of at least two weeks to enable the refugia to settle in. if the weather during these two weeks was considered unseasonably cool or wet and reptile activity was considered likely to be low, the refugia would be left out for an additional period until two weeks of suitable weather had been achieved.

4.41 Once this had been achieved, the capture survey would commence to capture reptiles found basking on or under refugia. Survey visits would be undertaken during suitable weather conditions when there was little cloud cover, no rain or strong winds, and when temperatures were between 10°C and 20°C.

4.42 All reptile captures would be by hand and with the use of reptile hooks, for adder, by suitably qualified ecologists experienced in the handling of reptiles.

4.43 All captured reptiles would be placed into a suitable aerated cloth bag with a drawstring to close off the opening. They would be transferred to the receptor site no later than 1 hour after capture to help minimise the amount of stress.

4.44 At the receptor site, reptiles would be released into suitable areas of habitat which provide cover from potential predators.

4.45 The translocation exercise would comprise 60 days capture effort but would continue beyond this if necessary until there were five consecutive days with no reptile sightings or captures.

Destructive Search

4.46 Upon completion of the capture survey a targeted destructive would be undertaken on any parts of the site considered to contain features of value as reptile refugia, which may include particularly dense grass tussocks

4.47 Areas would be hand searched for reptiles by an ecologist and any found would be translocated to the receptor site. When the features had been searched, they would be carefully removed under the watching brief of an ecologist who would check for reptiles present below ground as the top layer of soil was removed.

4.48 Grass tussocks should be cut to approximately 10cm in height using a hand held brushcutter/strimmer before being rechecked by the ecologist. Once confirmed clear of reptiles the tussocks should be cut down to ground level.

4.49 Once tussocky grassland had been removed a small excavator should be used to carefully lift turfs and shake out the roots and soil so that the ecologist can search for any additional reptiles which may be present below the surface.

4.50 Areas would be hand searched for reptiles by an ecologist and any found would be translocated to the receptor site. When the features had been searched, they would be carefully removed under the watching brief of an ecologist who would check for reptiles present below ground as the top layer of soil was removed.

4.51 The destructive search should be undertaken systematically starting at the access point onto the site and progressing methodically across the site to ensure that the excavator does not track across any areas of reptile habitat before they are removed.

4.52 This will render the site unsuitable for reptiles and will allow construction to commence. Once the habitat had been removed the site should be maintained in that condition to prevent suitable reptile habitat from reoccurring

Landscaping

4.53 The landscaping proposals for the north of the site would incorporate areas of rough grassland on the southern side of the shrub planting with connectivity to the roadside verge. Extending and managing the grass margin in the north of the site, through one yearly cut at the end of September this would extend the proportion of good reptile habitat on site.

4.54 The proposals for trees and shrub planting along the northern boundary would be kept to a minimal width and height kept at below 2.5m. This would help reduce shading of suitable reptile habitat along the grassland verge to the north of the proposed landscaped area.

4.55 The landscaped area would comprise native trees and shrubs which would add additional structural diversity and in time would provide hibernacula around their roots. This would compensate for the habitat lost in the north of the site and improve on the current condition of the habitat.

NVC

4.56 The management regime of the reptile receptor site described in the reptile mitigation plan above, will also benefit the diversity of flora that is present on site. The annual cuts late in season will allow rarer flowers the chance to fully develop and set seed. The rotational method will also provide bi-annuals the chance to fully develop.

FIGURES

Figure 1: Reptile Survey Results

Notes
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Legend

- Site location
- Reptile Mats
- Adder
- Grass Snake
- Common Lizard
- Slow Worm
- Slow Worm slough

Rev	Description	By	CB	Date

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Project: Fineshade Wood

Title: Reptile Survey Results

Status	Drawn By	PM/Checked By
DRAFT	BG	SB
Project Number	**Scale @ A3**	**Date Created**
ECO00477	1:750	JUN 2019
Figure Number		**Rev**
1		-

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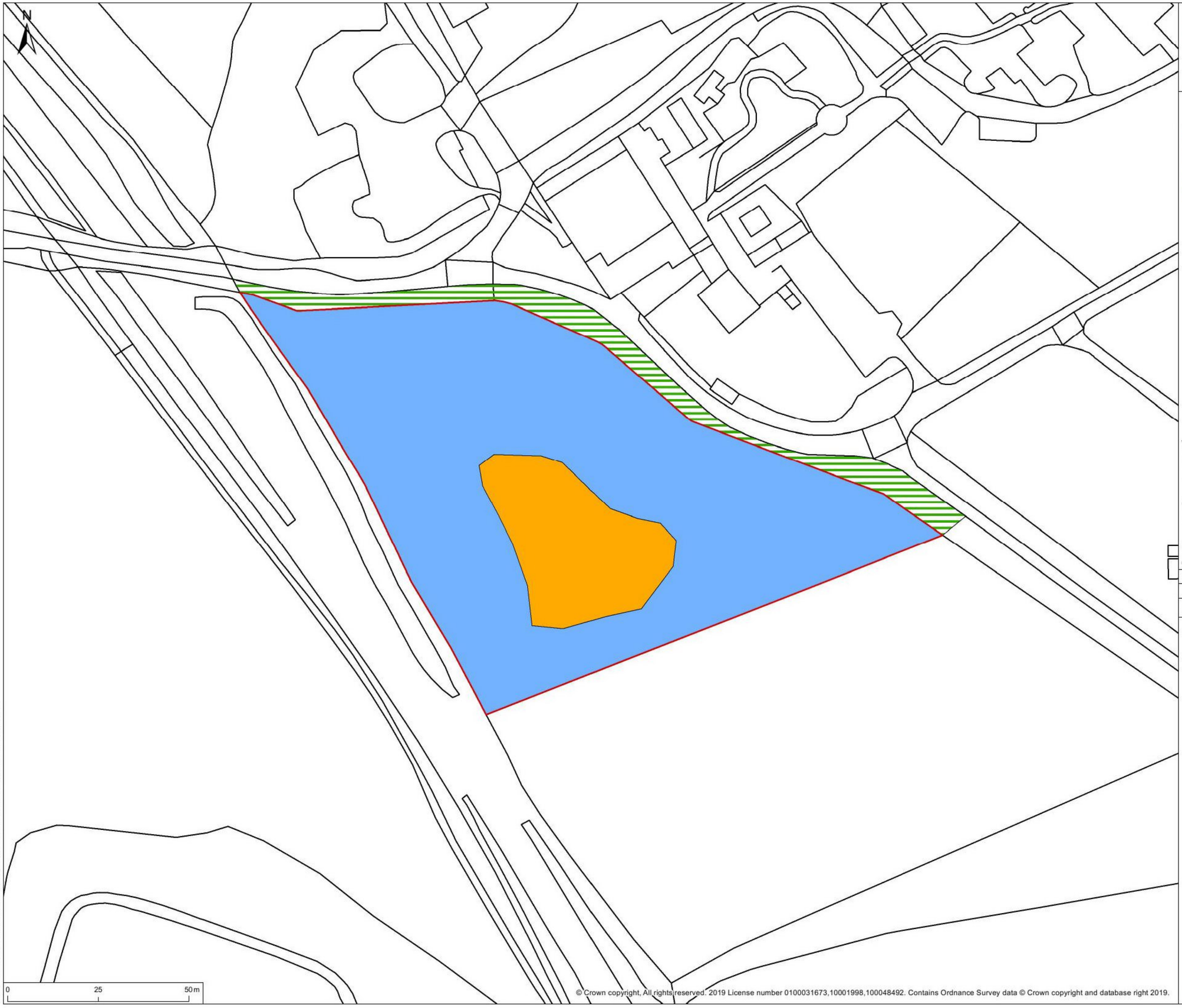
Figure 2: NVC Survey Plan



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Legend

- Site location
- MG6
- OV25
- W24a

W24a: Rubus fruticosus - Holcus lanatus underscrub, Cirsium arvense - Cirsium vulgare sub -community

OV25: Urtica dioica - Cirsium arvense community

MG6: Lolium perenne - Cynosorus cristatus grassland

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Title: NVC Plan

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Figure 3: Reptile Mitigation Plan

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Legend

- Site location
- Retained rough grassland
- Grassland Mosaic
- Refugia and Hibernacula
- Native Shrub Mix
- Rough Grassland

Rev	Description	By	CB	Date

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Client: Countrywide Park Homes Ltd

Project: Fineshade Wood

Title: Mitigation Plan

Status	Drawn By	PM/Checked By
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Project Number	**Scale @ A3**	**Date Created**
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Figure Number		**Rev**
3		-

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REFERENCES

Atherton I., Bosanquet S., Lawley M. (2010). Mosses and Liverworts of Britain and Ireland a field guide. Latimer Trend & Co. Ltd, Plymouth.

Froglife (2016) Surveying for reptiles. Froglife, Peterborough

Gent, A.H., and Gibson, S.D., eds. (2003). Herpetofauna Workers' Manual, 2nd edition. Joint Nature Conservation Committee, Peterborough

HMSO, (1981) Wildlife and Countryside Act 1981 (as amended) HMSO, London. The Stationery Office, Norwich.

HMSO, (2006) Natural Environment and Rural Communities Act 2006 (as amended) HMSO, London. The Stationery Office, Norwich.

Maddock A. (2008). UK Biodiversity Action Plan; Priority Habitat Descriptions. BRIG

Rodwell J. (2006). Joint Nature Conservation Committee (JNCC). National Vegetation Classification: User's handbook.

Rodwell J. (1992). Joint Nature Conservation Committee (JNCC). British Plant Communities Volume 1: Woodlands and scrub.

Rodwell J. (1992). Joint Nature Conservation Committee (JNCC). British Plant Communities Volume 3: Grasslands and montane communities.

Rodwell J. (1992). Joint Nature Conservation Committee (JNCC). British Plant Communities Volume5: Maritime communities and vegetation of open habitats.

RPS (2018) Land at Fineshade Woods Preliminary Ecological Appraisal. Abingdon

Stace C. (2010). New Flora of the British Isles. Cambridge University Press: Cambridge.

Thorpe D. (No Date). Snowdonia Biodiversity Action Plan. HF4

APPENDICES

Appendix A

Frequency of species table

Frequency describes how often a species is encountered in different stands irrespective of how much that species is present in each stand.

Frequency of Species

Frequency class	
I = 1-20% (1 in 5)	Scarce
II = 21-40%	Occasional
III = 41-60%	Frequent
IV = 61-80%	Constant
V = 81-100%	Constant

Appendix B

Floristic table showing species list as well as DOMIN, Abundance and Frequency values

Species	Common Name	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Abundance	Frequency
Vascular Plants		DOMIN																I - V
		HS1				HS2					HS3							
Anthoxanthum odoratum	Vernal Sweet-grass											4					4	I
Anthriscus sylvestris	Cow Parsley				2												2	I
Bellis perennis	Daisy	3															3	I
Bromus hordeaceus	Soft Brome					6	4	2	7				2				2 – 7	II
Centurea nigra	Knapweed													2			2	I
Circium arvense	Creeping Thistle	4		4							4			7	5	5	4 – 7	II
Circium vulgare	Spear Thistle	4	2				4		5	4	5		4				2 – 5	III
Dactylis glomerata	Cock's Foot	5										4	5				4 – 5	I
Festuca arundinacea	Tall Fescue	7	4	7	7	4	6	7		7	6		5	4	5	5	4 – 7	V

Species	Common Name	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Abundance	Frequency
Vascular Plants		DOMIN																I - V
		HS1				HS2					HS3							
Festuca rubra	Red Fescue				4							5	5	5			4 – 5	II
Galium aparine	Cleavers		4	5													4 – 5	I
Geranium disectum	Cut-leaved Cranesbill							2									2	I
Geranium molle	Dove's-foot Crane's-bill			3			2				2	2				4	2 – 3	II
Geranium pratense	Meadow Crane's-bill		6														6	I
Heracleum sphondinium	Hogweed		4														4	I
Holcus lanatus	Yorkshire Fog					4	4	4							5		4 – 5	II
Lathyrus pratensis	Meadow Vetchling				2												2	I
Lolium perenne	Pereneal Rye-grass	5															5	I

Species	Common Name	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Abundance	Frequency
Vascular Plants		DOMIN																I - V
		HS1				HS2					HS3							
Medicargo sp.	Medick sp.					2					4						2 – 4	I
Plantago lanceolata	Ribwort Plantain	2															2	I
Poa trivialis	Rough Meadow-grass	4				4	5			4				4		5	4 – 5	II
Potentilla reptans	Creeping Cinquefoil	3										5	5	4			3 – 5	II
Ranunculus acris	Meadow Buttercup					4	2	2	4	4		6	2	2			2 – 6	III
Ranunculus bulbosus	Bulbus Buttercup	4															4	I
Ranunculus repens	Creeping Buttercup						2		2								2	I
Rumex crispus	Curled-leaved Dock						4			5					4		4 – 5	I
Rumex obtusifolius	Broad-leafed Dock														4		4	I

Species	Common Name	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Abundance	Frequency
Vascular Plants		DOMIN																I - V
		HS1				HS2					HS3							
Rumex sanguineus	Wood Dock		4			4		5									4 – 5	I
Sonchus arvensis	Field Sow-thistle			4													4	I
Stellaria graminea	Lesser Stitchwort					5							4				4 - 5	I
Tanacetum vulgare	Tansy			4													4	I
Tragopogon pratensis	Goat's-beard				2												2	I
Trifolium arvense	Hare's-foot Clover											4				4	4	I
Trifolium repens	White Clover	2				4		4	5	5	7	2	4	4	4	6	2 - 7	IV
Urtica dioica	Common Nettle		7	5	4	4	4	6	4	4							4 - 7	III
Veronica persica	Common Field Speedwell					2	2			4	4	2		2	4		2 - 4	III

Species	Common Name	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Abundance	Frequency
Vascular Plants		DOMIN																I - V
		HS1				HS2					HS3							
Vicia sativa	Common Vetch	2				2	2	2	2				2	2		2	2	III