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Reptile Mitigation Statement

Land north of Sunnyside Cottages, Barnham

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Report Summary

1. The Ecology Co-op was commissioned by Manorwood to outline necessary mitigation for a proposed development on land north of Sunnyside Cottages, where there is suitable habitat for reptiles, and it has been assumed that there is a good population of reptiles present on the site.
2. Pre-construction work includes the creation of new habitats of value for reptiles such as hibernacula and high-value scrub forming in-situ 'receptor sites', followed by the fencing, trapping and translocation of common reptiles to these receptor sites.
3. Enhancement measures are also proposed for wider wildlife benefits including the creation of high-value scrub and wildflower meadow habitat which will be beneficial for a variety of wildlife as well as reptiles.
4. Site staff must be briefed prior to the commencement of construction on the importance of protecting the reptile fencing and contacting an ecologist in the event that any reptiles or other wildlife are identified within the construction zone.
5. Post construction management is detailed in Section 4 of this report.

This report has been prepared by The Ecology Co-operation Ltd, with all reasonable skill, care and diligence within the terms of the Contract with the client. This report only becomes the property of the client once payment for it has been received in full.

We disclaim responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.



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1 INTRODUCTION

1.1 Purpose of the Report

This document has been produced to demonstrate how a residential development upon land north of Sunnyside Cottages in Barnham, West Sussex will minimise its impact upon and enhance the site for common reptiles. It outlines all mitigation and compensation measures that are designed to ensure that valuable habitats are either protected, replaced or enhanced further to a proposal to construct two new residential dwellings with associated parking and soft landscaping.

All of the prescribed mitigation measures described within this document will be issued to relevant works contractors to ensure that they are carried out in full. Implementation of this will be overseen by a suitable ecological consultancy, and the works contractor will be given contact details for an ecologist so that any issues can be resolved promptly.

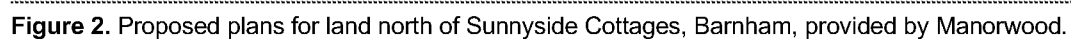
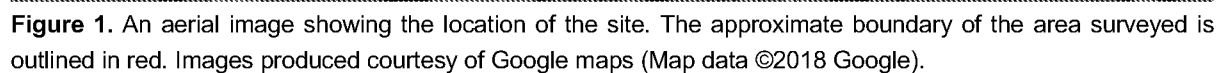
This report was commissioned and produced at the request of Manorwood.

1.2 Background

The Ecology Co-op has been commissioned to outline reptile mitigation for land north of Sunnyside Cottages, Yapton Road, Barnham, West Sussex, PO22 0AZ. The Ecology Co-op undertook a Preliminary Ecological Appraisal (PEA) at the site on the 22nd of November 2018 which identified the need for a reptile presence/absence survey. It has now been assumed that there is a good population of reptiles on the site, with this Mitigation Statement subsequently being produced to outline how reptiles will be protected through the development process.

The site is located to the north of Yapton Road, at the southern end of Barnham, a small semi-rural village 5km east of Chichester in West Sussex (see Figure 1). Surrounding the site are fields of pasture, deciduous woodland, a small camping and caravan park and residential properties. The site itself includes an unused greenhouse, long grassland, ruderal habitat, an area of establishing vegetation, scrub, a hedgerow and a dry ditch.

The proposed development (planning reference: BN/48/18/PL) includes the construction of two new residential dwellings on approximately the same footprint as the greenhouse with associated parking and soft landscaping (see Figure 2).





1.3 Reptiles

The site includes habitat of value for reptiles, including ruderal habitat (see Figure 3), scrub (see Figure 4), longer grassland (see Figure 5) and establishing vegetation (see Figure 6). A large brash pile on the western site boundary (see Figure 7) also provides a suitable hibernaculum for reptiles. Therefore, a reptile presence/absence survey was recommended.

It has been assumed that a population of reptiles is likely to be present on the site and therefore for any development to proceed, it is important that mitigation and compensation measures for reptiles is put in place to protect both individual reptiles and the longevity of the population.

The site ownership extends northwards of the proposed development site and will therefore not be impacted by the development. Given the small size of the construction zone this area of land can be retained for enhancement and used as an in-situ receptor sites. Mitigation would therefore include the construction of reptile barrier fencing around the proposed construction zone, with all reptiles subsequently 'trapped out', with all captured reptiles translocated to the retained grassland habitat. This process is outlined in detail in sections 2.1 to 2.2.



Figure 3. Ruderal habitat running the eastern site boundary.



Figure 4. Ruderal habitat and scrub running the northern wall of the greenhouse.



Figure 5. Long grassland running along the southern boundary.



Figure 6. Disturbed ground with establishing vegetation.



Figure 7. Brash pile and small greenhouse just north-west of the large greenhouse.



1.4 Rationale

Reptiles

Slow worms *Anguis fragilis*, adder *Vipera berus*, grass snakes *Natrix natrix* and common lizards *Zootoca vivipara* are protected against intentional killing or injuring and trade under part of subsection 9 (1) and all of subsection 9 (5) of the Wildlife and Countryside Act 1981. Destruction of known habitats whilst reptiles are present may therefore lead to an offence.

2 PRE-CONSTRUCTION MITIGATION MEASURES

2.1 Reptile Fencing Installation

The whole of the proposed construction zone, to include the working footprint of the site, additional landscaping areas, any material storage areas and areas to be tracked over by machines, will need to be fenced with semi-permanent, amphibian and reptile- proof fencing (see Figure 8). A semi-permanent polypropelene material that is tough and stabilised against ultraviolet light should be installed to a depth of not less than 20cm below ground and supported by stakes every 2 metres fixed with clout nails and washers. The fencing should be backfilled with earth and tightly compacted to make sure that it acts as an impassable barrier. The advantage of the semi-permanent fence is that it is less susceptible to damage by dogs, deer, foxes and other animals as well as any accidental damage by construction staff and is suitable for developments where fencing may need to remain in-situ over a long period of time.



Figure 8. An example of the semi-permanent fencing material that will be used.

The fencing would be required to make a continuous fence line to separate the construction site from all adjacent green habitats, where reptiles might migrate onto the site and would need to remain in-situ

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until all construction work deemed a risk to reptiles has been completed (i.e. earthworks and associated landscaping). This will prevent any amphibians from the surrounding areas to migrate onto the site during works.

Figure 9 shows the proposed route for the fence around the construction zone on land north of Sunnyside Cottages, Barnham. The proposed fence line is highlighted in yellow. The exact route of the fence lines on all boundaries of the receptor sites may need to be modified during construction to avoid damaging the roots of any of the trees and hedgerows. The areas highlighted in green represent the area of vegetation that should be retained and enhanced with hibernacula and high-value scrub to act as the in-situ receptor sites for any reptiles found and removed from the construction zone. These two receptor sites can be connected on the eastern boundary via the hedgerow which is to be created through the development.



Figure 9. Map showing the proposed route for the fence around the site at Overwood House, Farnham. The proposed fencing is highlighted in yellow and the proposed in-situ receptor sites highlighted in green.

The installation of the fencing would need to be overseen by a suitably qualified ecologist, with a hand search conducted of the fencing construction line ahead of a trencher or small excavator digging the trench for the installation of the fence. The fence will be installed outside of the reptile hibernation period (generally October to late-February dependent of weather conditions) to minimise the risk of killing or injuring reptiles during the fence installation.

Construction method:

1. At least 24 hours prior to the construction, the fence route would be hand searched by a suitably qualified ecologist and strimmed (using brush-cutters where necessary) of vegetation to a height of no more than 5cm and a two-metre width, with all cuttings raked off and removed. This will ensure that reptiles are discouraged from the fencing construction zone. The



strimming process will be completed in two passes, with the grass cut to a height of 10-15cm on the first pass, to reduce the risk of harming amphibians or reptiles during the strimming process. In the unlikely event that any nesting birds are found along the fencing route, then strimming will have to wait until the nesting birds and chicks have fledged and moved on.

2. The fencing construction zone will not be allowed to grow taller than 5cm prior to construction of the fence and materials will not be stored along the fencing route, which could otherwise attract amphibians and reptiles to them as refugia.
3. The entire length of the fence must first be established by excavating a 20cm wide 20cm deep trench, overseen under watching brief by a suitably qualified ecologist. Excavated earth will be piled on the outside edge of the trench so that it is easily backfilled once the fence has been installed.
4. Excavation work for the fencing trench will be carried out by an excavator or trencher not larger than 1.5 tons in weight to minimize ground disturbance.
5. Fence stakes will be positioned every 2 metres and will be sunk into the ground to a depth of at least 30cm to ensure they are secure.
6. The fencing material (which is supplied in 100kg rolls) will be rolled out along the outside edges of the trench and will be lifted into place when each full roll has been unravelled or cut into manageable sections.
7. The fencing sheet will be attached to the stakes using 2 clout nails and plastic washers at the top and 15cm from the bottom of each stake.
8. Once fixed the excavated earth will be backfilled along the trench and trodden in to ensure that it is lightly compacted to prevent animals from digging into it.
9. After establishment, fence checks would be undertaken every week to look for any signs of damage. Once construction has commenced, the fence checks and maintenance will become the responsibility of the works contractor.
10. All site staff must be briefed prior to the commencement of construction on the importance of protecting the reptile fencing and contacting an ecologist in the event that any reptiles or other wildlife is identified within the construction zone.

In order to prevent any amphibians and reptiles from migrating around the entrances to the site, the fence will have 'cut backs' on each of its ends (see Figure 10). This is where the fence loops back on itself, so that any animals travelling along the edge of the fence are guided away from the site entrance. In addition to this the grassy cover around the edge of the fencing will be monitored regularly to ensure that the grass is kept short and unsuitable for amphibians and reptiles to deter them away naturally where necessary.

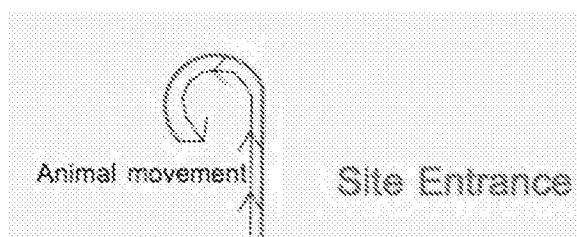


Figure 10. 'Cut backs' used to guide animals away from the site entrance.



2.2 Reptile Translocation Strategy

In line with current guidelines outlined by the Amphibian and Reptile Group UK (ARGUK), a target total of 60 translocation visits will be made between mid-March and October, with 'refugia' (which can be bitumen and or corrugated metal sheets) placed at a density of not less than 100 per hectare of suitable habitat in line with ARGUK guidelines. Translocation visits will be undertaken every working day where possible as long as the air temperature is between 9°C and 18°C degrees in the morning or mid-afternoon in the absence of wet or very windy weather. All captured reptiles will be placed into a large smooth-sided bucket with some grass/vegetation at the bottom and released immediately into the receptor sites, the northernmost and southernmost sections of the site which will remain undeveloped. All translocation details would be recorded into a table (see Table 1 below) and submitted to the council upon request as evidence of the work undertaken.

Although the target number of trapping checks is 60 visits, this should be used as a guide, with the total number of visits cut shorter if there is an early drop in captured numbers and at least 10 visits in suitable weather conditions are made without identifying any reptile presence within the construction zone. Although the construction zone will be declared free of reptiles following 5 clear visits after the target of 60 trapping visits has been achieved.

Table 1. Example table in the format used to document the translocation process.

Date	Start Time/finish of Survey	Air & refugia temperature °C	Weather Notes	Species Total	Notes
31/05/2017	10:15/11:15	15/25	100% high and light cloud cover, 5-10 mph wind	2M 3F 1 Juv Slow Worm 1M Common Lizard	N/A

2.2.1 In-situ Reptile Receptor Sites

The areas of land north and south of the construction zone, which are also in the same site ownership will remain undeveloped, with a management plan put in place to ensure these are maintained as suitable habitat for reptiles. Therefore, the area of establishing vegetation and area of long grassland is to be used as the receptor sites for all reptiles and amphibians captured. This area includes grassland and establishing longer vegetation, as well as ruderal habitat and scrub along the boundaries, which will provide cover from predators for foraging and basking sites and has connectivity to further hedgerows and treelines within the landscape. These areas can be enhanced for common reptile species using the recommendations outlined in Section 3 below.



3 ENHANCEMENTS

3.1 Hibernacula Creation

The in-situ receptor sites should be enhanced to increase the carrying capacity for common reptile species. This should include the creation of at least three new reptile hibernacula within this area. These can be built using logs and branches, piled on top of each other, with grass cuttings, earth and turf laid over the top to provide insulation (see Figure 11). These hibernacula would also provide benefits for other species including amphibians, solitary bees, wasps and other insects. The proposed locations for these are indicated in Figure 12.

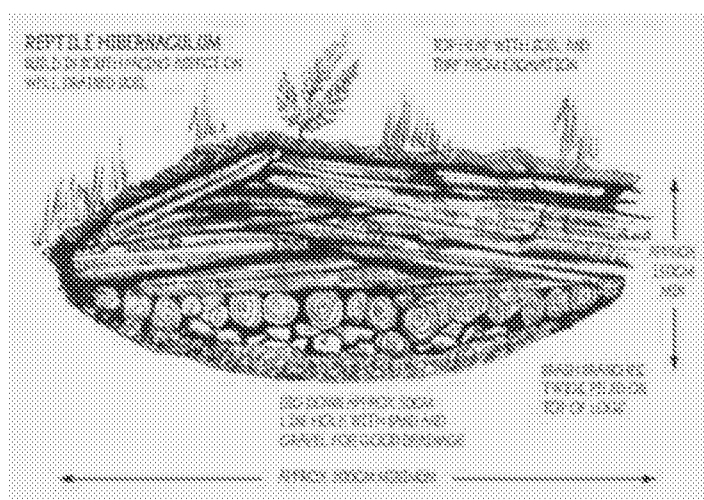


Figure 11. Illustration showing how to build a reptile hibernaculum. Image taken from the 'Reptile Habitat Management Guidelines' by Herefordshire Amphibian and Reptile Team and the Herefordshire Nature Trust.

3.2 High-value scrub creation

To increase the value of the site for reptiles further, areas of high value scrub habitat can be created across the in-situ receptor sites. On the northern boundary of the receptor sites, there is a line of ruderal habitat and developing scrub, which can be supplemented with additional planting and the provision of new artificial hibernacula to create additional cover for reptiles. This will also increase valuable habitat on the site for invertebrates and a range of mammals and birds. The scrub should include species such as: hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa*, wayfaring tree *Viburnum lantana*, dogwood *Cornus sanguinea* and bramble *Rubus fruticosus*. The recommended locations for this scrub are shown in Figure 12 below.



Figure 12. Recommended locations for high-value scrub creation and hibernacula. The brown triangles represent the approximate locations of the two hibernacula within the in-situ receptor areas and the blue rectangles indicate where high-value scrub can be created.

3.3 Wildflower Meadow Creation

A wildflower meadow should be established in the southern section of the northern in-situ receptor sites. This will increase the value of this area as foraging habitat for bats, birds, reptiles and amphibians as well as pollinating insects. To establish this as a wildflower area a process of light rotavating and seeding should be employed with good ground preparation essential to the success of the wildflower meadow. The sowing process is best undertaken between late August and the end of September during mild and wet weather best suited to seedling establishment or during mid-March to mid-May when the ground has sufficient moisture and there is very little risk of frosts. The rotavating process is to create an area of largely bare ground to allow the wildflower seed mix to establish. Immediately following rotavating, a suitable seed mixture containing not less than 20 wildflower and grass species should be sown across the ground at a density of four grams per square metre. Cutting the grass sward very short prior to rotavating the ground will also help to prepare a more suitable growing base. The species included must all be of native British origin. A recommended seed mixture is EM5 - Meadow mixture for loamy soils, which is available from Emorsgate seeds (www.wildseed.co.uk). Table 2 below details the composition of this mixture.

To ensure that reptiles or amphibians are not harmed during the rotavating process, habitat manipulation techniques must be used as detailed within Section 2.1 prior to this process.



Table 2. EM5 meadow mixture for loamy soils from Emorsgate Seeds.

Wild Flowers		
%	Latin name	Common name
0.5	<i>Achillea millefolium</i>	Yarrow
3	<i>Centaurea nigra</i>	Common Knapweed
1	<i>Daucus carota</i>	Wild Carrot
2.5	<i>Galium verum</i>	Lady's Bedstraw
0.3	<i>Geranium pratense</i>	Meadow Cranesbill
1.2	<i>Knautia arvensis</i>	Field Scabious
0.5	<i>Lathyrus pratensis</i>	Meadow Vetchling
0.4	<i>Leontodon hispidus</i>	Rough Hawkbit
0.5	<i>Leucanthemum vulgare</i>	Oxeye Daisy
0.5	<i>Lotus corniculatus</i>	Birdsfoot Trefoil
1	<i>Malva moschata</i>	Musk Mallow
0.5	<i>Plantago lanceolata</i>	Ribwort Plantain
0.5	<i>Plantago media</i>	Hoary Plantain
1	<i>Primula veris</i>	Cowslip
1	<i>Prunella vulgaris</i>	Selfheal
2	<i>Ranunculus acris</i>	Meadow Buttercup
1	<i>Ranunculus bulbosus</i>	Bulbous Buttercup
1.5	<i>Rhinanthus minor</i>	Yellow Rattle
1	<i>Rumex acetosa</i>	Common Sorrel
0.1	<i>Trifolium pratense</i>	Wild Red Clover
Grasses		
8	<i>Agrostis capillaris</i>	Common Bent
3	<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass (w)
3	<i>Briza media</i>	Quaking Grass (w)
32	<i>Cynosurus cristatus</i>	Crested Dogtail
10	<i>Festuca ovina</i>	Sheep's Fescue
20	<i>Festuca rubra</i>	Slender-creeping Red-fescue
3	<i>Phleum bertolonii</i>	Smaller Cat's-tail
1	<i>Trisetum flavescens</i>	Yellow Oat-grass (w)

4 POST CONSTRUCTION MANAGEMENT

4.1 Management Plan Operations

It is important that all of the above prescribed mitigation and enhancement measures are maintained in perpetuity.

1.1.1 Scrub Management

The cutting of scrub can encourage regrowth but must only take place outside the nesting bird season (1st March to 31st August). Scrub should also be cut in rotation, with one third cut each year, so as to not cause habitat fragmentation. Any cutting should also be programmed for late winter so that fruit bearing vegetation such as bramble and blackthorn continue to provide food for birds and mammals



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through the winter. To prevent harm to both reptiles and amphibians scrub should be cut back following the methods outlined within Section 2.1 of this report.

1.1.2 Wildflower Meadow Management

As part of on-going management, the sward should receive low-intensity management, that allows some wild flowers to thrive, but also ensures reptiles are not at risk. Under this management it is recommended that one half of the grassland area is cut to a height of no less than 5cm between mid-August and late September with all cuttings collected and composted, with the other half of the grassland cut and gathered in the spring (mid-March to late-April). This management will ensure that some taller grassland cover is always available for reptiles for cover.

Should you need any further advice on the information provided above, please do not hesitate to contact The Ecology Co-op.
