



ENVIRONMENTAL CONSULTANTS

Unit 4, Langham Stables, Langham Lane, Lodsworth, Petworth, West Sussex, GU28 9BU

Mitigation statement and Habitat Creation and Management Plan

Land at Toddington Lane, Wick, Littlehampton

Author: Briony Hill, BSc, GradCIEEM

Reviewed by: Paul Whitby, BSc, MCIEEM, CEcol

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The Ecology Co-operation Ltd
Registered Office: Greens Court, West Street, Midhurst, West Sussex, GU29 9NQ
Company number: 8905527



Report Summary

1. The Ecology Co-operation was commissioned by Rapleys LLP on behalf of the Rabbit Group to outline necessary mitigation measures for a proposed development on land at Toddington Lane, Wick, Littlehampton where it was determined that the site supports a low population of slow worms, nesting bird habitat and hedgehog habitat.
2. Pre-construction work includes the instillation of semi-permanent reptile fencing around 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. Following the instillation of this fencing reptile trapping visits would take place from as early as mid-March, with a target of up to 60 visits or until 10 visits have been made under suitable weather conditions, without identifying reptile presence.
3. Nesting bird checks will be necessary if any scrub, trees or hedgerows are to be cleared during the nesting bird season (1st March to 31st August). Should any active birds nests be identified a buffer of at least 5 meters must be created around them and they must be left undisturbed until the young have fledged. Hand searches for hedgehogs of scrub across the site are recommended so that in the event any hedgehogs are found they can be removed safely.
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 is identified within the construction zone
5. Enhancement measures in the form of the establishment of native species rich hedgerows and the creation of a wildflower meadow are to be incorporated and additional 'green features' are to be incorporated.
6. Post construction management is detailed in section 4.

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



CONTENTS PAGE

1 INTRODUCTION	4
1.1 Background	4
1.2 Rationale	7
2 PRE-CONSTRUCTION MITIGATION MEASURES	8
2.1 Reptile Mitigation	8
2.1.1 Potential Receptor Site	8
2.1.2 Fencing Installation	9
2.2 Reptile Translocation Strategy	11
3 CONSTRUCTION PHASE MITIGATION MEASURES.....	12
3.1 Nesting Birds	12
3.2 Hedgehogs	12
3.3 Wildflower Meadow Creation	12
3.4 Creation of Hedgerows	13
3.5 Enhancements for Bats	14
3.6 Mitigation for Bats	15
3.7 Enhancements for nesting birds	16
4 POST CONSTRUCTION MANAGEMENT.....	17
4.1 Management Plan Operations	17



1 INTRODUCTION

1.1 Background

The Ecology Co-op has been commissioned by Rapleys LLP on behalf of the Rabbit Group to outline mitigation measures for a proposed residential development upon Land at Toddington Lane, Wick, Littlehampton, which is situated to the east of Wick and north of Littlehampton in West Sussex (see figure 1 and 2). Toddington Lane meets the north and eastern boundaries of the site while an industrial estate meets the western boundary. The boundaries to the south meet three residential properties with gardens and an area of scrub which extends to the south meeting a train line. The site is composed of ruderal and scrub habitat along with some bare ground and hard standing tarmac. A large industrial shed and some open sided metal storage structures are also present. The proposal is to build 10 residential properties which will include gardens and areas of public open space (See figure 3).

Following a reptile survey at this site by The Ecology Co-op in April 2017 it was concluded that the site supports a low population of slow worms with a peak count of 1 recorded. The site also supports suitable habitat for hedgehogs and nesting birds.

This document has been written in order to demonstrate the ecological mitigation and enhancement measures for implementation during the construction of a housing development of 10 new homes, including a variety of enhancements for biodiversity throughout the development.

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 suitably qualified ecologist, and the works contractor will be given contact details for an ecologist so that any issues can be resolved promptly.



Figure 1. An aerial image showing the location of the site. The approximate site boundary is outlined in red.



Figure 2. Existing site plan with the site boundaries shown in red.

Land at Toddington Lane - Mitigation Statement

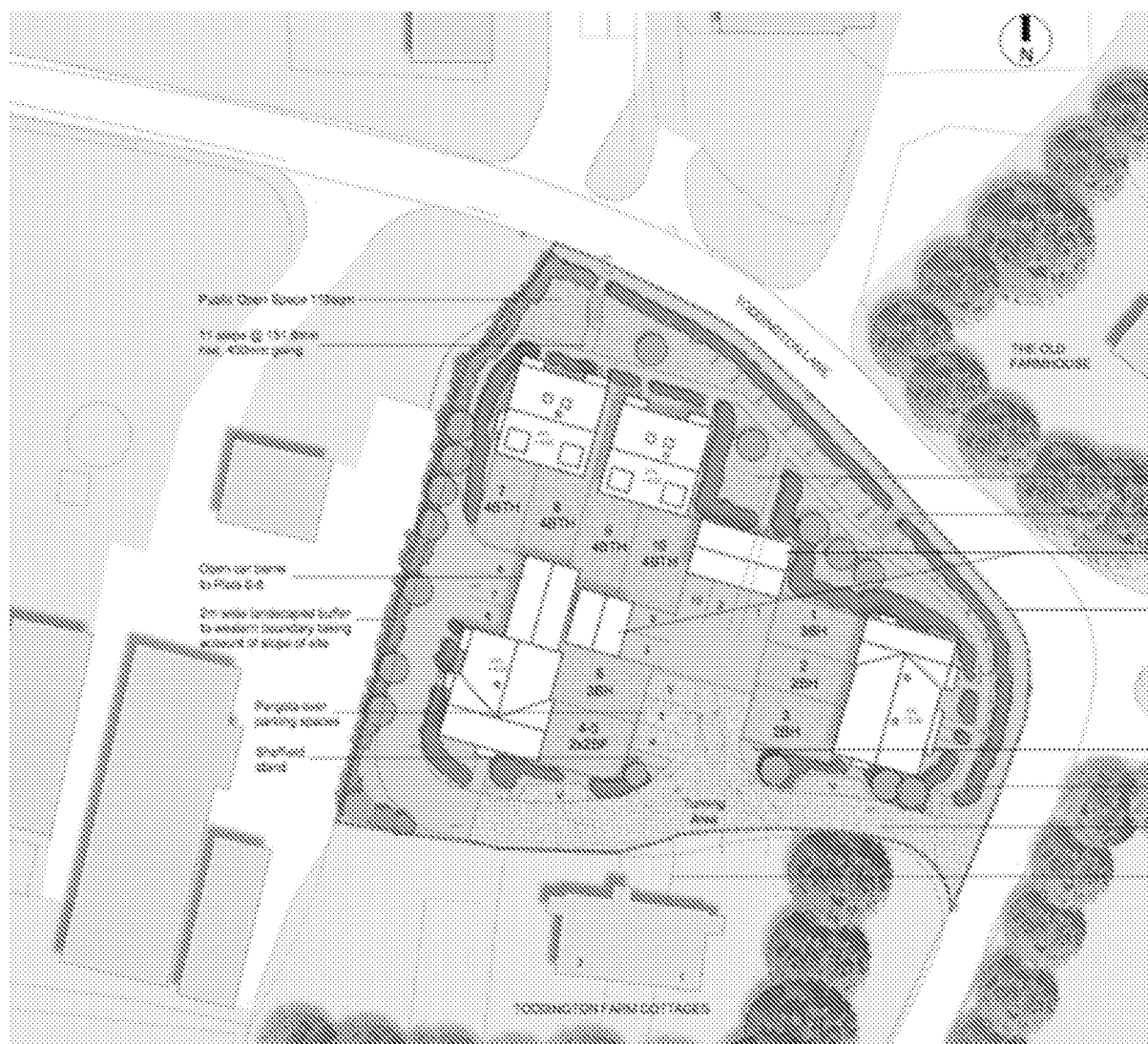


Figure 3. Proposed site plan with the site boundary shown in red.

1.2 Rationale

Reptiles

Slow Worms, Adder, Grass Snakes and Common Lizards 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.

Birds

All species of bird are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended). Protection was extended by the Countryside and Rights of Way (CROW) Act 2000. Under the above legislation it is an offence to intentionally:

- kill, injure or take any wild bird;
- take, damage or destroy the nest of any wild bird while that nest is in use or being built; or
- take or destroy an egg of any wild bird.

Certain species are listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and receive protection under Sections 1(4) and 1(5). The protection was extended by the Countryside and



Land at Toddington Lane - Mitigation Statement

Rights of Way (CROW) Act 2000. There are special penalties where the offences listed above are committed for any Schedule 1 species and it is also an offence to intentionally or recklessly:

- disturb any such bird when it is building its nest or while it is in or near a nest containing dependent young; or
- disturb the dependent young of any such birds

2 PRE-CONSTRUCTION MITIGATION MEASURES

2.1 Reptile Mitigation

Reptile mitigation is necessary at this site due to the identification of a low population of slow worms through a reptile presence/absence survey undertaken by The Ecology Co-op in April 2017. All reptiles will need to be translocated to a suitable off-site receptor are as there will not be a sufficient amount of suitable well connected habitat remaining for a reptile population.

2.1.1 Potential Receptor Site

A search was carried out to identify potential receptor sites for the translocation of a low population of slow worms found at land at Toddington Lane. The search results include at least 6 potentially suitable receptor sites within 2.5km of the site.

Five of the best locations are:

1. A public access grassland expected to be owned by the West Sussex County Council located approximately 600 meters to the south of the site. This area appears to be long grassland habitat and covers an area of approximately 6.7 ha.
2. Brookfield Park located approximately 770 meters to the east of the site which supports wildflower areas, wildlife areas and woodland habitat along site public amenity space. This site is a country park created between 1997 and 2000 and is approximately 10 Ha in area. A railway line, known to be good wildlife corridors, is located along its northern boundary.
3. Rustington Golf Course located approximately 1.6km to the east which supports longer grassland habitat at the roughs across the site.
4. Maltravers community orchard, which is approximately 0.3 Ha in area, located approximately 2km to the south. This orchard was planted in 2012 and a wildflower meadow has been created within the area.
5. Littlehampton Golf Course located approximately 2.2km to the south west of the site which support roughs with longer grassland habitat.

The land owners of all potential receptor sites will be contacted during the detailed planning stage of works to ensure that the most suitable location is chosen, allowing the slow worm population to increase over many years.

A reptile presence/absence survey will be undertaken at the potential reptile translocation site deemed



Land at Toddington Lane - Mitigation Statement

most suitable to determine the use of the site by reptiles, the size of any reptile population present and conclude its suitability prior to any translocation.

A reptile presence/absence survey can be conducted between April and mid October by placing a number of artificial refugia across the site (typically comprising of bitumen and/or corrugated metal sheeting), which are allowed to 'bed in' for a minimum of ten days before commencing the survey process. Seven surveys should be undertaken in the morning or late afternoon when the refugia have warmed in sunlight and the ambient air temperature is above 9 degrees Celsius. Surveys cannot be undertaken during periods of rainfall or strong winds and the optimal months for this survey are April, May and September.

2.1.2 Fencing Instillation

The whole of the proposed construction zone will need to be fenced with semi-permanent reptile-proof fencing. 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 (see figure 4). 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 4. 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 until all construction work deemed a risk to reptiles has been completed- i.e. earthworks and associated



Land at Toddington Lane - Mitigation Statement

landscaping. This will prevent any animals from surrounding habitat migrating onto the site during construction work. Figure 5 shows the proposed route for the fence around the site at Toddington Lane. The fence line is situated along the western and southern site boundary and will tie off at Toddington Lane at the north and the hard-standing access road to the cottages located south of the site. Toddington Lane will act as a barrier to reptile movement and therefore no fencing will be required along the north-east and eastern boundary.

The installation of the fencing would need to be overseen by an 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 injury of 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 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 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. 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 reptiles from migrating around the entrances to the site, the fence will have 'cut backs' on each of its ends (See figure 6). 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 5. The proposed fencing route at Land at Toddington Lane, Wick to enclose the entire construction and landscaping zone of the site is shown in blue. The site boundary is shown in red.

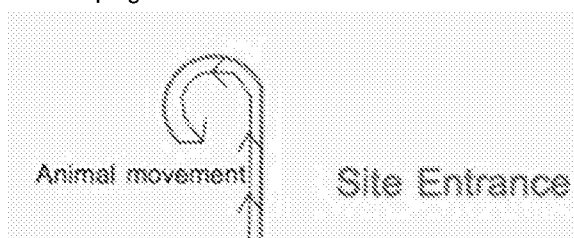


Figure 6. Cut backs' used to guide animals away from the site entrance.

2.2 Reptile Translocation Strategy

In line with current guidelines outlined by the Amphibian and Reptile Group UK (ARGUK), a target total of 30 translocation visits will be made between mid March and October, with 'tins' (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 degrees and 18 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-



Land at Toddington Lane - Mitigation Statement

sided bucket with some green hay at the bottom and released immediately into the receptor area. All translocation details would be recorded into a table such as the example below and submitted to the council upon request as evidence of the work undertaken.

Table 1 – The table format that should be used to document the translocation process

Date	Start Time/finish of Survey	Air Temperature & 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	

Although the target no of trapping checks is 30 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 30 trapping visits has been achieved.

3 CONSTRUCTION PHASE MITIGATION MEASURES

3.1 Nesting Birds

Any scrub, trees or hedgerows to be cleared must be removed outside of the nesting bird season (1st March to 31st August) unless features are first hand search by a suitably qualified ecologist and concluded clear of any nesting birds. Should any active bird nests be identified a buffer of at least 5 meters must be created around them and they must be left undisturbed until the young have fledged.

3.2 Hedgehogs

The dense scrub upon the site along the northern site boundary is suitable habitat for hedgehogs. Resultantly a hand search of these features by a suitably qualified ecologist is recommended prior to site clearance so that in the event any hedgehogs are found they can be removed safely. It is recommended that if any are found they are moved to the scrub area to the south of the site beyond the sites boundaries as this area supports dense scrub habitat and meets the garden space of a residential property.

3.3 Wildflower Meadow Creation

A wildflower meadow area approximately 60 meters squared in area should be established along the northern boundary of the site between the proposed public footpath and the top of the bank. The bank is an ideal place for its creation as the nutrients within the soil will leach out providing the ideal nutrient poor soil to allow wildflowers to thrive. This will increase the value of this area as foraging habitat for bats, birds as well as pollinating insects.



Land at Toddington Lane - Mitigation Statement

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. The species included must all be of native British origin. A recommended seed mixture is EM2 – Standard General Purpose Meadow Mixture, which is available from Emorsgate seeds (www.wildseed.co.uk). Table 2 details the composition of this mixture.

As part of on-going management, the sward should be cut and gathered to a height of approximately 5cm at least three times in its first year of establishment to control the flush of annual weeds which will grow during the first growing season. Thereafter the sward should be cut (with all cuttings removed and composted) between mid-August and late September every year. Cutting in the spring (March/April) should be included if the sward grows too vigorously.

Table 2 – Composition of EM4 – Meadow mixture for clay soils to be sown in the southern section of the site.

Wildflowers		
%	Latin name	Common name
0.5	<i>Achillea millefolium</i>	Yarrow
4.5	<i>Centaurea nigra</i>	Common Knapweed
3	<i>Galium verum</i>	Lady's Bedstraw
1	<i>Leucanthemum vulgare</i>	Oxeye Daisy
0.5	<i>Lotus corniculatus</i>	Birdsfoot Trefoil
1	<i>Plantago lanceolata</i>	Ribwort Plantain
0.5	<i>Plantago media</i>	Hoary Plantain
0.2	<i>Primula veris</i>	Cowslip
2	<i>Prunella vulgaris</i>	Selfheal
4.2	<i>Ranunculus acris</i>	Meadow 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
40	<i>Cynosurus cristatus</i>	Crested Dogtail
28	<i>Festuca rubra</i>	Slender-creeping Red-fescue
4	<i>Phleum bertolonii</i>	Smaller Cat's-tail

3.4 Creation of Hedgerows

A new hedgerow will be created along the western site boundary. This hedge should be created with only native species from UK stock and 50% must be composed of blackthorn so that it is in keeping with the surrounding landscape. The remaining 50% should include a mixture of five of the following species to increase its ecological value:



Land at Toddington Lane - Mitigation Statement

- Hawthorn (*Crataegus monogyna*)
- Spindle (*Euonymus europaeus*)
- Dogwood (*Cornus sanguinea*)
- Wayfaring-tree (*Viburnum lantana*)
- field or dog rose (*Rosa arvensis/ Rosa canina*)
- Guelder rose (*Viburnum opulus*)
- Field maple (*Acer campestre*)
- Wild privet (*Ligustrum vulgare*)
- Beech (*Fagus sylvatica*)
- Hazel (*Corylus avellana*)

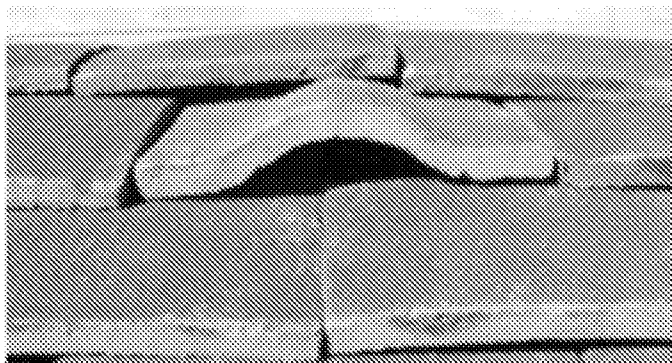
New hedgerows should be planted with 4-5 plants per linear meter as a minimum and it is best to plant while the trees are dormant between November and March in the absence of heavy frost. Guards to protect these hedge trees from rabbits and deer may be necessary.

The landscaping plan should incorporate a variety of trees native to the UK sourced from UK stock (non-native trees and shrubs may still be used for landscaping the residential plots). This will create greater habitat for a variety of birds and invertebrates. Given the arrival of ash dieback, it is not recommended that any ash saplings are planted anywhere on the site. The following species are recommended for establishment:

- Pedunculate oak (*Quercus robur*)
- Rowan (*Sorbus aucuparia*)
- Hazel (*Corylus avellana*)
- Dogwood (*Cornus sanguinea*)
- Holly (*Ilex aquifolium*)
- Field maple (*Acer campestre*)
- Aspen (*Populus tremula*)
- Wild cherry (*Prunus avium*)
- Hornbeam (*Carpinus betulus*)
- Beech (*Fagus sylvatica*)

3.5 Enhancements for Bats

As a measure to enhance roosting opportunities for bats, features will be incorporated into two of the new residential buildings with two bat access tiles, which can be designed to match the roof tiles proposed for use within the construction design, installed across two buildings to provide roosting areas for crevice-dwelling bat species. These features should be positioned upon buildings in close proximity to boundary hedgerows. Roofs where access tiles are installed will not use a Tyvek type underlay, which has a tendency to fray and pose an entanglement risk to bats, but instead must consist only of bitumen roofing felt or a similar material. See figure 7 for proposed locations of the bat access tiles.



Example of a bat access tile

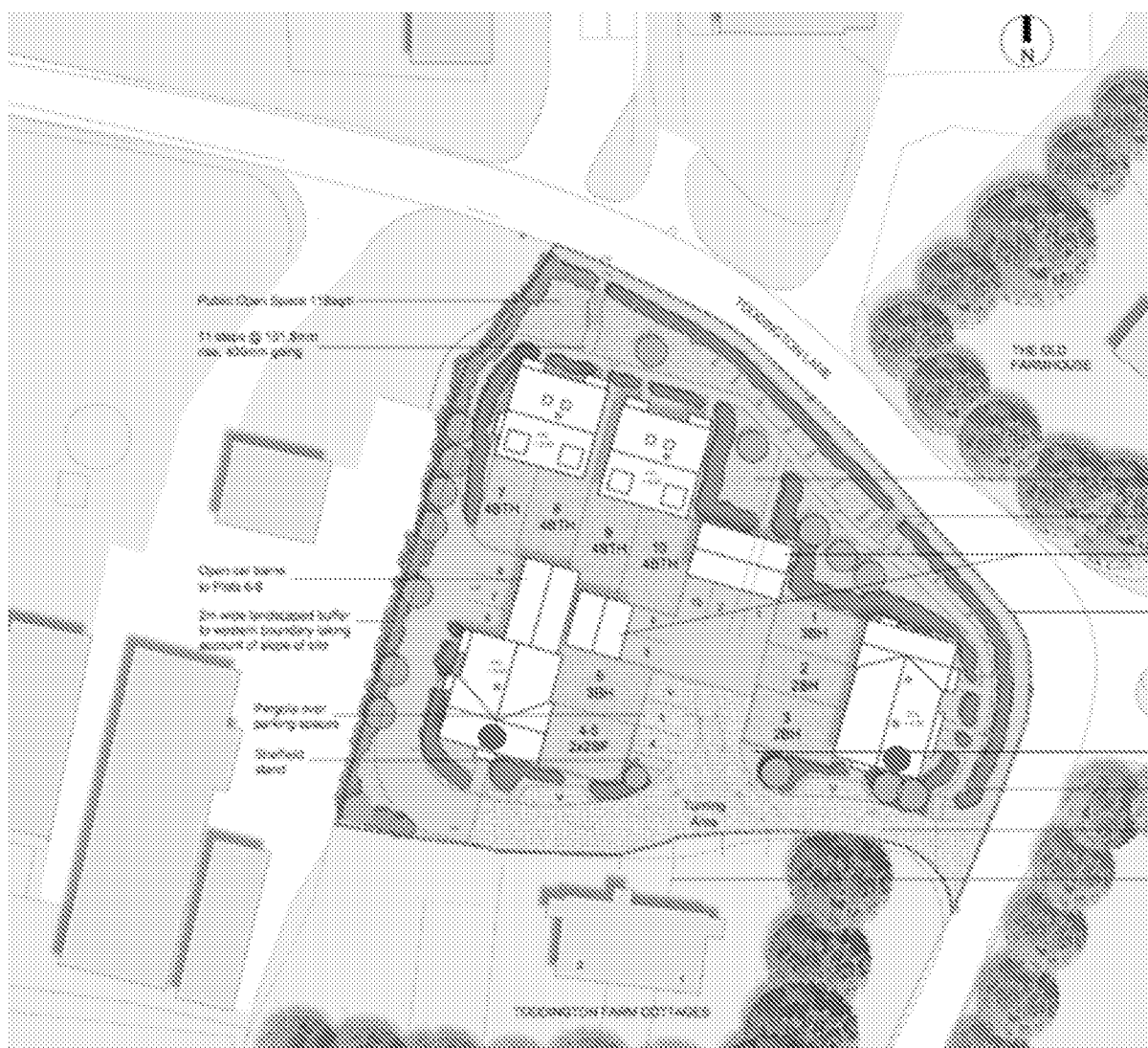


Figure 7. Proposed locations of the two bat access tiles shown with red circles.

3.6 Mitigation for Bats

Bright external lighting can have a detrimental impact upon foraging and commuting bats, but importantly can also cause bats to be fooled into thinking that the light is from the sun, causing them to remain in their roosts for longer. As a result, the western site boundary where a new hedgerow is to be



Land at Toddington Lane - Mitigation Statement

established must be protected from artificial lighting with no street lamps or outside lights to face towards this boundary. In addition, no lights should face towards the scrub area located to the south of the site beyond the southern boundary. Guidelines issued by the Bat Conservation Trust should be incorporated into the lighting scheme for land at Toddington Lane and the following measures must be implemented into the site design:

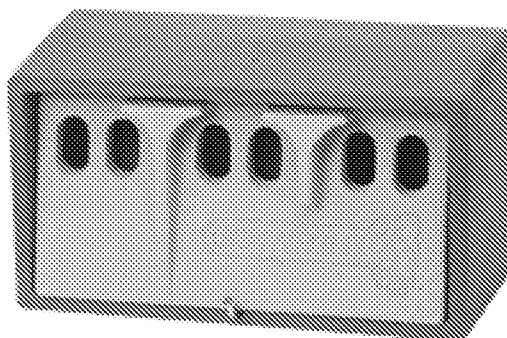
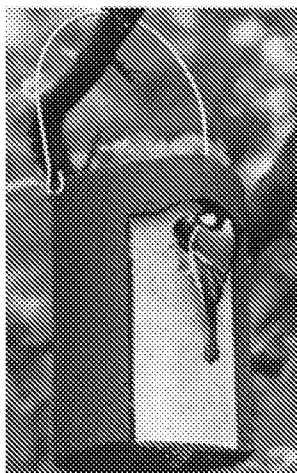
1. No 'upward pointing' or bare bulb lights will be installed anywhere on the development.
2. All external lights upon lamp-posts will not be more than 3.5 metres in height and will have shields installed to focus light towards footpaths and roads only (See figure 8). No light will be allowed to emit light past horizontal (90 degrees from the ground).
3. A no-light zone to protect the proposed new species rich hedgerow along the western boundary from any artificial light with no lights to be positioned to face towards these boundaries.
4. Any pedestrian ground lighting will not exceed 3 lux.
5. No external lights will be installed on new buildings above a height of 2 metres and all external lights will have shields to prevent light splash beyond horizontal.



Figure 8. An example of suitable downward shielded street lighting

3.7 Enhancements for nesting birds

In order to enhance the site for nesting birds some common nesting bird boxes will be put up across the site. Two 1B Schwegler Nest Boxes should be placed upon trees, fences or buildings at a height of at least 3 meters. Additionally, one 1SP Schwegler Sparrow Terrace could be installed upon new buildings in any location close to the soffit boards at a height of more than 2 meters to provide nesting habitat for this declining species.



1B Schwegler Nest Box 1SP Schwegler Sparrow Terrace

4 POST CONSTRUCTION MANAGEMENT

4.1 Management Plan Operations

All planted hedgerows must only be cut outside the bird nesting season (1st March to 31st August) and where possible hedges shouldn't be cut until February, so that valuable winter food associated with fruiting hedge trees is retained for over-wintering birds.

Bat boxes would be inspected to check they had not become detached or damaged each year.

The wildflower meadow should be cut and gathered each year between mid August and the end of September. This is important to ensure that species diversity of the area is maintained and grass species do not become dominant. Where necessary, a second cut could be taken in March or early April each year if the sward is growing too coarsely. Grass cuttings should be collected and composted.

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