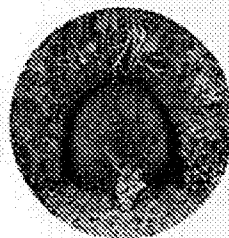
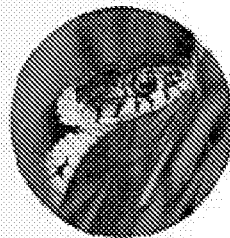
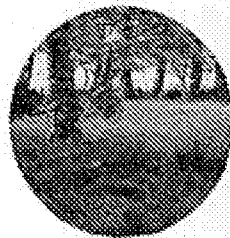


SUBSTITUTION

14.5.14



**ECOLOGICAL MITIGATION & ENHANCEMENT MANAGEMENT PLAN
FOR LAND AT GOODACRES, BARNHAM, WEST SUSSEX**

For: **Croudace Homes Group Ltd**
Croudace House, Godstone Road, Caterham, Surrey CR3 6XQ

Issued by: **Wychwood Environmental Ltd.**
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March 2014

Contents Page

1.0	Introduction	3
2.0	Background and Ecological Baseline	3
3.0	MITIGATION	4
	Protection of unimproved grassland, trees and hedgerow	4
	Reptile & Amphibian Mitigation	5
	Bird Mitigation	5
	Bat Mitigation	5
	Invertebrate Mitigation	6
	Mitigation Timetable	6
	Compliance	7
4.0	ENHANCEMENTS	7
	Habitats	7
	Enhancements Timetable	10
	Personnel responsible for the implementation of the Plan	10
	Monitoring	10
5.0	Conclusion	11
	APPENDIX 1 – Figures	12
	APPENDIX 2 - Relevant Legislation	16
	APPENDIX 3 - Bats and Lighting in the UK	17
	APPENDIX 4 – RHS Pollinator Plant List	18

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Date of issue: 26th March 2014

1.0 Introduction

1.1 Wychwood Environmental Ltd was commissioned by Croudace Homes Ltd to compile an Ecological Mitigation and Enhancement Management Plan for land at Goodacres, Barnham, on which the development of residential homes, gardens and green space are proposed (Figure 1, Appendix 1).

1.2 Lizard Landscape Design completed an extended ecology phase 1 habitat survey report and a detailed reptile survey report for the site in May 2011^{1,2}. These reports, were used to support the success of the existing planning consent, will form the backbone of the Management Plan.

1.3 This proposed plan has been compiled in response to the requirements of Condition 13 of the Appeal Decision document (APP/C3810/A/11/2161133). This is detailed below:

13) Prior to the commencement of development full details of ecological enhancement measures shall be submitted to and approved in writing by the local planning authority. These details shall include an ecological management plan for the construction phase of the development. Development shall be carried out in accordance with the approved details.

1.4 This report covers the following: Background and Ecological Baseline; mitigation of existing habitats and protected species; enhancement of habitats and protected species; and site monitoring.

2.0 Background and Ecological Baseline

General Ecology

2.1 The site is approximately 2.5ha in size, comprised of fields, scrub and tree-lined boundaries. Habitats of interest include unimproved neutral grassland, standing and running water and hedgerows. The hedgerow on the southern boundary of the unimproved grassland/scrub is thought to be important due to its mature nature and good connectivity to other hedgerows and 'green' habitat in the local area. Ditches hold standing water on site, and provide some interest for invertebrates and amphibians. Overall the site was found to have potential to support bats, birds, amphibians, reptiles and invertebrates (Lizard Landscapes, May 2011). Figure 2, Appendix 1 shows the location of significant ecological features.

Reptiles

2.2 Following detailed reptile surveys, conducted by Lizard Landscape Design (May 2011), it was determined that medium populations of slow worms (*Anguis fragilis*) and common lizards (*Zootoca vivipara*), and a small population of grass snake (*Natrix natrix*) were present. A high number of these reptile species were recorded in the area that is proposed to be retained as open space and which will serve as a

¹ Lizard Landscape design (May 2011). Land off Goodacres & Halliford Drive, Barnham, West Sussex – Residential development Site, Detailed Reptile Survey Report.

² Lizard Landscape design (May 2011). Land off Goodacres & Halliford Drive, Barnham, West Sussex – Residential development Site, Extended Ecology Phase 1 Habitat Survey Report.

receptor site for reptiles translocated from the rest of the development site. A separate mitigation and translocation plan³ has been submitted to the council in response to Condition 11 (regarding reptiles) of the Appeal Decision Document and therefore will not be detailed within this report.

Bats

- 2.3 Trees adjacent to and within the site were found to have good potential to support bats and as such, further surveys were recommended (Lizard Landscapes, May 2011). Surveys are to be conducted by Wychwood Environmental Ltd in April/May 2014. The results of these surveys will inform a bat sensitive lighting strategy which will be submitted to the council in response to Condition 12 (regarding bats) of the Appeal Decision Document. As such mitigation and enhancements relating to bats will not be detailed within this report.

- 2.4 Details on relevant protected species legislation is provided in Appendix 2.

3.0 MITIGATION

Protection of unimproved grassland, trees and hedgerow.

Grassland

- 3.1 An area of approximately 0.5 ha will be retained as green space as part of the development. The chosen area (shown in Figure 1) covers an area identified during previous surveys (Lizard Landscapes, 2011), as containing unimproved grassland and optimal reptile habitat. During the construction phase this area will be the receptor site for reptiles removed from the construction zone and therefore it will be fenced off using semi-permanent reptile fencing. See Wychwood Environmental Ltd report (March 2014) for details.

Hedgerow/tree line boundary vegetation

- 3.2 There is potential for indirect effects on the trees and woody edges resulting in damage to tree roots, during construction. Mitigation is proposed as follows:
- 3.3 Hedge and tree lined boundaries around the site will be protected with heras fencing. Best practice must be followed (*i.e. BS5837: 2012 Trees in Relation to design, demolition and construction - Recommendations*) to ensure individual trees are not adversely affected.
- 3.4 Any trees of over 100mm trunk diameter, and/or of significant ecological value, must be protected by barriers. Barriers prohibit construction works in the area between the barrier and the tree trunk. The minimum distance between tree trunk and barriers must be either the distance of branch spread or half tree height, whichever is the greater. In all cases trees must be protected from direct impact and from severance or asphyxiation of the roots.

³ Wychwood Environmental Ltd (March 2014). Reptile Mitigation and Translocation Plan for Land at Goodacres, Barnham, West Sussex.

- 3.5 Figure 3 shows the location of protective fencing for the receptor site and hedge/tree line boundaries during the construction phase. Where reptile fencing is present, tree protection heras fencing will be positioned behind this fencing.

Pollution

- 3.6 During construction there is the potential for pollution events from the development to the retained habitats. As such, no temporary storage of materials, equipment or plant must take place in the vicinity of the proposed heras fence lines (Figure 3). This is necessary to avoid pollution (e.g. litter, oil spillage) which, could result in harm to wildlife.

- 3.7 The developer is legally responsible for compliance with The Environment Agency Pollution Prevention Guidelines: PPG1, across the development site.⁴

Reptile & Amphibian Mitigation

- 3.8 See Wychwood Environmental Ltd (March 2014) Reptile and Translocation Plan.

Bird Mitigation

- 3.9 Some areas of scrub with potential bird nesting habitat will be removed as part of the development. If this is undertaken during the spring/summer period it has the potential to affect nesting birds. There will however be no other direct impact potential on nesting birds as no ground nesting birds are known to occur within the site. Proposed mitigation is as follows:

- 3.10 All pruning / removal works to existing vegetation, including trees, should be undertaken outside of the main bird nesting season to ensure breeding birds are not disturbed. The bird nesting season is taken to be from March to September inclusive. If this is not feasible, a watching brief for birds nesting must be implemented by a suitably qualified Ecologist.

Bat Mitigation

- 3.11 See Wychwood Environmental Ltd Bat Survey and Mitigation Report for full details (to be completed May 2014), however general mitigation will be in line with the following statements:

- 3.12 Any new lighting proposed in areas sensitive to ecology/bat foraging shall be carefully considered. Lighting equipment will have a flat glass lantern, no Ultra Violet radiation, no infra red radiation and low mounting heights. LEDs and Compact Fluorescent light sources offer the lowest UV and IR and would be most suitable for the on site lighting, which shall also be lit to a low lighting class from within BS5489. External lighting will be directed away from the site boundaries, downward pointing, and directed so that the foraging and commuting route for bats is not affected. Information on bats and Lighting in the UK is provided in Appendix 3.

⁴ Information on Pollution Prevention Guidelines - <http://www.environment-agency.gov.uk/business/topics/pollution/39083.aspx>

- 3.13 Any significant tree surgery works must be undertaken by a suitably qualified tree surgeon, preferably one registered with the Arboricultural Association and with a working knowledge of bats and their legal protection. A bat roost assessment is being conducted by Wychwood Environmental in April 2014 prior to works commencing. This will ensure that proposed works do not have an adverse impact on roosting bats. If bats are present then a license will be required from Natural England before works can be conducted

Invertebrate Mitigation

- 3.14 Habitats of principal importance to invertebrates (0.5ha of unimproved grassland, hedgerows and tree lines) are retained as part of the scheme and therefore no further recommendations are proposed.

Mitigation Timetable

Table 1 - Timetable setting out details of the protective measures to be implemented at each phase of construction.

Action	Reasoning	Timing	2014	2015
Mitigation				
<i>Habitat protection</i>				
Erection of heras fencing around retained grassland/trees/hedges (See figure 3, Appendix 1).	Protect trees/hedges (and general boundary vegetation) during site clearance to ensure individual trees are not adversely affected (e.g. root damage).	Throughout construction.	X	X
<i>Pollution prevention</i>				
No temporary storage of materials, equipment or plant must take place within the areas protected by heras fencing.	To avoid pollution which may impact wildlife.	Throughout construction.	X	X
<i>Species Protection</i>				
Mitigation for reptiles by protecting boundary habitat with reptile and heras fencing (See Wychwood Environmental Mitigation & Translocation Report for details (March 2014)).	To avoid disturbance/harm to reptiles during construction phase. Contain reptiles in receptor site and linking site boundaries. Prevent reptiles from entering the construction zone.	Throughout construction. Translocation to occur March-October (outside hibernation period)	X	x
Mitigation for nesting birds (Tree/scrub clearance)	To avoid disturbance/harm to nesting birds	October-February (otherwise checked for by an ecologist)	X	X
Mitigation for bats (Tree clearance)	To avoid disturbance/harm to roosting bats.	Checks at anytime of year	X	X
Mitigation for bats (Sensitive lighting)	To avoid disturbance/harm to commuting/foraging bats.	Anytime of year		X

Compliance

- 3.15 Mr. Greg Roberts of Croudace Homes Ltd. will be responsible for compliance with legal consents, planning conditions, installation of protective measures, inspection and maintenance.

4.0 ENHANCEMENTS

Habitats

Grassland

- 4.1 It is recommended that patches of grassland within the reptile receptor zone are sown with a wildflower mix to improve the diversity of species recorded on site. This would involve the clearing of approx. 10-20m² of turf and the sowing of seed e.g., EM2 – Standard General Purpose Meadow Mixture⁵. It may also be beneficial to use some plug plants for instant impact⁶. Sowing quantities and methods are detailed by the supplier and will be following by the appointed landscape team. As a guide Spring and Autumn is the best time for sowing/planting.

- 4.2 The retained area of grassland (reptile receptor zone) on site will be maintained through an annual hay cut in the late summer/autumn. Some cut material should be composted in a discrete area along the eastern treeline boundary. The cutting should take care to avoid scrubby edges where Grass Snake are likely to be present (See Wychwood Environmental Mitigation & Translocation Report, March 2014).

- 4.3 To ensure that the public and reptiles can co-exist, pathways and some small sections of shorter grass (close to the pathways) will need to be maintained so that residents can walk through and enjoy the open space, whilst ensuring that the grassland is not highly managed in such a way that would have an adverse impact on reptiles.

Scrub

- 4.4 Sections of retained bramble edge scrub should be maintained by annual winter cutting (the extent to be retained and managed is shown on Figure 4). It should not be allowed to develop in the open grassland in order to reduce shading and therefore maintain/improve floral diversity. Heavy scrub management work will be carried out between November and February. All bramble and vegetation-cutting must be carried out in a sensitive manner, so as not to completely remove scrub cover and food sources for foraging mammals and birds.

Provision of boxes for nesting birds and roosting bats

- 4.5 The provision of boxes would provide habitat to support the local bird population. Five bird boxes should be erected on trees along boundary and woodland habitat. Boxes should be erected at a height of 2-3 metres with good vegetation cover. 2GR Schwegler nest boxes are recommended as they provide extra protection from

⁵ <http://wildseed.co.uk/mixtures/view/3>

⁶ <http://www.wildflowershop.co.uk/>

maggies, jays and martins. Suitable nest boxes are provided by NHBS⁷ and the Nest Box Company Ltd⁸. Boxes chosen should be FSC certified.

- 4.6 Bats are a priority species in the UK Biodiversity Action Plan. At least three bat boxes should be erected on existing trees (to be informed by bat surveys). These boxes should be erected at a height of 4-6 m, positioned on a southerly aspect with a clear line of sight to access hole) to provide improved roosting opportunities. Wooden boxes with an open base are preferred as no maintenance is required once erected (e.g. 1FF Schwegler bat box). These can be sourced from NHBS⁹ or The Nest Box Company¹⁰. Boxes chosen should be FSC certified.

- 4.7 It is advised that bird and bat boxes are erected by a suitably qualified ecologist to ensure correct placement and therefore maximizing the likelihood of usage by targeted species. Figure 4, Appendix 1 shows the proposed locations of bird and bat boxes.

Creation of log piles

- 4.8 Any dead wood/ or felled wood should be retained along site boundaries and with the retained grassland in log piles, in order to provide habitat opportunities for reptiles, amphibians and saproxylic invertebrates.

Invertebrates

- 4.9 It is envisaged that the cutting regime proposed for the reptiles (Wychwood Environmental Mitigation & Translocation Report, March 2014), would provide maximum benefit for invertebrates, in-turn benefitting bats and birds utilizing the site. Additional 'pollinator friendly' planting within the gardens of the dwellings (see para. 4.10) would also benefit native invertebrates.

Private residences

- 4.10 Any shrub planting with the gardens of the new dwellings should be pollinator friendly¹¹, using plants recommended by the Royal Horticultural Society (see Appendix 4). A mix of planting will provide a range of food plants throughout all seasons of the year, in-turn benefitting other fauna.

- 4.11 It is also recommended that where areas of gardens are laid to lawn, a species rich lawn turf is used¹². This turf is used as an alternative to a standard monoculture grass lawn, with improved biodiversity to help meet regulatory standards such as BREEAM and the Code for Sustainable Homes. This biodiverse lawn is treated in the same way as a conventional lawn (regularly mown) but the flowering species included in the mix are able to survive and thrive with this regime.

- 4.12 It is also proposed that new residents are provided with an information sheet/pack indicating that their gardens have been planted for wildlife value, and that the site is being managed to enhance biodiversity. Such information could provide additional

⁷ http://www.nhbs.com/bird_boxes_eqcat_426.html

⁸ <http://www.nestbox.co.uk/Bird-Nest-Boxes>

⁹ http://www.nhbs.com/1ff_schwegler_bat_box_with_built_in_wooden_tefno_158636.html

¹⁰ <http://www.nestbox.co.uk/Bat-Boxes>

¹¹ <http://www.rhs.org.uk/Gardening/Sustainable-gardening/Plants-for-pollinators>

¹² <http://www.wildflowerlawn.co.uk/species-rich-lawn-turf>

information on how to best manage their gardens areas, and provide additional planting and habitat features.

Enhancements Timetable

Table 2 - Timetable setting out details of the enhancements measures to be implemented at during/post-construction.

Action	Reasoning	Timing	2014	2015	2016	2017	2018
Enhancements							
<i>Grassland</i>							
Plug planting/seeding	To improve native floral diversity.	Autumn or Spring	X	X			
Hay Crop	To improve native floral diversity.	Late summer/Autumn	X	X	X	X	X
Control of bramble	To improve ground flora diversity.	Winter	X	X	X	X	X
<i>General</i>							
Enhancements for bats/birds (box erection)	To improve nesting/roosting opportunities.	As soon as possible.	X				
Creation of log piles	To improve habitat for invertebrates/reptiles/amphibians.	As wood comes available through site works	X				
Monitoring							
Update reptile surveys - See Wychwood Environmental Mitigation & Translocation Report for details (March 2014).	To inform future management of habitats that support fauna.	Spring/ Autumn			X		X
Regular litter removal	To prevent harm to wildlife and for aesthetic reasons.	As necessary	X	X	X	X	X
Review of management activities and monitoring surveys will be conducted	To inform further future management.	By the end of 2018					X

Personnel responsible for the implementation of the Plan

- 4.10 Mr. Greg Roberts of Croudace Homes Ltd. will be responsible for the Implementation of the plan.

Monitoring

- 4.11 Remedial measures that would be triggered by specified findings of monitoring measures.
- 4.12 Monitoring surveys for reptiles are recommended in years 1 (2016) and 3 (2018) post development to inform future management of habitats that support these species. Spring/Autumn is an optimal survey period for reptiles See Wychwood Environmental Mitigation & Translocation Report for details (March 2014).

Rubbish removal

- 4.13 As necessary rubbish should be removed from the site. This includes plastic tree guards that are no longer protecting trees. This is necessary to avoid any harm to wildlife and for aesthetic reasons.
- 4.14 Table 2 provides a summary of recommended actions for mitigation, control and enhancement measures to be taken over the next 5 years. In year 5 a review of management activities and monitoring surveys will be conducted to inform future management. All heavy work (tree removal) that may impact protected species (and therefore involves targeted mitigation) is planned for Winter 2014. Monitoring surveys will inform more specific management tasks and the frequency of actions required.

5.0 Conclusion

- 5.1 If the mitigation measures outlined are taken into account pre-development and during site clearance and construction, then disturbance to protected species and sensitive habitats should be kept to a minimum and no offences should be committed under UK and European Law.
- 5.2 A number of options are put forward for providing ecological gain to the development proposals. The implementation of these or other ecological gains as part of the development will ensure that the provisions of the National Planning Policy Framework (NPPF, 2012) and local Planning Policies are upheld.

APPENDIX 1 – Figures

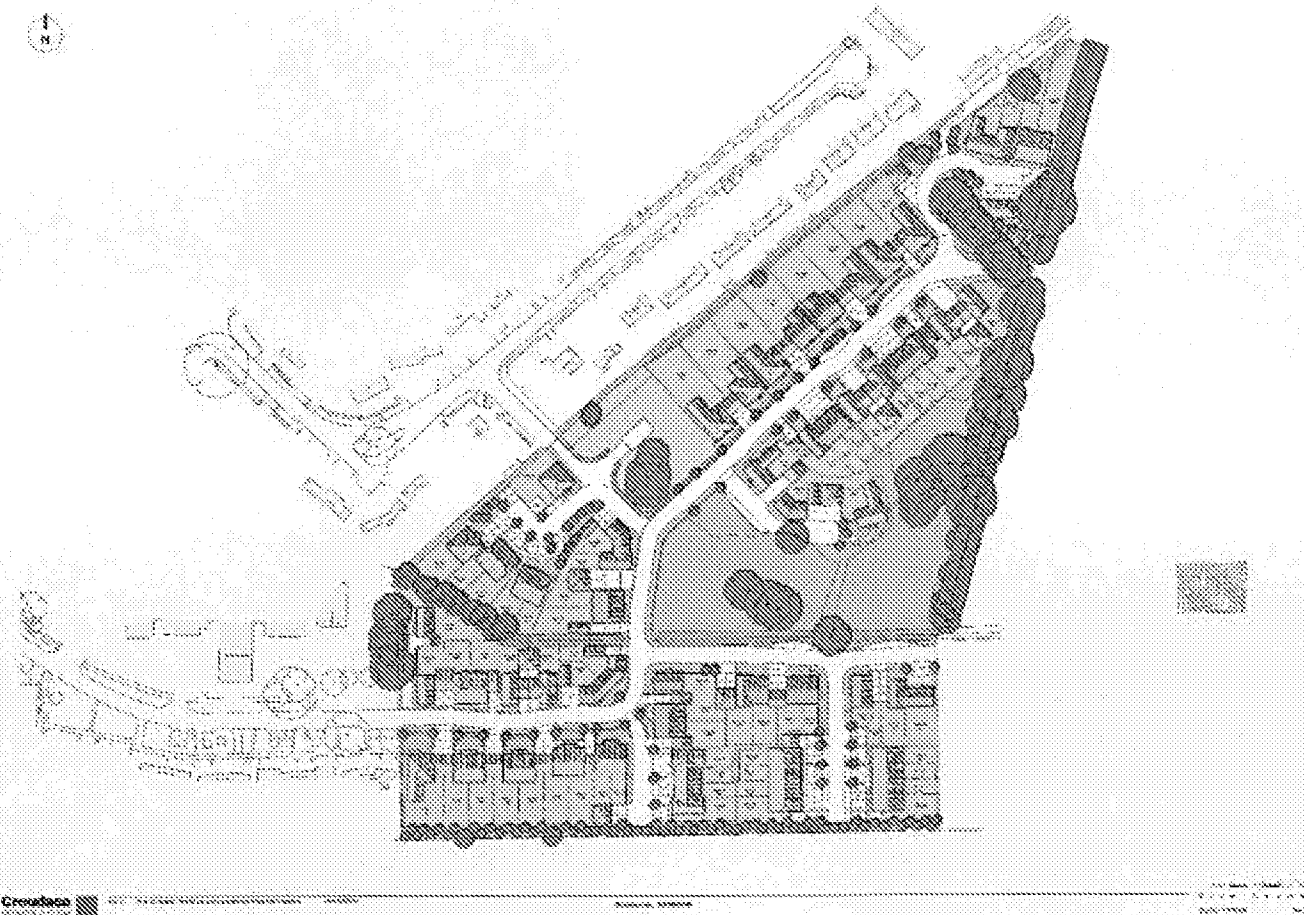


Figure 1 – Development Plan

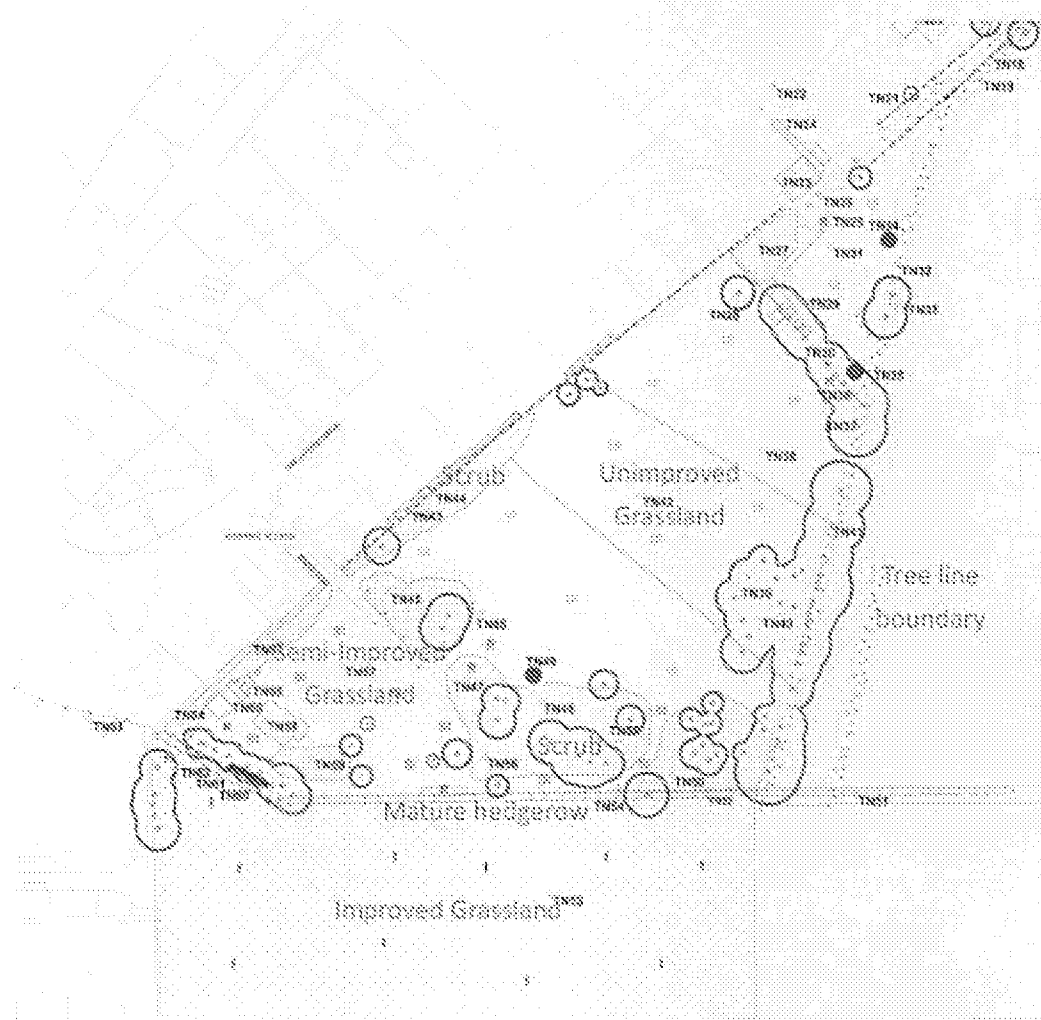


Figure 2 ~ Location of key ecological features, adapted form Lizard Landscapes (May, 2013).

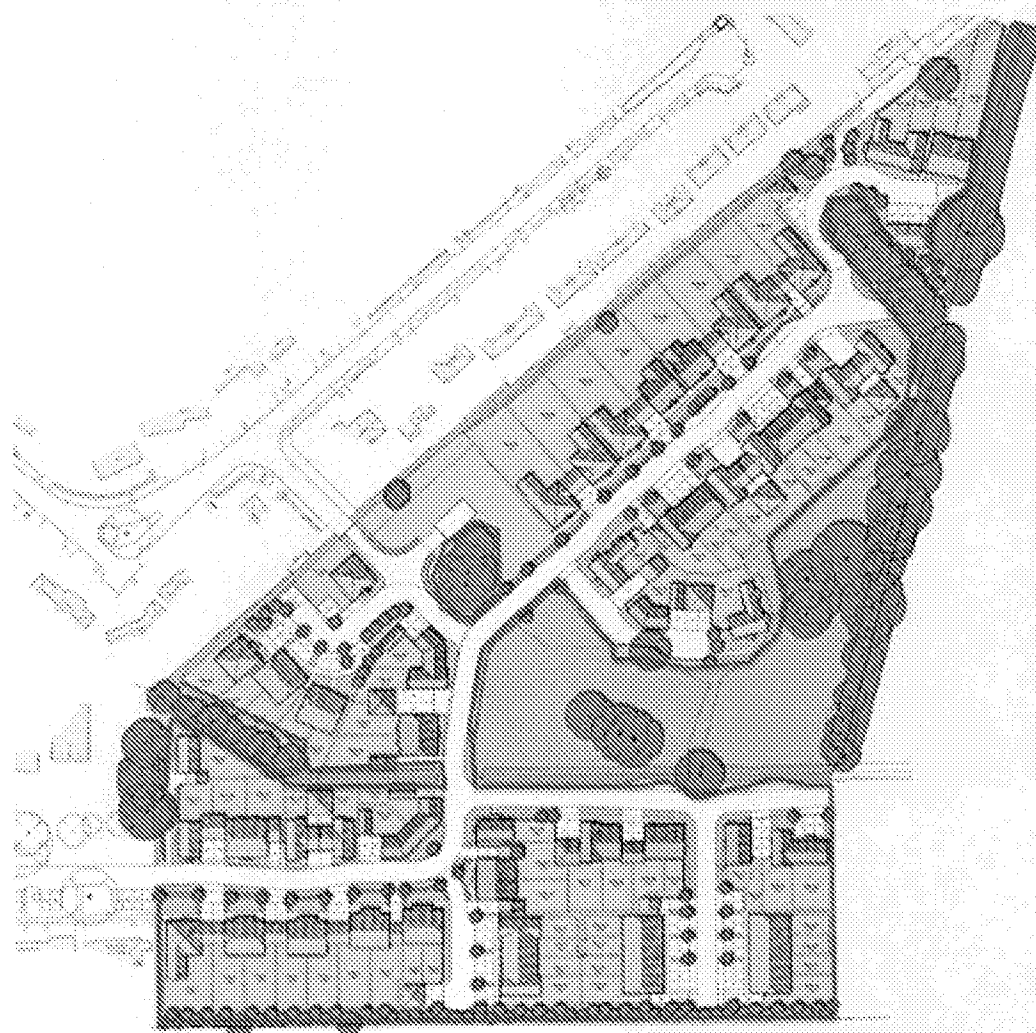


Figure 3 - Location of proposed Heras fencing.

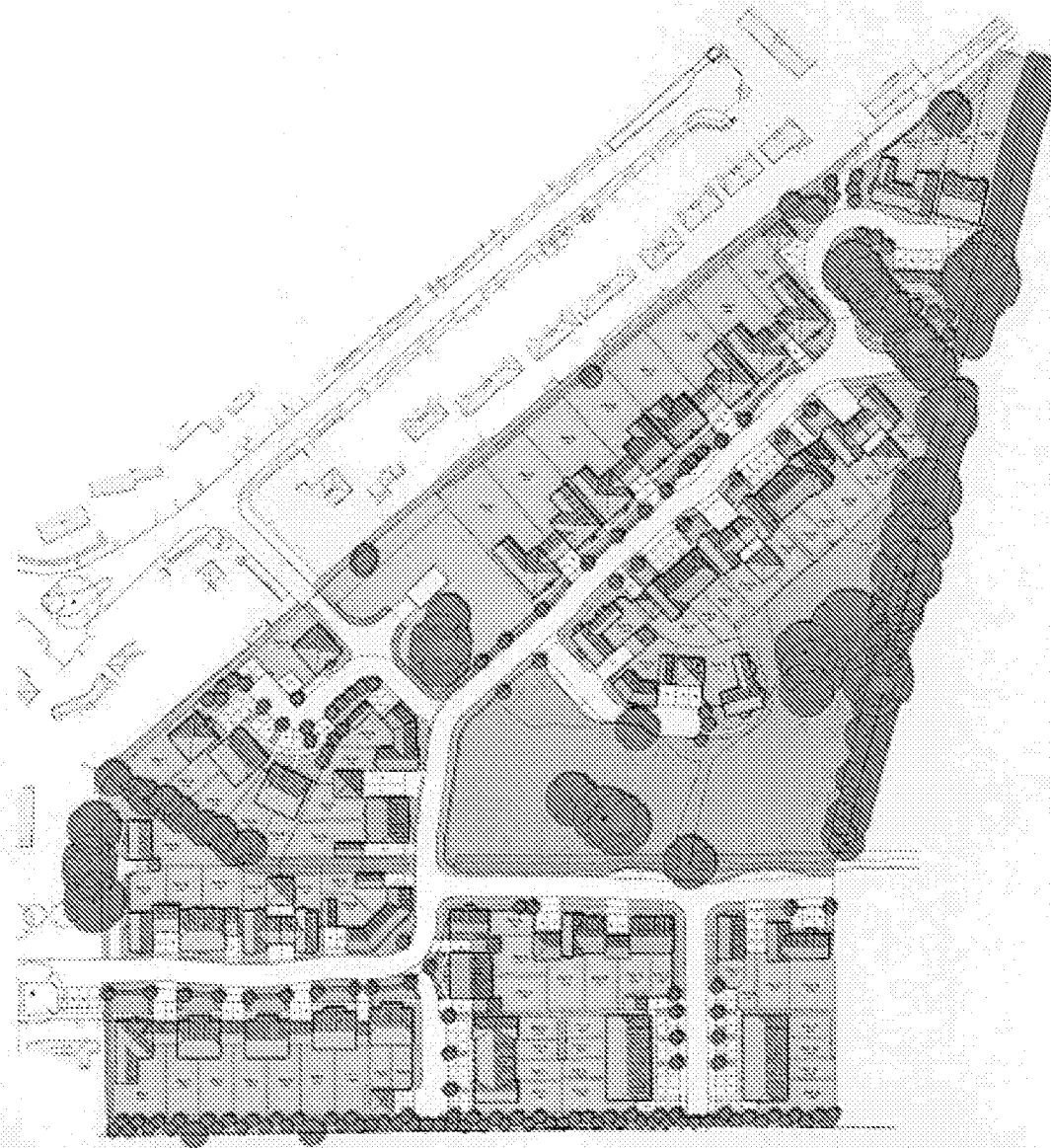


Figure 4 – Proposed locations for bat boxes (red) and bird boxes (blue) and location of retained/managed scrub (orange crosses).

APPENDIX 2 - Relevant Legislation

Birds

The bird breeding season generally lasts from early March to September for most species. All birds are protected under the Wildlife and Countryside Act (1981) (as amended) and the Countryside & Rights of Way Act 2000. This legislation makes it illegal, both intentionally and recklessly to:

- Kill, injure or take any wild bird;
- Take, damage or destroy the nest of any wild bird while it is being built or in use;
- Take or destroy the eggs of any wild bird; and
- Possess or control any wild bird or egg unless obtained legally.

Birds listed under Schedule 1 of the Wildlife and Countryside Act (1981) (as amended) (e.g. barn owl and kingfisher) are afforded additional protection, which makes it an offence to disturb a bird while it is nest building, or at a nest containing eggs or young, or disturb the dependent young of such a bird.

Reptiles

There are six native species of reptiles in the UK, including the slow-worm (*Anguis fragilis*), viviparous/common lizard (*Lacerta vivipara*), grass snake (*Natrix natrix*) and adder (*Vipera berus*), smooth snake (*Coronella austriaca*) and sand lizard (*Lacerta agilis*), which are afforded varying degrees of protection under UK and European legislation.

Slow-worm, viviparous/common lizard, adder and grass snake are protected under Schedule 5, Section 9 (1 and 5) of the Wildlife and Countryside Act 1981 (as amended) and the Countryside & Rights of Way Act 2000 against deliberate or reckless killing and injuring and sale.

Bats

All bat species are afforded full protection under UK and European legislation, including the Wildlife and Countryside Act 1981 (as amended), the Countryside and Rights of Way Act 2000 and The Conservation of Habitats and Species Regulations 2010. Together, this legislation makes it illegal to:

- Intentionally or deliberately take, kill or injure a bat
- Damage, destroy or obstruct access to bat roosts
- Deliberately disturb bats

A bat roost is defined in the legislation as "any structure or place which a bat uses for shelter or protection". Roosts are protected whether or not bats are present at the time. If a development activity is likely to result in disturbance or killing of a bat, damage to its habitat or any of the other activities listed above, then a licence will usually be required from Natural England.

APPENDIX 3 - Bats and Lighting in the UK

APPENDIX 4 – RHS Pollinator Plant List