



**Land at Tortington,
Arundel:
Landscape and
Ecological
Management Plan**

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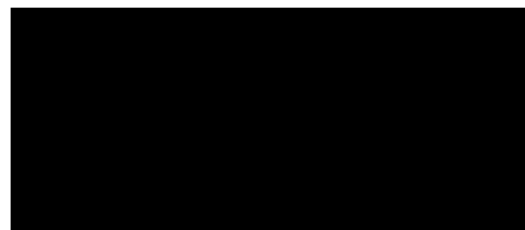
For: The Arundel Estate

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Produced by:

Environmental Gain Ltd
The Old Church School
Butts Hill
Frome
BA11 1HR

Approved: Matt Davies (Head of
Ecology) BSc (Hons) MSc
MCIEEM



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1 INTRODUCTION

Objectives of the Plan

- 1.1 This document provides an outline Landscape and Ecological Management Plan for the proposed development at Land off Ford Road, Arundel.
- 1.2 Engain have evaluated the site's ecological characteristics and conducted various ecological surveys. The site supports:
- Badgers;
 - Bats;
 - Nesting birds;
 - Dormice; and
 - Reptiles and amphibians.
- 1.3 This document outlines how the site will be managed to benefit these species and other wildlife in the long term. A full and detailed LEMP will be produced with a reserved matters application.

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2 RESPONSIBILITY

- 2.1 Once construction is completed, management of the site will be the responsibility of a Residents Management Company (RMC), funded by the new residents and administered by appointed representatives.
- 2.2 Homeowners will have a role in understanding and supporting the delivery of the management objectives. This will be communicated to them via the formation and administration of the Resident's Management Company, which will report back to residents annually.
- 2.3 The management will be implemented by a single contractor, to ensure consistency of application across the whole site.

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3 FEATURES

Retained Features

3.1 The following features will be retained and managed for the benefit of wildlife:

1. A potential outlier badger sett and surrounding vegetation
2. Sections of approx. 1.3km of mature hedgerows
3. Individual mature broadleaved trees
4. A seasonally inundated area at the eastern edge of the site
5. Areas of grassland

Newly Created Features

3.2 The following features will be created and managed for the benefit of wildlife:

1. Creation of 370m of new hedgerows
2. Grassland with greater sward diversity
3. The replacement of the eight trees at a ratio of more than 2:1
4. Areas of shrub planting
5. Two new sustainable urban drainage features
6. Amenity areas within the development
7. Bat boxes will be integrated into 20% of properties across the site
8. Bat boxes will be installed on retained trees within the site
9. Bird boxes will be installed on at least 20% of properties onsite
10. Barn owl boxes will be installed onsite
11. Log piles will be created
12. Fencing around the residential properties will be permeable to small mammals
13. Hedgehog boxes will be installed across the site.

4 MANAGEMENT ACTIONS

Grass Cutting

Amenity Grass Areas

- 4.1 The main purpose of amenity grassland areas is to provide publicly accessible grassland for recreational and aesthetic purposes. This requires the maintenance of a short and hard-wearing sward. However, there is opportunity to allow space for wildlife within this type of management system, by allowing some areas at the edges to grow longer before they are cut.
- 4.2 These areas will be managed to retain a taller sward around the retained trees and the edges of the site, with a short sward in the remaining area. The longer sward will be cut once a year in early spring, whilst the short sward will be cut regularly throughout the growing season, as required to maintain the desired sward height.

Meadow Management

- 4.3 Areas of grassland not maintained with a short sward for amenity purposes will be managed as meadows to enhance their botanical diversity in the long-term.
- 4.4 A cut will be taken once a year in the period between June and July (inclusive). The timing of this cut should be dependent on weather conditions. However, in at least one year in five the cut will be taken later (*i.e.* in August) to allow species to flower and set seed that would not otherwise be able to in the earlier cut years. The height of the cut should be no less than 150mm to avoid harming reptiles or amphibians and to reduce the risk of harm to hedgehogs.

Management of Trees and Shrubs

Newly Planted Trees and Shrubs

- 4.5 The newly planted trees and shrubs (including newly planted hedges) will be managed by the landscape contractor in the first five years after planting, subject to the typical requirements for the replacement of dead or dying stock, maintenance and eventual removal of tree guards, and control of weeds. This will include annual maintenance including:

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- Mulching: each planted area will be covered with composted mulch to suppress weed growth
- Tree shelters shall be provided and removed when the tree / shrub has fully established itself
- Watering shall be provided as required in accordance with weather conditions
- Formative pruning to ensure vigorous growth and removal of damaged or diseased branches
- Adjustment and removal of stakes and ties as required
- Weed control to ensure a weed-free area around the base of trees and shrubs whilst they establish themselves

4.6 After the first five years, the newly planted stock will fall under the same management regime as the retained trees and shrubs (as below).

Ornamental Shrub Planting

4.7 These areas will primarily be maintained for aesthetic value in accordance with a regular pruning schedule to maintain form and structure. This will be carried out outside of the bird nesting season.

4.8 Ornamental plants should be allowed to achieve their natural height and spread and only need to be pruned back where they would interfere with access to keep roads and paths clear.

Retained Trees

4.9 The following principles will be applied:

1. Ivy will not be removed
2. Pruning will not be carried out in the bird nesting season (March to August inclusive)
3. Dead wood will only be removed if it poses a risk to the health and safety of residents and visitors

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4. No materials or structures will be stored or built within the root protection zones
5. The health and condition of retained trees will be inspected during regular maintenance to identify any necessary remedial arboricultural work.

Attenuation Basin

- 4.10 The attenuation basin will be unlikely to hold water throughout the year, and therefore it is likely to retain a grassy appearance and can be mown once a year in autumn. It will be cut in two stages: each year one half will be left uncut whilst the other is cut (and the arisings removed), with this pattern reversed in subsequent years.
- 4.11 Functionality of the attenuation basin must be maintained: the inlet and outlet structures will be inspected annually to ensure they are free from debris and water is able to flow adequately.

Log Pile Maintenance

- 4.12 The log pile will require very little maintenance in the short term.
- 4.13 In the long term it may be beneficial to 'top up' the log piles with additional material (e.g., soil, grass clippings, brash or timber). The need for this will be assessed in Year 5.

Hedge Management

- 4.14 The purpose of hedge management will be to maintain a 'good' structure, and to allow shrubs to flower and set fruit. Most native shrubs only flower on second-year growth, so it will be necessary to cut the hedges on a rotational basis, ensuring that only a proportion of the hedge is cut each year.
- 4.15 Hedges form an important link for wildlife within and through the site. In order to maintain this function, they should have a target height of no less than 2m and a width of no less than 1.5m.

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- 4.16 The margins of hedges must be left uncut to allow rough grassland and scrub to develop within a zone between 1m and 2m from the base of the hedge. This zone will be cut back every three to five years to maintain a dynamic edge habitat of great benefit to bats, birds, invertebrates and herpetofauna.

SUDS and Wetland Management

- 4.17 The new SUDS features will be managed to maintain aquatic and water-margin vegetation with species-rich grassland on the drier slopes. The wetter zones of the SUDS will need little management other than any maintenance required to ensure their continued functioning. This may periodically require de-silting or the removal of debris. If this is required, it should be carried out in late winter / early spring to avoid harm to any hibernating wildlife.
- 4.18 The wetland area adjacent to Ford Road will be managed to maintain a mosaic of scrub and wet grassland. This requires a light-touch management approach, allowing natural colonisation of shrubs such as suckering elm or blackthorn from the adjacent hedge, which is periodically knocked back with a topper. The cuts should be low enough to open up the vegetation but not so low as to disturb any wildlife. The cuts should be taken in late spring / early winter so as to avoid harm to any hibernating wildlife or nesting birds.

Litter and Arisings

- 4.19 Litter will be controlled during occupation according to the usual means of recycling collections and waste disposal. Additional litter picking in areas away from residential areas will be carried out annually.
- 4.20 Arisings from vegetation management carried out on behalf of the management company shall be disposed of by the grounds maintenance team along with the general estates management.



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Table 4-1 Management Schedule

Feature	Objective(s)	Management Action(s)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Amenity grass (short sward)	Maintain a short sward for recreational and aesthetic purposes	Mow regularly as required during the growing season and remove arisings												
Amenity grass (long sward)	Allow the development of taller swards under tree canopies and around the edges of the site to provide habitat for wildlife	Mow once a year in early spring and remove arisings												
Meadow grassland	Maintain a species-rich sward	Cut once a year in June / July and remove hay cut												
Retained trees (and newly-planted trees after the expiration of the 5-year maintenance period)	Allow natural development and maintain tree health	Pruning or removal of dead wood only as required for public health and safety or tree health												
Ornamental shrub planting	Maintain for amenity purposes	Annual cut to maintain form and structure												
Attenuation Basin	Maintain open vegetation (grassland and tall herbs) Inspect inlet and outlets and clear debris	Cut half of the area each year and remove the arisings												



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Feature	Objective(s)	Management Action(s)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Hibernacula	Maintain a structure suitable for sheltering and hibernating amphibians, reptiles and hedgehogs	Top up with additional material after five years if required.												
Hedges	Maintain a 'good' structure and promote flowering and fruiting	Cut back one third of hedges each year												
	Create edge habitat in a zone 1-3m from the hedge base	Cut back every 3-5 years												
SUDS Areas	Maintain aquatic, water-margin and species-rich grassland vegetation and maintain functioning as attenuation	Remove debris as required												
Wetland Area	Maintain a mosaic of wet grassland and scrub	Cut back periodically to prevent complete covering of scrub												
Litter picking	Remove any accumulation of litter from areas outside of gardens and POS	Remove and dispose of litter												

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5 MONITORING

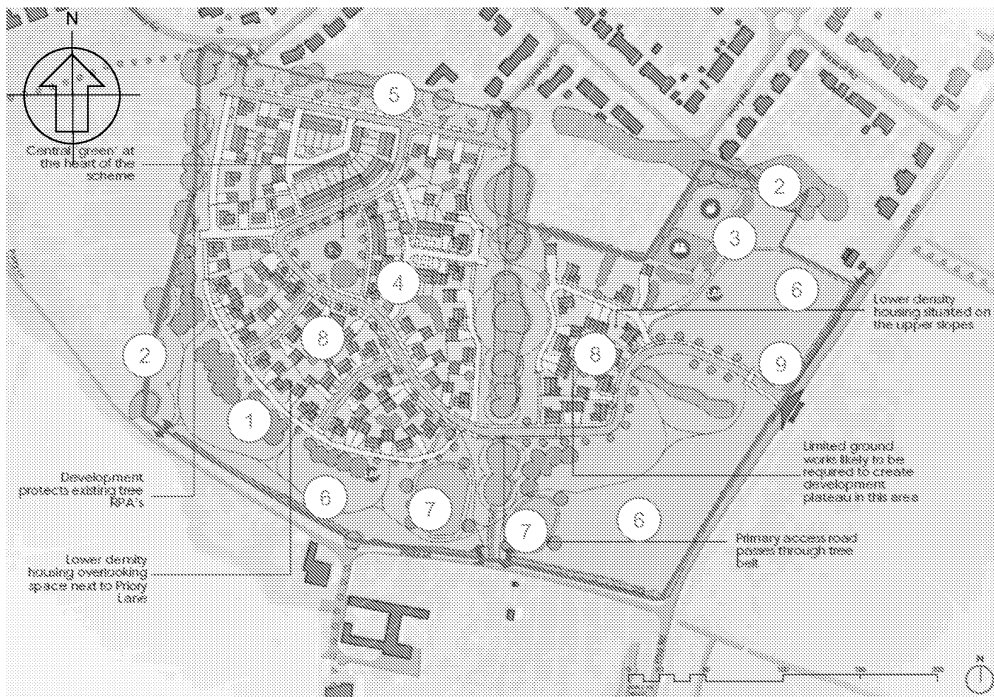
- 5.1 The site will be monitored annually for the first five years, and the frequency of monitoring thereafter shall be reviewed against the site's condition.
- 5.2 The monitoring will consist of a visual inspection and a description of the characteristics against the parameters set out in Table 5-1. For each feature, the person completing the monitoring will set out whether any further action is required, along with a timescale for implementation.
- 5.3 The monitoring will be carried out in June or early July of each year.
- 5.4 The monitoring schedule is designed to be completed by an ecologist, as they are best placed to judge the ecological characteristics of the features and whether any further action is required.



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Table 5-1: Annual Monitoring Record

Date of Check:		Grid Ref:		
Feature	Parameters	Results	Action(s) Required	Timescale for Implementation
Amenity grass (short sward)	No bare ground			
Amenity grass (long sward)	Sward at least 15cm tall with coarse grasses, less than 10% cover of woody species			
Meadow grassland	Species-rich meadow, sward height no less than 15cm			
Retained trees (and newly-planted trees after the expiration of the 5-year maintenance period)	Trees present, dead wood and ivy left in place where safe to do so			
Attenuation Basins	Half of basin to have longer vegetation than other half as evidence of rotational cutting			
	Inlet and outlet structures free of debris			
Wetland Area	Mosaic of scrub not more than 50% of total area			
Hibernacula	Size and structure matches baseline condition within 20%			
Hedges	Shrubs allowed to flower and fruit			
	Marginal area of 1-3m wide			



- 1 New tree planting groups, providing more than the 16 trees required to replace lost trees at a ratio of 2:1
- 2 Barn owl boxes installed on retained trees overlooking foraging areas
- 3 Reptile hibernacula created next to the off-site allotments
- 4 Bird and bat boxes built-in to at least 20% of new dwellings
- 5 Hedgehog nesting boxes installed on suburban boundary
- 6 Wildflower grassland created from existing habitats
- 7 Creation of new seasonal water bodies
- 8 Hedgehog highways through garden fences throughout site
- 9 Wetland area managed as mosaic of wet grassland and scrub
- 10 Hedges managed to promote flowering and fruiting, with 'edge habitat' at bases



Environmental Gain Ltd
 The Old Church School, Butts Hill
 Frome, BA11 1HR
 T: 01225 459 564
 enquiries@engain.co.uk www.engain.com

ON BEHALF OF
 The Arundel Estate

PROJECT
 Land off Ford Road, Arundel

SCALE: NTS
 PROJECT NO: eg17809.003

DATE: 08/03/21
 APPROVED: MD
 TITLE: Figure 1: Illustrative Biodiversity Enhancement Plan