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Biodiversity Enhancement Management Plan

Land at Bramble Cottage,
Hyde End Road,
Wokingham,
Berkshire

RG7 1BU

March 2024

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QUALITY CONTROL		
The information which we have prepared and provided is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct.		
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The views and opinions contained within the document are based on a reasonable timeframe between the completion of the survey and the commencement of any works. If there is any delay between the commencement of works that may conflict with timeframes laid out within this document, or have the potential to allow the ingress of protected species, a suitably qualified ecologist should be consulted.

It is the duty of care of the landowner/developer to act responsibly and comply with current environmental legislation if protected species are suspected or found prior to works.

1. INTRODUCTION

1.1. This Biodiversity Enhancement Management Plan (BEMP) has been prepared to support proposals for the construction of a new residential property with associated landscaping, amenity garden, and hardstanding driveway, at Land at Bramble Cottage, Hyde End Road, Wokingham, RG7 1BU¹ (planning reference 231885).

1.2. The BEMP will support the discharge of Condition 7 of the Planning Consent with reference 231885 which states;

No development, site clearance or other operation shall commence on site until a Biodiversity Net Gain Management and Monitoring plan for an on-site net gain of 5 large trees and 0.095 habitat units in addition to 0.673 hedgerow units together is submitted to and approved by the Local Planning Authority.

Reason: To secure biodiversity net. Relevant policy: Core Strategy Policy CP7 and Managing Development Delivery Local Plan policy TB23.

1.3. It has been clarified with the Wokingham Council Ecologist that by 'Large Trees', it was meant 'Large Species' rather than the Biodiversity Net Gain size definition of a tree which is >90cm in diameter at breast height (dbh).

1.4. This document presents a strategy for habitat compensation and biodiversity enhancement works both during and following the completion of the proposed development. Long-term management strategies for retained, enhanced and newly created habitats within the site are also provided, to ensure that the ecological value of the site is maintained in perpetuity to achieve an overall biodiversity net gain.

1.5. This report has been informed by an Ecological Impact Assessment (2022) and a Biodiversity Net Gain Assessment (2023), both produced by Darwin Ecology Ltd.

1.6. This document presents a strategy for habitat compensation and biodiversity enhancement works. Long-term management strategies for enhanced and newly created habitats within the site are also provided, to ensure that the ecological value of the site is maintained in perpetuity.

1.7. The post-development habitats on site comprise:

- Five newly planted scattered trees (comprising large species);
- Newly planted native hedgerows;
- Newly planted ornamental hedgerows;
- New areas of modified grassland;
- New mixed introduced shrub planting;

¹ OS Grid Reference SU 72713 66619

- New areas of hardstanding including buildings, permeable paving and access roads.

1.8. The landscaping layout and post-development habitat map are shown in the **Appendix**.

1.9. A wildlife sensitive lighting plan has been proposed for the site.

2. AIMS AND OBJECTIVES

- 2.1. This report aims to detail the habitats to be retained, enhanced and created as part of the scheme and provide details on how each habitat will be managed in perpetuity to achieve an overall biodiversity net gain.
- 2.2. The report has been informed by an Ecological Impact Assessment (2022), a Biodiversity Net Gain Assessment (2023), both produced by Darwin Ecology Ltd, and a landscape plan produced by Bradford-Smith Landscape Architects (2024).
- 2.3. The primary objectives are as follows:
 - To provide details of the type and size of each habitat to be retained, enhanced or created;
 - To provide details of five years of aftercare, 25 years of management and 30 years of monitoring of post-development habitats;
 - To ensure that soft landscaping enhances the site for invertebrates by providing nectar, pollen and fruit resources throughout the seasons, a variety of structural diversity and larval food plants, with no less than 60% native and local species by number and diversity;
 - To ensure the removal of all existing Schedule 9 plants from the site (if present) and to ensure that no invasive non-native species are introduced to the site during or post-development;
 - To provide a timescale for delivery of habitat creation and enhancement including soft landscaping and green infrastructure;
 - To provide a monitoring strategy which will assess the condition of all habitats created and detail any and all necessary management or replacement / remediation measures required to deliver the agreed upon values, as well as suggesting appropriate contingency measures should monitoring identify that changes are required to ensure the habitat(s) are in the appropriate condition to deliver the required biodiversity values.
- 2.4. The compensation, enhancement and management proposals relate to three main themes:
 - Protection of retained/enhanced habitats and features during construction;
 - Methods of habitat creation and enhancement including aftercare to ensure proper establishment of habitats to appropriate target conditions; and
 - Long-term management of all post-development habitats to maximise biodiversity and ensure a biodiversity net gain in perpetuity including monitoring strategy.
- 2.5. The site owner and the company managing the estate will accept the responsibility and obligation for the implementation of the mitigation measures during landscaping works and the management plan post-construction. Should any parcels of land under this management

plan be sold on, the new ownership will need to take on the management plan as an obligation.

3. SITE OVERVIEW

- 3.1. The site is located on the southeastern outskirts of Spencers Wood village, approximately 2.21km southeast of M4 J11 and 2.07km east of the A33 (running north to south). The site is situated roughly 6.88km south of Reading town centre.
- 3.2. The site comprises a small area (approximately <0.05ha) of residential garden containing scrub habitat and mature trees as identified using aerial imagery. The site at the time of the survey comprised predominantly bare earth with scattered tree stumps, a patch of hardstanding, and garden waste piles. The extent of each habitat is shown in the **Appendix**.
- 3.3. The site is immediately bordered to the north and west by moderate density residential developments comprising detached and semi-detached properties with associated amenity gardens. The site is immediately bordered to the south by pastoral fields bounded by lines of trees and hedgerows, with the east of the site being bordered by a large detached residential property with a large associated amenity garden (see **Figure 1**).
- 3.4. The wider landscape to the north and west of the site comprises moderate density residential areas, with the landscape to the south and east of the site comprising agricultural land with connecting hedgerows and lines of trees, interspersed with small, low density urban areas. To the north of the M4 (running east to west approximately 2.20km north of the site), the landscape transitions to the high density residential, commercial, and industrial area of Reading town. West of the A33, the landscape comprises a mosaic of arable and pastoral fields with connective lines of trees and hedgerows, interspersed with small, low density residential developments (see **Figure 2**).
- 3.5. See the **Appendix** for the pre-development habitat map.



Figure 1: Site location within the local landscape (Copyright Google Earth Pro, 2024)

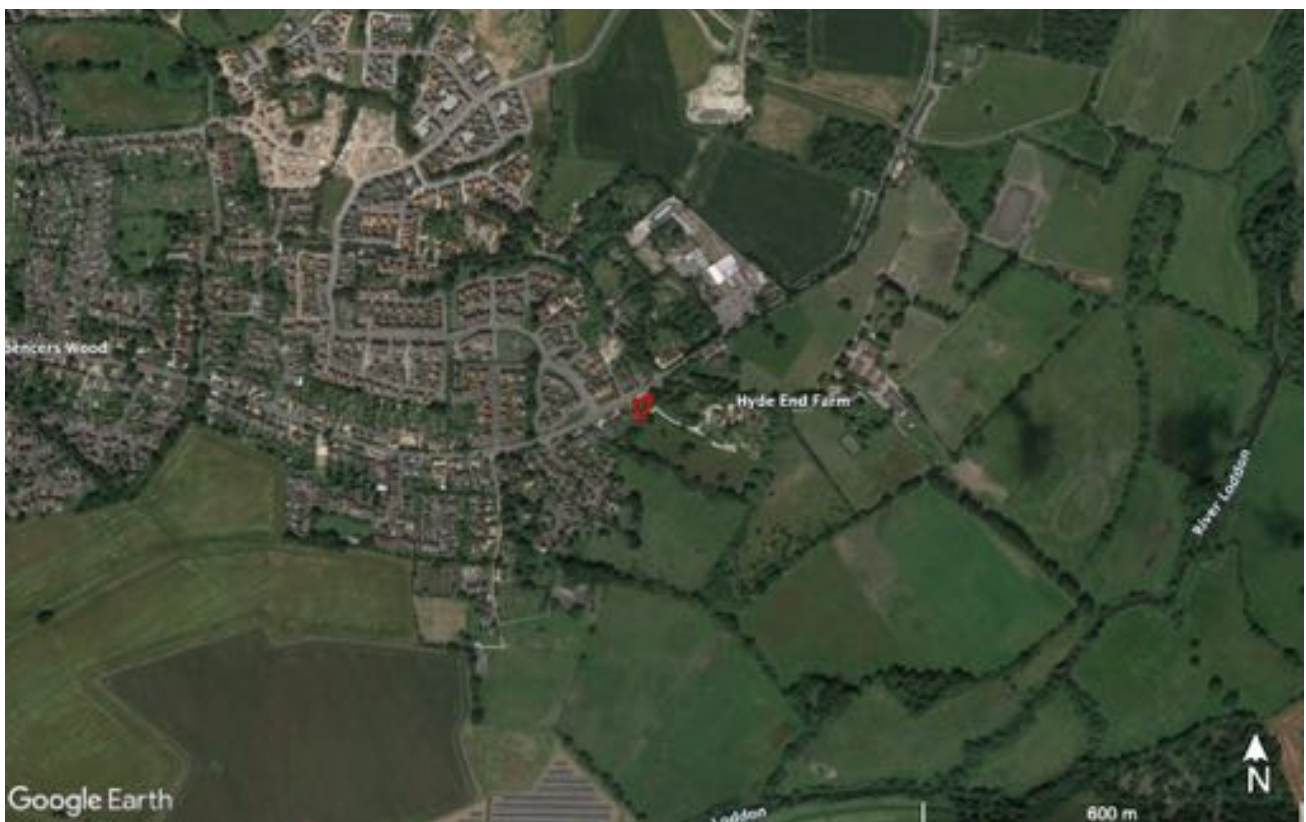


Figure 2: Site location within the wider landscape (Copyright Google Earth Pro, 2024)

4. BACKGROUND

- 4.1. Darwin Ecology Ltd. undertook an Ecological Impact Assessment (2022) and a Biodiversity Net Gain Assessment (2023), including a habitat condition assessment, at Land at Bramble Cottage, Hyde End Road, Wokingham, RG7 1BU to support a planning application (reference: 231885).
- 4.2. During the habitat walkover, it was identified that the site comprised <0.05ha area of bare earth with a small hardstanding area, scattered tree stumps, a pile of garden debris, dead wood, and a small area of retained scrub. As the site had been recently cleared, aerial imagery from 2021 was used to inform the previously existing habitats on site and their potential to support protected species. See **Appendix** for the site habitat map.
- 4.3. The 2021 aerial imagery confirmed the site to comprise scrub habitat, scattered grassland, and mature trees.
- 4.4. The EclA identified that the scrub habitat on site and the mature trees provided suitable opportunities to support foraging bats, nesting birds, reptiles, common amphibians, and foraging hedgehogs *Erinaceus europaeus* and [REDACTED]. Therefore, the site had good potential to support individuals of these species. However, due to its small size, the opportunities provided by the site are limited, and the likelihood that the site would support populations of these species was low. Overall, the loss of the habitats on site would have a permanent low-moderate negative impact on local populations of protected and notable species.
- 4.5. The grassland habitat would offer opportunities for amphibians, reptiles, foraging birds, small terrestrial mammals (including hedgehogs), [REDACTED] as this habitat provides good foraging, commuting and resting opportunities for these species.
- 4.6. It was determined that the site had negligible potential to support dormice *Muscardinus avellanarius*, white-clawed crayfish *Austropotamobius pallipes*, and riparian mammals (otters *Lutra lutra* and water voles *Arvicola amphibius*), due to not containing any habitat suitable to support these species.
- 4.7. As the pre-clearance habitats offered opportunities to support individuals of protected and notable species, the loss of these habitats would have a low-moderate negative impact on local populations of protected and notable species, particularly given the urban location of the site. Due to this, the opportunities present for these species prior to the clearance of the site need to be reinstated and enhanced post works.
- 4.8. Post-clearance, the site comprised bare earth, ruderal vegetation, and hardstanding. Tree stumps and some small areas of retained scrub were also present. It was assessed that the site at the time of the 2022 habitat walkover offered suitable opportunities to support common amphibians, reptiles, and hedgehogs. [REDACTED]
[REDACTED]
[REDACTED]

- 4.9. The recently felled mature trees may have had the potential to provide potential roosting features for bats due to being of the correct age and character. The loss of these trees would result in a loss of roosting features within the local area, having a low-moderate impact on the local bat populations. The loss of these roosting features must be compensated for post-development.
- 4.10. Due to the site being surrounded by lines of trees, agricultural land, hedgerows, and scattered mature trees, it is likely that the habitat surrounding the site is used frequently by commuting and foraging bats. Light spill from the construction process on these features may impact the flight paths of foraging and commuting bats and deter bats from using these flight bats resulting in habitat fragmentation. A wildlife sensitive lighting plan should be developed for the site.
- 4.11. The clearance of areas of taller vegetation, such as ruderal vegetation or remaining scrub, have the potential to cause killing or injury to reptiles, amphibians, and hedgehogs. The removal of these habitats on site, particularly the scrub and scattered trees will result in a loss of foraging, commuting, and resting habitat and resources for protected and notable species.
- 4.12. The existing deadwood and the pile of garden waste may be used by amphibians and reptiles as hibernating or resting features. The removal of these piles have the potential to injure/kill individual reptiles and amphibians if present.
- 4.13. Excavations and storage and moving of materials on the site may also have potential to cause harm to species present on site.
- 4.14. Due to the distance between the development site and any statutory designated sites it is unlikely that the proposed works will result in direct (such as land take) or incidental negative impacts to any designated sites or priority habitats (such as dust pollution, light pollution, littering, or contamination by spillage).
- 4.15. There is considered to be a low risk of impacts to retained habitats on site and surrounding area. However, impacts to be considered include the potential for dust pollution, littering, contamination by spillage of liquids and run-off and introduction of non-native or invasive species. Noise, lighting and vibration may also cause disturbance to the fauna of the site.

5. GENERAL SITE MANAGEMENT

- 5.1. All works within the site will need to be carefully controlled and monitored to ensure that impacts to the surrounding habitats and wildlife remain negligible. Clearance works will be carefully coordinated to ensure sensitive site works are undertaken, particularly with regard to bats, birds, invertebrates, reptiles, amphibians and hedgehogs.
- 5.2. General site management will involve the use of toolbox talks to inform contractors of the wildlife interest within the site, precautionary measures to safeguard species and supervision during clearance of habitats.

Toolbox Talks

- 5.3. Toolbox talks will be provided to all contractors prior to works commencing on site. These toolbox talks will cover the legal protection afforded to species, how to identify protected species and where they may be found, working measures to minimise the risk to each species and a contingency plan should any protected species be found onsite during construction.

Excavations

- 5.4. During construction all trenches and holes are to be covered overnight to prevent any animals falling in and becoming trapped. Contractors should also ensure that ladders or ramps are installed in any holes or trenches to provide a means of escape for any animals which fall into the excavation, and all should be checked before filling takes place. The construction and building team are responsible for this activity on a daily basis.

Construction Materials

- 5.5. All stored materials should be located within a designated area which has been made unsuitable for reptiles and amphibians. These should ideally be raised off the ground on pallets or skids to remove any refuge potential for reptiles, amphibians, and hedgehogs. Aggregates such as gravel and sand must be delivered in bulk bags and stored on pallets.

6. BIODIVERSITY ENHANCEMENT PLAN²

Introduction

- 6.1. The details below outline the practical tasks required to create the habitats outlined in the BNG Assessment (Darwin Ecology Ltd, 2023) and shown in the **Appendix**. Additionally, the **Appendix** also shows the ecological enhancements which will be created on site, with timings for each action outlined.

Habitats

- 6.2. Any future landscape planting should seek to enhance biodiversity, improve connectivity to the surrounding habitats and provide food and shelter for a wide range of wildlife. All amenity planting and formal landscaped areas should be created from a palette of wildlife beneficial plants (not necessarily native) chosen for nectar or fruit and non-invasive species should be planted. Species suggested include hornbeam *Carpinus betulus*, dogwood *Cornus sanguinea*, elder *Sambucus nigra*, blackthorn *Prunus spinosa*, hawthorn *Crataegus monogyna*, hazel *Corylus avellana*, guelder rose *Viburnum opulus*, spindle, wild or bird cherry *Prunus avium/padus*, and crab apple *Malus sylvestris*.
- 6.3. There are a number of specialist seed mixes available specific to certain soil types, growing conditions and designed to benefit different groups of species such as bees or butterflies and moths.
- 6.4. All newly created or retained habitats listed will be managed appropriately to ensure the desired conditions are reached within the target time.
- 6.5. Management will include five years of specific aftercare, during which monitoring and remedial action must be proactive to ensure habitats establish successfully. After this initial five years, management in perpetuity to ensure long-term biodiversity value is maintained will be required.
- 6.6. Specific management prescriptions for each habitat are outlined below, with timings for each action outlined in **Appendix**.

Vegetated Garden

Initial Management

- 6.7. As part of the proposals, 271.87m² of vegetated garden will be created in the form of modified grassland.
- 6.8. Gardens are allocated a pre-determined fixed condition score within the Metric. Therefore, gardens have been set a poor target condition.

² All landscape contractors should be familiar with the National Plant Specification and follow the relevant British Standards and Codes of Practice, including BS5837:2012 - Trees in relation to design, demolition and construction; BS3882:2015 Specification for topsoil; BS3936:1992 Nursery Stock - Specification for trees and shrubs; BS8545:2014 - Trees: from nursery to independence in the landscape; and BS4428:1989 - Code of Practice for general landscaping operations.

- 6.9. All areas of grassland within the vegetated garden area will be turfed with a hard-wearing, multi-purpose species rich turf (supplied by Wildflower Turf Ltd. or similar equivalent). If a species rich turf is not used, an appropriate seed mix, designed to benefit pollinators, such as Emorsgate EL1 Flowering Lawn Mixture or Emorsgate EM1 Basic General Purpose Meadow Mixture, will be sown within all areas of modified grassland to encourage growth and to enhance the baseline biodiversity of the modified grassland.
- To prepare the seed bed, first remove weeds using repeated cultivation. Then plough or dig to bury the surface vegetation, harrow or rake to produce a medium tilth, and roll, or tread, to produce a firm surface. The seeds are best sown into prepared soil within the autumn or spring, but can be sown at other points in the year if there is sufficient warmth and moisture.
 - After sowing the grassland in autumn or spring, regular mowing (roughly once or twice a month) is required for the first year. The grassland should be left to grow longer from April to August to allow the grass to start establishing. Most of the sown species are slow to establish. Soon after sowing, there will be a high amount of annual weeds. These should be left until mid-late summer as they will shelter seedlings and are beneficial to insects.
 - The grassland areas are small and therefore hand sowing of these areas is recommended. This will allow an even coverage of seeds. After sowing, the soil should be trampled or lightly rolled to ensure the seeds make good contact with the bare soil.

Long-term management

- 6.10. Due to their regular use, these areas are expected to be maintained at a **poor condition** (in line with the Biodiversity Small Sites Metric Condition Assessment).
- 6.11. Watering will be carried out during dry periods, and re-seeding of any failed areas will be carried out in Autumn if sown in Spring, or re-seeded in spring if sown in Autumn.
- 6.12. During year 1 of the grassland planting, the grass should have a cut in late summer (ideally September). Whilst any arisings from grassland management should not be left to create thatch or rot and increase nutrient loads at high value habitat, discrete, self contained (within wooden structures etc.) compost piles can provide new habitat for invertebrates and egg-laying sites for grass snakes *Natrix helvetica*.
- 6.13. If the grassland is slowly establishing or failed in areas then a second harrowing will be required at the end of year one in September.
- 6.14. As the property will be used as a residential dwelling, management of the modified grassland areas will be limited, with only occasional management such as re-sowing of seed mixes occurring.
- 6.15. Where possible, the grassland will be managed to create a varied sward, such as creating mown pathways through the habitat. Any pathways should be no more than 1m wide and do a simple loop through the habitat. Mowing of pathways should be undertaken using a cut

and collect mower or a hand-held trimmer and leaf blower to collect arisings, as regularly as is required to maintain an accessible path.

- 6.16. No fertilisers or nutrients will be added to the grassland areas.
- 6.17. In the second year after sowing, if the grassland areas are not sufficiently established, damaged, defective or bare areas shall be re-seeded following the established as detailed in the points above. This will be repeated every autumn until the mixture has established.
- 6.18. Marginal areas adjacent to hedgerows and shrub planting should be cut once on alternate years with some ruderal species being allowed to colonise for further species and habitat diversity. Scrub encroachment should be monitored on a regular basis and removed as necessary.
- 6.19. Ongoing weed control will be carried out to ensure the grassland are free of broad leaved, injurious and invasive weeds. Injurious weeds are those listed in the Weeds Act 1959 and the Wildlife and Countryside Act 1981 (as amended) and include the following: spear thistle, creeping or field thistle, curled dock, broadleaved dock and common hogweed.
- 6.20. Grassland areas underneath and bordering hedgerows can be sown with an appropriate hedgerow understory seed mix, such as Emorsgate EH1 Hedgerow Mixture. This seed mix should be sown shortly after the hedgerow is planted, when the surrounding ground is still bare. This will create a full and diverse hedgerow understory.

Introduced Shrub

Initial Management

- 6.21. Multiple areas of introduced shrub will be created in the form of ground level ornamental beds (totalling 33.03m²). These areas of shrub will be created to enhance foraging resources for birds, mammals and invertebrates on site, and a combination of native and non-native species will be incorporated. No invasive, non-native species will be used.
- 6.22. Introduced shrub is allocated a pre-determined fixed condition score within the Metric. Therefore, introduced shrub habitat has been set a **poor target condition**.
- 6.23. Where these beds are being created, any available native topsoil from within the construction footprint will be retained and used as new topsoil.
- 6.24. These areas will comprise a mixture of woody species (combining at least three different species within each area). All species will be sourced from suppliers who have adopted Flora Locale's Code of Practice for collectors, growers and suppliers of native flora (Flora Locale, 2012).
- 6.25. Plants will be supplied in accordance with the National Plant Specifications and from a HTA certified nursery. Delivery and handling of all plant material will be in accordance with the code of practice for Handling and Establishing Landscape Plants (Parts I, II and III and BS8545).

- 6.26. All planted shrub species will be species selected for their wildlife benefits, including their provision of flowers and/or fruit (such as those mentioned in the below Native Hedgerow section).
- 6.27. Planting of bare root whips will be undertaken between November and February, with earlier planting within this time period recommended to maximise successful establishment, due to the dry soil conditions at the site. The shrub species will be planted in staggered rows, approximately 30cm apart, with the aim of creating an area of shrub planting which is dense and has an even distribution of species.
- 6.28. Saplings will be watered to saturation on the day of planting and again the following day. Subsequently new shrub planting will be watered twice weekly throughout the first growing season (April to October).

Long-term management

- 6.29. Due to their regular disturbance and ornamental use, these areas of introduced shrub are expected to be maintained at a **poor condition** (in line with the Biodiversity Statutory Metric Condition Assessment).
- 6.30. It is important that any new planting is protected during the early growth from grazers and other damage for approximately 3-4 years. Tree guards (ideally not plastic) should be used to protect the leading shoots of the shrub species.
- 6.31. After the initial growing season the new shrub planting will be watered at least once per week throughout the next three growing seasons (April to October). After this period, the planted shrubs will be watered as required, with regular watering throughout dry periods of the year.
- 6.32. Plants that provide fruits and nuts should not be pruned excessively and these resources should be allowed to remain on vegetation over-winter to ensure the benefits of these features are maximised, with management cutting taking place in January or February. All arisings from landscape planting management should be removed from the site, collected in discrete, self-contained compost units or, in the case of larger woody species (such as gorse cuttings), these can be added to deadwood piles created at the boundaries of the site.
- 6.33. Monitoring annually and infill planting into gaps to replace any dead or diseased specimens during establishment will be carried out from year 1 onwards. It will also be checked that no invasive or non-native species are present within the shrub areas, with any identified specimens being removed appropriately and replaced with a native species. Infill planting and new planting will be regulated in a way to ensure that only native species are used and that an individual species does not make up over 75% of the shrub planting cover.
- 6.34. Trimming following establishment periods (year 5 to year 30) including maintenance of edge scrub to graded margins down to field layers to a height of 20cm. Trimming will be carried out in January/February in order to avoid the breeding bird season and after all plants have

fruited etc. If trimming is required during the nesting bird season (March-August, inclusive) then a suitably qualified ecologist will attend site to check for any nesting birds.

- 6.35. Cutting back the shrub every five years, during the winter months of November to February will stop the bramble from becoming 'leggy' or encroaching into grassland habitat and aid in the establishment of other woody species within the shrub habitat.
- 6.36. Management of the ornamental plants should be based on the species requirements, but is likely to involve regular trims and shaping. Any dead or diseased plants should be removed and replaced as with the native hedge.
- 6.37. The shrubs will be managed to ensure that it does not spread into the adjacent grassland habitats and overtake these areas.
- 6.38. The resident of the property will be provided with an online informative brochure regarding the management and maintenance of the shrub planting. This brochure will include information regarding:
- 6.39. Information regarding the species present within the introduced shrub;
- Why the shrub planting should be managed;
 - The importance of shrubs to biodiversity;
 - Watering schedules;
 - How to conduct new planting and where to source appropriate species;
 - How to trim and coppice the shrub planting;
 - Shrub understory species and which to remove to allow for greater biodiversity;
- 6.40. To enhance the overall biodiversity of the site, this brochure will include further information regarding how to increase the biodiversity of their garden, such as descriptions of how to create biodiverse water features, bat and bird box recommendations, and beneficial planting suggestions.

Native Hedgerow Planting and Non-native Ornamental Hedgerow Planting

Initial Management

- 6.41. New native hedgerow planting will be incorporated into the proposed development, with multiple hedgerows being scattered across the site (totalling approximately 93.10m). Additionally, 18m of new non-native ornamental hedgerow planting (comprising solely Garden Privet *Ligustrum ovalifolium*) is scattered across the site.
- 6.42. Planting of new native hedgerows will comprise a mixture of native woody species, suitable for the soil type and conditions within the site. All hedgerow species will be sourced from suppliers who have adopted Flora Locale's Code of Practice for collectors, growers and suppliers of native flora (Flora Locale, 2012).

- 6.43. Native hedgerows will be dominated by hawthorn *Crataegus monogyna*, with supplementary hazel *Corylus avellana*, field maple *Acer campestre*, dogwood *Cornus sanguinea*, English holly *Ilex aquifolium*, European hornbeam *Carpinus betulus*, and dog rose *Rosa canina*. At least five different species should be used within each hedgerow to increase the suitability of the hedgerow to support protected and notable species, and to overall enhance the biodiversity of the site.
- 6.44. Planting of bare root whips will be undertaken between November and February, with earlier planting within this time period recommended to maximise successful establishment, due to the dry soil conditions at the site. Two staggered rows will be planted approximately 30cm apart (or five per metre) along the length of the new hedge line, with the aim of creating a hedgerow that is at least 0.75-1m wide on average along its length.
- 6.45. It is important that any new planting is protected during the early growth from grazers and other damage for approximately 3-4 years. Tree guards (ideally not plastic) should be used to protect the leading shoots of the shrubs.
- 6.46. Saplings will be watered to saturation on the day of planting and again the following day. Subsequently new hedgerow planting will be water twice weekly throughout the first growing season (April to October).

Long-term Management

- 6.47. It is anticipated that these hedgerows will be managed to a **moderate condition**.
- 6.48. After the initial growing season, the new hedgerows will be watered at least once per week throughout the next three growing seasons (April to October). After this period, the hedgerow will be watered as required, with regular watering throughout dry periods of the year.
- 6.49. The health of the hedgerows should be monitored annually throughout the growing season, with weed species removed from the base of the hedgerow. Bramble should be controlled to ensure that it does not become dominant, although a small amount of bramble can be beneficial for wildlife. Failed specimens should be replaced on a like-for-like basis.
- 6.50. Any failed whips must be replaced on a like-for-like basis to ensure that gaps in the hedge canopy make up <10% of its total length and that no canopy gaps are >5m.
- 6.51. Hedgerow vegetation will be managed by cutting as required every two years, outside of the breeding bird season (March to August inclusive), with fruit and seeds allowed to remain on plants throughout the winter. To ensure that the correct target condition is met and maintained, the hedgerow will be allowed to grow at least 1.5m tall on average along its length, with the cutting regime aiming to ensure that the hedge-base gap remains <0.5m along 90% of the hedgerows length (see the Hedgerow Management Cycle in the **Appendix**). All arisings from hedgerow cutting must be removed, with small amounts added to deadwood habitat piles where appropriate and the remainder removed from the site.

- 6.52. Management of the hedgerows on site will be undertaken by the resident.
- 6.53. Management of the ornamental hedgerows should be based on the species requirements, but is likely to involve regular trims and shaping. Any dead or diseased plants should be removed and replaced as with the native hedge.
- 6.54. The resident of the property will be provided with an online informative brochure regarding the management and maintenance of the hedgerows. This brochure will include information regarding:
- Information regarding the species present within the hedgerow;
 - Why the hedgerow should be managed;
 - The importance of hedgerows to biodiversity;
 - The importance of the neighbouring woodland and why the hedgerow placement is important to commuting protected and notable species;
 - Watering schedules;
 - How to conduct new planting and where to source native species;
 - How to trim and coppice the hedgerow;
 - Hedgerow understory species and which to remove to allow for greater biodiversity;

Landscape Planting

Initial Management

- 6.55. Five new trees are planned to be planted throughout the site. These will include native and nut/fruit bearing species.
- 6.56. Recommended native and naturalised tree species include English oak *Quercus robur*, alder *Alnus glutinosa*, common beech *Fagus sylvatica*, silver birch *Betula pendula*, English or Wych elm *Ulmus minor/Ulmus glabra*, wild service tree *Sorbus torminalis*, crab apple *Malus sylvestris*, and whitebeam *Sorbus subg. Aria*. Other native tree species would also be suitable. Plants should be at least 5 years old, and a mix of ages planted.
- 6.57. In line with the conditions provided by Wokingham Borough Council, the five trees planted need to be 'large' species (species which will grow to a large size), such as those listed above. To meet this achievement, trees of a diameter of >15cm at chest height should be planted, and comprise fast growing species such as alder, rowan, or common beech) to ensure that they reach >30cm diameter at breast height within 30 years of planting on site.
- 6.58. All tree species will be sourced from suppliers who have adopted Flora Locale's Code of Practice for collectors, growers and suppliers of native flora (Flora Locale, 2012).

- 6.59. Due to the potential risk of spreading ash dieback no ash *Fraxinus excelsior* trees will be planted (Statutory Instrument No. 2707 - The Plant Health (Forestry) (Amendment) Order 2012 effectively prohibits the internal movement of plants or seeds of ash).
- 6.60. Landscaping plans for the development should include beneficial native species planting which will enhance biodiversity, improve connectivity to the surrounding habitats and provide food and shelter for a wide range of faunal species.
- 6.61. Tree planting will be completed between October and March, avoiding periods of frost and snow from stocks of local provenance, with earlier planting within this time period recommended to maximise successful establishment, due to the dry soil conditions at the site.
- 6.62. Saplings will be watered to saturation on the day of planting and again the following day. Subsequently, new planting will be watered twice weekly throughout the first growing season (April to October).
- 6.63. Following the planting of trees, the habitats should be monitored and managed to ensure longevity and ecological interest. During the first five years, the trees are vulnerable to competition for light, nutrients and water and the following management prescriptions should be considered to aid establishment:
- Selective strimming/treatment with weedkiller of pernicious weeds
 - Like-for-like replacement of failed specimens where appropriate
- 6.64. Once established, occasional thinning may be required to remove weak, diseased or overcrowded trees or vegetation to make the remaining trees stronger.

Long-term Management

- 6.65. These trees will be managed to a **moderate condition**.
- 6.66. Where possible, standing dead wood should be left *in situ* as this provides valuable habitat for a range of animals and plants, including bats, woodpeckers, invertebrates and lichens (unless there is a direct health and safety issue).
- 6.67. In addition, the wood resulting from coppicing and management works should be piled up or left as dead hedges or piles.
- 6.68. It is important that any new planting is protected during the early growth from grazers and other damage for approximately 3-4 years. Tree guards (ideally not plastic) should be used to protect the leading shoots of the trees. Chicken wire fencing (600mm high, with maximum 30mm mesh size) fixed to a wooden post and rail fence should be used to limit grazing by rabbits/deer.
- 6.69. Water is required in the first few years during dry weather to ensure new planting survives.

- 6.70. Plants that provide fruits and nuts should not be pruned excessively and these resources should be allowed to remain on vegetation over-winter to ensure the benefits of these features are maximised, with management cutting taking place in January or February.
- 6.71. All arisings from landscape planting management should be removed from the site to avoid build-up of thatch or nutrients, which would encourage courser grasses to become dominant. They should be collected in discrete, self-contained compost units or, in the case of larger woody species (such as gorse cuttings), these can be added to deadwood piles created at the boundaries of the site.
- 6.72. No chemical pesticide sprays will be used at formally landscaped areas of the site, or anywhere else within the site boundary.
- 6.73. Landscape planting areas will be managed as appropriate to maintain a multi-functional resource, that provides both aesthetically pleasing features for people whilst also providing an appropriate foraging resource for invertebrates, terrestrial mammals, bats, and birds.

Invasive Species and Biosecurity Measures

- 6.74. No Schedule 9 invasive non-native species have been reported on the site. However, if any such species are recognised to have colonised the site during or following the works, appropriate steps will be taken to control them as soon as possible.
- 6.75. Small shrubs can be controlled by pulling the plant by the roots by hand. The plant is able to re-generate from the roots so care should be taken to ensure all roots are removed. Small laurel shrubs can also be treated using herbicide, being done by spray application or through injection into the trunk.. More than one dose may be needed to completely kill the plant. It is recommended that the application of herbicide treatments is conducted by a qualified professional.
- 6.76. Larger shrubs should be felled back to ground level, leaving only a stump. Herbicide plugs should then be pushed into holes drilled in this stump. A qualified professional is required to conduct these works. The plants must be cut below the lowest node to stop regeneration. Pulled plants should then be burned off site or disposed in a permitted landfill.
- 6.77. The removed plants should be disposed of in a bio-secure way through a licensed waste carrier company, licensed garden waste company, or permitted landfill.
- 6.78. Good site hygiene should be maintained during the works which will include;
- The installation of fencing with clear signs indicating the presence of non-native species.
 - Personnel working on or between sites should ensure their clothing and footwear are cleaned before leaving the contaminated area.
 - Tracked vehicles should not be used within the area of infestation.

- All vehicles leaving the infested area must be thoroughly pressure-washed in a designated area and material or water left after vehicles have been pressure-washed must be contained, collected and disposed of appropriately.
- All wash facilities including wastewater from washing vehicles, equipment or personnel should be managed in a responsible way so as not to cause harm to the environment.
- All machinery and tools brought onto site must be cleaned prior to use on the site so that earth and plant material from other locations is not introduced to the site or spread to adjacent habitats.
- Contractors working on or between sites must ensure that they are aware of the potential for invasive species at other sites and that the clothing and protective equipment worn on site is clean and free from contamination.
- Any soil or aggregate or other loose materials brought onto the site must be from a reputable source, and free from contaminants or pollutants.

Protected Species

Birds

- 6.79. At least two bird boxes will be mounted on the new building on site, with a further box installed on the retained mature tree outside the northeastern corner of the site to provide additional nesting opportunities for common birds using the local area.
- 6.80. The Schwegler Swift Nest Box is recommended as it can be used by swifts *Apus apus* if present in the locality, although other species (tits and finches) will also use them. Swift boxes should be installed at the building's eaves, at least 5m from ground level and with unobstructed air space directly in front. The southern aspect should be avoided to limit the risk that chicks would overheat in the nest box during sunny days. All other aspects are suitable locations for the installation of nest boxes. At least one swift box will be installed within the eaves of the new buildings on site. The installation of these boxes will be overseen by a suitably qualified ecologist to ensure they are positioned in an appropriate location.
- 6.81. Sparrow terrace nest boxes are also recommended as house sparrow *Passer domesticus* populations are in decline and provision of a terrace box will offer nesting space for a number of pairs. House sparrows are very social and like to nest in colonies. Sparrow terrace boxes can be installed on any elevation except the southern elevation. At least one sparrow terrace will be mounted on/installed within the fabric of the new building on site (avoiding the southern aspect).
- 6.82. Both the sparrow and the swift boxes can be incorporated into the fabric of the building during construction through the use of integrated sparrow and swift boxes, or can be mounted on the exterior walls of the building.
- 6.83. At least one generalist woodcrete bird boxes will be installed onto the retained mature tree just outside the northeastern corner of the site. Tree boxes should be positioned approximately 3m above ground level and sheltered from prevailing wind.

Bats

- 6.84. At least one bat box will be installed on the new buildings to provide new roosting opportunities for bat species using the local area.
- 6.85. One void-style box will be installed into the fabric of/mounted on the exterior walls of the new buildings (approximately one box per building), allowing bats an enclosed cavity space to roost within.
- 6.86. Bat boxes such as the Beaumaris Woodstone bat box are suitable for installation on external walls and will provide new roosting opportunities for a range of bat species including pipistrelle and myotis species. These will be installed on south / west / east-facing elevations and at a minimum height of 4m, away from any light fittings. The installation of these boxes

will be overseen by a suitably qualified ecologist to ensure they are positioned in an appropriate location.

- 6.87. At least two bat features, such as lifted roof tiles/hanging tiles, or a ridge tile feature must be installed into the new building to provide new crevice roosting opportunities for bats. The locations of the bat features should be agreed by an appropriately qualified ecologist. See the Appendix for further details on these features.

Lighting Mitigation for bats

- 6.88. The Bat Conservation Trust (BCT) offers guidelines on reducing the impact of lighting on bats. The following measures are recommended when designing a sensitive lighting scheme for bats, these comments are generic but incorporating these should be included on all projects:

- Lighting intensity kept to a minimum;
- Lighting times limited to provide some dark periods (e.g. switching installations off between midnight and 5am);
- Timers and motion sensors used to ensure areas are only lit when necessary;
- Retention of dark corridors;
- Low level lighting to allow darkness to be retained in higher vegetation;
- Warm colour spectrums (<2700K, <550nm wavelength) used;
- Light to be directed downward and shielded to prevent light spill above a 70 degree angle;
- All luminaires to avoid UV elements and metal halide fluorescence; and
- LED luminaires used where possible to provide sharp cut-off, lower intensity, good colour rendition and dimming capability.

- 6.89. In addition to this, all lighting must be directed away from the adjacent retained hedgerow to maintain 'completely dark' conditions (as defined by TBMS 'defined as <0.2 lux on the horizontal plane and less than 0.4 lux on the vertical plane (measured at 1.5m and 4m) (Bat Conservation Trust and Institution of Lighting Professionals, 2018). There must be no glare impact from the development within this zone'). These principles will ensure the adjacent habitat is retained favourably for bats and other protected species. A post development lighting check will be carried out 2 years post completion of the development to ensure that no alterations have been made.

Reptiles and Amphibians

- 6.90. At least one hibernacula will be created for reptiles and amphibians on the southern boundary of the site, including dead wood, stone and suitable vegetation cleared elsewhere in the site. Hibernacula will be topped with turf.

- 6.91. Additional dead wood piles will also be created along the native hedgerows present on site to provide foraging, basking and resting habitat for reptiles, including dead wood, stone and suitable vegetation cleared elsewhere in the site.
- 6.92. Whilst cuttings from grassland management should not be left to rot and increase the nutrient load of soil (potentially degrading the protected habitats retained) throughout the site, collections of grass cuttings in discrete, self-containing structures (wooden compost heaps etc.) can provide egg-laying habitat for snakes.

Hedgehogs

- 6.93. Hedgehogs *Erinaceus europaeus* are listed as a Priority Species for Conservation Action under the UK Biodiversity Action Plan, and protected from harm in the UK under Schedule 6 of the Wildlife and Countryside Act 1981. Under the NERC Act 2006, the hedgehog is categorised as a 'Species of Principal Importance' for biodiversity.
- 6.94. At least one hedgehog house should be installed within the site. Specifications for building hedgehog houses will follow the guidance provided by the People's Trust for Endangered Species (2020), including a waterproof cover (such as polyethene or roofing felt) and natural materials (soil, leaves, brash, etc.) covering the box.
- 6.95. These houses are best placed in a covered area such as near a hedge, and the entrance should face away from prevailing wind. There should be suitable connectivity to the wider area and other habitats.
- 6.96. Suitable gaps (13cm x 13cm) will be installed in curtilage fencing around the site to ensure that hedgehogs are able to access the entirety of the site. Holes will be created by either cutting holes in the fences or digging a small channel beneath it, at a location furthest from likely disturbance by occupants of the new dwelling.

Invertebrates

- 6.97. Insect hotels should be created on site. They are easily implemented as they can be made from a range of materials such as bricks, plant pots, tree cuttings, logs and broken tiles. At least one insect hotel should be created near one of the newly planted hedgerows on the site boundaries.
- 6.98. Bee houses could be integrated within the landscaping, being situated in a sunny, exposed area on the southern aspect of the site.
- 6.99. Bee bricks could be integrated into the exterior walls of the new buildings.

7. ECOLOGICAL MONITORING AND REMEDIAL ACTION

- 7.1. On completion of the development, a compliance check will be undertaken by a suitably qualified ecologist to ensure that habitats and protected species features have been created correctly and are establishing. Where habitats or features have not established successfully, the ecologist will provide advice with regards rectifying any issues.
- 7.2. The ecological condition of the habitats on site will be monitored every two to three years by a suitably qualified ecologist, starting one year post-completion of the development and continuing for five years. Condition assessments of all habitats on site and collation of full species lists including relative abundance using the DAFOR scale will be undertaken as part of this review. If the condition of any of the habitats appears to be in decline, advice regarding additional management will be provided. This management will then be carried out by an appropriate landscape contractor. A report of the conditions of the habitats on site and any management changes that have been proposed will be provided to the Local Planning Authority by the **1st November** on year 3 and 5 post development, and every five years thereafter.
- 7.3. If new fruit trees or other landscape planting fails, additional planting may be required. Planting of any of any replacements for failed trees should be undertaken between November and February.
- 7.4. After the initial five years post-development, this management plan (with any necessary amendments identified during those first five years) will be complied with in perpetuity. Reviews of the management plan will be undertaken by a suitably qualified ecologist every five years to ensure that the management regimes remain appropriate and that the habitats and features within the site continue to provide biodiversity gain.

8. REFERENCES

Darwin Ecology (2022). *Ecological Impact Assessment - Land at Bramble Ecology*, Darwin Ecology Ltd.

Darwin Ecology (2023). *Biodiversity Net Gain Assessment - Land at Bramble Ecology*, Darwin Ecology Ltd.

Edgar, P., Foster, J. and Baker, J. (2010). *Reptile Habitat Management Handbook*. Amphibian and Reptile Conservation, Bournemouth.

Environmental Management Guidance; Harmful Weeds and Invasive, Non-native Plants: Prevent them Spreading [online] www.gov.uk/guidance/prevent-the-spread-of-harmful-invasive-and-non-native-plants#dispose-of-invasive-non-native-plants [March 2024].

Flora Locale (2012) *Code of Practice or collectors, growers and suppliers of native flora - Planting with wildlife in mind* [online] cieem.net/wp-content/uploads/2019/07/FL-code-of-practice-growers-seeds.pdf [March 2024]

Institute of Lighting Professionals and the Bat Conservation Trust (2018) *Bats and Artificial Lighting in the UK - Bats and the Built Environment Series* [online] theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/ [March 2024]

People's Trust for Endangered Species (2021) Give a 'hog a home [online] ptes.org/wp-content/uploads/2020/08/Hedgehog-house-instructions-PTES.pdf [March 2024]

Rose, F., (2006). *The Wildflower Key*. Fredrick Warne. Wembridge, D. (2011).

The State of Britain's Hedgehogs. British Hedgehog Preservation Society and Peoples Trust for Endangered Species.

APPENDICES

1. Proposed Plans

2. Habitat Walkover Map

3. Biodiversity Enhancement Map

4. Timetable for Habitat Creation, Enhancement, and Management

5. Hedgerow Management Cycle

6. Mitigation, Compensation, and Enhancement Recommendations

NOTES

Ground work within RPA of existing trees - Any required excavations within RPA's for the new planting and fence posts shall be undertaken by hand using hand held tools only to minimize any root damage. All such works will be undertaken in full accordance with Section 7.2 of BS5837: 2012. Any required root pruning will be undertaken by the Arboricultural Consultant (where such works are appropriate in accordance with the above Standard) and as detailed in Section 7.2.

New Fencing: All fence posts within RPA's shall be locally adjusted to avoid significant roots and undertaken by hand using hand held tools to minimize any root damage.

Tree Survey & RPA's: Green Earth Tree Survey & AMS Report.

Hard landscape details and drainage: refer to Architects and Engineers details. For details on retaining structures, please refer to engineers / architects details.

Levels: proposed detailed levels to be provided by Engineers details.

Surface finishes: to be installed in accordance with the manufacturers instructions. All hard surfaces laid to falls.



NOTES

Copyright: This drawing is the property of Bradford-Smith Landscape Architects. It must not be copied or reproduced or passed to a third party without written consent of Bradford-Smith Ltd.
Dimensions: Only figured dimensions are to be taken from this drawing. All contractors must visit site and be responsible for taking and checking all dimensions related to the works shown on the drawing. All levels in meters.
Utilities/Highways/Environment: It is the responsibility of the client or their contractor to liaise with Utility Providers, Highways Authority's and Environment Agency and to ensure that all approvals are in place. It is the responsibility of the contractor to locate all underground services prior to construction.
Drawings: All drawings and levels to be checked on site prior to the construction works commencing on site. All drawings shall be read in conjunction with relevant landscape specifications.
Discrepancies: Any discrepancy on the drawings shall be referred to the CA immediately.

NORTH



SCALE 1:100 @ A1

LEGEND

SOFT LANDSCAPE WORKS

- Existing TPO Oak tree to be retained & protected - refer to Green Earth Tree Survey & AMS Report
- Root Protection Areas (RPA) - refer to Green Earth Tree Survey & AMS Report
- Proposed native and non-native tree planting - refer to drawing 993-LA-P-03
- Proposed mixed native species rich hedgerow planting - refer to drawing 993-LA-P-03
- Proposed clipped privet (*Ligustrum ovalifolium*) hedgerow planting - refer to drawing 993-LA-P-03

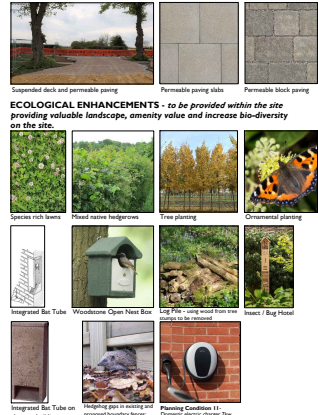
BOUNDARY TREATMENTS

- Existing timber close board fence with capping rail and gravel board circa 1800mm high retained
- Existing timber close board fence with circa 1200mm high retained

HARD LANDSCAPE WORKS

- Entrance Path & Patios: Paving slabs - Hydropave Textured Flags supplied by Tobemore or similar equivalent
- Car Parking & Turning: Permeable Block Paving: Priors Tegul supplied by Tobemore or similar equivalent
- Suspended Deck - refer to Green Earth Tree Survey Report (Treesafe by Abbey Pynfold or Rootbridge Green Grid System) undertaken by specialist contractor
- Gravel path with timber edging restraint and pegs
- Site boundary

HARD LANDSCAPE PALETTE



18/01/2024 Added additional hedgerows
Revisions

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Project
The Haulage Yard Land Adjacent to Bramble Cottage,
183 Hyde End Road, Hyde End Road, RG7 1BU

Client

Drawing Title
SURFACE MATERIAL PLAN

Scale
1:100 @ A1

Date
February 2024

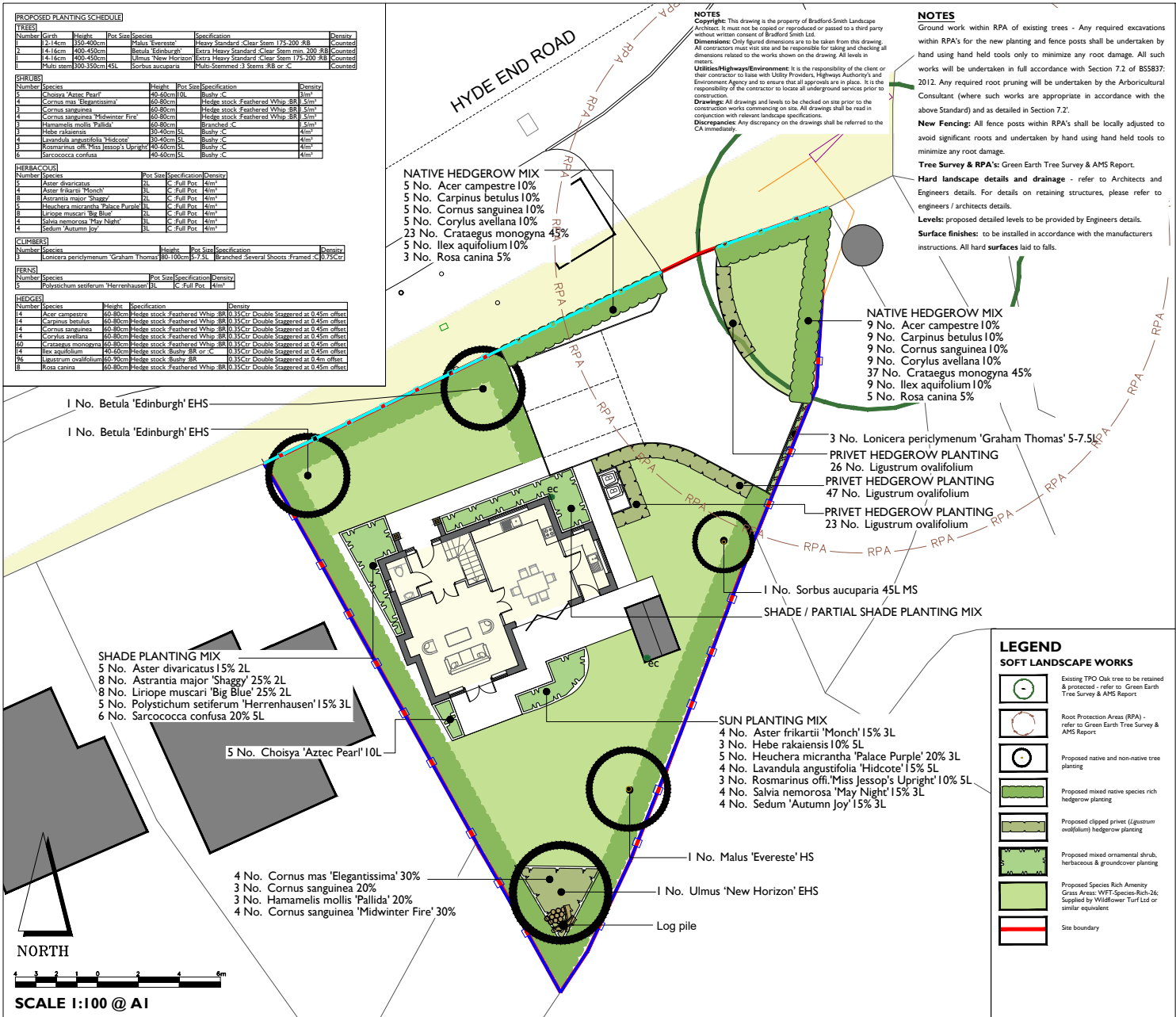
Drawn
MS

Drawing No.
993-LA-P-02

Status
PLANNING CONDITION 5 & 11

Revision
A

Legend for Planning Approval:
☐ Preliminary
☐ Used for Planning Approval
☐ Used for Construction
☐ Used for Designation
☐ Used for Tender
☐ As Built



SPECIFICATION NOTES - These implementation and maintenance specification notes are for planning purposes only and do not constitute a detailed landscape specification.

SITE PREPARATION

Imported Topsoil

Imported topsoil shall be to BS 3882: 2015. Specification for topsoil and requirements for use, Multi-purpose grade - (Landscape 20) and be of medium texture with a high proportion of loamy material. It shall be free from subsoil, rubbish, roots of perennial weeds and other injurious to plant growth. Imported topsoil shall be from an approved source and a sample submitted and analyzed/tested at an independent approved laboratory. Soil Handling: The soils shall be handled in accordance to the Good Practice Guide for Handling Soils. Soil handling shall only take place during the driest parts of the year to prevent compaction of the in situ soils. All topsoil used for planting shall be tested by an approved Topsoil Analysts and any required amelioration or soil improver required shall be carried out in accordance with the topsoil Analyst Report.

The topsoil shall be free from harmful trace elements, including phytotoxic and zootoxic elements harmful both to plant growth and man. The topsoil should be tested by physical and chemical analysis and should state clearly the physical characteristics of the soil, levels of micro-nutrients and chemical content. All fertilizers and added nutrients shall be applied by a qualified staff or supervised so the correct application is undertaken.

Preparation for Topsoil Re-spread

Topsoil shall be spread following completion of all hard landscape building works, following a thorough clearance and removal of building debris. Bottom of tree pit broken up to a depth of 150-200mm and scarify sides. Tree pits within soft landscape areas: min. 1000 x 1000mm x 300mm deep (min). Depth of tree pit dependent of depth of rootball; check dimensions of rootballs prior to planting. Tree pits backfilled with 300mm imported topsoil over subsoil. Hedge and shrub planting areas: minimum 300mm deep.

Grass areas: minimum 150mm deep. No new top soiling operations to take place within the RPA's.

Ameliorant's: Fertilizers & composts: Landscape contractor responsible to submitting imported topsoil analysis to inform requirements. All topsoil ameliorant's (compost & fertilizers), approved pre- free to PAS100 & incorporated during backfilling & cultivation at required rate to full depth of growing medium.

Root Protection Area beneath Existing Trees: No new top soiling operations to take place within the RPA - all new native hedgerow and shrub planting within RPA's to be pit notched planted into existing soil on site, using hand tools only to minimize root damage. If significant roots are encountered, these will be left undamaged and plants locally adjusted. **Existing trees:** All existing trees to be retained shall be protected in accordance with BS 5837:2012 - Trees in Relation to Construction. Existing levels shall be retained around existing trees to be retained. Any tree works pruning to existing trees within the site shall comply with the BS 3998: 2010, Tree Work Recommendations and undertaken by an Arboricultural Association approved Contractor.

Backfilling with Topsoil Tree pits and shrub beds shall be backfilled, in layers, with previously prepared topsoil excavated from the tree pit and imported topsoil as required. Topsoil thoroughly mixed with planting organic compost and slow release fertilizer shall be used to plant all trees, shrubs and hedges. All finished levels shall be 25mm above adjacent paving. The shrubs shall be shaken during backfilling to avoid air pockets and the soil must be firmed as the hole is filled. All backfilled material shall include an organic compost and slow release fertilizer. No new top soiling operations to take place within the RPA.

Cultivation: Topsoil shall be cultivated to a minimum of 400-450mm deep on planting areas to a medium tilt, removing all rubbish, vegetation, perennial weeds, roots, stones over 50mm in any one dimension and raked to even levels. No cultivation operations to take place within the RPA's.

PLANTING

Plant Stock and Timing

Plant material shall conform to BS 3936 Part 1: 1992, Part 2: 1990, Part 9: 1998, Part 10: 1990 and BS4043: 1989 and shall

be protected at all times in transit to the site. The planting season shall be from 1st October to the 31st March. Planting shall not be carried out during periods of frost, drought, cold drying winds, or when the soil is waterlogged.

The planting shall be carried out in the first planting season following practical completion of the building and hard landscaping. Planting outside the planting season will require adequate watering to ensure establishment. All new native hedgerow and shrub planting within RPA's to be pit planted into existing soil on site, using hand tools only to minimize root damage. If significant roots are encountered, these will be left undamaged and plants locally adjusted.

Planting

All trees, hedges & shrub planting shall be planted upright at the same depth as the nursery soil level and evenly spaced, leaving room for growth. Allow at least 300mm clearance between the rootball and the edge of the pit to facilitate staking and to allow adequate amount of backfill around the root ball. Trees shall be planted upright and at the same depth as the grown nursery soil level with the root collar being at finished soil level, and evenly spaced, leaving room for growth. Allow at least 150-300mm clearance between the rootball and the edge of the pit to facilitate staking and to allow adequate amount of backfill around the rootball.

Individual trees: All tree planting in accordance with BS8545:2014 Trees: From Nursery to Independence in the Landscape - Recommendations. Trees shall be pit planted and supported by either double staking or for multi stem trees underground guying system to BS 4043:1989. Stakes shall be softwood, peeled chestnut or larch, free from projections and large knots, with one end pointed. Each stake secured to cross bar using galvanised nails. Tree secured to stake with rubber tree tie and tree cushion spacer/pad, fixed to support the tree. All fixing nails shall be galvanised annular ring. For underground guying system: the underground guying system shall be the designed to secure the root ball/ container grown trees/ multi-stem trees: supplied and installed in accordance with the manufacturers instructions/ specification. Green Blue Arborary system or equivalent approved shall be used. Use

of aluminum ratchet strainers or equivalent approved. Immediately following planting, all plants shall be watered-in to field capacity.

AMENITY GRASS AREAS: amenity garden grass areas shall be turfed with a hard wearing, multi purpose high quality turf - Species Rich Turf supplied by Wildflower Turf Ltd or similar equivalent. Turf shall be in accordance with BS 3969: 1990 and be good quality, uniform in size and thickness with a dense cover of good colour and free from weeds, pests and diseases. The turf shall be between 18-30mm thick. Pre-turfing fertiliser shall be applied to all seeded and turf areas and shall be laid in accordance with BS 4428: 1989.

MULCH: Prior to the application of mulch, the planting areas shall be completely weed free and watered sufficiently to achieve field capacity. The surface of the planting areas shall be mulched with a layer of fine composted bark mulch (0-8mm bark) to a depth of 50-75mm, ensuring that the low branches of shrubs plants are not smothered. Supplied by AHS Ltd or similar approved. The mulch shall be topped-up to maintain, after settlement, a depth of not less than 50mm.

IMPLEMENTATION

All trees, hedges and shrub planting areas shall be carried out in the first planting season after all the building works and the hard landscaping areas have been set out and completed.

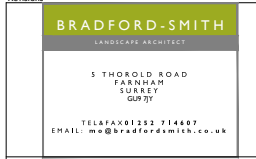
AFTER CARE PERIOD

Maintenance: The Aftercare Period shall extend for a five year period. During the Aftercare Period maintenance visits shall be carried out, at least monthly from April to September and twice during the dormant season to carry out the following operations to establish healthy growing plants in weed free areas. Maintenance operations shall include: watering, firming-up all plants and adjust tree ties, stakes, pest and disease control, grass cutting, general pruning, hedge trimming, weed control, removal of litter, fork over beds, top up mulch and autumn tidying. Removal of defective plants and plant replacements in the following planting season.

Replacement plant stock if required or necessary shall be of similar species, size and form with the appropriate support and as the original specification. Minor pruning all woody plants to

remove deadwood and achieve an overall balanced canopy - where necessary. Need to consider and avoid breeding bird season (March- July/August). Hedge trimming - Trimmed annually outside the bird nesting season which is March- July/August. Check for invasive species and remove from site. Health & Safety: Trees adjacent to public paths or adjacent to buildings to be inspected annually and remedial tree works carried out where necessary. All plants, which have died, are missing or have failed to thrive, shall be noted and replaced annually for a period of five years with the same size and species as originally planted, in the following planting season.

A 06.01.2024 Amendments to trees, species and added additional hedges/retainers



Project: The Haulage Yard Land Adjacent to Bramble Cottage, 183 Hyde End Road, Hyde End Road, RG7 1BU

Client:

Drawing Title
DETAILED PLANTING PLAN & SCHEDULE

Scale: 1:100 @ A1 Date: February 2024 Drawn: MS

Drawing No: 993-LA-P-03 Status: PLANNING CONDITION 5 Revision: A

☐ Preliminary	☐ Used for Design/Information
☐ Used for Planning Approval	☐ Used for Tender
☐ Used for Construction	☐ As Built



***NOTE** Areas are indicative and are not shown to exact scale.

 Site Boundary

 Ruderal Vegetation

 Hardstanding

 Fence

 Bare Ground



DARWIN
ECOLOGY

integrating nature conservation

Project: Land at Bramble
Cottage, Hyde End Road, RG7
1BU

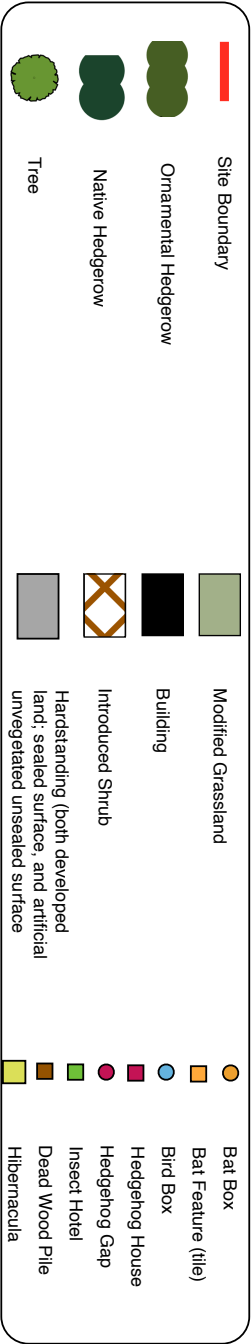
Figure: Pre-development Map

[Info@darwin-ecology.co.uk](mailto:info@darwin-ecology.co.uk)
www.darwin-ecology.co.uk

Date: March 2024



*NOTE Areas are indicative and are not shown to exact scale.



DARWIN
ECOLOGY

integrating nature conservation

info@darwin-ecology.co.uk
www.darwin-ecology.co.uk

Project: Land at Bramble Cottage, Hyde End Road, RG7 1BU

Figure: Post-development Map and Enhancement Features

Date: March 2024

93.10m of newly planted native hedgerow and 18m of non-native ornamental hedgerow will be planted around the borders of the site. These hedgerows will be managed to a moderate target condition. Management will include regular coppicing and replanting, removal of invasive and non-native species, avoiding the use of pesticides/herbicides, and management to ensure a mix of age classes and a lack of large gaps.

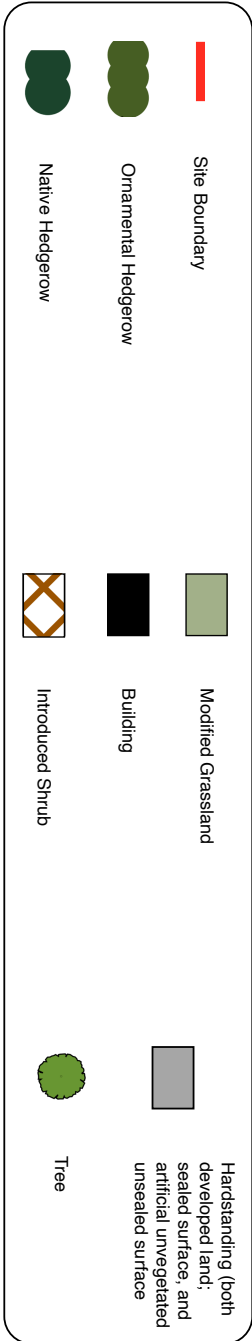
Newly planted medium trees. These trees will be managed to a moderate target condition. These newly planted trees will include native and nut/fruit bearing trees. The trees will be fast growing species and will be roughly 15cm dbh on planting. Management of these trees will avoid pesticides, herbicides, and regular pruning, with trimming only occurring when necessary. Like for like replacement of failed specimens will additionally occur.

271.87m2 of vegetated garden will be created in the form of modified grassland. All areas of grassland will be turfed with a hard-wearing multipurpose species rich turf to increase the biodiversity on site. Vegetated garden will be managed to a poor condition. Where possible, management will include the creation of a varied sward height. Ongoing weed control will be carried out to ensure the grassland is free of invasive species.

33.03m2 of introduced shrub will be planted throughout the garden. These areas will be managed to a poor condition. All shrub species will be selected for their wildlife benefits such as the provision of flowers and/or fruit. Regular management of the scrub will be conducted, including coppicing, removal and replanting, new planting, and removal of invasive non native species.

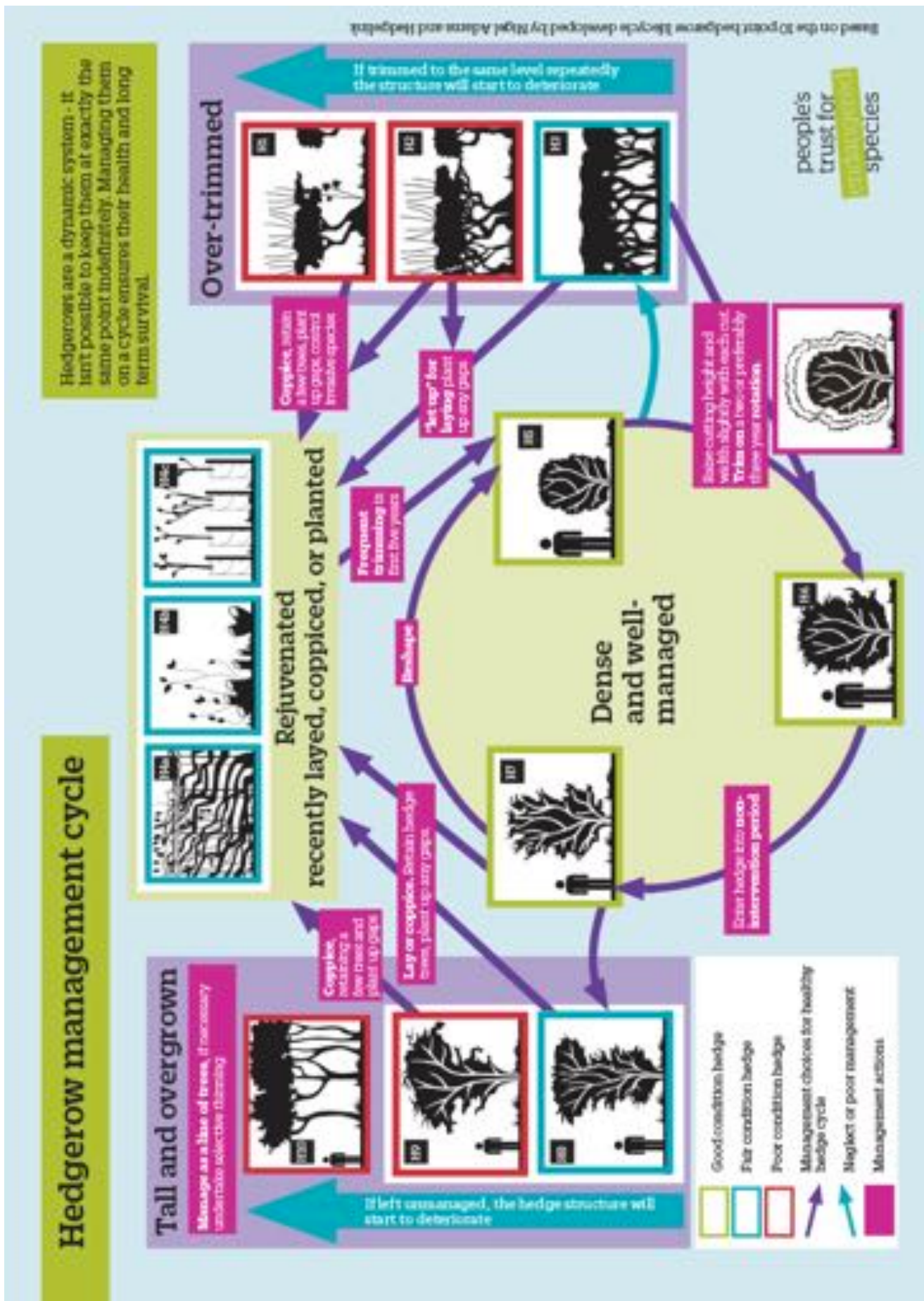


***NOTE Areas are indicative and are not shown to exact scale.**



TIMETABLE FOR HABITAT CREATION, ENHANCEMENT AND MANAGEMENT

Description of works		Years Active with Priority					
	Pre works	1	2	3	4	5	Post 5 yrs
Toolbox talks							
Breeding birds (if works conducted in nesting season)	Y	-	-	-	-	-	-
Badger Walkover	Y	-	-	-	-	-	-
Protected Species Enhancement							
Mounting of bird boxes, bat boxes, dead wood piles, hibernacula, insect hotel, bee bricks and bee houses, and hedgehog houses under ecologist supervision		Y	-	-	-	-	
Creation of Hedgehog Highway Gates within fencing on site		Y	-	-	-	-	-
Monitor, clean and replace enhancement features if in poor condition (NB: Licensed bat worker required to take down any bat boxes that need replacing)		-	Y	Y	Y	Y	Y
Hedgerow and shrub/tree planting							
1. Plant new plants in autumn or spring . Irrigate for the first 6 months if planted in spring.		Y	-	-	-	-	-
2. Replace dead or dying species on a like for like basis		-	Y	Y	Y	Y	Y
3. Cut and prune as needed in accordance with species requirements		Y	Y	Y	Y	Y	Y
Modified Grassland							
1. Sow seed mix in autumn or spring, irrigated for the first 6 months if planted in spring.		Y	-	-	-	-	-
2. Undertake first cut after summer (September) to 50mm		Y	-	-	-	-	-
3. Undertake a second cut in spring to 50mm		-	Y	-	-	-	-
4. Marginal areas adjacent to hedgerows mowed on alternate years		-	Y	-	Y	-	Y
5. Ongoing weed control by hand		Y	Y	Y	Y	Y	Y
6. Yearly September cut (in communal areas)		-	Y	Y	Y	Y	Y
Monitoring							
1. Compliance check		Y	-	-	-	-	-
2. Monitor general green infrastructure and habitats every two to three years and use results to inform future management		Y	-	Y	-	-	Y
3. Wildlife gaps will be checked regularly and, if blocked, will be cleared immediately. Wood piles will be topped up with deadwood if depleted or rotten - and may be pinned down to avoid		-	-	Y	-	-	Y





THE IMPACT OF LIGHTING ON BATS

Bats favour a dark environment for both roosting and foraging as they are adapted to low-light conditions. Artificial lighting will disturb bats if the lighting covers roost access points, flight paths or foraging habitats.

The main peak of nocturnal insect abundance occurs at dusk and a delay in emergence results in a lower foraging rate for bats.

Artificial lighting creates a 'vacuum effect' for nocturnal insects. During the night nocturnal insects use the light of the moon* to navigate. However, artificial lighting and even sky glow above cities obscures the natural moonlight as it is closer

and radiates light in multiple directions.

Some species of bats have been recorded foraging around street lights such as *Pipistrellus* species and *Nyctalus* species. However, species that are less tolerant of artificial light are at a disadvantage when foraging as insects are drawn away from these species usual foraging grounds into the zones of artificial light.

Lighting must be considered in context to any development as increased lighting may cause roost abandonment, reduced reproductive success, and reduced foraging. Mitigation to reduce the impacts of lighting for bats is therefore of great importance in bat conservation.

Table 1: Summary of predicted impact of lighting for each species/genus

Impact	High	Medium	Low
Behaviour			
Maternity roost	All species	-	-
Night roost	<i>Rhinolophus hipposideros</i> <i>Rhinolophus ferrumequinum</i> <i>Myotis</i> spp. <i>Plecotus</i> spp.	<i>Pipistrellus</i> spp. <i>Nyctalus</i> spp. <i>Eptesicus serotinus</i> <i>Barbastella barbastellus</i>	-
Emergence	All species	-	-
Foraging	<i>Rhinolophus hipposideros</i> <i>Rhinolophus ferrumequinum</i> <i>Myotis</i> spp. <i>Plecotus</i> spp.	-	<i>Pipistrellus</i> spp. <i>Nyctalus</i> spp. <i>Eptesicus serotinus</i> <i>Barbastella barbastellus</i>
Commuting	<i>Rhinolophus hipposideros</i> <i>Rhinolophus ferrumequinum</i> <i>Myotis</i> spp. <i>Plecotus</i> spp.	-	<i>Pipistrellus</i> spp. <i>Nyctalus</i> spp. <i>Eptesicus serotinus</i> <i>Barbastella barbastellus</i>
Swarming	All species	-	-
Hibernation	All species	-	-

*For more information see Warrant, E., and Dacke, M. (2016) Visual Navigation in Nocturnal insects. *Physiology*, 31, 182-196.



Sources of light that can disturb bats include; light spill via windows, sport floodlighting, car headlights, roadside lighting, security lighting, aesthetic lighting of waterways, and aesthetic illumination of buildings. Glare will affect bats over greater distance than the target area directly illuminated.

Avoidance is the most effective method, but if this is not possible the following measures should be considered.

What lighting should I use?

- Low pressure sodium lights or 'warm' LEDs
- Wavelength above 540nm
- Colour temperature below 2700K
- Shielded lights that prevent light spill above a 70 degree angle
- Passive infrared (PIR) motion sensors



What to avoid:

- Lighting roost entrances, flightpaths, and foraging or commuting routes
- Reflective surfaces beneath lighting
- High level lights
- Non-directional lighting

Lighting should be considered at an early stage allowing impacts to be minimised through the design of the site.

Key Points

- Keep lighting intensity to the minimum level required
- Limit the times that lights are on to provide some dark periods (e.g. switching installations off between midnight and 5am)
- Dim lighting according to demand
- As an alternative to lighting pathways use paving materials that reflect moonlight
- Low level lighting allows darkness to be retained within higher vegetation
- Set dark habitat buffers - lighting should always be a minimum of 25m from vegetated margins and 40m from waterbodies
- Incorporate dark corridors within the site
- Compensate for the loss of dark areas by enhancing other dark areas
- Consider building design - install internal lighting away from windows



TYPES OF BAT BOXES



Schwegler 2F Double Front Panel

- Manufactured from long-lasting woodcrete
- Lifetime - 20-25 years
- Suitable for pipistrelle and Myotis species
- A second inner wooden panel is fitted adjacent to the front panel imitating a cavity wall



Schwegler 1FD Double Front Panel

- Manufactured from long-lasting woodcrete
- Lifetime - 20-25 years
- Suitable for pipistrelle and Myotis species
- A second inner wooden panel is fitted adjacent to the front panel imitating a cavity wall
- Small entrance hole discourages birds from using the box



Vincent Pro Bat Box

- Manufactured from timber and recycled plastic
- The front and the top of the box is black, which helps heat absorption
- Suitable for a range of species including pipistrelle species, Myotis species, and brown long-eared bats.
- No maintenance required



Schwegler 2FN

- Manufactured from long-lasting woodcrete
- Lifetime - 20-25 years
- Suitable for pipistrelle species, Myotis species, serotine, brown long-eared, noctule and Leisler's bats
- Dual entrance
- Birds and dormice have also been found using this box
- A newer model is now available, Schwegler 3FN, designed with smaller entrance holes which discourage birds and dormice



Schwegler 1FS Large Colony Box

- Manufactured from long-lasting woodcrete
- Lifetime - 20-25 years
- Suitable for a range of bats including pipistrelle species, Myotis species, Noctule, and brown long-eared bats
- Three grooved inner wooden panels are connected to the front panel, which are ideal for bats to cling to.
- Accommodates large summer colonies



Schwegler 1FF Colony Box

- Manufactured from long-lasting woodcrete
- Lifetime - 20-25 years
- Suitable for a range of crevice dwelling bats including pipistrelle species, barbastelle, noctule, and brown long-eared bats
- Rough wooden surface for bats to cling onto and climb



Greenwoods Ecohabitats Small Hollow Bat Box

- Manufactured from long-lasting ecostyrocete
- Lifetime - 20-25 years
- Suitable for a range of bats preferring a cavity space, including pipistrelle species, myotis species, noctule, and brown long-eared bats
- Suitable for hibernating bats



Bark Boxes Large Twin Crevice Bat Box

- Suitable for range of bat species providing roosting opportunities similar to naturally formed tree roosts.
- Thermal mass suitable for spring and autumn roosts.
- Natural and discreet appearance for hanging on trees.
- No maintenance required.
- Made from over 50% recycled materials./



How to Install



Integrated bat boxes can be installed into the brickwork of buildings to provide a roosting spot for bat species.

Being embedded in the masonry of a building, they do not impact the exterior seal of structure and are commonly integrated in new builds.

With some modification or bespoke design, integrated bat boxes can be installed in such a way that it does not interfere with a building's exterior facade.

The 1FR bat tube has a 45 degree angle for bats to land on and crawl upwards into the bat tube. It has been designed to be installed within or adjacent to the the external skin of the block work or brickwork.

For a rendered finish, the 1FR bat tube can be built into the external skin of breeze blocks (acting as a block) and be rendered over (ensuring the access point is left clear). Ridges should be created in the render immediately below the access point, which will aid the bats when crawling into the bat tube.

For a brickwork finish, the 1FR bat tube should be installed within the brickwork, set back slightly to allow the front to either be rendered over or for a continuity of brick slips to be mortared over the top of the tube. The upper brick slip should overlap the access point and the lower brick slip should be in line with the 45 degree angle of the bat tube.

Alternatively, **Habibat** bat tubes can be purchased that are designed for brickwork design and can be custom made.





Lifted tile bat access features

Lifted tiles provide a simple, discreet bat roosting opportunity which are great for replicating existing roost features on traditional tiled roofs. They can be cheaply and easily created using materials available on site to provide a bespoke mitigation solutions for bat licence projects.



Lifted tiles should provide a gap of approximately 15-25 mm beneath the tile to provide access to the batten space of the roof. The roof should be lined with bitumastic felt to create the perfect warm crevices suitable for roosting bats.



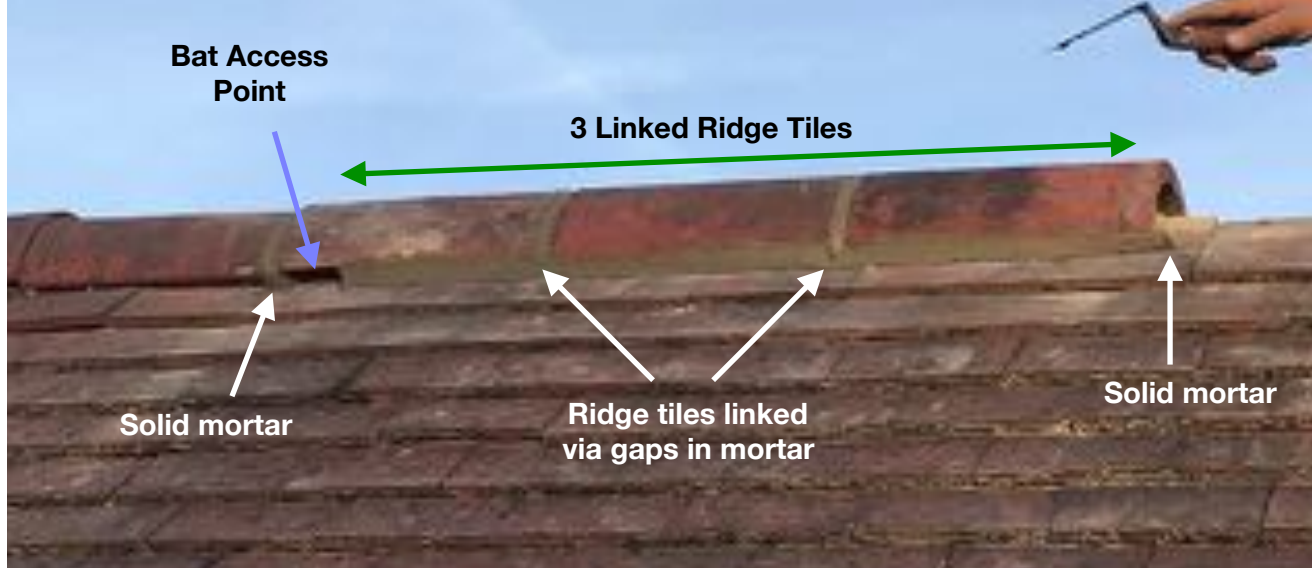
Small pieces of tile, mortar, pieces of wooden batten or rolled lead tingle can be used to raise the tile and create a suitable access gap for bats.



These features are also suitable for incorporation on areas of hanging tiles to provide bat access to the batten space.

The locations for these features should be agreed with an ecologist to provide optimal conditions for the bat species and roost types present on site.

Lifted tile features can also be used to provide access into a roof void suitable for roosting bats. To provide access into the roof space, a small gap must be cut into the roofing felt. This should be approximately 50 mm x 20 mm to provide access for bats but discourage birds from entering the roof space.

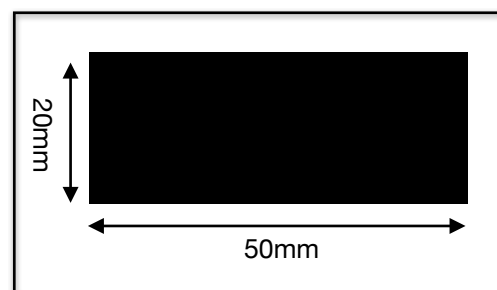


HOW TO CREATE

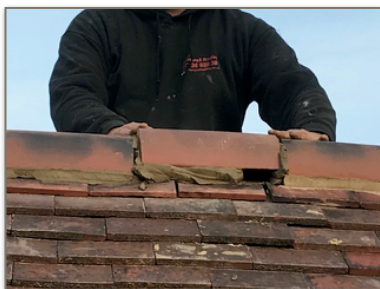
Note: Use three adjacent ridge tiles for one Ridge Tile Crevice Feature



1. Notch out the underside of a ridge tile measuring 20mm high by 50mm wide.



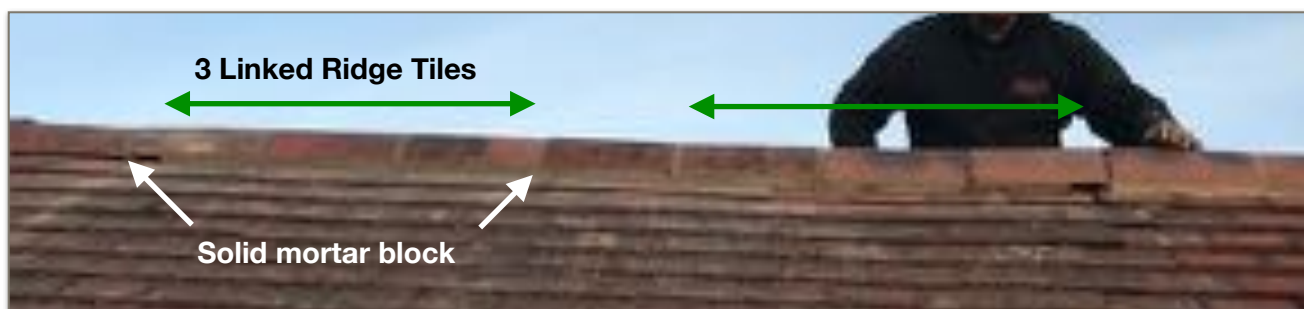
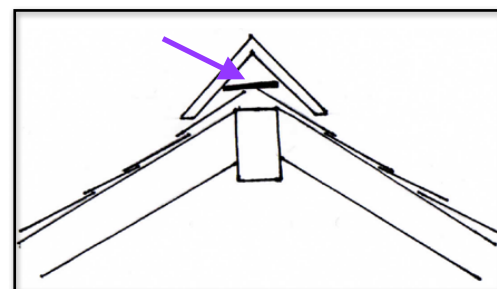
2. Or leave a gap in the mortar of the same size



3. Leave the gap mortar free when bedding the tile onto the ridge.



4. To ensure the three ridge tiles remain linked either; place a broken tile over the ridge and mortar only above the tile (left) or fill one side with mortar and leave the other side empty (do this on alternate sides to ensure the feature does not become draughty) (right).



5. At each end of the three linked ridge tiles insert a solid mortar block to reduce through draughts.



Gaps and Crevices

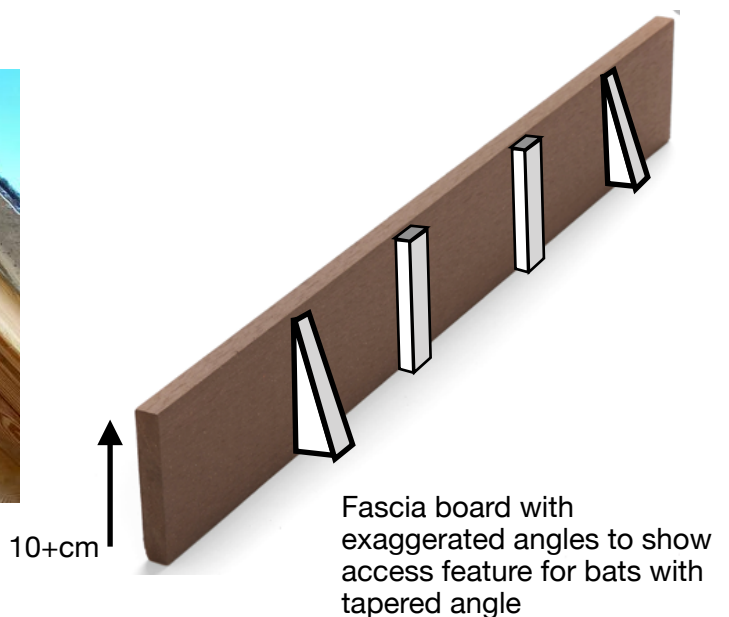


Crevice-dwelling bat species can utilise gaps in fascias, barge board and soffits, and potentially can gain entry to the interior roof void if the gap is large enough.

These areas of a building are often replaced or repaired which would destroy any identified roosting features. Luckily there are features that can be implemented to compensate for the loss of these features.

A simple option to compensate for a lost roosting feature in a fascia or barge board is to cut an access hole flush with the wall in which the new/replacement fascia, barge board, or soffit box is placed. It needs to be close to the wall as bats need somewhere to land before they can climb up into a gap

Alternatively, features can be created by installing wide barge boards directly on overlapping cladding, which creates suitable gaps for crevice roosting bats where natural crevices are created due to the profile of the boards. Gaps of at least 4 inches deep and approximately 15mm wide at the top are suitable for small bats such as pipistrelle species.





TYPES OF BIRD BOXES



Vivar Pro Seville 32mm WoodStone Nest Box

- Manufactured from woodstone - increases longevity and provides a consistent internal temperature
- The nest box compensates for the lack of natural cavities that are found in trees
- Suitable for blue tits, tree sparrows, house sparrows, great tits, crested tits, nuthatches, coal tits and pied flycatchers
- Should be installed between 1.5m and 3m high



5KL Schwegler Nuthatch Nest Box

- Manufactured from woodcrete
- Nuthatches prefer nest boxes with larger cavities. They will often occupy owl nest boxes and fill the entrance hole with mud reducing the size to approximately 32mm
- Nuthatches plaster mud on the internal walls of the cavity and line the floor with wood chipping and leaves to nest
- To discourage nuthatches from using owl nest boxes try installing the 5KL immediately adjacent



Tawny Owl Nest Box

- Install on a mature tree within a woodland (not on the outskirts)
- Install a minimum of 3m high
- Face the box entrance away from prevailing wind (generally avoiding west/south-west)



Open-fronted Nest Box

- Manufactured from woodstone - lifetime of 20-25 years
- Suitable for robin, wren, spotted flycatchers, and black redstart
- Best installed hidden from view on the wall of a building or hidden within ivy/honeysuckle as the boxes open-front may attract predators
- Install at a height of 1-3m



Design and creation

Deadwood habitat piles offer valuable habitats for an array of saprophytic (deadwood eating) invertebrates that will in turn provide food for a wide range of predatory species of insects, birds, mammals, reptiles and amphibians.



On sites where vegetation structure is limited, brash and log piles provide an instant enhancement. Deadwood habitat piles also provide shelter and refuge opportunities for larger animals, particularly reptiles and amphibians.

They can also be suitable hibernation sites during the winter for reptiles, amphibians and small mammals including hedgehogs. Think bonfire!

Habitat piles should be located in sunny or part shaded sites. A compact central core, with larger woody material in contact with the ground is recommended to provide the damp and decomposing wood conditions that are most suitable for benefiting saprophytic invertebrates. The outer layers should be laid more loosely on top. This provides a diverse structure within the habitat pile and provides suitable cover and basking opportunities for reptiles.

Habitat piles should be maintained by adding material every few years as the pile decomposes and do not require much management.



To provide optimal conditions for reptiles, amphibians and mammals, log piles should contain a mixture of sizes and shapes with plenty of small diameter material included. This introduces voids of different sizes and creates a complex internal structure.

They can be created to be an attractive feature of the landscape where a more formal appearance is required.





Creation and design



Hibernacula offer sheltering opportunities for reptile and amphibian species, providing them with essential habitat in which to hibernate during the winter temporary shelter in the summer during the warmer months.

Hibernacula can be both naturally-occurring and artificial, and can be constructed of a range of materials. Our ecologists can advise on the best locations and materials for the placement of artificial hibernacula.

The optimum locations for hibernacula are on south-facing slopes within freely-draining soils. It is imperative that the hibernacula are exposed to direct sunlight for the majority of the day to ensure maximum thermal capacity.

It is also important that hibernacula are created within a mosaic of habitat types for example open areas of grassland adjacent to sheltered areas of scrub / hedgerow. This ensures excellent basking areas are available adjacent to well connected habitat and areas of shelter.



Hibernacula can range from underground chambers to sheltered areas at ground level, akin to refugia.

By digging a shallow pit and filling it with materials such as rocks and logs, a chamber can be created which contains several gaps within. Access can be enabled by placing entrance tubes at ground level that go into and out of the chamber.

When the chamber and access has been constructed, soil can be piled on top of the hibernacula to seal it. Plant wildflower seeds on top to further benefit local biodiversity!





Insect boxes and bug hotels



The provision of insect boxes and bug hotels provide a valuable resource for invertebrates, providing suitable nesting habitat for important native pollinators such as mason bees and leafcutter bees. They can also provide opportunities for a wide range of species to shelter and over-winter during the colder months.

Bug hotels are highly adaptable, and are therefore suitable for almost all developments and habitats. They can be made easily from a range of waste and plant materials, and more specialist items such as bee bricks can be purchased in order to target specific species.



Image: RSPB

Bug Hotel

These are easily implemented in almost any situation as bug hotels can be made from a range of materials, such as bricks, plant pots, tree cuttings, logs and broken tiles.

Bug hotels can also be adapted to benefit specific species, such as bees, woodlice, and ladybirds.

Other terrestrial species such as hedgehogs, reptiles and amphibians can also benefit from sheltering in a bug hotel.



Insect boxes

A range of prefabricated insect boxes such as the Green & Black Bee Brick (left) and the Woodstone Insect Box (above) are available and can be incorporated into or onto buildings or on trees to provide nesting habitats for a range of solitary bee species.



Wildflower Turf

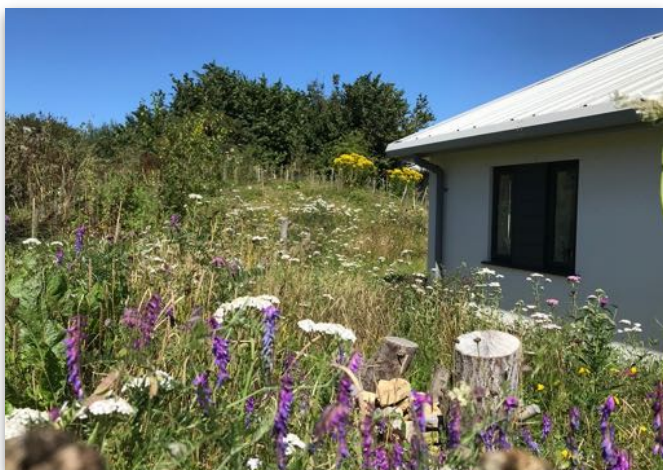
Wildlife Friendly Landscaping



Wildflower turf is suitable for use in a wide range of applications to provide a naturalistic and attractive meadow landscape and provides a more reliable result compared with traditional seeding methods.

The seeded turf contains a diverse mix of native wildflower meadow species including grasses and flowering plants characteristic of lowland meadows on a range of soil types.

As the grassland matures, the meadow develops a characteristic composition with species that thrive on the local soil.



Wildflower turf provides an instant enhancement to any landscaping project with low maintenance and reliable establishment of native wildflower grassland.

Darwin Ecology Ltd are Accredited Partners of Wildflower Turf Ltd.

Accredited partners are trained in the use and installation of Wildflower Turf Ltd. products to deliver attractive and successful wildflower landscapes.



The flowers in the turf have been chosen to ensure that flowering plants are present from early spring through to autumn.

A diverse and thriving meadow will attract a huge range of invertebrates and pollinators to birds, reptiles and mammals.

Darwin Ecology can help you maximise the impact of your wildflower areas by designing and creating additional habitats for the species you will attract including rustic and visually pleasing deadwood habitats or hibernacula as shown.