BIODIVERSITY ENHANCEMENT & MANAGEMENT PLAN REPORT

at
Land off Carr Top Lane
Golcar
Huddersfield
West Yorkshire
HD7 4JD

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Brierstone Ltd

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JCA Limited
Arboricultural & Ecological Consultants

Quality Assurance

JCA ref.	Version	Report Completed:		Reviewed:	
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17029f/MB	01	23/03/2022	Megan Brown	Adam West	29/04/2022
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This report has been prepared and provided in accordance with the *British Standard 42020: Biodiversity – Code of practice for planning and development* and the *CIEEM's Code of Professional Conduct.*

Version 2: Updated plans in Appendix 1.

Contents

1 Introduction

1.1 Purpose of the Report

1.1.1 A Biodiversity Enhancement plan has been requested for **Land off Carr Top Lane, Golcar** by Kirklees Council. This is described within Condition 30 of the Decision Notice:

Prior to the commencement of development (including ground works), a Biodiversity Enhancement and Management Plan (BEMP) shall be submitted to and agreed in writing by the Local Planning Authority. The BEMP shall ensure that no less than a 10% biodiversity net gain (i.e., 10% above the site's pre-development habitat units and hedgerow units baseline) is achieved post-development, and shall include the following:

- *Description and evaluation of features to be managed and enhanced;*
- *Details of the extent and location/area of proposed enhancement works on appropriate scale maps and plans;*
- *Details corresponding with landscaping details to be submitted pursuant to condition 28;*
- *Details of ecological trends and constraints on site that might influence management;*
- *Aims and Objectives of management;*
- *Appropriate management actions for achieving the Aims and Objectives;*
- *An annual work programme (to cover an initial five-year period capable of being rolled forward over a period of 30 years);*
- *Details of the management body or organisation responsible for implementation of the BEMP; and*
- *Details of an ongoing monitoring programme and remedial measures.*

The BEMP will be reviewed and updated every five years and implemented for a minimum of 30 years. The BEMP shall include details of the legal and funding mechanisms by which the long-term implementation of the BEMP will be secured by the developer with the management body responsible for its delivery. The BEMP shall also set out (where the results from the monitoring show that the Aims and Objectives of the BEMP are not being met) how contingencies and/or remedial action will be identified, agreed and implemented so that the development still delivers the fully-functioning biodiversity objectives of the originally-approved BEMP. The development shall be implemented in accordance with the approved BEMP and all measures and features shall be retained in that manner thereafter.

1.1.2 This report will aim to fulfil the planning conditions set by Kirklees Council, with the aim of enhancing the site's value to wildlife, through the retention of any existing features of value to wildlife, the creation of new habitats and the provision of new roosting/nesting opportunities within the proposed development.

1.2 Terms of Reference

1.2.1 We have been instructed by **Brierstone Ltd** to produce a Biodiversity Enhancement Plan.

1.2.2 The following development plan has been supplied for this purpose:

- Detailed Landscape Proposal (Phase 2) Drawing No.: 2748/3 (Rosetta Landscape Design, 2022).

1.2.3 Please also refer to the Preliminary Ecological Appraisal (JCA, 2021) for a full description of the site's ecological potential.

1.3 Scope of the Report

1.3.1 This report is compiled in accordance with guidance outlined in the *National Planning Policy Framework* (NPPF) so that the development takes into account the value of ecosystem services and enhance ecological networks.

1.4 Details of Proposed Development

1.4.1 The development proposed at this site is for thirteen residential dwellings with associated parking and gardens. The woodland to the south of the site and existing building are to be retained.

1.5 Site Description

1.5.1 **Land off Carr Top Lane, Golcar** is situated approximately 4.5km west of Huddersfield town centre, Ordnance Survey (OS) National Grid Reference SE 09593 15659, with nearby postcode HD7 4JD.

1.5.2 The site is surrounded by predominantly residential development on the north and east with woodland clusters to the south and west. The wider surrounding area consists of further residential development and agricultural fields.

2 Local Biodiversity Action Plan

2.1.1 If possible, JCA Ltd aim to incorporate Local Biodiversity Action Plan (LBAP) habitats within our enhancement plans. We also aim to attract and support LBAP species, through either directly planting LBAP floral species, or creating habitats that will attract these species. The LBAP that covers **Land off Carr Top Lane** is the Kirklees BAP.

2.1.2 The local habitats of principal importance listed within the Kirklees LBAP (Kirklees Habitats of Principal Importance, 2007) are listed below:

- Hedgerows
- Other semi-natural grassland (wet/rush pasture and rough grassland)
- and Riverine.

2.1.3 Kirklees Council have issued the following species action plans (Kirklees Species of Principal Importance, 2007):

Table 1 Species of Principal Importance within Kirklees BAP.

LBAP Species		
Plants		
Dactylorhiza incarnate Early marsh orchid	*Epipactis palustris* Marsh helleborine	*Luronium natans* Floating water plantain
Birds		
Tetrao tetrix subsp. *britannicus* Black Grouse	*Crex crex* Corn Crake	*Coccothraustes coccothraustes* Hawfinch
Pyrrhula pyrrhula subsp. *pileata* Common Bullfinch	*Numenius arquata* Eurasian Curlew	*Prunella modularis* subsp. *occidentalis* Dunnock
Cuculus canorus Common Cuckoo	*Passer montanus* Eurasian Tree Sparrow	*Passer domesticus* House Sparrow
Locustella naevia Common Grasshopper warbler	*Caprimulgus europaeus* European Nightjar	*Carduelis cabaret* Lesser Redpoll
Carduelis cannabina Common Linnet	*Streptopelia turtur* European Turtle Dove	*Vanellus vanellus* Northern Lapwing
Sturnus vulgaris Common Starling	*Botaurus stellaris* Great Bittern	*Lagopus lagopus* subsp. scotica Red Grouse
Miliaria calandra Corn Bunting	*Perdix perdix* Grey Partridge	*Emberiza schoeniclus* Reed Bunting
Turdus torquatus Ring Ouzel	*Anthus trivialis* Tree Pipit	*Phylloscopus sibilatrix* Wood Warbler
Alauda arvensis subsp. *arvensis/scotica* Sky Lark	*Carduelis flavirostris* subsp. *bensonorum/pipilans* Twite	*Motacilla flava* subsp. *flavissima* Yellow Wagtail
Turdus philomelos subsp. clarkei Song Thrush	*Parus montanus* subsp. *kleinschimdti* Willow Tit	*Emberiza citrinella* Yellowhammer
Muscicapa striata Spotted Flycatcher		
Invertebrates		
Formica lugubris Northern Wood Ant	*Coenonympha pamphilus* Small Heath	*Lasiommata megera* Wall Brown
Satyrium w-album White-letter Hairstreak		
Fish		
Salmo salar Atlantic salmon	*Lampetra planeri* Brook Lamprey	*Salmo trutta* Brown/Sea trout
Anguilla anguilla European eel	Lampetra fluviatilis River lamprey	
Reptiles and Amphibians		

Vipera berus Adder	*Lacerta vivipara* Common Lizard	*Bufo bufo* Common Toad
Natrix natrix Grass Snake	*Triturus cristatus* Great Crested Newt	*Anguis fragilis* Slow worm
Mammals		
Lepus europaeus Brown Hare	*Plecotus auritus* Brown long-eared bat	*Lepus timidus* Mountain Hare
Nyctalus noctula Noctule	*Lutra lutra* Otter	*Mustela putorius* Polecat
Pipistrellus pygmaeus Soprano Pipistrelle	*Arvicola terrestris* Water Vole	*Erinaceus europaeus* West European Hedgehog

3 Retention of Ecologically Valuable Features

3.1 Pre-development

3.1.1 For a comprehensive description of the site's current ecological value please see Preliminary Ecological Appraisal Report (JCA, 2021). A summary of the habitats and features present in this report can be seen below.

3.1.2 The site consists of the following habitats:

- Semi-natural mixed woodland
- Dense/continuous scrub
- Scattered scrub
- Scattered trees
- Improved grassland
- Scattered bracken
- Tall ruderal
- Introduced shrub
- Bare ground
- Building.

3.1.3 The most valuable habitats for wildlife are the mixed woodland, scattered trees and scrub habitats, and the building.

3.1.4 The woodland contains Schedule 8 species bluebells *Hyacinthoides non-scripta* protected under the Wildlife and Countryside Act 1981 (as amended) (WCA). It also contains valuable habitat for foraging and commuting bird, bat, and invertebrate species, in addition to providing nesting habitat for breeding bird species (JCA, 2021).

3.1.5 The existing building onsite was assessed to hold moderate bat roost potential.

3.1.6 Two invasive Schedule 9 (WCA) species were also identified onsite and thus require eradicating prior to developmental works (see **Section 4**).

3.1.7 The remaining habitats onsite were deemed to hold lower biodiversity and provide less opportunity for notable or protected species (JCA, 2021).

3.2 Features to be Retained and Protected

3.2.1 The semi-natural mixed woodland onsite is being retained during the development, subsequently retaining the most valuable habitat for biodiversity.

4 Invasive Weed Eradication

4.1 Invasive plant species are those plants listed under Schedule 9, Part II of the Wildlife and Countryside Act 1981 (as amended) or described on the Non-Native Species Secretariat (NNSS) website. Invasive species include Giant Hogweed, Giant Kelp, Japanese Knotweed, Japanese Seaweed, Himalayan Balsam, Horsetail and Floating Pennywort. Under the Wildlife and Countryside Act 1981 (as amended) it is an offence to plant or cause the spread of Invasive Plant Species in the wild and therefore it is a legal obligation to remove them.

4.2 Both Japanese knotweed (*Fallopia japonica*) and Himalayan balsam (*Impatiens glandulifera*) were recorded onsite during the field survey conducted by JCA in April 2021 and were reported in the site's Preliminary Ecological Appraisal (JCA, 2021). Brierstone Ltd. are hiring specialist contractors to deal with the removal of the Schedule 9 species.

5 Habitat Creation

5.1 Summary

5.1.1 The majority of habitats onsite are of low conservation value, with the exception of the mixed woodland, scattered trees, scrub and building with moderate bat roost potential. There is therefore scope to enhance the site's wildlife value post development.

5.1.2 It has been proposed to create 13 residential dwellings with their associated parking spaces and gardens, containing amenity grassland and shrub beds. While trees towards the site borders are being retained, including those within the woodland habitat, trees within a more central position onsite are being removed to facilitate for the development. To compensate for their loss, several urban trees of three species have been proposed. Additional understorey planting has also been proposed to enhance the existing woodland habitat.

5.1.3 It is important at this site to maintain as much of the woodland habitat as possible, particularly as the habitat forms part of a larger woodland corridor, providing greater ecological connectivity for wildlife. The woodland south of the site also forms a 'soft-edge' that separates the woodland from the residential properties. Edge habitats are particularly important for maintaining invertebrate populations and woodland edge bird species. The inclusion of this edge habitat will also enhance the wild feel of the site, providing natural looking vistas which will enhance the amenity value of the site for residents. It is also important to consider the size of the block of habitat. In general, maintaining larger areas of woodland is better for supporting priority species and protected species such as bats (Ausden, 2007).

5.1.4 Gardens can support a surprising and diverse array of wildlife. There are number of practices that can maximise biodiversity in back gardens and are particularly relevant to this proposed development. This can be achieved by minimizing practices such as pesticides, planting flowers and trees, creating wildlife features such as ponds piles of logs and providing artificial nesting and roosting sites.

5.1.5 The positions of the proposed new planting can be seen in **Appendix 1**.

5.2 Grassland Planting

5.2.1 Species Selection: The species chosen for this grassland are all nectar and pollen rich, and so will attract insects such as bees and butterflies. It is hoped that the insects that are attracted to the site will then provide a food source for larger animals, thus encouraging species such as bats and birds to the site. The species selected are also visually attractive and therefore should add amenity value and appeal to the residents.

5.2.2 Quantity: Roughly 370m² of land will be converted to species rich grassland. Sown at 4 grams per meter squared, this will require approximately 1.48 kg of seed mix.

5.2.3 Species Specifications: A list of the proposed species can be seen below in Table 2.

Table 2: List of species proposed within the grassland mix.

Botanical Name	Common Name	Number/m^2
Festuca glauca	Blue fescue grass 'Elijah Blue'	4/m^2
Miscanthus sinensis	Chinese silver grass 'Kleine Fontane'	4/m^2
Miscanthus sinensis	Chinese silver grass 'Red Chief'	4/m^2
Pennisetum villosum	Feathertop grass	4/m^2
Stipa tenuissima	Mexican feathergrass	4/m^2

5.2.4 Planting Implementation: The key to creating sustainable, species-rich grasslands is to begin with a nutrient-poor base and then manage the land correctly.

Species-rich grasslands require much less management than amenity grassland. As they only require mowing twice a year, they will save a considerable amount of money in the long term.

It is recommended that the grassland planting is implemented after the completion of the development.

- **Ground Preparation**:
  Bare soil: If the area of ground to be converted into species-rich grassland is bare, then the following instructions should be implemented: At most sites, it is likely that the soil will have at one point been fertilised. To reduce fertility, remove the top 15 to 20 cm of topsoil to reveal the nutrient-poor subsoil. The nutrient rich topsoil should then be relocated elsewhere on site, i.e. in the garden spaces and shrub beds. Alternatively, a layer of the unearthed subsoil can be excavated and placed over the topsoil. This method will inhibit the growth of any weeds present in the topsoil. Another option is to dilute the topsoil by mixing in poor quality material such as crushed builders' rubble or spoil. Then, using a fork, break up the soil and rake the proposed seedbed to produce a fine, firm tilth. Remove any large stones and any root fragments.

  Existing Grassland: If the area of ground to be converted into species-rich grassland is an existing area of grassland, then the following instructions should be implemented: During the autumn (September / October) cut the grass very short and rake the land over vigorously to create patches of bare ground. When the lawn is cut, the cuttings must be removed from the site to prevent the nutrients being returned.

- **Sowing**: The seed mix should be sown during early autumn (late August/ September). The seeds should be sown sparsely, at a rate of 2 to 5 grams per square metre. Mix the seed with damp sand or sawdust in a ratio of 1 to 3 in order to ensure the seeds are evenly distributed across the seedbed. Scatter the seed by hand, gently rake over and then lightly roll or tread the ground to settle the seeds in the soil.

- **Management**: Following sowing, remove any annual and perennial weeds that appear. The grassland should remain nutrient poor, therefore do **not** add fertilisers at any point. The grassland should be cut only twice a year; once in the spring (between early March and early April) and once in the autumn (between late June and the end of August). Always remove the cuttings to prevent nutrients returning to the soil. **Never** cut the meadow shorter than 5cm. This cutting regime will prevent the grassland from succeeding in to scrub and woodland, whilst allowing the flowers to set seed for the following year, thus producing a sustainable and viable habitat. If after 2 years the grassland remains species poor, the land should be prepared in the

method described above in *Existing Grassland* and the seed mix re-sown.

5.3 Shrub & Hedgerow Planting

5.3.1 Species Selection: The species have been selected for their hardiness, amenity value and their value to local wildlife, either in the form of flowers, berries, seeds or shelter. Species that are poisonous such as Spindle have been avoided.

5.3.2 Shrub Specifications: The following tables detail the specification for the newly planted shrubs within the shrub beds, and for understorey planting within the Public Open Space (POS) areas, including the existing woodland South of the site:

Table 3: Proposed species for mixed shrub planting 2 m spacing.

Botanical Name	Common Name	Height	Number/m^2
Berberis thunbergii	Japanese Barberry Atropurpurea Nana'	40 – 60cm	4/m^2
Ceanothus sp.	Ceanothus 'Blue Mound'	30 – 40cm	4/m^2
Choisya ternata	Mexican orange	30 – 40cm	4/m^2
Euonymus fortune	Euonymus 'Silver Queen'	20 – 30cm	4/m^2
Escallonia sp.	'Iveyi'	40 – 60cm	4/m^2
Escallonia sp.	'Red Elf'	40 – 60cm	4/m^2
Hebe sp.	'Autumn Glory'	20 – 30cm	4/m^2
Hebe rakaiensis	Rakai hebe 'Shrubby Veronica'	30 – 40cm	4/m^2
Hebe sp.	'Red Edge'	20 – 30cm	4/m^2
Lavandula angustifolia	'Hidcote'	30 – 40cm	4/m^2
Lonicera nitida	Boxleaf Honeysuckle	30 – 40cm	4/m^2
Photinia fraser	Photinia	40 – 60cm	4/m^2
Prunus laurocerasus	Cherry laurel	40 – 60cm	4/m^2
Physocarpus opulifolius	Ninebark	40 – 60cm	4/m^2
Pyracantha saphyr	Firethorn	30 – 40cm	4/m^2
Skimmia japonica	'Rubella'	30 – 40cm	4/m^2
Spiraea nipponica	Snowmound'	60 – 80cm	4/m^2
Salvia officinalis	'Purpurascens'	20 – 30cm	4/m^2
Viburnum tinus	Laurustinus	30 – 40cm	4/m^2
Weigela florida	Weigelia 'Foliis Purpureis'	40 – 60cm	4/m^2

5.3.3 Shrub Planting Implementation: Recommendations for good shrub planting practice are given below:

- **Site Preparation**: It is recommended that the shrub planting scheme is implemented after the completion of the development. The shrub beds must be installed before the shrubs are planted, care should be taken during development to ensure that soils within these beds are not contaminated with cement or other building materials.

  Loosen the soil to eliminate compaction and improve drainage. If the existing topsoil is of poor quality, a fertile, freely draining soil with neutral or slightly acidic pH should be imported.

- **Planting Hole:** A planting hole will be excavated to around two and three times the diameter of the rootball and no deeper than the roots. The sides and bottom of the hole should be roughened with the spade or fork. Soil amendments such as compost should not be added as this has been shown to be detrimental to successful establishment.

- **Planting**: The top layers of compost should be scraped away when planting container grown plants, with the point where the roots flare out being near the soil surface. Place the shrub in the centre of the hole and carefully refill ensuring soil is positioned between and around all of the roots in order to eliminate any and all air pockets. Firm the soil around the shrub gently, avoiding compacting the soil.
- **Mulching**: Woodchip mulch should be applied around the base of each shurb to a depth of no more than 75mm. This will conserve water close to the soil surface and inhibit weed growth.
- **Timing**: Planting should be carried out during the dormancy period for deciduous species (November to February).
- **Positioning**: Shrubs within the amenity bed should be planted **1m** apart, ideally with at least 1 example of each species planted within each bed. In larger shrub beds, shrubs should be planted in small groups (3-4) of the same species. Shrubs within the woodland shrub bed should be planted **2m** apart. Whips within the hedgerow scheme should be planted in two staggered lines, **30cm** apart, and distributed evenly.
- **Management**: Hedgerows should be cut only once every two to three years, **not** annually. Cutting annually will prevent hedgerow species from flowering and fruiting, thus reducing their wildlife benefit. The best time to cut hedgerows is during late winter.

5.4 Tree Planting

5.4.1 Species Selection: The species chosen have been selected based on their amenity and ecological value. They have attractive autumnal colours, berries, flowers, interesting bark and leaves and as such, the site should be attractive throughout the seasons for both residents and wildlife. The species selected have a range of life expectancies in order to provide the site with long term tree cover. Poisonous species have been avoided, as have species which commonly drop branches. Where appropriate trees have been planted in order to provide useful screening (see **Appendix 6-8**).

Trees have been positioned where they will provide the highest amenity possible and are unlikely to conflict with other trees or structures as they attain their mature height and spread.

5.4.2 Tree Specifications: The following table details the specification for all the replacement trees. Consideration is given to availability, immediate impact, ease of installation and likelihood of successful establishment.

Trees should be container-grown and selected according to guidelines BS: 3936: Part 1: 1992 - Nursery Stock. This will ensure that they are of good form and in good condition.

Table 4: Proposed deciduous trees within the development.

Botanical Name	Common Name	Size at Purchase	No. Required
Amelanchier arborea	Serviceberry 'Robin Hill'	Standard	3
Prunus sp.	Prunus 'Pandora'	Standard	2
Sorbus aucuparia	Rowan 'Cardinal Royal'	Standard	2
		Total	**7**

5.4.3 Tree Planting Implementation: Recommendations for good tree planting practice are given below:

- **Site Preparation:** It is recommended that the tree planting scheme is implemented after the completion of the development. This will avoid damage to new trees from construction hazards such as re-grading of soils near roots and mechanical damage to tree crowns.

- **Planting Hole:** A planting hole will be excavated by hand and will be twice the diameter of the rootball and of equal depth. The sides of the hole should be roughened with the spade. The new tree should be offered into the hole and backfilled using the original soil material. Soil amendments such as compost should not be added as this has been shown to be detrimental to successful establishment.

- **Staking**: Staking will be required in order to secure the tree and prevent losses within the first years of establishment. It may be necessary to angle the stakes in order to avoid damaging the rootball. All trees are to be staked at a height of no more than 1 metre.

- **Tree Ties**: Adjustable and flexible tree ties will be used. These are to be attached at a point no more than one third of the way up the stem. Ties should be inspected after one year and adjusted as required. Only if establishment is particularly slow should stakes remain in place longer than three growing seasons.

- **Mulching**: Woodchip mulch should be applied around the base of each tree to a depth of no more than 75mm. This will conserve water close to the soil surface and inhibit weed growth

- **Timing**: Planting should be carried out during the dormancy period for deciduous species (November to February).

- **Tree Guards**: Spiral type guards are to be incorporated around the base of each stem in order to reduce pest damage throughout the winter months and to prevent mechanical damage from strimmers and mowers.

- **Future work**: After completing any future tree works such as pruning or felling, all deadwood should be retained on site and created into log piles in suitable and sheltered positions. This will then provide habitat for flora and fauna such as fungus, invertebrates and amphibians.

5.5 Aftercare

5.5.1 All newly planted trees and shrub beds are to be thoroughly watered immediately after planting and during any prolonged periods of dry weather.

5.5.2 Once planted, trees and shrubs should be inspected on an annual basis for signs of poor condition or damage. Any trees or shrubs that die within the first 5 years after planting will be replaced with trees or shrubs of the same species and size.

5.5.3 Any trees or shrubs in a private garden will be the responsibility of the house owner in the future.

5.5.4 Trees and shrubs in public open spaces will be the responsibility of the managing agent for the site whether it is a private company contracted to do the work or the Local Authority. All tree and shrub works should be completed outside of the breeding bird period (March to August).

5.5.5 Any weeds found growing around the newly planted trees and shrubs should be removed annually in subsequent years after planting. This will ensure the uptake of valuable resources such as water, nutrients and light. This should be done by manually without the use of herbicides.

5.5.6 Tree ties should be inspected annually and adjusted if required. Tree ties and stakes should be removed within three years of planting unless establishment is deemed to be unusually slow.

5.5.7 New bark mulch should be applied around the base of each tree to a depth of no more than 75mm, each year for at least the first three years. This will conserve water close to the soil surface and inhibit weed growth.

6 Faunal Boxes

6.1 Summary

6.1.1 In total **3** bat boxes, **2** bat bricks, **8** bird boxes, **2** hedgehog shelters and **2** insect boxes have been recommended (see **Appendices 2-5**).

6.2 Bat Roosting Opportunities

6.2.1 All British bat species are protected by UK legislation. This is in response to the declines experienced by many bat species over the past century. The cause of the decline could be linked to a number of factors, including habitat loss, pesticide over-use, habitat fragmentation, loss of roost sites and roost disturbance.

6.2.2 Box Selection & Positioning: There is a wide range of different bat boxes available, including both internal and external designs. External designs include the traditional wooden and woodcrete boxes. Internal designs include boxes that can be built into the walls, with a front that mimics the brickwork of the building, essentially becoming invisible. Other roost opportunities include cutting slots into soffit boxes, using bat bricks that lead into cavity walls and using lifted tiles to allow access into the loft.

6.2.3 **Bat bricks** have been selected to incorporate into the new buildings. The bricks are positioned high on the walls of the building, and the gap within the brick is only a few centimetres wide. These gaps are often overlooked by residents and so should not cause conflict with buyers. Bat bricks should be placed under the eaves at the apex of the south facing gable end walls. These bricks will then allow bats to access the cavity wall spaces (See **Appendix 2)**.

6.2.4 **Bat Boxes** should be positioned at least 5m high, in groups of three, with their front facing north, southwest or southeast (as recommended by the BCT). This will allow each box to gain a different amount of warmth from the sun, creating a range of different environmental conditions for bats to choose from. The selected boxes should be constructed of woodcrete or similar in order increase their life expectancy. A range of different designs should be selected in order to increase the likelihood of bats roosting within the site (See **Appendix 2)**.

6.2.5 Where lighting is required, conditions should be imposed to ensure the impact of the lighting on the bats is kept to a minimum. Lighting will be situated away from areas of both retained and new trees and shrubs. Any lighting should be of a low level of luminance. The use of low-pressure sodium lamps or high pressure sodium lamps is recommended instead of mercury or metal halide lamps. Overall levels on site should be as low as planning permits. Lighting column height near hedgerows or trees should be kept to a minimum as this reduces the ecological impact. Where lighting can be directed downwards at a more acute angle, taller columns can be used. Please refer to the IPL Guidance note 8 (2018).

6.3 Bird Boxes

6.3.1 In the UK there are approximately 600 species of bird, each occupying a different habitat and present in a different region of the country. A small number of these regularly visit

gardens and will quickly adopt new nest boxes, but only when the right box design is selected and situated correctly. Each species prefers a specific nest box design, with different dimensions and hole sizes. It is recommended that a breeding bird survey is carried out on site to inform and produce a robust and tailored Biodiversity Enhancement Report for this site.

6.3.2 House Sparrow: House sparrows prefer to breed in small colonies in buildings. Therefore, erecting several boxes close together or choosing a House Sparrow 'Hotel' will greatly increase the chances of attracting House Sparrows. Boxes should be securely fastened below the eaves, or at least 3m above ground level. Boxes should be positioned so that the front is facing in an easterly direction, so as to avoid direct heat of the sun and prevailing wind and rain. Boxes should be around 25cm tall and 15cm deep with a hole size of around 32mm.

6.3.3 Swift boxes: Swift boxes should be positioned directly under the building's eaves, at least 5m from ground level and out of direct sunlight. The openings should not be obstructed by vegetation or other structures. The openings should face north, north-east or north-west. Boxes should ideally be constructed out of woodcrete to increase their life expectancy or could be in the form of internal 'swift bricks'. The entrance hole should be around 3cm by 5cm.

6.3.4 Standard bird boxes: Birds such as most tit species, tree sparrows and nuthatches prefer standard nest boxes with a small hole opening and a perch at the entrance. The size of hole can vary depending on the bird species.

6.3.5 Open-sided boxes: Birds such as Robins, Wrens and Blackbirds will only nest in boxes with an open front design. These should be positioned within dense vegetation, below 2m high. Robins and wrens prefer smaller boxes (25 x 15 x 12 cm) and Blackbirds larger boxes (30 x 18 x 15 cm). Therefore, a mix of box sizes should be selected.

6.3.6 **3** standard bird boxes and **2** open-sided boxes should be placed on suitable trees, in a sheltered position and **1** house sparrow 'hotel' and **2** swift box on houses (see **Appendix 3**).

6.4 Insect Boxes

6.4.1 Insects are the primary food source for many of the rare or protected animals that regularly visit gardens. Thus encouraging insects into a site will then attract their predators, such as birds and bats.

6.4.2 Many insect species will hibernate over winter in their adult state, such as butterflies, ladybirds and lacewings. In nature, these insects would hibernate within features such as leaf litter or other plant debris. However, gardeners tend to over-maintain their gardens, often tidying these features away in the autumn. Therefore, these species can be encouraged to stay at the site all year round by erecting suitably designed boxes (Kirby 2003).

6.4.3 **2** boxes should be placed on fences or walls between 0.5 to 2m, in a sheltered position (see **Appendix 4**).

6.5 Hedgehog shelter

6.5.1 Hedgehog numbers have declined by 90% over the past 50 years due to a number of factors including habitat loss, fragmentation and parasites. Providing shelter and a means of dispersal in gardens will encourage hedgehogs to visit the site and utilise the natural space.

6.5.2 Hedgehog shelters are simple to construct. Situate in a quiet corner of a garden, preferably under vegetation. Dried leaves or hay are placed inside for bedding (Bunnell, 2014).

6.5.3 **2** hedgehog shelters should be placed onsite in a sheltered position; one can be placed within the woodland habitat and one within a property garden (see **Appendix 5**).

6.5.4 Access to gardens has become increasingly limited for hedgehogs, as fences and walls block their dispersal. A simple solution is to create a 13x13cm access hole at ground level into fences in each garden to allow hedgehogs to freely move between green spaces (Bunnell 2014).

7 Conclusion

7.1 Retention of Ecologically Valuable Features

7.1.1 The site largely contains habitats of low conservation value, with the exception of the mixed woodland, scattered urban trees, the scrub and building. The potential for generalist invertebrate species, breeding birds and foraging and commuting bats was identified onsite; the derelict building was assessed to hold moderate roosting potential. The woodland onsite was also found to contain Schedule 8 species *Hyacinthoides non-scripta*. However, as the woodland and derelict building are being retained over the development, the most valuable habitats for wildlife will not be impacted by the development.

7.2 Habitat Creation

7.2.1 The development on site is proposed for 13 residential dwellings with their associated gardens and parking spaces. Within the soft landscaping plans of the site, grassland, shrub and hedgerow, and tree planting have been proposed, targeted at enhancing the site's existing biodiversity. These are described in Section 5 and their planting positions shown in **Appendix 1**.

7.3 Faunal Boxes

7.3.1 **2** bat bricks and **2** bat boxes will be positioned around the site, within the new buildings and on a number of suitably sized existing trees. **8** bird boxes including designs aimed at supporting house sparrows, swifts, robins, blackbirds and wrens will be erected onto the proposed buildings and trees. **2** mixed insect boxes aimed at attracting butterflies, ladybirds and lacewings will be erected onto proposed rear garden fences. Finally, **2** hedgehog shelters have been recommended.

7.4 Management and monitoring

7.4.1 Monitoring of faunal boxes and wildlife features over a 5-year period is recommended. Monitoring is key to understanding how habitat and wildlife features are being used by wildlife on site after the development. Without monitoring, and effective and adaptive management a scheme can't be maintained and revised.

7.4.2 For a full schedule of ecological mitigation measures, please refer to **Appendix 9** detailing management for the site over the next 30 years. As per Condition 30 of the Decision Notice, the BEMP should "be reviewed and updated every five years and implemented for a minimum of 30 years" (Kirklees Council, 2021). The developer, Brierstone Ltd., is responsible for ensuring implementation of the plan either personally, or by finding and appointing a specialist ecological management body or organisation who will carry this out.

8 References

Ausden, M. (2007) *Habitat management for conservation: A handbook of techniques*. Oxford, United Kingdom: Oxford University Press, USA.

Bat Mitigation Guidelines (Jan. 2004). A. J. Mittchell-Jones. English Nature.

Bat Survey Guidelines: Good Practice Guidelines (2007). Bat Conservation Trust (BCT).

Bat Workers Manual (3rd Edition 2004). A. J. Mitchell-Jones & A. P. McLeish. Joint Nature Conservation Committee (JNCC).

Bunnell, T. (2014) *The disappearing Hedgehog*. United Kingdom: Independent Publishing Network.

Kirby, P. (2013) *Habitat management for invertebrates: A practical handbook*. Exeter: Pelagic Publishing.

Perrow, M.R. (2008) *Handbook of ecological restoration: Volume 1, principles of restoration: V. 1: Principles of restoration*. Edited by Martin R. Perrow and Anthony J. Davy. Cambridge, United Kingdom: Cambridge University Press.

Websites:

Bat Conservation Trust (BCT). <http://www.bats.org.uk/>

Google Maps. **<**http://maps.google.co.uk/**>**

Multiple-Agency Geographic Information for the Countryside (MAGIC). <http://www.magic.gov.uk/>

National Biodiversity Network (NBN) Gateway. <data.nbn.org.uk>

Natural England. < http://www.naturalengland.org.uk/>

Nature on the Map. Natural England. <www.natureonthemap.org.uk>

Relevant Legislation:

Wildlife and Countryside Act 1981 <http://jncc.defra.gov.uk/page-3614>

The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019
< http://www.legislation.gov.uk/ukdsi/2019/9780111176573 >

Countryside and Rights of Way Act 2000
<http://www.legislation.gov.uk/ukpga/2000/37/pdfs/ukpga_20000037_en.pdf?view=interweave>

Appendices

Appendix 1: Landscape Proposals

Planting Schedule

Proposed Trees

Nr	Code	Tree Name	Specification	Girth	Height
2 -	AaRH	Amelanchier arborea Robin Hill	Selected Standard :Clear Stem 175-200 :RB	10-12cm	300-350cm
1 -	PPan	Prunus 'Pandora'	Selected Standard :Clear Stem 175-200 :RB	10-12cm	300-350cm
1 -	SaCR	Sorbus aucuparia 'Cardinal Royal'	Selected Standard :Clear Stem 175-200 :RB	10-12cm	300-350cm
Total :4 -					

Proposed Shrubs

Nr	Code	Plant Name	Height	Cntr (l)	Nr/m2
20 -	Bd	Berberis darwinii	40-60cm	5L	4/m²
6 -	CBM	Ceanothus 'Blue Mound'	30-40cm	5L	4/m²
10 -	Ct	Choisya ternata	30-40cm	5L	4/m²
26 -	HAG	Hebe 'Autumn Glory'	20-30cm	2L	4/m²
9 -	HRE	Hebe 'Red Edge'	20-30cm	2L	4/m²
44 -	LaH	Lavandula angustifolia 'Hidcote'	30-40cm	5L	4/m²
45 -	PfxRR	Photinia fraseri 'Red Robin'	40-60cm	5L	4/m²
21 -	PoRL	Physocarpus opulifolius 'Red Lady'	40-60cm	5L	4/m²
10 -	SjRu	Skimmia japonica 'Rubella'	30-40cm	5L	4/m²
9 -	SnSn	Spiraea nipponica 'Snowmound'	60-80cm	5-7.5L	4/m²
Total :200 -					

Grasses

Nr	Code	Plant Name	Height	Cntr (l)	Nr/m2
5 -	MsRC	Miscanthus Sinesis 'Red Chief'			4/m²
30 -	Pvil	Pennisetum villosum			4/m²
20 -	St	Stipa tenuissima			4/m²
Total :55 -					

Note: Crime and Anti-Social Behavior - Proposed planting on this site has been designed to deter against any crime and anti-social behavior. This is achieved by allowing easy surveillance throughout the site but at the same time introducing as much green infrastructure as possible. Low growing shrub planting adjacent to car parking areas and drives helps to screen full views of cars from neighbouring properties but at the same time allowing easy access and sight for the resident. Awkward corners and sides have been planted to removed any areas where people can congregate or hide. Trees have been introduced where space allows to add height and colour to the scheme. There trees will have clear stems up to 175cm so views beneath the trees will be available.

LEGEND

- Site boundary
- Existing vegetation to be retained
- Existing vegetation to be removed
- Proposed tree Selected (Standard)
- Proposed shrub bed
- Proposed grass

Planting Notes

Topsoil shall be a minimum of 400mm depth over planting beds and graded to fall. Imported topsoil must be BS3882:2007 compliant and existing topsoil must be cultivated in accordance with BS3882:2007. No cultivation should take place in wet/ waterlogged conditions.

Herbicide and cultivation: Topsoil to be treated with two applications of herbicide prior to planting, where necessary, strictly in accordance with the Control of Pesticides Regulations 1986 (as amended 1997, or, otherwise, updated/superseded legislation) and following manufacturer's instructions by qualified staff. The topsoil shall than be cultivated to 150mm depth.

Planting: All planting and turfing shall conform to BS: 3936: 1992 and BS:4428:1989.

Trees: Standard trees to be planted in pits 800x800x450mm or dimensions of rootball, whichever is greater. Heavy and Extra Heavy Standard trees to be planted in pits 1000x1000x600mm or dimensions of rootball, whichever is greater. Alginure soil improver and 150g Enmag (or, equivalent) to be incorporated into the soil of all new tree pits. Trees to be planted centrally within a tree pit. Tree stakes shall be of hazel, chestnut or other approved timber. They shall be round, rough sawn, straight, free from projections, large or edge knots and other defects and be pointed at the lower end. They shall be strong enough not to split when driven into the ground and when ties are nailed to them (both initially and when adjusted). For Feathered trees use 2Nr stakes (1.4m by 75mm) to be driven into ground 800mm, leaving 600mm above ground.. For Selected Standard Trees 2Nr stakes (1.7m by 100mm) and cross bar are required; stakes to be driven 900mm below ground leaving 800mm above ground. For Heavy/ Extra Heavy trees use 2Nr stakes (2.2m x 100mm) with a 400x100x15mm cross bar. Stakes to be driven into ground 1m leaving 1.2m above ground. Semi-mature/Multi-stemmed trees greater than 5m to be underground guyed. Tree ties shall consist of a solid rubber spacer, hollowed on both sides and twice slotted of such a width that the tree is held away from the stake and/or cross bar, and such that it does not rub against the stake and/or cross bar in any location and fixed so that nails do not scar tree; and 25mm wide rubber or rubber covered canvas strap of such a length to allow 50mm overlap after securing. The strap shall be flexible, slightly elastic and adjustable. Tie Fixing Nails shall be galvanised and not less than 38mm long with 10mm diameter heads.

Container grown shrubs, transplants and whips: Shrubs and transplants shall be planted in pits 300x300x400mm depth), and the backfill shall include 3 litres of peat-free tree and shrub compost. Where two or more shrub species are indicated within a single bed each species shall be randomly mixed throughout the bed in groups of 3/5.

Herbicide: Spot treat with herbicide throughout the maintenance period in accordance with the manufacturer's instructions.

Mulch: Planting beds to receive 75mm depth pulverized ornamental bark mulch. Native woodland/edge plants to be planted with 800g flax fibre mulch mat pinned to soil. Native hedgerow to be planted through 800g flax fibre mulch roll, edges tucked. Ensure the top of the mulch layer is a minimum of 15mm below adjacent pavements and other surfaces, to prevent spillage.

Plant position: Final position of trees and shrubs subject to confirmation of service location and approval of statutory undertakers.

Protection to planting: Native hedgerow plants to be protected by spiral shelters. Native trees and shrubs within mixes to be protected by shelter guards as supplied by Acorn Planting Products Ltd (01508 528763), or equivalent.

Grass: All turf/seeded areas to be cultivated and levelled as required removing any stones, rubble, subsoil, general construction waste.

Planting Season: Bare-root shrubs to be planted between mid-November and mid-March dependant upon the planting season.

This drawing has been prepared for the purpose of planning approval.

Rev C: Revised to Equilibrium Architects 'Proposed Site Plan' R-0873-60-E - 05Jan25 (BP)

Rev B: Revised to client comments - 21Feb23 (BP)

Rev A: Revised to Council comments - 15Feb23 (BP)

Base: Nicol Thomas drawing Site Layout - Buildings [M4419 90 01 A] received 04 Jan 2022

PROJECT	Carr Top Lane, Golcar		
TITLE	Detailed Landscape Proposal (Phase 2)		
CLIENT	Brierstone Ltd		
DATE	05 Jan 22	SCALE 1 : 250	SHEET A2
DRAWN	RP	DRAWING NO	2748/3
CHECKED	BP	REVISION	C

ROSETTA LANDSCAPE DESIGN
Landscape Architects

Swallow's Nest, Main Street
Askham Richard, York, YO23 3PT

Telephone +44 (0)1904 500410

Email design@rosettalandscape.co.uk
Web www.rosettalandscape.co.uk

Proposed residential development at :-
CARR TOP LANE,
GOLCAR, HUDDERSFIELD

Site Layout - 1 ; 200.

Fencing Legend.

Fence Type A.

1200mm close boarded swd. fence with concrete posts.

900mm (If divisional on plot lines) or 1100mm (if guarding on retaining walls).
If in guarding position it is to be capable of resisting at least the horizontal force given in BS 6398 Part 1 (1996) and as Building regulations part K section 3.

Fence Type B.

1800mm fence close boarded swd. with concrete posts and gates.

Fence Type C.

1200mm fence close boarded swd. with concrete posts and gates built off retaining wall.

Fence Type D.

New / Existing dry stone walling (900mm min height) as section A-A

Retaining Walls.

Plot Driveways.

Driveway widths are to be a minimum of 5.0m with the exception of plots 4 and 5 that are to be 3.0m minimum.

C.P. - Car Charging Point

One standard electric vehicle charging point
(Minimum output of 16A/3.5Kw.)

Plot Sheds / Cycle store (2m x1.5m) for 2no. cycles.

The shed must be securely fixed to a concrete foundation. The door must be fitted wit either a solid secure silver padlock or mortice deadlock to BS 3621 :2007. The cycle security must be to Sold secure silver standard.

- Blue circle indicating private lighting with dusk-to-dawn sensors

Do not scale from this drawing.

All dimensions are to be checked on site prior to construction, manufacture of any components and ordering of materials and equipment.

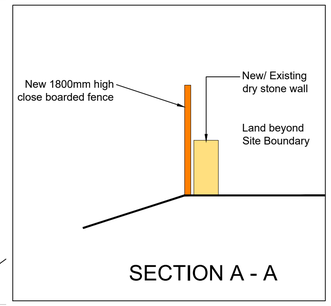
Any discrepancies are to be reported to the architect for clarification.

All materials and workmanship to be in accordance with the current British Standards and codes of practice.

This drawing is to be read in conjunction with all relevant Architectural, Structural Engineers, Mechanical Engineers, Electrical Engineers and Specialists drawings and specifications.

As with all construction projects the CDM 2015 regulations apply and the work on this project may require both the issue of a notification to the HSE (because of the duration of the works on site) and the client may also need to appoint a Principal Designer because there may be more than one contractor working on site.
The Principal Designer will be able to coordinate the pre-construction information and also ensure that all duty holders under CDM comply with their relevant duties.

The building owner is to serve a Party Wall Act Notice as applicable to adjoining property owners as outlined in The Party Wall Act 1996
The Building Contractor is to verify the thickness of the party walls prior to commencement of the proposed works.



SECTION A - A

REV	DESCRIPTION	CHECK	DATE
E	Updated bin collection point, pedestrian link onto the public path and dusk till dawn sensors annotation to Client's request	PB	18.12.25
D	Added fence type D & Section A-A	PM	30.01.25
C	Updated plan	PM	10.07.24
B	Updated plan	PM	09.07.24
A	Updated plan	PM	09.07.24

CLIENT
Brierstone Developments

PROJECT
Carr Top Lane, Golcar

DRAWING
Proposed Site Layout

SCALE	DATE	DRAWN	CHECKED
1:200@A1	July 2024	PM	

DRAWING NO.	CAD REFERENCE NO.	REVISION
R-0873-60		E

equilibrium ARCHITECTS
2A Bank Street Bury Lancashire BL9 0LA T : 0161 797 2077 F : 0161 797 2088
info@equilibriumarchitects.co.uk www.equilibriumarchitects.co.uk

NOTES

1. Do not scale from this drawing.

2. This drawing is to be read in conjunction with all relevant Architects and Engineers drawings and specifications.

3. All works and materials to be in accordance with current British Standards and Building Regulations.

4. The Architects site plan has been used as a base for this drawing. Please refer to the latest site plan.

5. For drainage and adopted highway details refer to Build Vision 900 Series drawings.

6. All Sub-bases and Capping layers to be graded and compacted in accordance with the Specification for Highway Works. (SFHW) To be confirmed by CBR tests on site & SI.

7. For private paving details refer to the Architects Site Plan and for adopted areas refer to the S38 Highway Layout drawing.

PRIVATE FOOTPATH/PEDESTRIAN AREAS
PAVED
Paving to architects details
30mm 0/4mm Laying Course Sand to BS EN 12620.
100mm DOT Type 1 sub-base.
(For vehicle crossings increase sub-base to 150mm)

PRIVATE FOOTPATH
TARMAC
20mm close graded dense bitumen surface course with 6mm aggregate to BS-EN 13108 & BS594987.
60mm dense bitumen binder course with 20mm aggregate to BS-EN 13108 & BS594987.
100mm DOT Type 1 sub-base.
(For vehicle crossings increase sub-base to 150mm)

PRIVATE DRIVEWAYS/SHARED DRIVEWAYS
PERMEABLE PAVING
60mm/80mm permeable block paving to architects detail
30mm of 2/6.3mm laying course sand to BS-EN 13242 or BS-EN 12620.
1 layer of geotextile with minimum 300mm laps.
400mm 4/40mm permeable coarse graded aggregate Type 3 sub-base.
1 layer of geotextile with minimum 300mm laps.

KEY

- Proposed Private Road Bituminous Carriageway
- Proposed Private Block Paved Service Strip
- Private Road Boundary

AS BUILT.

AS-BUILT RECORD DRAWING:
This drawing is based on the latest issue construction drawings modified as necessary from information supplied by the contractor. This information has not been verified by Build Vision Consulting Engineers and cannot be guaranteed correct. Build Vision Consulting Engineers do not accept any responsibility for As Built information provided that does not comply with current design guides

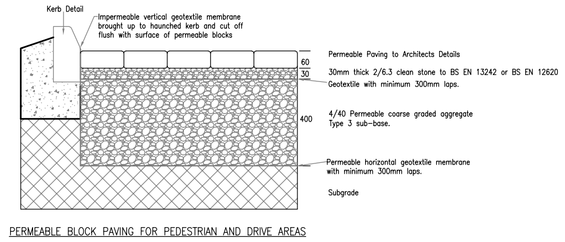
Rev	Date	By	Checked	Remarks
A	09.12.25	SJG		As Built, public footpath pedestrian link
P3	15.06.22	SJG		Revised site plan, S1-S2,S3-S4
P2	29.04.22	SJG		Added kerbs and road hatch
P1	17.01.22	SJG		Preliminary Issue

Project
Carr Top Lane Phase 2
Golcar

Client
Brierstone Newsome Ltd.

Drawing
Hard Paving Specifications

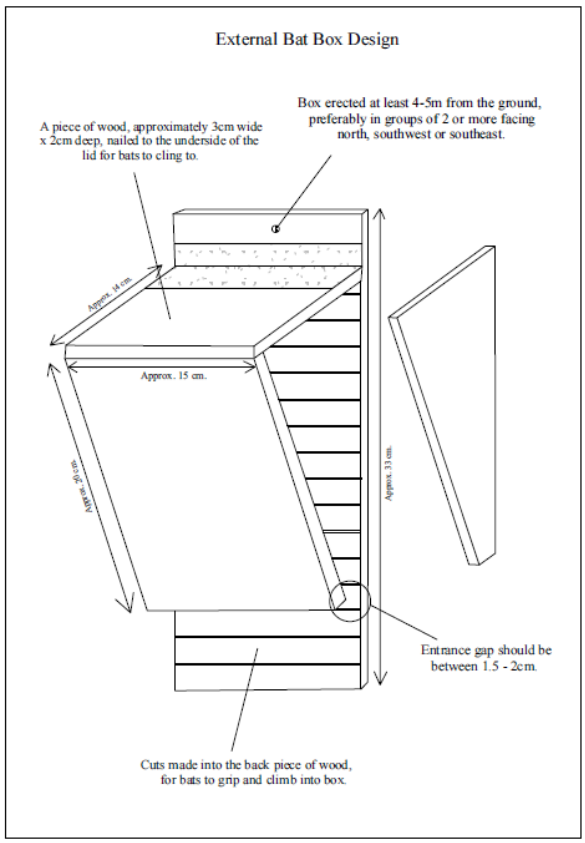
Number			Rev
1261-903			A
Scale	Drawn	Checked	Date
1:200@A1	SJG		Jan 2022

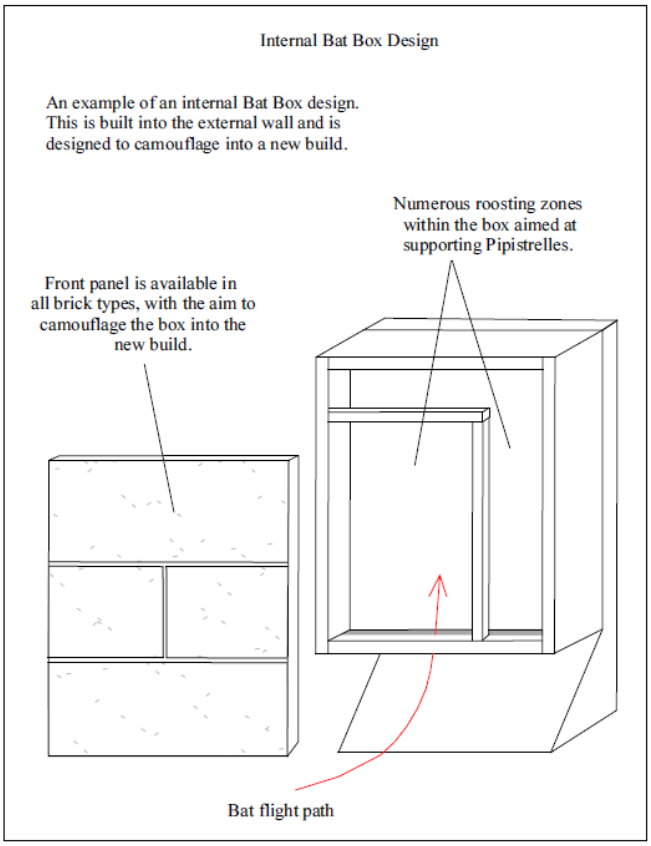


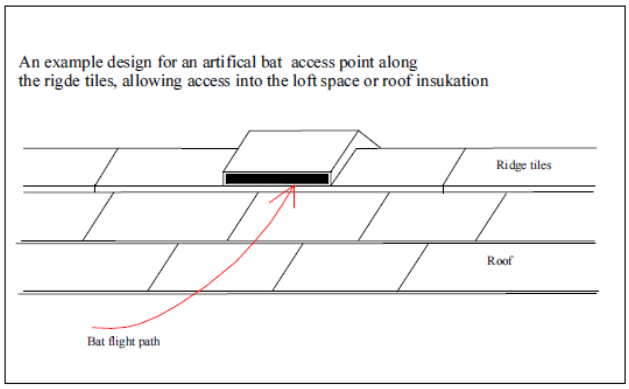
PERMEABLE BLOCK PAVING FOR PEDESTRIAN AND DRIVE AREAS

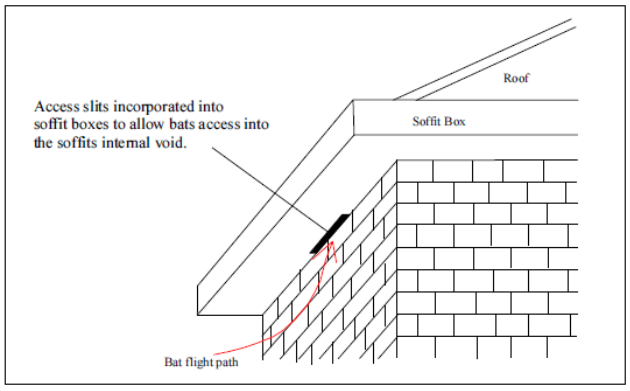
Build Vision
Consulting Engineers
Middle Cottage, Ben Kaye Row, Holmfirth HD9 1EF
Mobile Tel. 07799 823040
email: Sarah.Griggs@bvconsulting.co.uk

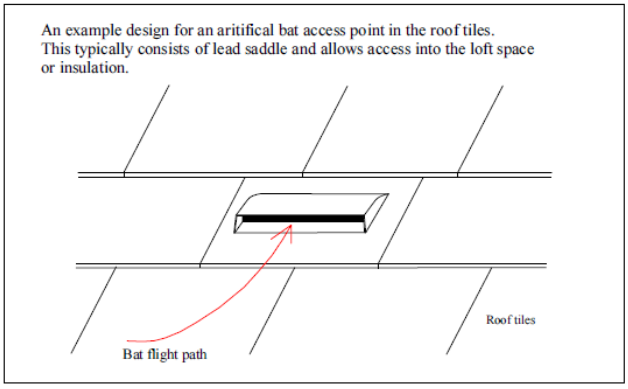
Appendix 2: Examples Artificial Bat Box Designs

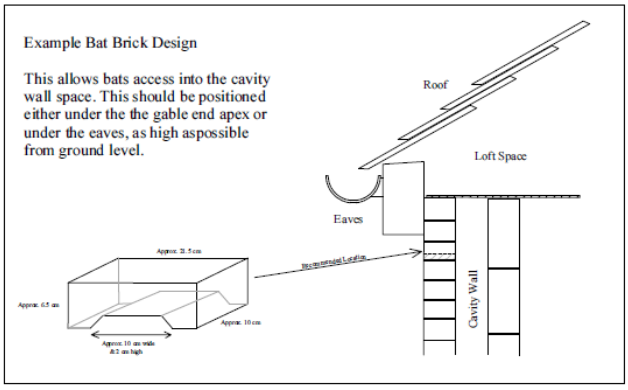






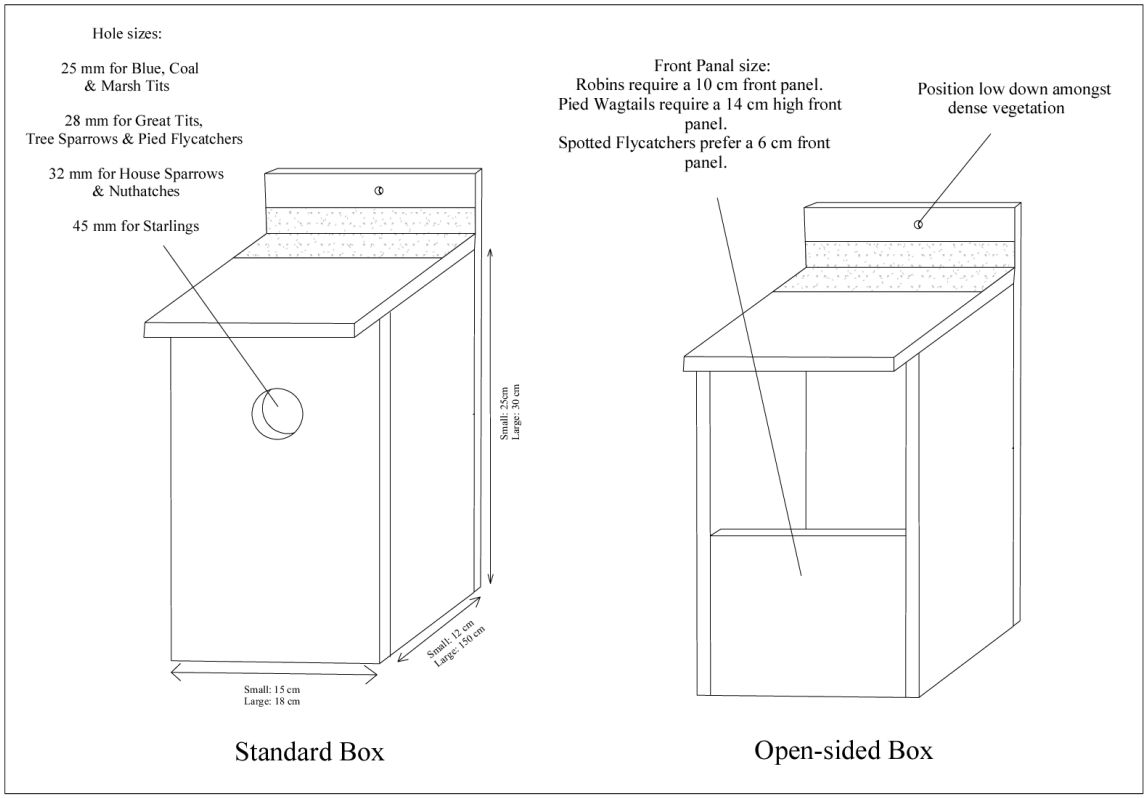




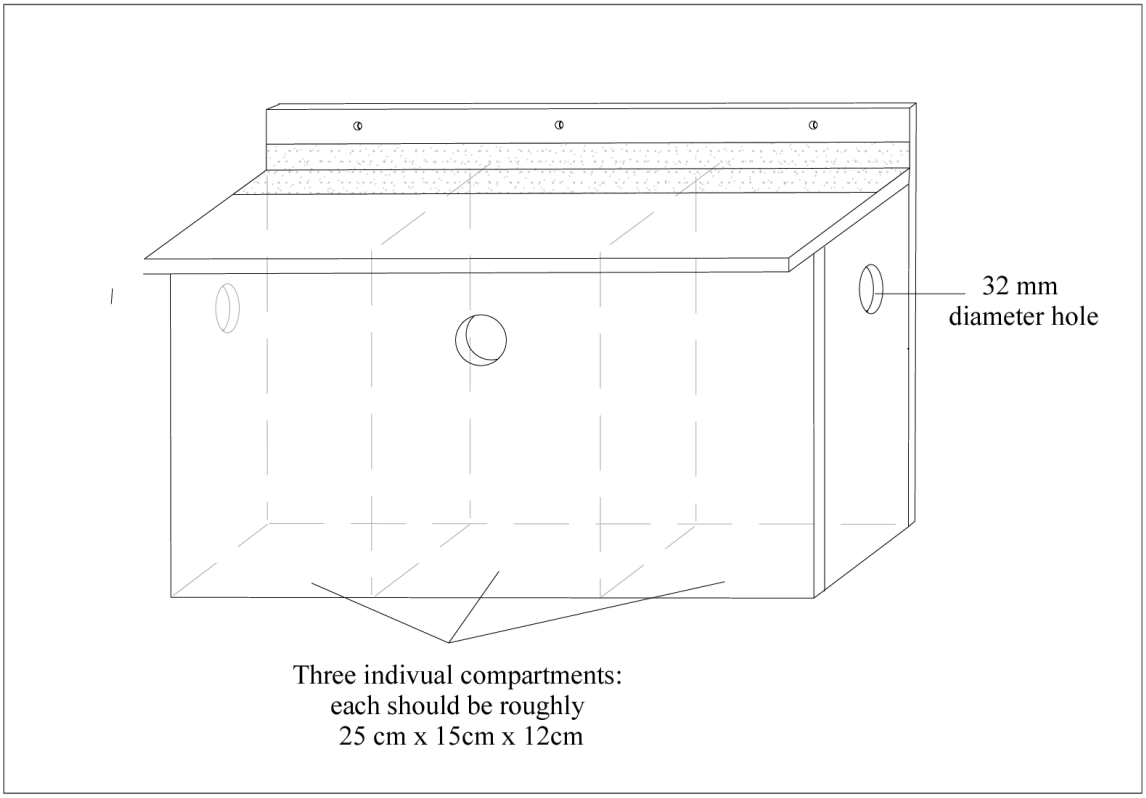


Appendix 3: Examples Artificial Bird Box Designs

An example of two different bird box designs

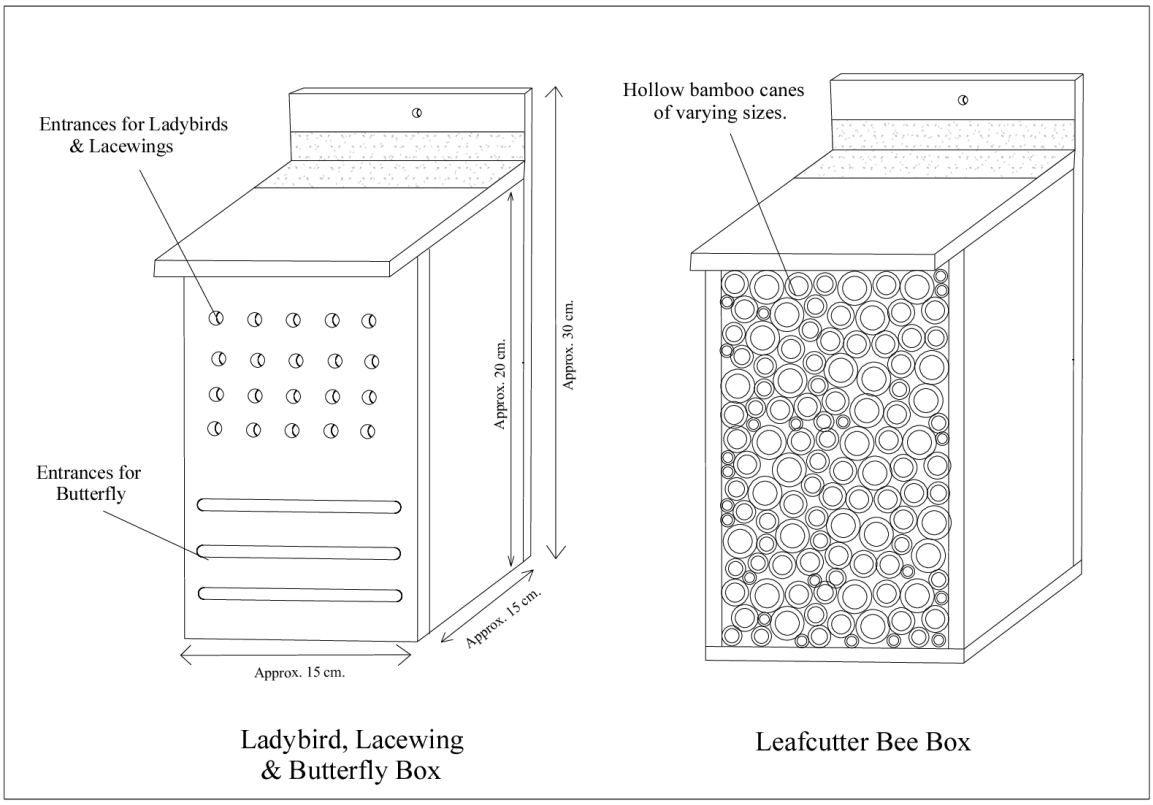


An example of a House sparrow box design

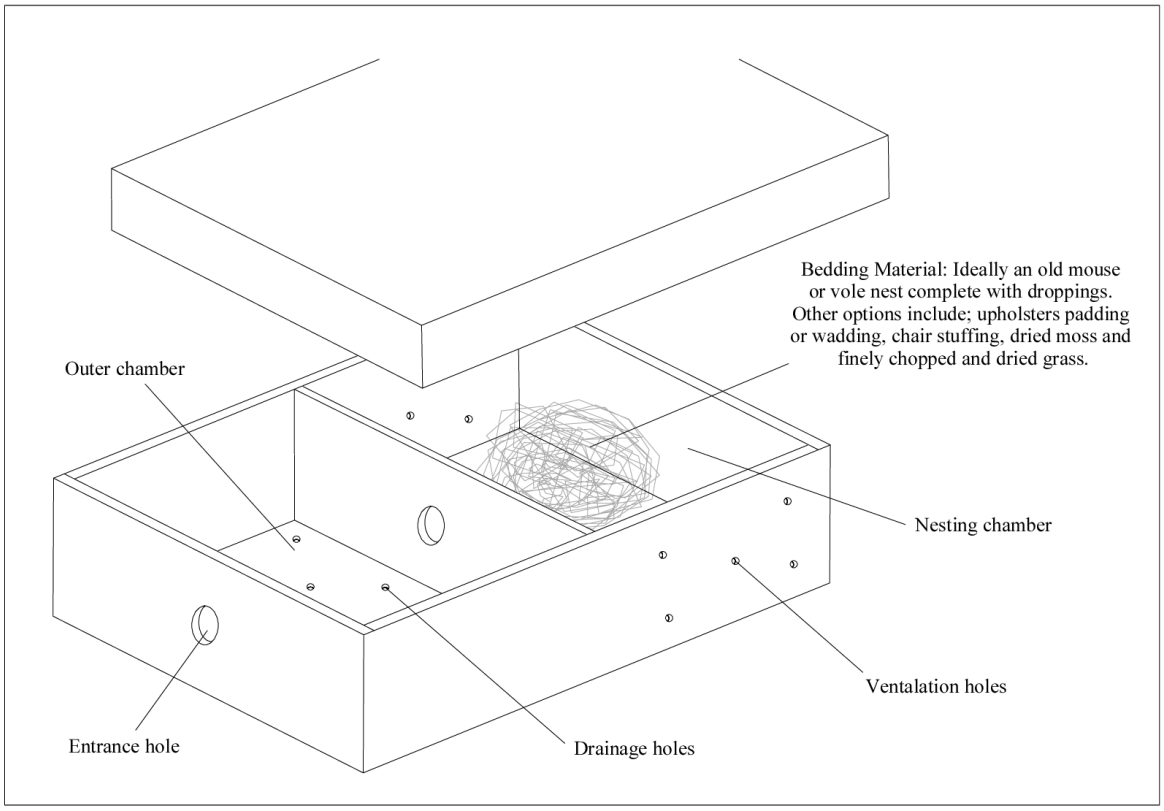


Appendix 4: Examples of Insect Shelter Designs

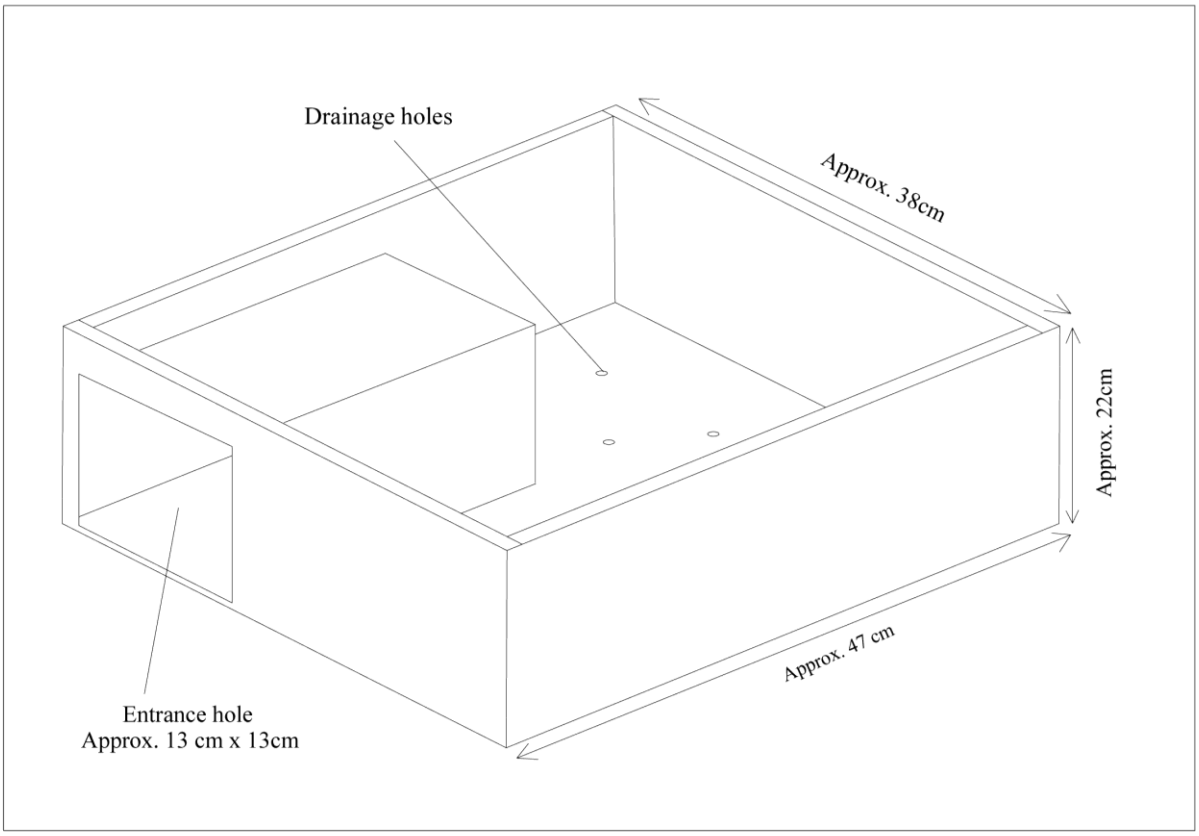
An example of two different insect box designs



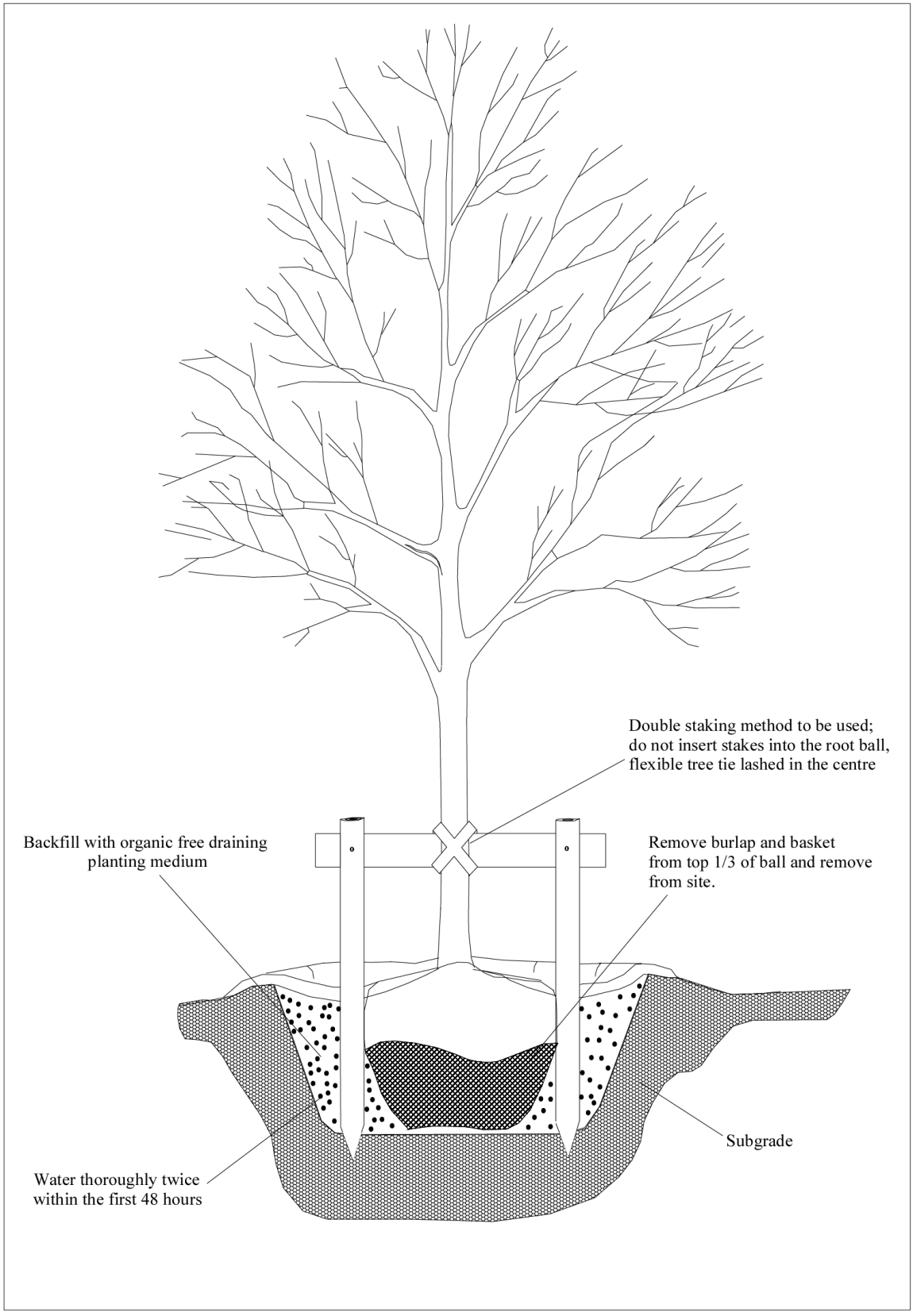
An example of a Bumblebee box design



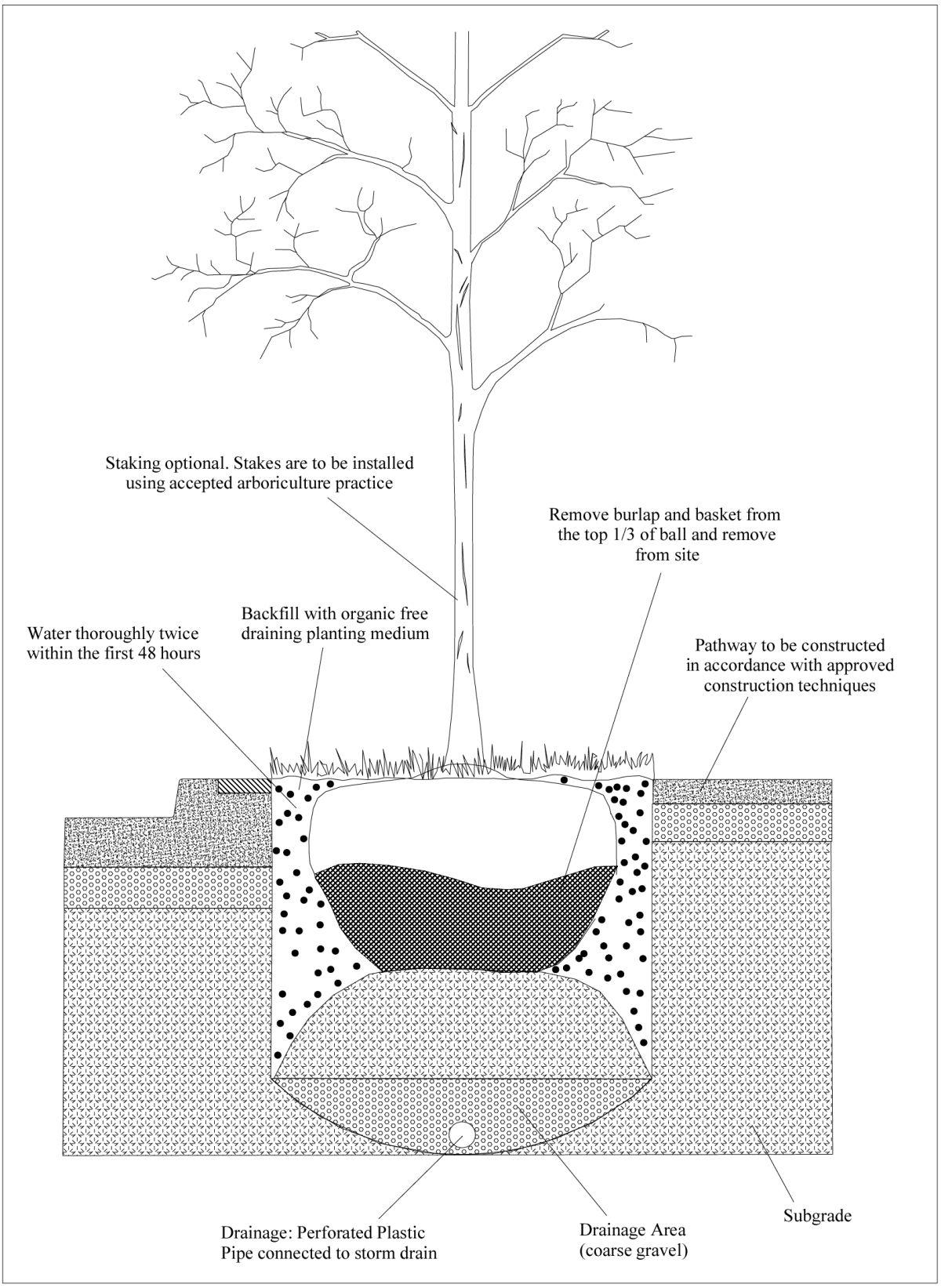
Appendix 5: Example of Hedgehog Shelter Design



Appendix 6: Example of planting a tree in an open grass strip

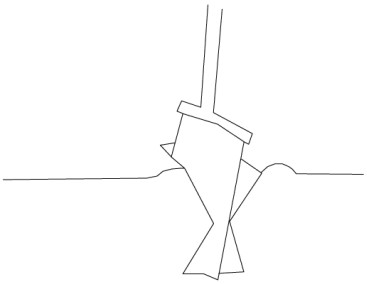


Appendix 7: Example of planting a tree within a street

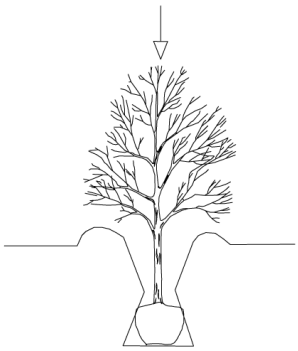


Appendix 8: Example of planting a tree

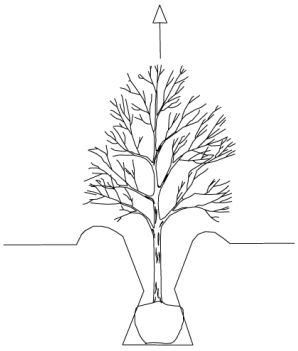
1) Make plenty of room for the transplants roots



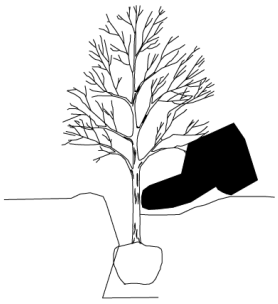
2) Ensure that the roots are pushed down as far as possible



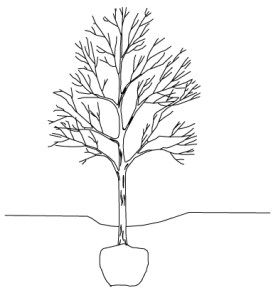
3) Withdraw the transplant slightly to spread roots



4) Firm up to exclude air pockets



4) Transplant in correct position



Appendix 9: Schedule of Ecological Monitoring

Table 5 Schedule of Ecological Monitoring for site at Carr Top Lane over the next 30 years.

Key:

	Appropriate time to conduct deliverable
	Unadvised time to conduct deliverable

TABLE 5.1 SCHEDULE OF ECOLOGICAL MONITORING – YEAR 1

DELIVERABLE	TIME OF YEAR											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Installation of bat boxes within properties												
Installation of bird boxes												
Installation of insect boxes												
Incorporate hedgehog access holes into garden fences												
Preparation of ground for wildflower grassland												
Planting of new trees												
Planting of new shrubs												
Put mulch at base of trees and shrubs												

TABLE 5.2 SCHEDULE OF ECOLOGICAL MONITORING – YEAR 2												
DELIVERABLE	**TIME OF YEAR**											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Installation of bat boxes within properties												
Installation of bird boxes												
Installation of insect boxes												
Incorporate hedgehog access holes into garden fences												
Sowing of wildflower grassland								Late August				
Planting of new trees												
Loosen tree ties												
Place mulch at base of trees and shrubs												
Planting of new shrubs												

TABLE 5.3 SCHEDULE OF ECOLOGICAL MONITORING – YEAR 3												
DELIVERABLE	**TIME OF YEAR**											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Monitoring of bat boxes within properties												
Monitoring of bird boxes												
Check if bird boxes require repairs												
Installation of insect boxes. Check hedgehog holes not blocked, fences												
Check insect boxes if require repairs												
Re sowing of wildflower grassland if required								Late August				
Mowing of grassland												
Planting of new trees												
Place mulch at base of trees and shrubs												
Planting of new shrubs												
Remove tree ties and stakes if required												

TABLE 5.4 SCHEDULE OF ECOLOGICAL MONITORING – YEAR 4												
DELIVERABLE	**TIME OF YEAR**											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Monitoring of bat boxes within properties												
Monitoring of bird boxes												
Check if bird boxes require repairs												
Check if insect boxes need repairs												
Check hedgehog holes not blocked												
Mowing of grassland												
Planting of new trees												
Planting of new shrubs												
Remove tree ties and stakes if required												

TABLE 5.5 SCHEDULE OF ECOLOGICAL MITIGATION MEASURES – YEAR 5

Deliverable	**TIME OF YEAR**											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Monitoring of bat boxes within properties												
Monitoring of bird boxes within/on properties												
Check if bird boxes require repairs												
Check if insect boxes need repairs												
Check hedgehog holes not blocked												
Mowing of grassland												
Remove tree ties and stakes if required												
Maintenance of trees and shrubs												

TABLE 5.6 SCHEDULE OF ECOLOGICAL MITIGATION MEASURES – YEARS 6 - 30												
Deliverable	**TIME OF YEAR**											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Check if bird boxes require repairs												
Check if insect boxes need repairs												
Check hedgehog holes not blocked												
Mowing of grassland												
Replacement of dead or diseased trees												
Maintenance of trees and shrubs												

Appendix 10: Author Qualifications

Adam West, Principal Ecologist

BSc (Hons) Animal and Wildlife Management, ACIEEM.

Adam joined JCA to lead the expanding ecology department. Having returned to education as a mature student, Adam studied Countryside Management for two years before undertaking a Batchelor's degree in Animal and Wildlife Management, for which he was awarded First Class Honours. Adam has many years' experience in ecological consultancy, working on projects ranging from individual planning applications to national infrastructure projects. Adam holds a Natural England Level 1 great crested newt survey class licence and a Natural England Level 2 bat survey class licence.

Megan Brown, Graduate Ecologist

MSc Zoo Conservation Biology, BSc (Hons) Zoology.

Megan joined JCA in 2021 after completing her master's degree in Zoo Conservation Biology from Manchester Metropolitan University. After graduating from Newcastle University with First Class Honours in Zoology, Megan joined a local survey group and now has over two years of experience in conducting ecological surveys across a variety of habitat types and taxa. She is continuing to broaden her survey experience at JCA while applying her knowledge, identification and report writing skills to her role as a Graduate Ecologist.

Alex Donovan, Assistant Ecologist

MBiol BSc (Hons) Biology (Industrial).

Alex joined JCA in 2023 after graduating from the University of Leeds with a First Class Honours Integrated Master's degree in Biology, including an industrial placement year working in the Uplands Research Department of the Game and Wildlife Conservation Trust. Alex is a Qualifying Member of CIEEM, a Member of the Royal Society of Biology, and a member of the BTO's Bird Ringing Scheme and Nest Record Scheme. Alex holds Natural England licences for barn owls (CL29) and great crested newts (level 1, CL08), and is working towards additional survey licences for bats and white-clawed crayfish.

The Information and advice which we have prepared and provided is true and has been prepared and provided in accordance with the CIEEM's Code of Professional Conduct. We confirm that the opinions expressed are our true and bona fide opinions.

Signed:

.....

Megan Brown *MSc, BSc (Hons)*

24/03/2022

Reviewed by:

.....

Adam West *BSc (Hons), ACIEEM*

29/04/2022

Updated by:

.....

Alex Donovan *MBiol BSc (Hons), MRSB*

07/01/2026

For and on behalf of ***JCA Ltd***

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ECOLOGICAL SERVICES

Ecological Pre-Planning Services

- Phase 1 Habitat Surveys
- Great Crested Newt eDNA Sampling
- Protected species: Bat, Wintering and Nesting Bird, Badger, Amphibian, Otter, Water Vole, White-Clawed Crayfish, Dormice and Reptile Surveys.
- Preparation for Environmental Impact Assessment (EIA)
- Invasive Species Surveys
- Code for Sustainable Homes
- Butterfly & Insect Surveys

Ecological Post-Planning Services

- Biodiversity Enhancement Plans
- Protected Species Mitigation
- Ecological Management (Bat and Bird box installation and inspection)
- Planting Schemes
- Monitoring of bird or bat boxes.

ARBORICULTURAL SERVICES

Guidance for Architects & Developers

- British Standard 5837 Surveys
- Arboricultural Implications Assessments (AIA)
- Arboricultural Method Statements (AMS)

Advice for Engineers, Loss Adjusters and Insurers

- Tree Surveys for Subsidence
- Heave Assessment
- Tree Root Identification

Advice for Local Authorities and Social Housing

- Tree Safety Surveys
- Specialist Decay Detection
- Landscape and Orchard Design

Tree Advice for the Legal Profession

- Subsidence Litigation
- Personal Injury and Accident Investigation
- Expert Witness, Planning Inquiries and Appeals

Veteran Tree Management

- Ancient Woodland Management
- Veteran Tree Management

Tree Health and Pest and Disease Management

- Pest and Disease Surveys
- Tree Health Checks
- Disease Mitigation and Control

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