

BIODIVERSITY ENHANCEMENT PLAN

**at
Land south of Hanson Close
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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*.

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1. Introduction

1.1 Purpose of the Report

- 1.1.1 In July 2025, JCA Ltd were commissioned by MSM Aerospace Fabricators to produce a **Biodiversity Enhancement Plan (BEP)** for a site located at **Land south of Hanson Close**, hereafter referred to as 'the site'.
- 1.1.2 This report will aim to enhance 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 The following reports and plans have been used in the production of the BEP and should be read in conjunction with this report:
- JCA Ltd. – Arboricultural Report and Impact Assessment, Nov 2022 (JCA Ref: 19349/PH V2).
 - JCA Ltd. – Preliminary Ecological Appraisal (PEA), Nov 2022 (JCA Ref: 19349a/EG).
 - CDP Architects – Proposed Site Layout (Dwg No: 22.135_01_002).

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 Site Description and Baseline Site Use

- 1.4.1 The site is centred at Ordnance Survey ('OS') grid reference **SD 87524 06095**.
- 1.4.2 The site is bordered to the north and west by commercial and industrial properties, to the east by woodland and residential properties and to the south by the River Irk.

1.5 Proposed Site Use

- 1.5.1 The proposed scheme is the development of a new manufacturing facility and associated parking spaces.



2. Local Biodiversity Action Plan

The BAP for Greater Manchester is available at https://gmlrc.org/projects/gm_bap/

Habitats included within the BAP for Greater Manchester:

- Grasslands
 - Unimproved neutral grassland
 - Acid grassland
 - Marshy grassland
- Hedgerows
- Lowland mosslands (lowland raised bogs)
- Reedbeds
- Ponds and lodges
- Canals
- Native woodlands
 - Lowland broadleaved woodland
 - Upland oak woodland
- Urban managed greenspace

Species included within the BAP for Greater Manchester:

- Bats
 - Common pipistrelle *Pipistrellus pipistrellus*
 - Soprano pipistrelle *Pipistrellus pygmaeus*
 - Serotine *Eptesicus serotinus*
 - Daubenton's *Myotis daubentoniid*
 - Whiskered *Myotis mystacinus*
 - Natterer's *Myotis nattereri*
 - Leisler's *Nyctalus leisleri*
 - Noctule *Nyctalus noctula*
 - Brown long-eared *Plecotus auritus*
- Birds
 - Bittern *Botaurus stellaris*
 - Black redstart *Phoenicurus ochruros*
 - Twite *Linaria flavirostris*
 - Willow tit *Poecile montanus*
- Great crested newt *Triturus cristatus*
- Hares
 - Brown hare *Lepus europaeus*
 - Mountain hare *Lepus timidus*
- Water vole *Arvicola amphibius*
- Black poplar *Populus nigra subsp. betulifolia*



3. Ecologically Valuable Features

3.1 Pre-development

- 3.1.1 For a comprehensive description of the site's current ecological value please see the PEA (19349a/EG).
- 3.1.2 The PEA identified the following baseline habitats on-site:
- G4: modified grassland
 - H3h: mixed scrub
 - U1b: developed land, sealed surface
 - U1c: artificial unvegetated, unsealed surface – secondary codes: 16: tall herb, 17: ruderal/ephemeral, 67: mortared wall, 73: bare ground, 351: vacant/derelict land, 1170: urban trees
 - W1h5: other woodland, mixed, mostly broadleaved
- 3.1.3 The PEA identified the following habitats in close proximity to the site:
- The River Irk
 - Priority deciduous woodland
- 3.1.4 The PEA noted the site's potential to support a range of protected and notable species, including reptiles, nesting birds, foraging/commuting bats, badgers, and hedgehogs.
- 3.1.5 Two invasive species were also identified on-site: Japanese knotweed and rockspray cotoneaster (wall cotoneaster). An **Invasive Species Method Statement** was recommended.



4. Habitat Creation

4.1 Summary

4.1.1 The following will be created to facilitate the proposed development:

Area habitats

- G4: modified grassland
- H3h: mixed scrub
- U1b: developed land, sealed surface
- U1c: artificial unvegetated, unsealed surface
- W1h5: other woodland, mixed, mostly broadleaved
- Secondary code 32: scattered trees

Linear habitats

- H2a: native hedgerow

4.2 Grassland Planting

4.2.1 Setting aside areas of grassland for wildflower planting would be beneficial to local invertebrate populations, particularly pollinators such as bees, butterflies, and moths. Increased invertebrate abundance would then benefit species that feed on invertebrates, such as birds and bats.

4.2.2 The species chosen include those that are shade tolerant as they will be subject to a degree of shading by the surrounding trees. Other species are those more typical of wildflower grassland planting, such as those that are nectar and pollen rich, and so will attract insects such as bees and butterflies. The grasses are visually attractive, and many are the host plant of butterfly species. It is anticipated 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.

4.2.3 The seed mix stated on the Proposed Site Layout is EW1F Wild Flowers for Woodland from Emorsgate Seed, sown at 5/m². A list of the species included within the seed mix can be found at:

<https://wildseed.co.uk/product/mixtures/wild-flower-only-mixtures/wild-flowers-for-woodland/>

4.2.4 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 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 (early March to early April) and once in the autumn (late June to 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.

4.3 Hedgerow Planting

- 4.3.1 Incorporating border hedges, rather than a fence or wall, will benefit a range of species by providing additional habitats for invertebrates, nesting opportunities for birds, and resting/commuting opportunities for hedgehogs.
- 4.3.2 The Proposed Site Layout includes new border hedgerow planting consisting solely of hawthorn, chosen for its defensive properties. The following table includes additional native thorny species which could be included, providing perimeter defence whilst increasing value for local biodiversity through increased species diversity. For a



hedgerow, shrubs should be planted every 30cm in a double staggered row.

Table 1: Recommended species for native hedgerows.

Botanical Name	Common Name	Size at purchase
<i>Crataegus monogyna</i>	Hawthorn	60-90cm
<i>Ilex aquafolium</i>	Holly	60-90cm
<i>Prunus spinosa</i>	Blackthorn	60-90cm
<i>Viburnum opulus</i>	Guelder Rose	60-90cm

4.3.3 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 shrub 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:** 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.

4.4 Tree Planting

4.4.1 Tree planting will benefit a range of species by providing additional habitats for



invertebrates, nesting opportunities for birds, and providing forage in the form of berries and fruit (dependant on tree species).

4.4.2 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 healthy condition. Trees must be 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.

4.4.3 The Proposed Site Layout includes new individual tree planting consisting of wild cherry *Prunus avium* and Italian alder *Alnus cordata*. Italian alder is a non-native species, it is recommended to replace with common alder *Alnus glutinosa*, which is a visually similar native species, which will provide a greater benefit to local biodiversity. Additional recommended species are included in Table 2. The recommended species are all UK natives with 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.

Table 2: Recommended species of native deciduous trees.

Botanical Name	Common Name	Size at Purchase
<i>Alnus glutinosa</i>	Common alder	Heavy Standard
<i>Betula pendula</i>	Silver birch	Heavy Standard
<i>Prunus avium</i>	Wild cherry	Heavy Standard
<i>Quercus rober</i>	English oak	Heavy Standard

4.4.4 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.

4.5 Scrub Planting

- 4.5.1 Incorporating an area of shrubs will benefit a range of species by providing additional habitats for invertebrates, nesting opportunities for birds, and resting/commuting opportunities for hedgehogs.
- 4.5.2 The Proposed Site Layout includes new scrub planting consisting of Mexican orange blossom *Choisya ternate* and feather reed grass 'Karl Foerster' *Calamagrostis × acutiflora* 'Karl Foerster'. These species are non-native ornamentals; therefore, it is recommended to also include native shrubby species to provide greater benefit to local biodiversity.

Table 3: Recommended species of native shrubs for inclusion in scrub planting.

Botanical Name	Common Name	Size at Purchase
<i>Buxus sempervirens</i>	Common box	80-100cm
<i>Cornus sanguinea</i>	Dogwood	80-100cm
<i>Corylus avellana</i>	Hazel	80-100cm
<i>Crataegus monogyna</i>	Hawthorn	80-100cm
<i>Ilex aquifolium</i>	Holly	80-100cm
<i>Prunus spinosa</i>	Blackthorn	80-100cm
<i>Viburnum opulus</i>	Gelder Rose	80-100cm

- 4.5.3 Recommendations for good shrub planting practice are given in Section 4.3.3.

4.6 Aftercare

- 4.6.1 All newly planted trees and shrubs are to be thoroughly watered immediately after planting and during any prolonged periods of dry weather.
- 4.6.2 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.
- 4.6.3 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 (1st Mar-31st Aug).

- 4.6.4 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 manually without the use of herbicides.
- 4.6.5 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.
- 4.6.6 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.



5. Faunal Boxes

5.1 Summary

- 5.1.1 In total, **8** tree mounted bat boxes, **8** integrated swift bricks, **8** tree mounted bird boxes, **4** insect towers, and **3** hedgehog shelters have been recommended. Hedgehog highways in new walls/fences to allow access across the site should also be implemented.

5.2 Bat Roosting Opportunities

- 5.2.1 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.
- 5.2.2 All bat species are European Protected Species (EPS) under **Schedule 2** of the **Conservation of Habitats and Species Regulations (CHSR) 2017** (retained in UK law by **CHSR (Amendment) (EU Exit) 2019**), with additional protections under **Schedules 5 and 6** of the **Wildlife & Countryside Act (WCA) 1981 (as amended)**. Additionally, six species (including soprano pipistrelles and noctules) are priority species under **Section 41 (S41)** of the **Natural Environment & Rural Communities (NERC) Act 2006**, designating them as species of principal importance for the purpose of conserving biodiversity.
- 5.2.3 Pipistrelles typically roost within structures, but also use tree holes and crevices, whereas noctules are primarily tree roosting species. Therefore, the types of bat boxes recommended for the Proposed Development will provide roosting opportunities for a range of bat species.
- 5.2.4 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.
- 5.2.5 **Bat bricks** (on buildings) 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 walls. These bricks will then allow bats to access the cavity wall spaces.
- 5.2.6 **Bat Boxes** (on trees) should be positioned at least 5m high, with their front facing **south**. The selected boxes should be constructed of woodcrete or similar in order to increase their life expectancy. A range of different designs should be selected in order to increase the likelihood of bats roosting within the site.



5.2.7 The specifications of all bat bricks/boxes recommended to be installed onsite post-development are detailed below in the table below.

Table 4: Bat roosting opportunities to be installed as part of the Proposed Development.

Bat Brick/Box	Number to be Installed	Description	Details
1FD Schwegler Bat Box (or a comparable design) 	4 (on retained trees)	The Schwegler 1FD has been developed specifically for smaller bats as both the interior and the type and size of the entrance hole match the requirements of smaller species. It features a special layout inside, such as a domed roof, an increased interior height and two grooved internal wooden front panels with precise spacing between them. This model has proved highly effective as a nursing area. The front panel can be removed for cleaning and inspection. This box is designed to be sited on trees using the galvanised steel hanger and aluminium nail provided. Schwegler bat boxes are backed by conservation organisations, government agencies and forestry experts and have the highest occupation rates of all nest boxes. They are carefully designed to mimic natural roost sites and to provide a stable environment.	Dimensions Height: 360mm Diameter: 160mm Weight: 4.8kg
Schwegler 2FN Bat Box (or a comparable design) 	4 (on retained trees)	The 2FN bat box has two entrances - one at the front and one at the rear against the tree. It has a domed roof to allow the bats to form roosting clusters for warmth, and an increased internal height. This design has proved highly successful with larger bat species including noctule and Bechstein's bats <i>Myotis bechsteinii</i>. This bat box is also designed to be effective against small predators and excludes draughts and light. Due to the opening on the bottom, this bat box does not require cleaning. It is manufactured from long-lasting WoodCrete, which should last for at least 20-25 years.	Dimensions Height: 360mm Diameter: 160mm Weight: 4.9kg

5.3 Bird Boxes

5.3.1 In the UK there are approximately 600 species of bird, each occupying a different habitat and present in a different region of the country. Many birds regularly visit gardens and urban areas and will quickly adopt to 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.

5.3.2 The specifications of all bird boxes recommended to be installed onsite post-development are detailed below in the table below.



Table 5: Bird nesting opportunities to be installed as part of the Proposed Development.

Bird Box	Number to be Installed	Description	Details
Vivara Pro WoodStone Swift Nest Box (or comparable design) 	8 (on the proposed buildings)	Swifts in the UK have been declining rapidly over the past decades and it is thought that the destruction of suitable nesting habitat is a core reason for this decline. Installing a swift box is a great way to help these birds and to ensure their continued presence in our surroundings. The FSC certified woodstone swift nest box is constructed entirely out of woodstone meaning it is long lasting and won't rot away like a traditional wooden nest box. There is an opening at the back of the box for easy cleaning with the nest entrance on the underside of the box. This type of entrance is preferred by swifts but discourages house sparrows and starlings from occupying the box. This box should be installed at least 5m above the ground, ensuring that there is unobstructed access for birds entering and leaving. If possible, boxes should be sited under the shelter of eaves or overhanging roofs.	Dimensions Length: 245mm Width: 380mm Depth: 265mm Weight: 600g
Vivara Pro Seville 32mm WoodStone Nest Box (or comparable design) 	4 (on retained trees)	Unlike a traditional wooden nest box, these boxes will not rot away or deteriorate and are guaranteed for 10 years. This robust material safeguards against attacks from predators such as woodpeckers, cats and squirrels, whilst also providing a well-insulated interior with a consistent internal temperature (important for breeding). These 32mm hole nest boxes are suitable for blue tits, tree sparrows, house sparrows, great tits, blue tits, nuthatches, coal tits and pied flycatchers and they are available in brown, green or grey to complement both natural woodland and garden settings.	Dimensions Height: 310mm Width: 200mm Length: 200mm Weight: 6.9kg Entrance hole diameter: 32mm
Vivara Pro WoodStone Starling Nest Box (or comparable design)	4 (on retained trees)	This nest box is manufactured from woodstone, this durable material is very resistant to rot and also provides increased thermal insulation and protection from predators. Woodstone is also breathable, ensuring that the nesting chamber maintains the optimum temperature and humidity levels. The starling nest box should be sited on an external wall or tree at a height of at least 1.5m using an aluminium nail or screw and wall plug (not included). Site near to vegetation if possible as this will provide additional protection and cover.	Dimensions Height: 395mm Width: 190mm Length: 220mm Weight: 7.4kg Entrance hole



			diameter: 45mm
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- 5.3.3 Bird boxes on **buildings** should be securely fastened below the eaves, at least 4m above ground level (to prevent predation by cats). Boxes should be positioned so that the front is facing in a **northerly to easterly** direction, as to avoid direct heat of the sun and prevailing wind and rain.
- 5.3.4 Bird boxes on **trees** should be installed facing in a **northerly to easterly** direction, thus avoiding strong sunlight and wet winds. Boxes should be installed as to ensure birds have a clear flight path to the bird box without any clutter directly in front of the entrance.
- 5.3.5 The installation of all bird boxes is to be undertaken immediately after the completion of the Proposed Development.

5.4 Insect Boxes

- 5.4.1 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 other species, such as birds and bats.
- 5.4.2 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, urban areas tend to be over-maintained, often with valuable features tidied 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).
- 5.4.3 To ensure the Site maintains its' value for other invertebrate species, **four** insect towers should be placed attached to a suitable fence, post, or other structure. A suitable Insect Tower design by CJ Wildlife can be seen below in **Figure 1**. This particular model provides a variety of habitats for various insects, including butterflies, lacewings, and ladybirds.





Figure 1: Example of an Insect Tower by CJ Wildlife.

5.5 Hedgehog Shelters

- 5.5.1 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.
- 5.5.2 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).
- 5.5.3 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). These 'hedgehog highways' (PTES, 2018) should have appropriate signage installed to indicate their purpose and stipulate that they should remain open. In total, **65** hedgehog highway holes have been recommended.
- 5.5.4 Providing shelter for hedgehogs within green spaces will encourage this species to visit the Site and utilise the natural space. Therefore, **three** hedgehog shelters should be placed in sheltered positions.
- 5.5.5 Hedgehog shelters are simple to construct and should be situated in a sheltered, undisturbed area preferably under vegetation with dried leaves or hay placed inside for bedding (Bunnell, 2014). An example of a hedgehog shelter is shown below in **Figure 2**.





Figure 2: Example of hedgehog shelter *in-situ*.



6. Ecological Recommendations

6.1 Lighting

Lighting Scheme: The development will likely increase lighting levels. All lighting must consider wildlife and be in accordance with the Institution of Lighting Professionals (ILP) Guidance Notice GN01 (2021) and GN08 (2023). A key point is the avoidance of internal and external light spill. Where possible, lighting should be timed, or on sensors and avoid the hours between sunset and sunrise, when bats are out foraging.

All lighting installed as part of the development will be in line with Guidance Note 08/23 Bats and Artificial Lighting at night. The following will be required:

- LED lighting will be used and light levels will be kept as low as possible. Metal halide, fluorescent sources will not be used.
- Lighting will be directed to where it is required.
- Only luminaires with no light output above 90 degrees and/or an upward light ratio of 0% and with good optical control will be used, luminaires will always be mounted on the horizontal, i.e. no upward tilt.
- Any external security lighting will be set on motion-sensors and short (1min) timers.
- Internal lighting within the new rooms will be recessed where installed in proximity to windows to reduce glare and light spill.
- Light sources will emit minimal ultra-violet light, peak higher than 550nm and be of a warm white spectrum (ideally <2700 Kelvin).
- The use of bollard or low-level downward directional luminaires is strongly discouraged.

Providing the Lighting Strategy is adhered to, there will be an insignificant effect on the bat assemblage from lighting during the operational phase.

6.2 Vegetation removal and excavations

All wild birds are protected under the WCA whilst nesting. Any vegetation or tree removal should ideally take place outside of the bird nesting season (1st Mar-31st Aug). If works occur within this time, a preconstruction site walkover by a suitably competent ecologist should occur no more than **24 hours** prior to any vegetation removal and works is required. The ecologist will inspect any trees/vegetation to be removed or adjacent to any construction for evidence of nesting birds.

Any tree to be removed must be left *in situ* after felling for at least **24 hours** to allow any bats that may potentially be roosting in the tree the chance to escape.

The site has the potential to support nesting birds, reptiles, and hedgehogs. All native reptiles are protected under WCA Schedule 5. Hedgehogs are protected under WCA Schedule 6, with additional protection during hibernation and while raising their young. Clearance of the site must take place under the supervision of an **Ecological Clerk of Works (ECoW)**. The



ECoW will conduct a fingertip search of the areas to be cleared and, should any hedgehogs or reptiles be found, they will move the animal to a safe place containing suitable habitat for the species.

To permit the migration and safe passage of these species through the site, any excavations created during the development stage must be covered at night or appropriate escape routes implemented. A plank of wood (or similar) is to be placed at a 45-degree angle to prevent an animal getting trapped. Any pipes left open overnight must also be capped.



7. Conclusion

- 7.1.1 As per the BS 42020 (BSI, 2013) developments should follow the mitigation hierarchy, thereby retaining habitats as the first option, minimising impact as the second and, if these options are not available, providing compensatory measures.
- 7.1.2 It is recommended to create areas of wildflower grassland, planting of shrubs/hedgerows, and planting of native trees. The habitats should contain plant species to encourage biodiversity, particularly those that will attract food insects for bats (as advised in [Encouraging Bats](#)).
- 7.1.3 The site has the potential to support protected or notable species: bats, nesting birds, and hedgehogs, as well as a range of invertebrate species that will act as a food source and provide pollination services. As a result, it is recommended that **8** tree mounted bat boxes should be positioned around the site, on suitably sized trees. **8** integrated swift bricks and **8** tree mounted bird boxes, including designs aimed at supporting a range of bird species, are to be installed onto the buildings, or on suitably sized trees. **4** mixed insect box aimed at attracting invertebrates are to be installed around the site. **3** hedgehog shelter are to be installed in secluded areas, such as within hedge/scrub planting. Hedgehog highways in new walls/fences to allow access across the site should also be implemented.
- 7.1.4 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.



8. References

Reports:

JCA Ltd. – Arboricultural Report and Impact Assessment, Nov 2022 (JCA Ref: 19349/PH V2).

JCA Ltd. – Preliminary Ecological Appraisal (PEA), Nov 2022 (JCA Ref: 19349a/EG).

CDP Architects – Proposed Site Layout (Dwg No: 22.135_01_002).

Guidance:

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. Mitchell-Jones. English Nature.

Bat Survey Guidelines: Good Practice Guidelines, 4th ed. Collins (2023). 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.

Institute of Lighting Professionals (2021) Guidance Note 01/21: The Reduction of Obtrusive Light. ILP, Rugby

Institute of Lighting Professionals and Bat Conservation Trust (2023) Guidance Note 08/23: Bats and artificial lighting in the UK. ILP, Rugby

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

People's Trust for Endangered Species (2018) *State of Britain's Hedgehogs Report 2018*.

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.

Property Care Association (PCA). (2018). *Practical Management of Invasive Non-Native Weeds in Britain and Ireland*. Packard Publishing Limited, Forum House, Stirling Road, Chichester, West Sussex, PO19 7DN.



Appendices

Appendix 1: Baseline Habitat Map

Taken from the Preliminary Ecological Appraisal (PEA) by JCA, Noc 2022 (19349a/EG).

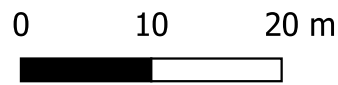
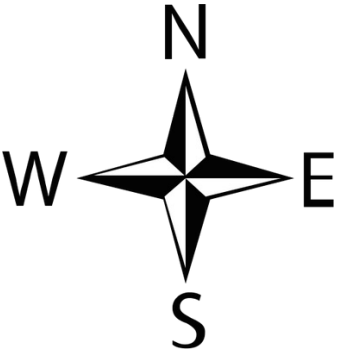


Habitat Map - Land South of Hanson Close, Middleton



Legend

- Red line boundary
- g4 – Modified grassland
- h3 - Dense scrub
- u1b - Developed land; sealed surface
- u1c - Artificial unvegetated, unsealed surface
- 16 - Tall herb
- 17 - Ruderal/ephemeral
- 73 - Bare ground
- 351 - Vacant/derelict land
- w1h5 - Other woodland; mixed; mainly broadleaved
- u1e - Built linear features
- 67 - Mortared walls
- u - 1170 Urban trees
- Target notes
 - 1 - Rockspray cotoneaster
 - 2 - Japanese knotweed
 - 3 - Brash pile
 - 4 - Rubble pile



Appendix 2: Proposed Site Layout



Appendix 3: Faunal Enhancement Plan



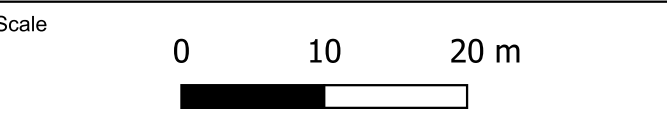


SHRUB PLANTING			
Abb	Species	Size	Density
CalF	Calamagrostis Karl Forester	3L	4 sq.m
Ct	Choysia ternata	3L	3 sq.m
CtS	Choysia ternata 'Sundance'	10L	As shown



Site name & address
Land South of Hanson Close
Middleton
Manchester
M24 2HD

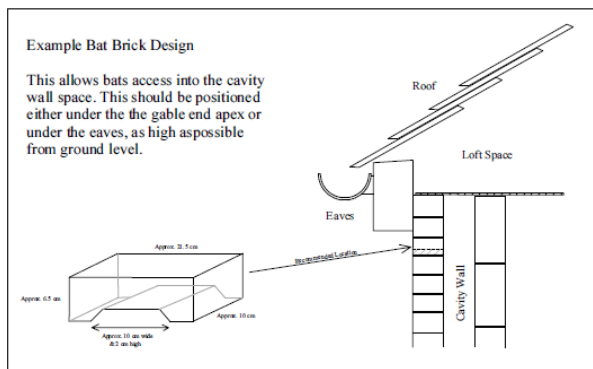
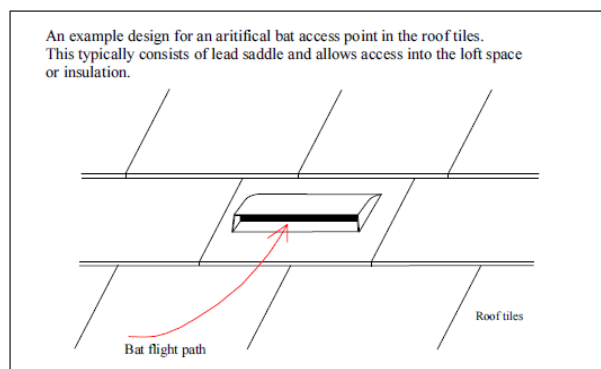
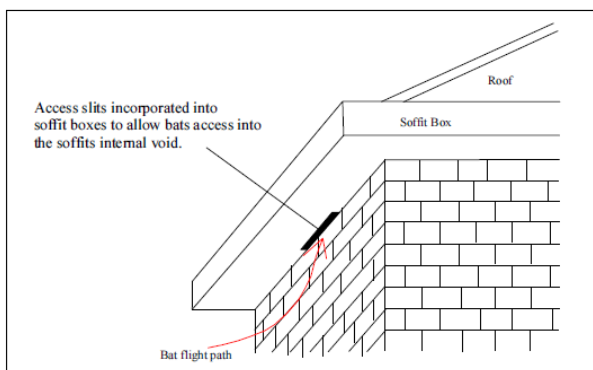
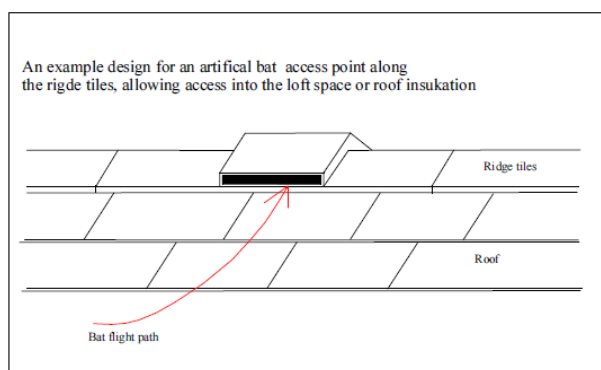
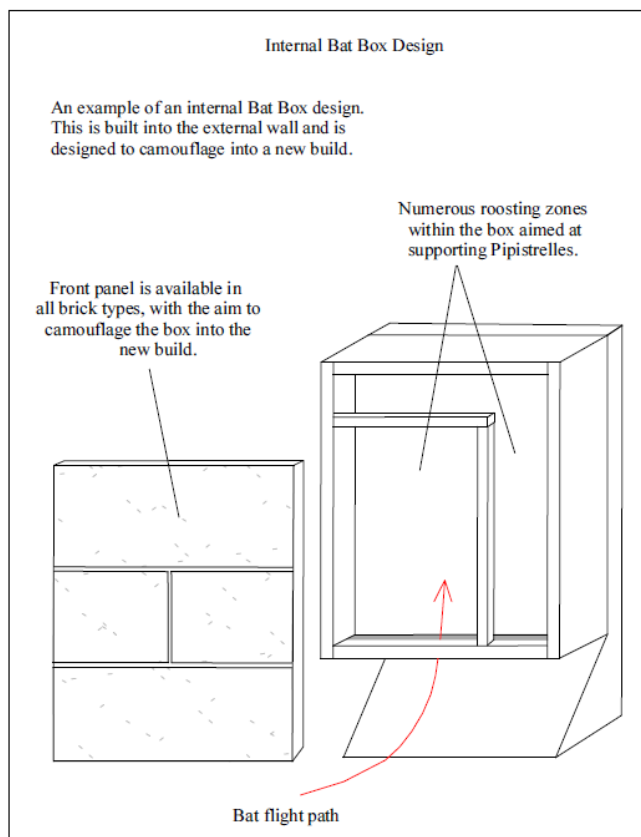
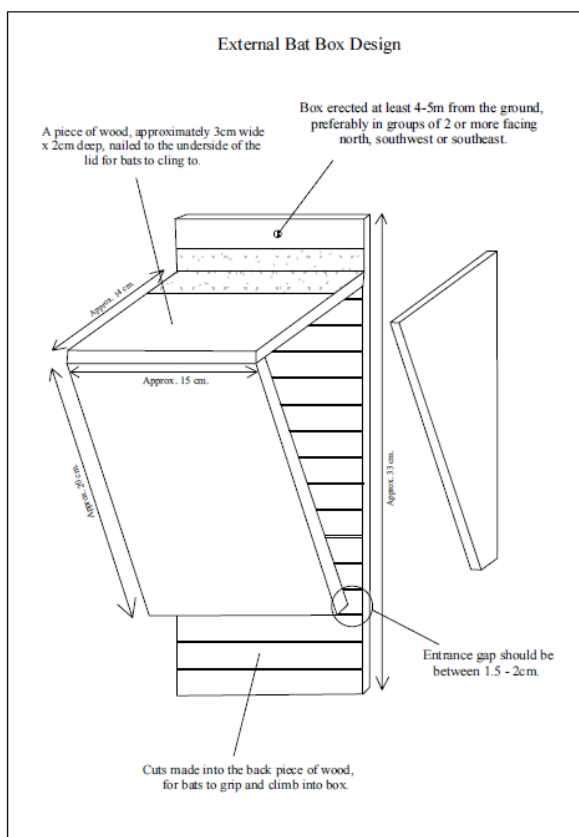
- Key**
- Faunal Enhancements**
- 1 - 1FD Schwegler Bat Box
 - 2 - Schwegler 2FN Bat Box
 - 3 - Vivara Pro WoodStone Swift Nest Box
 - 4 - Vivara Pro Seville 32mm WoodStone Nest Box
 - 5 - Vivara Pro WoodStone Starling Nest Box
 - 6 - Insect Tower
 - 7 - Hedgehog Shelter



Site Land South of Hanson Close	Client MSM Aerospace Fabrications
Project 19349b/ADo	Author ADo
Plan ref 22.135_01_002	Revision 001

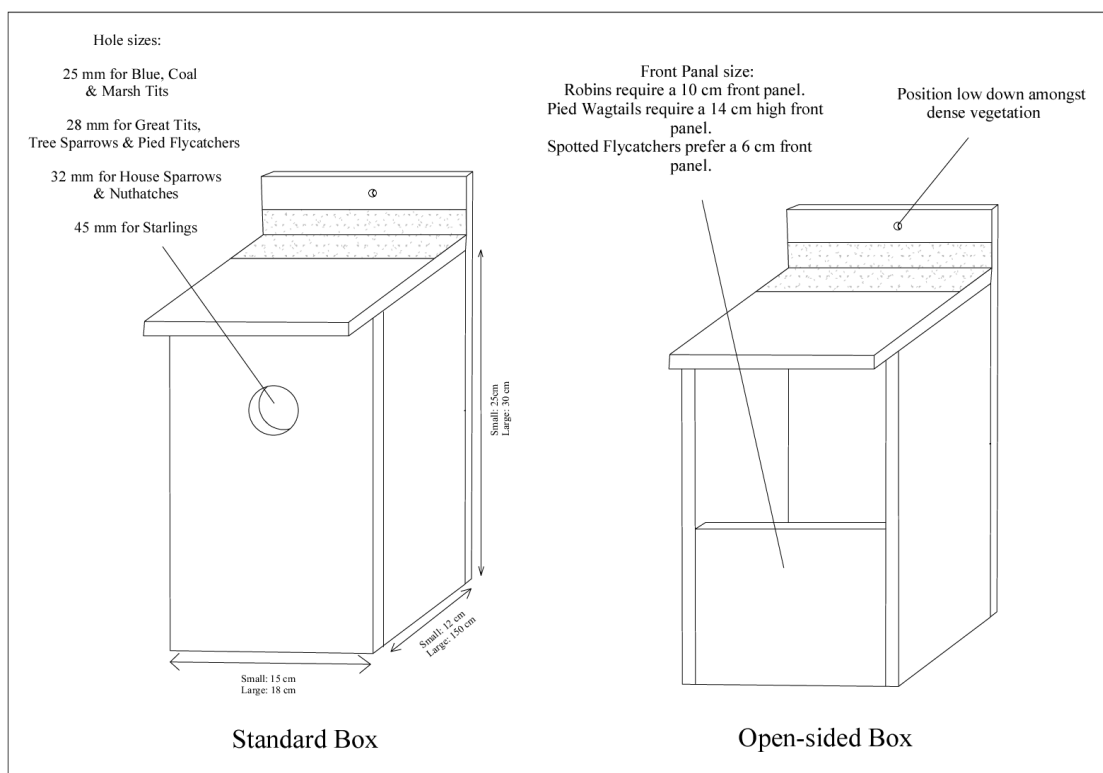
Contains Ordnance Survey data © Crown copyright and database right 2025

Appendix 4: Examples Artificial Bat Box Designs

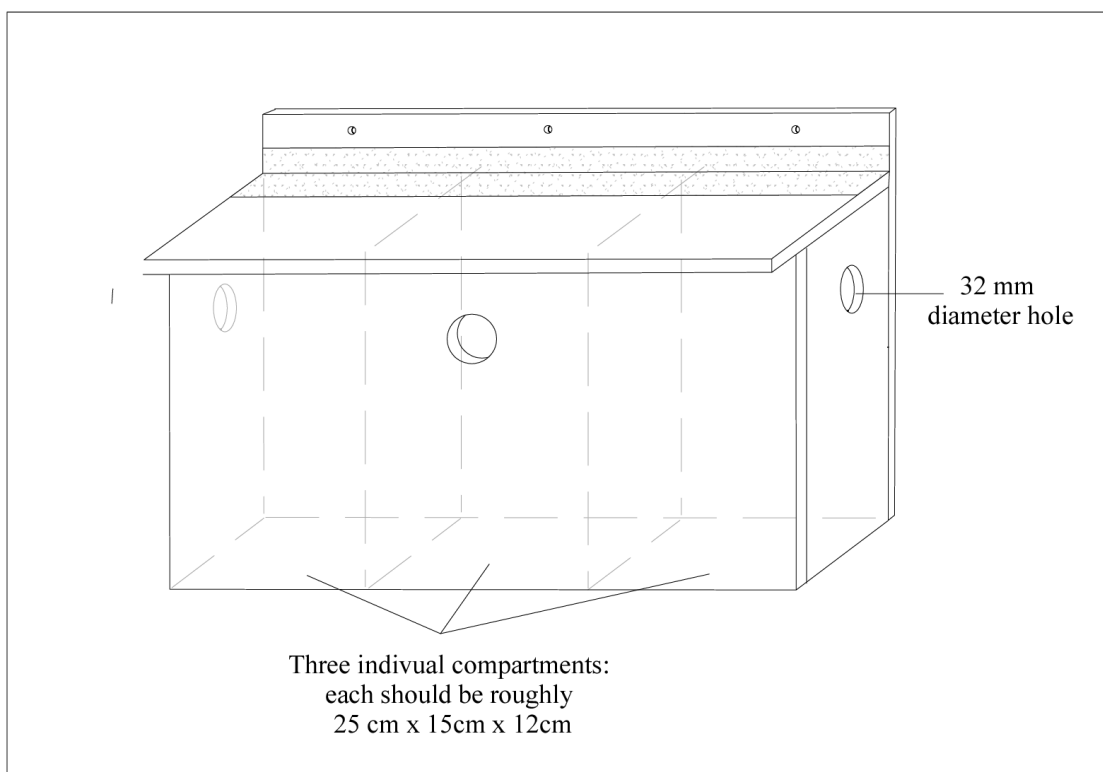


Appendix 5: Examples Artificial Bird Box Designs

An example of two different bird box designs

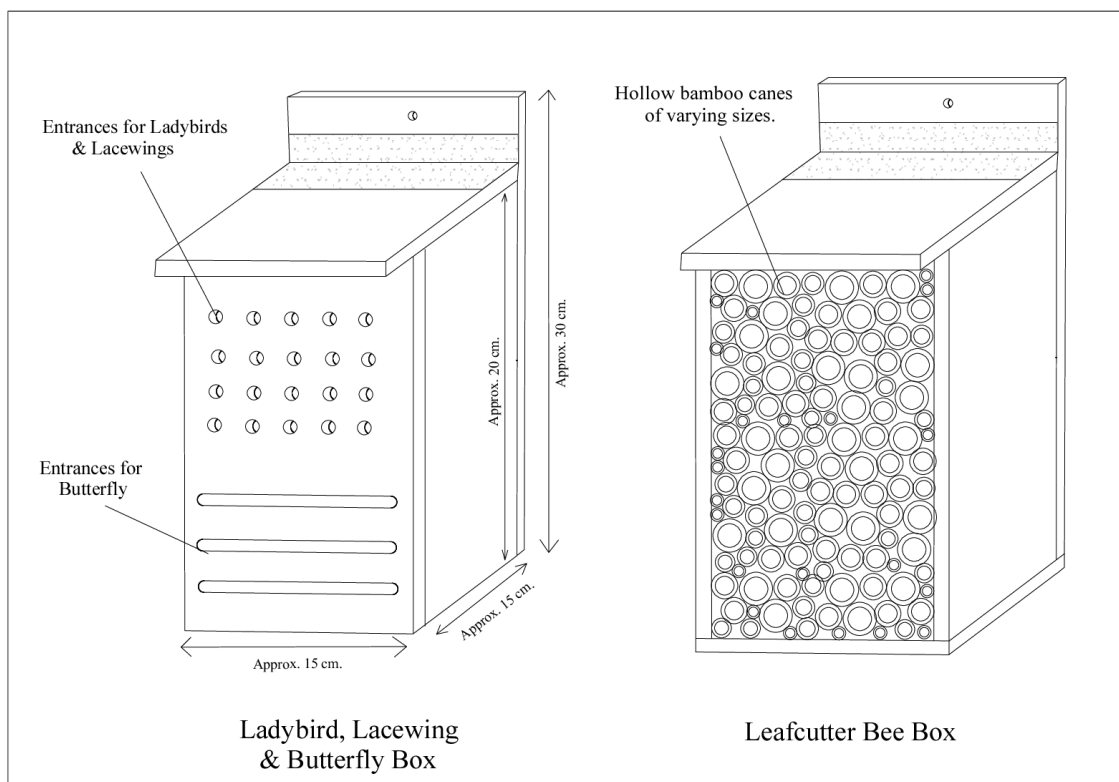


An example of a House sparrow box design

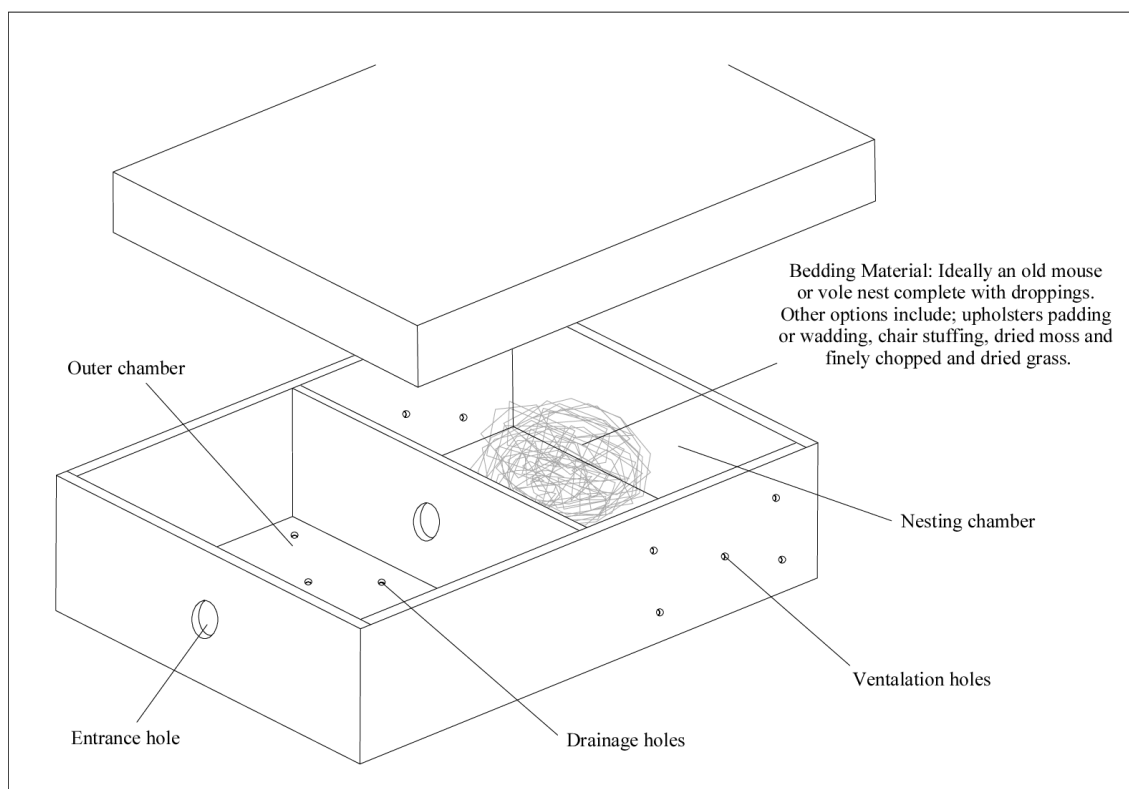


Appendix 6: Examples of Insect Shelter Designs

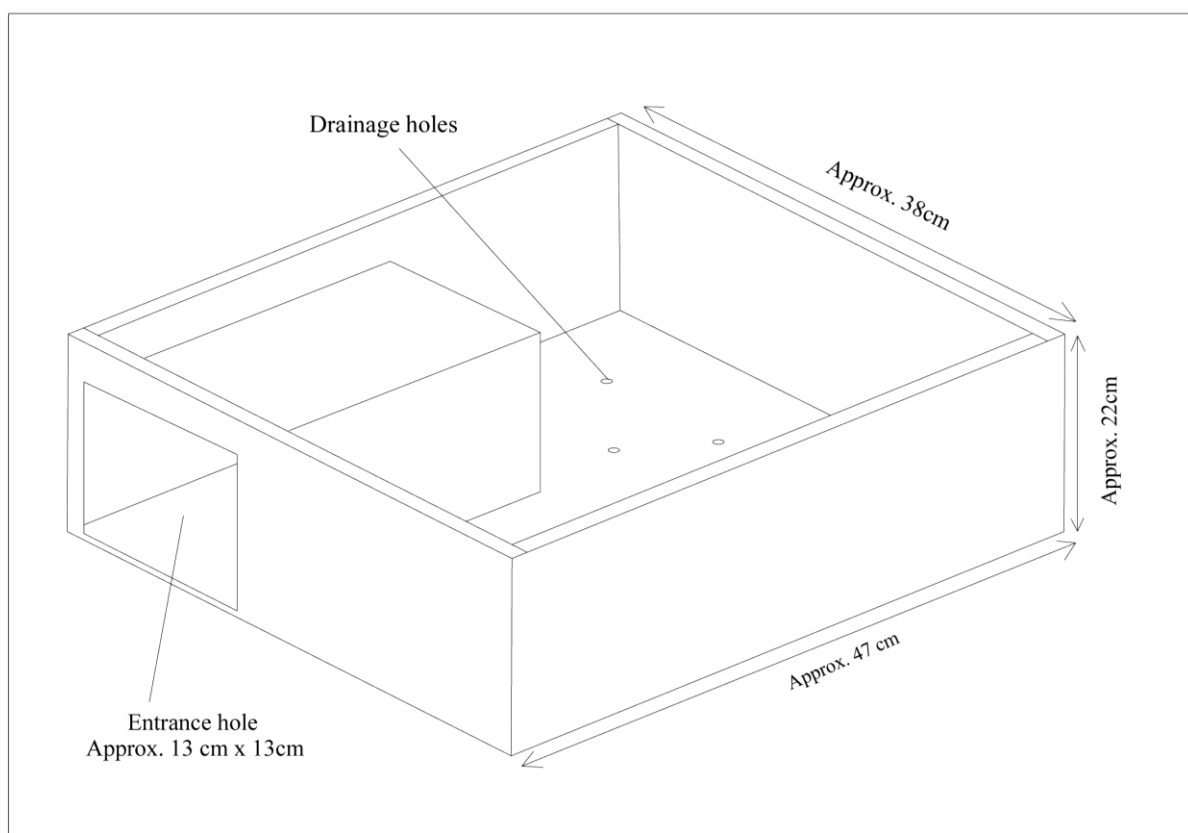
An example of two different insect box designs



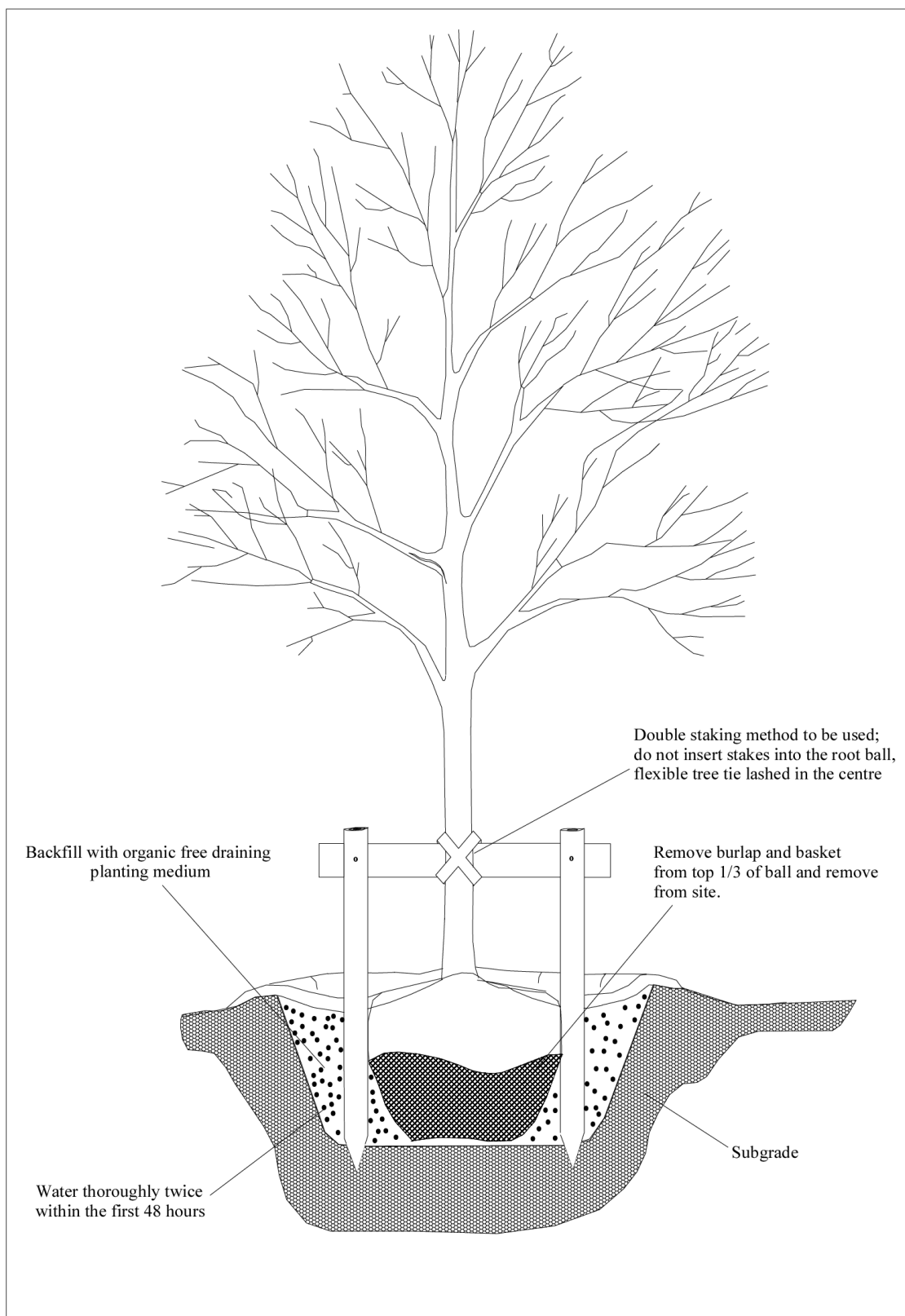
An example of a Bumblebee box design



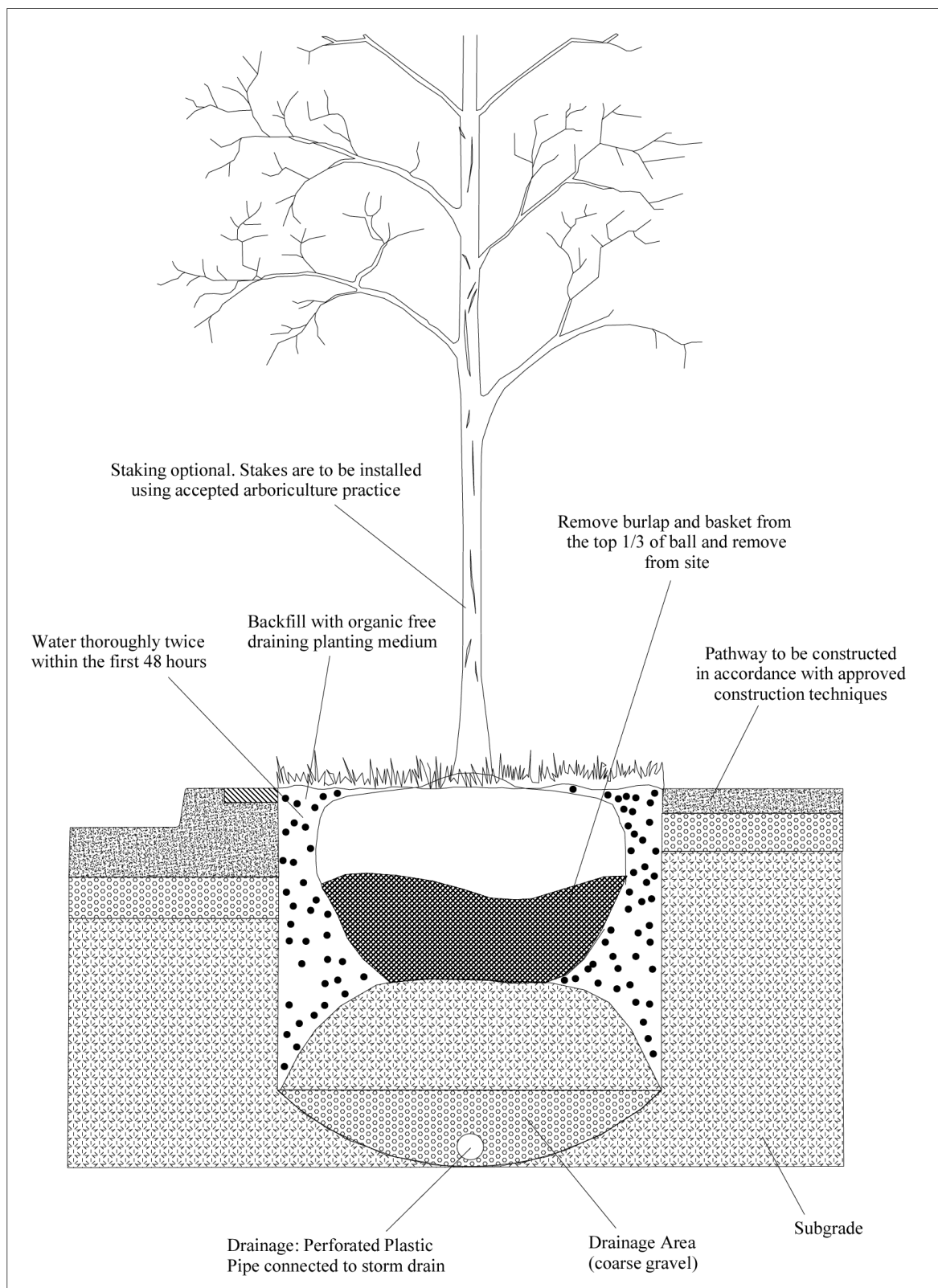
Appendix 7: Example of Hedgehog Shelter Design



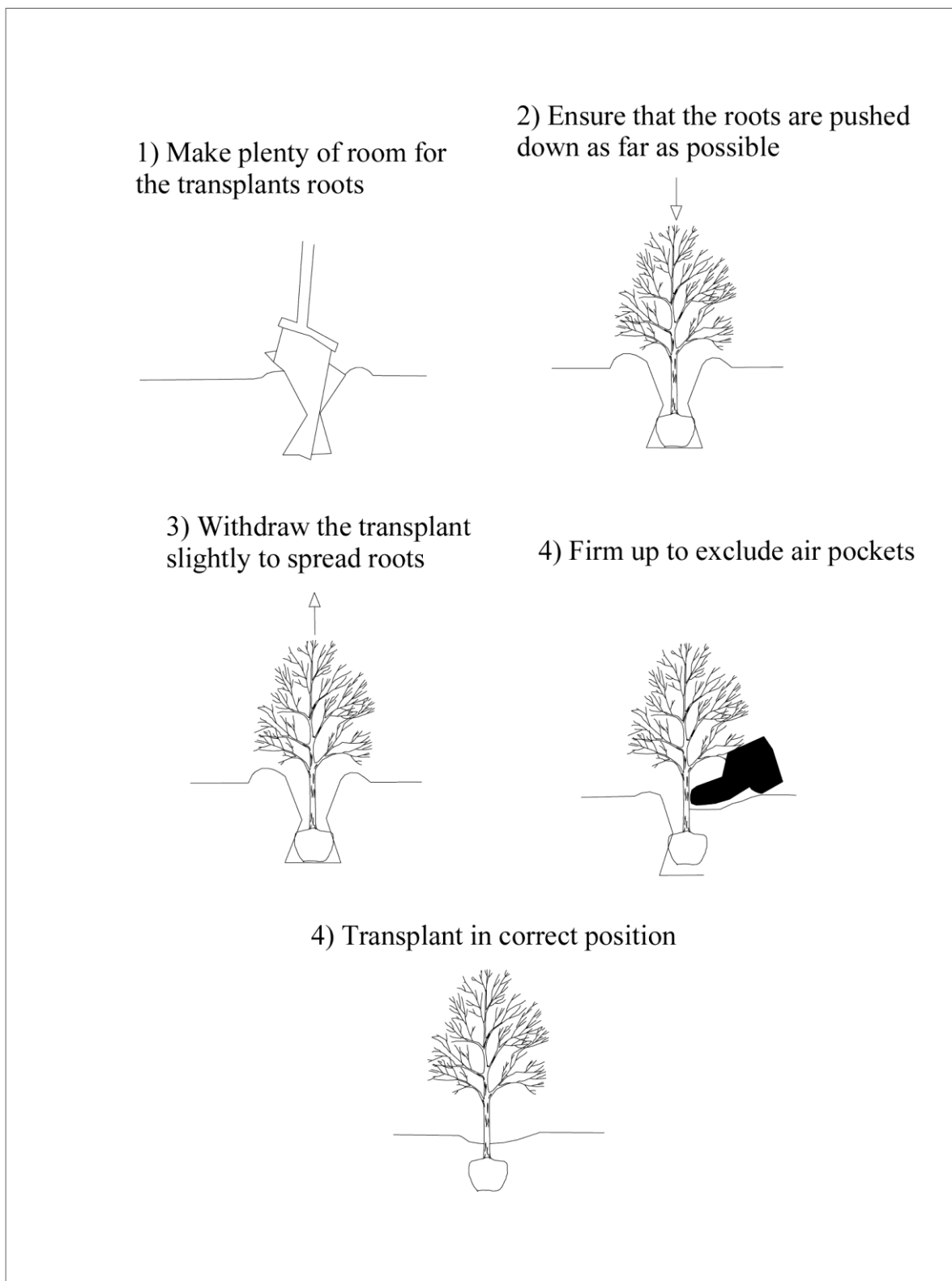
Appendix 8: Example of planting a tree in an open grass strip



Appendix 9: Example of planting a tree within a street



Appendix 10: Example of planting a tree



Appendix 11: Author Qualifications

Adam West, Principal Ecologist

BSc (Hons) Animal and Wildlife Management

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 Bachelor's degree, 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, a Natural England Level 2 bat survey class licence (and the Scottish and Welsh equivalents) and a CSCS card.

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 CIEEM Qualifying Member, and a member of the BTO's Bird Ringing Scheme and Nest Record Scheme. Alex holds a Natural England barn owl survey licence, and is working towards additional survey licences for bats, great crested newts, and white-clawed crayfish.

Grace Bramley, Graduate Ecologist

BSc (Hons) Design and Innovation with Environmental Science

Grace joined JCA in 2024 after completing her degree from The Open University with a first-class honour's degree in design and environmental science. Prior to this she spent six years working in the automotive industry followed by three years in the chemical industry. She is conducting Preliminary Ecological Appraisal and Biodiversity Net Gain Assessments and working towards her protected species licenses.

James Foster, Assistant Ecologist

BSc (Hons) Biology.

James gained his undergraduate degree in biology in 2012 from University of Leeds. James has plenty of experience in ecology, having worked countless projects of different scales all over the north and midlands. James has over 11 years of experience surveying anything from reptiles to hedgerows and holds a Great crested newt licence level 1 and is working towards his bat licence and barn owl licence.



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



.....
Alex Donovan *MBIOL BSc (Hons)*

12/08/2025

Approved by



.....
Grace Bramley *BSc (Hons)*

13/08/2025

Approved by



.....
James Foster *BSc (Hons)*

22/08/2025



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.

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Guidance for Architects & Developers

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

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- 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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