

**ECOLOGICAL DESIGN
STRATEGY REPORT**

at

**St Pauls Road
Mirfield
West Yorkshire
WF14 8AX**

Client:

West End Joiners & Builders Ltd

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JCA Ref:

22040a/ADo

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Quality Assurance

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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*.

Risk Assessment Completed	N/A
Bio-security Procedure Completed	
Lone Worker Procedure Completed	

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1. Introduction

1.1 Purpose of the Report

1.1.1 An Ecological Design Strategy has been requested for **St Pauls Road, Mirfield** by Kirklees Council. This is described within Condition 20 of the Decision Notice:

“Prior to the commencement of development, an Ecological Design Strategy (EDS) shall be submitted to and approved in writing by the Local Planning Authority. The EDS shall demonstrate that a net biodiversity gain will be achieved, and shall include the following details:

- *Purpose and conservation objectives for the proposed works;*
- *Review of site potential and constraints;*
- *Detailed design(s) and/or working method(s) to achieve stated objectives;*
- *Extent and location/area of proposed works on appropriate scale maps and plans;*
- *Seasonal timings of works with regards to roosting bats and nesting birds;*
- *Replacement bat roosts and/or protection of roost sites, including the roost within the adjacent tree in Ings Grove Park;*
- *An appropriate lighting design illustrating how impacts to existing and replacement bat roosts will be minimised;*
- *Location (shown on appropriate scale plans) of specific make and model, or design, of habitat boxes, such as bat boxes, bird boxes and hedgehog refuges (habitat boxes to be integral to new structures where such opportunities exist);*
- *A planting schedule and planting plan showing the inclusion of native species of tree and shrub to be included within/at the boundary of the application area, and how this achieves the stated purpose;*
- *Persons responsible for implementing the works;*
- *Details of initial aftercare and long-term maintenance; and*
- *Details of monitoring and remedial measures.*

The EDS shall set out (where the results from monitoring show that conservation aims and objectives of the EDS 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 scheme. The development shall be implemented in accordance with the approved EDS.

Reason: *In the interests of local ecological value and visual amenity, and to accord with Policies LP24, LP30, LP32 and LP33, of the Kirklees Local Plan, and chapters 12 and 15 of the National Planning Policy Framework.*

This pre-commencement condition is necessary to ensure that details relevant to ecological impact and biodiversity net gain are agreed at an appropriate stage of the development process.”



1.1.2 This report will aim to fulfil the planning conditions set by Kirklees Council, with the ultimate 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 JCA Ltd. have been instructed by **West End Joiners & Builders Ltd** to produce an Ecological Design Strategy (EDS).

1.2.2 For this purpose, the following reports, documents and plans were used:

- JCA Ltd. – Small Site Metric & Report, Jul 2021 (14607g/JE).
- JCA Ltd. – Bat Emergence Survey Report, Aug 2024 (22040b/ADo).
- JCA Ltd. - 22040a Statutory Biodiversity Metric Calculation Tool.
- Fda Landscape – Landscape Masterplan DRAFT, Nov 2024 (Dwg No: R/2815/1).

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 the construction of an extra care residential development with associated garden and parking areas.

1.5 Site Description

1.5.1 The site is located at Ordnance Survey (OS) National Grid Reference **SE 20203 19865**, with nearby postcode **WF14 8AX**. The site is situated ~4.7km southwest of Dewsbury Town centre. The site is surrounded predominantly by residential housing. With commercial properties to the southeast and number of industrial units. To the west and southwest the landscape changes to agricultural fields with recreational grounds in the form of playing fields and parks dotted throughout the landscape, and the site itself backs onto Ings Grove Park to the north. The River Calder runs from the west to the east with the closest section of the river being 150m to the southwest of the site. Huddersfield Road (A644) acts as a major transport link to and from Dewsbury town centre and is located in close proximity to the site.



1.6 Roles and Responsibilities

1.6.1 Ecological Responsibility

JCA Ltd. are the organisation responsible for the production of this EDS. JCA Ltd. report on both ecological and arboricultural issues throughout the UK. All surveys and reports are undertaken and compiled in accordance with CIEEM's Professional Code of Conduct and the relevant survey guidance.

1.6.2 Landowner and Land Manager

The landowner and manager responsible for the site is West End Joiners & Builders Ltd.

1.6.3 Management Organisation(s)

West End Joiners & Builders Ltd is responsible for the implementation of the EDS.

1.6.4 Local Planning Authority (LPA)

Kirklees Council are the LPA responsible for reviewing the EDS.



2. Local Biodiversity Action Plan

2.1.1 JCA Ltd aim to incorporate the Local Biodiversity Action Plan (LBAP) habitats within our enhancement plans. JCA Ltd 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 the site is the Kirklees BAP (KBAP).

2.1.2 The habitats listed within the KBAP can be seen below in **Table 1**.

Table 1: Habitats listed under Kirklees BAP.

Habitat	Key geographical areas in Kirklees
Arable field margins	Pennine foothills
Blanket bog	Uplands
Hedgerows	Pennine foothills
Inland rock outcrop and scree habitats	Valley slopes and quarries in any area
Lowland dry acid grassland	Valley slopes
Lowland heathland	Valley slopes
Hay meadows	Pennine foothills and mid-altitudinal grasslands
Lowland mixed deciduous woodland	Vally slopes and Pennine foothills
Open mosaic habitats on previously developed land	Urban areas
Ponds	Relevant to occurrence of protected species (white-clawed crayfish, great crested newt, water vole <i>L. natans</i>)
Reedbeds	Floodplain
Rivers	Floodplain
Traditional orchards	Pennine foothills
Upland flushes, fens and swamps	Uplands
Upland heathland	Uplands
Upland mixed Ashwood	Valley slopes (upland): component of upland oak woodland
Upland oak woodland	Uplands
Wet woodland	Floodplain: also, component of lowland mixed deciduous woodland and upland oak woodland
Wood-pasture & parkland	Pennine foothills and valley slopes
Scrub	Primarily valley slopes and Pennine foothills but can occur elsewhere. Includes open mosaic habitats on previously developed land (mostly in urban areas)
Other semi-natural grassland (wet/rush pasture and rough grassland)	Mid-altitudinal grasslands and Pennine foothills
Riverine	Floodplain: corridors include reedbeds and rivers



2.1.3 The species listed within the KBAP can be seen below in **Table 2**.

Table 2: Species listed under Kirklees BAP.

Group	Common name	Scientific name
Birds	Common bullfinch	<i>Pyrrhula pyrrhula</i>
Birds	Common grasshopper warbler	<i>Locustella naevia</i>
Birds	Common linnet	<i>Linaria cannabina</i>
Birds	Common starling	<i>Sturnus vulgaris</i>
Birds	Eurasian curlew	<i>Numenius arquata</i>
Birds	Eurasian tree sparrow	<i>Passer montanus</i>
Birds	Grey partridge	<i>Perdix perdix</i>
Birds	Hawfinch	<i>Coccothraustes coccothraustes</i>
Birds	Hedge accentor (dunnock)	<i>Prunella modularis</i>
Birds	House sparrow	<i>Passer domesticus</i>
Birds	Northern lapwing	<i>Vanellus vanellus</i>
Birds	Red grouse	<i>Lagopus lagopus Scotica</i>
Birds	Reed bunting	<i>Emberiza schoeniclus</i>
Birds	Ring ouzel	<i>Turdus torquatus</i>
Birds	Sky lark	<i>Alauda arvensis</i>
Birds	Song thrush	<i>Turdus philomelos</i>
Birds	Spotted flycatcher	<i>Muscicapa striata</i>
Birds	Tree pipit	<i>Anthus trivialis</i>
Birds	Twite	<i>Linaria flavirostris</i>
Birds	Willow tit	<i>Poecile montanus</i>
Birds	Wood warbler	<i>Phylloscopus sibilatrix</i>
Birds	Yellow wagtail	<i>Motacilla flava</i>
Birds	Yellowhammer	<i>Emberiza citrinella</i>
Invertebrates	Northern wood ant	<i>Formica lugubris</i>
Invertebrates	Small heath butterfly	<i>Coenonympha pamphilus</i>
Invertebrates	Wall brown butterfly	<i>Lasiommata megera</i>
Invertebrates	White-letter hairstreak butterfly	<i>Satyrrium w-album</i>
Fish	Atlantic salmon	<i>Salmo salar</i>
Fish	Brook lamprey	<i>Lampetra planeri</i>
Fish	Brown trout	<i>Salmo trutta</i>
Fish	European eel	<i>Anguilla anguilla</i>
Fish	River lamprey	<i>Lampetra fluviatilis</i>
Amphibians	Common toad	<i>Bufo bufo</i>
Amphibians	Great crested newt	<i>Triturus cristatus</i>
Reptiles	Adder	<i>Vipera berus</i>
Reptiles	Common lizard	<i>Zootoca vivipara</i>
Reptiles	Grass snake	<i>Natrix natrix</i>
Reptiles	Slow worm	<i>Anguis fragilis</i>
Terrestrial mammals	Brown hare	<i>Lepus europaeus</i>
Terrestrial mammals	Brown long-eared bat	<i>Plecotus auritus</i>
Terrestrial mammals	Mountain hare	<i>Lepus timidus</i>
Terrestrial mammals	Noctule bat	<i>Nyctalus noctula</i>
Terrestrial mammals	Otter	<i>Lutra lutra</i>
Terrestrial mammals	Polecat	<i>Mustela putorius</i>
Terrestrial mammals	Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>
Terrestrial mammals	Water vole	<i>Arvicola terrestris</i>
Terrestrial mammals	West European hedgehog	<i>Erinaceus europaeus</i>



3. Retention of Ecologically Valuable Features

3.1 Pre-development

3.1.1 A summary of the habitats and features present in this report can be seen below.

3.1.2 As listed below, the site consists of three different habitats, as identified within the Small Site Metric & Report (14607g/JE).

- Developed land, sealed surface
- Bramble scrub
- Urban trees

3.1.3 All habitats on site were species poor, consisting of only common species typical of their habitat type.

3.1.4 None of the habitats or features on site were deemed suitable for supporting rare or protected mammals (except bats), birds (except breeding birds), amphibians, reptiles, plants, or invertebrates, nor will the site impact on any designated conservation sites.

3.1.5 The site holds moderate potential to support foraging and commuting bat species. Two existing buildings were classified as having high potential to support roosting bats, one had moderate potential, and two had low potential, but no evidence of roosting bats was observed during the emergence surveys (22040b/ADo).

3.1.6 The vegetation and buildings on-site have the potential to support nesting birds. An active blackbird *Turdus merula* nest was noted within an open building during one of the dusk emergence surveys for the Bat Emergence Survey Report (22040b/ADo).

3.2 Features to be Retained and Protected

3.2.1 The majority of the site consists of hardstanding. The existing trees are all small young, self-set trees growing along the eastern boundary of the site. The existing bramble scrub also occurs to the east of the site. The bramble scrub will not be retained under the current scheme, and only one individual tree is due to be retained.

3.3 Features to be Enhanced

3.3.1 The scheme will not see the enhancement of any of the existing habitats on-site.



4. Habitat Creation

4.1 Summary

4.1.1 As the site contains habitats of negligible to medium conservation value, there is some scope to enhance the site's wildlife value post development.

4.1.2 The proposed development will see the creation of the following habits:

- G3c – other neutral grassland (proposed species rich grass seed mix and proposed wildflower grass seed mix)
- H2a – native hedgerow
- H3h – mixed scrub (proposed native species shrub mix)
- U1 – built-up areas and gardens (proposed turf to private garden area)
- Secondary code 32 – scattered trees (proposed trees)
- Secondary code 847 – introduced shrubs (proposed ornamental shrub planting)

4.1.3 Under the proposed scheme used to produce the Small Site Metric & Report (14607g/JE), the proposal was set to deliver a **+19.90%** biodiversity net gain. A recalculation incorporating the increased amount of new planting set out in the revised Landscape Masterplan DRAFT (Dwg No: R/2815/1) is now expected to deliver a **+34.27%** biodiversity net gain, whilst also satisfying the metric Trading Rules (22040a Statutory Biodiversity Metric Calculation Tool).

4.1.4 The proposed development will see the site's value to wildlife and biodiversity increased through a combination of the following:

- Creation of a nectar and pollen rich grassland habitat
- Native species shrub planting
- Native species tree planting
- Inclusion of faunal boxes and hedgehog provisions

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 Species Selection and Specification

It is important that the correct plant species are selected that are adapted to the local site conditions and resemble the semi-natural plant communities of the local area. The plant species must be matched to soil type (pH), fertility, hydrology and topography. A wildflower and grass mix of 15:85 is normally recommended but this should not include vigorous grasses as these will compete with wildflowers for resources.

Providing a good tilth can be prepared, the optimal time for seed sowing is in late summer/early autumn, which means the seeds are not exposed to rising soil temperatures but will be exposed to cold moist temperatures over winter, which can help break dormancy of some species. If sown too late in autumn, seedlings may be killed off by frosts. The months of March/April can also be suitable for sowing in areas of land that are prone to winter flooding.

Approximately **0.011ha** (110m²) of land will be enhanced to improve the floral species richness. The recommended seed mix is EM2 Standard General-Purpose Meadow Mixture. Sown at **40kg per hectare**, this will require between approximately **0.44kg** of seed mix.

A list of the species included within EM2 Standard General-Purpose Meadow Mixture can be seen below in **Table 3**. This mix includes species that are visually attractive, and many are the host plant for butterfly species. An increase in the abundance of insects on-site will benefit fauna higher up the trophic chain such as bats and birds who forage upon invertebrates.

The seed mix contains red fescue and common bent. Fescues and bents are included in the food plants that are foraged on by the caterpillars of small heath and wall butterflies, which are nationally, and locally important species listed on NERC S41 and the KBAP.



Table 3: List of species in EL2 Flowering Lawn Mixture from Emorsgate Seeds.

Flowering Plants			Grasses		
Botanical Name	Common Name	%	Botanical Name	Common Name	%
<i>Achillea millefolium</i>	Yarrow	0.75	<i>Agrostis capillaris</i>	Common Bent	8.50
<i>Centaurea nigra</i>	Common knapweed	1.50	<i>Cynosurus cristatus</i>	Crested Dog's-tail	29.75
<i>Rumex acetosa</i>	Common sorrel	0.30	<i>Festuca rubra</i>	Red fescue	25.50
<i>Galium verum</i>	Lady's bedstraw	1.50	<i>Phleum bertolonii</i>	Smaller Cat's-tail (w)	4.25
<i>Knautia arvensis</i>	Field scabious	0.45	<i>Poa pratensis</i>	Smooth-stalked meadow-grass	17.00
<i>Leucanthemum vulgare</i>	Oxeye daisy	1.27	Total		85
<i>Malva Moschetti</i>	Musk mallow	1.80			
<i>Poterium sanguisorba ssp sanguisorba</i>	Salad burnet	0.90			
<i>Primula veris</i>	Cowslip	0.30			
<i>Ranunculus acris</i>	Meadow buttercup	0.75			
<i>Silene dioica</i>	Red campion	1.50			
<i>Rhinanthus minor</i>	Yellow rattle	0.98			
	Total	15			

4.2.3 Implementation of Species-rich Grassland

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 enhancement of existing grassland is implemented after the completion of the development. In the grasslands' current state, it is likely that the soil fertility is too high to allow for a habitat of ecological value to establish.

For example, low soil fertility is important for meadow establishment. The level of available phosphorous is the most important nutrient that influences grassland diversity. It is recommended that a soil test is carried out to establish levels of available nutrients nitrogen, phosphorous, potassium, in addition to soil pH prior to this grassland habitat being enhanced.

It may take several years for the soil's fertility to be appropriate for enhancement. Therefore, it may be necessary to remove the topsoil as high fertility soil tends to promote the growth of more vigorous grasses and weeds. This removed topsoil can be sold for profit.

On completion of construction, if the area of ground to be converted into 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.
- 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.

- Weed species such as docks *Rumex* sp., thistles *Cirsium* sp., nettles *Urtica dioica*, and vigorous growing grasses, should be pulled up by hand prior to seed bed cultivation.

A summary of ground preparation for fertile sites is listed below:

- Remove existing weed species, including grasses.
- Shallow cultivate site with a rotovator and roll to consolidate ground to keep in moisture.
- Repeat removal of weed species, including grasses.
- Power harrow to create fine surface tilth.
- Final spray if required.
- Surface sow the seed and roll.

4.2.4 First Year of Management

The grassland should remain nutrient poor, therefore, do **not** add fertilisers at any point. The majority of species included within the seed mix are perennial and are slow to establish. There will be an abundance of annual weeds which offer protection to sown seedlings. Mow the grassland mid to late summer (early August) to a height no shorter than 5cm and remove the arisings. Remove any residual weeds present in the grassland.

4.2.5 Management Once Established

Once the grassland is fully established it should only be cut twice per year; once in Spring (early March to early April) and once in mid to late summer (August). The grassland should be cut to a height no shorter than 5cm and arisings are to be removed to prevent nutrients returning to the soil.

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 once in the spring (between early March and early April) and all arisings should be immediately removed to prevent the nutrients returning to the soil. A second cut should take place in late summer (between late June and the end of August). The arising should be left in-situ for



one to seven days before being removed to allow the seeds to re-enter the soil. The grassland should be cut no shorter than 5cm.

This cutting regime will prevent the grassland from succeeding into scrub and woodland, whilst allowing the flowers to set seed for the following year, thus producing a sustainable and viable habitat.

4.2.6 Monitoring

Monitor annually from years one to five and then every five years after. Monitoring is to take place between May and September. It is recommended to monitor the parcel using a quadrat to identify the habitats type and establish the number of species present.

4.3 Native Species Shrub Planting

4.3.1 Incorporating planting of native shrub species will allow the establishment of mixed scrub and native hedgerow habitats, which will benefit a range of species by providing for invertebrates, nesting opportunities for birds, and resting/commuting opportunities for hedgehogs.

4.3.2 Scrub and hedgerows are listed on the KBAP, therefore, creation of new areas of these habitats will increase the coverage of priority habitats.

4.3.3 Species Selection and Specification

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. **Table 4** gives examples of native species that would be suitable for creating an area of mixed scrub and native hedgerows.

Approximately **0.054km** (54m) of native hedgerow is to be planted. Shrubs will be planted every 30cm in a double staggered row, this will require approximately **180** shrubs.

Approximately **0.014ha** (140m²) of mixed scrub is to be planted. Shrubs will be planted at 2m x 2m spacing, this will require approximately **70** shrubs.

Table 4: Recommended native species for inclusion in mixed scrub and native hedgerow.

Botanical Name	Common Name	Size at Purchase
<i>Buxus sempervirens</i>	Common box	40-60cm
<i>Cornus sanguinea</i>	Dogwood	40-60cm
<i>Corylus avellana</i>	Hazel	40-60cm
<i>Crataegus monogyna</i>	Hawthorn	40-60cm
<i>Fagus sylvatica</i>	Beech	40-60cm
<i>Ilex aquifolium</i>	Holly	40-60cm
<i>Prunus spinosa</i>	Blackthorn	40-60cm
<i>Rosa canina</i>	Dog Rose	40-60cm
<i>Viburnum opulus</i>	Guelder Rose	40-60cm



4.3.4 Implementation of Scrub and Hedgerows

It is recommended that scrub planting is implemented after the completion of the development. This will avoid damage to scrub from construction hazards such as re-grading of soils near roots and mechanical damage to tree crowns. Care should be taken during development to ensure that soils surrounding the scrub are not contaminated with cement or any other building materials.

Shrub planting should take place between November and March. Before planting, 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.

The shrubs should be planted at 2m x 2m spacing for mixed scrub and every 30cm in a double staggered row for hedgerows. A planting hole will be excavated by hand and will be twice the diameter of the root ball and of equal depth. The sides and bottom of the hole should be roughened with the spade or fork. The new tree should be offered into the hole and backfilled using the original soil material. Before planting, loosen the soil to eliminate compaction and improve drainage. Soil amendments such as compost should not be added as this has been shown to be detrimental to successful establishment. All newly planted trees and shrub are to be thoroughly watered immediately after planting.

Staking will be required to secure the tree and prevent losses within the first years of establishment. It may be necessary to angle the stakes to avoid damaging the root ball. All trees are to be staked at a height of no more than 1 metre. Spiral type guards are to be incorporated around the base of each stem to reduce pest damage throughout the winter months and to prevent mechanical damage from trimmers and mowers. 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.

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.

4.3.5 First Year of Management

Newly planted shrubs are to receive 50 litres of water per week between the months of April and August for the first three years.

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.

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.



4.3.6 Management Once Established

Remove tree stakes, guards, and ties when they are no longer needed.

The scrub is to be split into coups and coppiced on rotation every 7 to 15 years depending on growth rate of shrubs. The best time to cut scrub is during late winter.

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.

4.3.7 Monitoring

Monitor annually from years one to five and then every five years after. Monitoring is to take place between May and September. It is recommended to monitor the establishment of newly planting shrub and trees and to replace dead shrubs as necessary.

4.4 Native Species Tree Planting

4.4.1 Nine new individual trees are to be planted across the site.

4.4.2 Species Selection and Specification

The chosen species are all native to Britain. These species 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 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 to provide useful screening.

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.

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. **Table 5** details the specification for the individual trees. Consideration is given to availability, immediate impact, ease of installation and likelihood of successful establishment.



Table 5: Recommended native deciduous trees.

Botanical Name	Common Name	Size at Purchase	Number
<i>Acer campestre</i>	Field Maple	Heavy Standard	2
<i>Betula pendula</i>	Silver Birch	Heavy Standard	2
<i>Quercus robur</i>	English oak	Extra-Heavy Standard	3
<i>Sorbus aucuparia</i>	Rowan	Heavy Standard	2

4.4.3 Implementation of Trees

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.

Tree planting should take place between November and March. Before planting, 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.

A planting hole will be excavated by hand and will be twice the diameter of the rootball and of equal depth. The sides and bottom of the hole should be roughened with the spade or fork. The new tree should be offered into the hole and backfilled using the original soil material. Before planting, loosen the soil to eliminate compaction and improve drainage. Soil amendments such as compost should not be added as this has been shown to be detrimental to successful establishment. All newly planted trees and shrub are to be thoroughly watered immediately after planting.

Staking will be required to secure the tree and prevent losses within the first years of establishment. It may be necessary to angle the stakes to avoid damaging the rootball. All trees are to be staked at a height of no more than 1 metre. Spiral type guards are to be incorporated around the base of each stem to reduce pest damage throughout the winter months and to prevent mechanical damage from strimmers and mowers. 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.

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.



4.4.4 First Year of Management

Newly planted trees are to receive 50 litres of water per week between the months of April and August for the first three years.

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.

Any weeds found growing around the newly planted trees 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.

4.4.5 Management Once Established

Remove trees stakes, guards and ties when they are no longer needed.

Any future tree works, such as pruning or felling, should be completed outside of the breeding bird period (February to August). 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.

4.4.6 Monitoring

Monitor annually from years one to five and then every five years after. Monitoring is to take place between May and September. It is recommended to monitor the establishment of newly planting shrub and trees and to replace dead trees as necessary.



5. Faunal Boxes

5.1 Summary

5.1.1 In total **2** integral bat bricks (within the building), **7** bat boxes (on trees), **11** bird boxes (2 on buildings, 9 on trees), **1** hedgehog shelters and **1** insect log pile have been recommended. The location of each faunal provision to be installed can be seen in **Appendix 3**.

5.2 Bat Roosting Provisions

5.2.1 All UK 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 can 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 Soprano pipistrelles, noctules, and brown long-eared bats are locally important species, listed within the KBAP, as well as being nationally important, listed on NERC S41. The boxes incorporated into this enhancement plan are therefore aimed at attracting these species.

5.2.3 Box Selection & Positioning: The number and specification of the recommended bat bricks and boxes are detailed in **Table 6** below, and their locations shown in **Appendix 3**.



5.2.4 Should the bat roosting provisions included within this report not be suitable, there is a wide range of options available to pursue. For example, other roost opportunities include cutting slots into soffit boxes, using bat bricks that lead into cavity walls and using lifted tiles to allow bats access into the loft. Should this be the case, an ecologist should be contacted as soon as possible in the planning process to ensure provisions for roosting bats remain as part of the proposed development.



Table 6: Bat roosting opportunities to be installed as part of the proposed development.

Bat Brick/Box	Number to be installed and location	Description	Details
<p>Ibstock Enclosed Bat Box 'C' (or a comparable design)</p> 	<p>2 Incorporated into buildings</p>	<p>The Enclosed Bat Box 'C' from Ibstock is designed for the pipistrelle bat. It is ideal for new builds as it can be integrated directly into the brickwork to produce a discrete but attractive home for bats.</p> <p>The inside of the box is designed to create several roosting zones which are ideal for crevice dwelling bats. The bottom entrance means that no maintenance is required as droppings will simply fall out the bottom.</p> <p>This Ibstock Bat Box C is available in two sizes and three colours (red, blue or cream). The box is both durable and fully frost resistant.</p>	<p>Dimensions</p> <p><u>Small Box</u></p> <p>Height: 215mm</p> <p>Width: 215mm</p> <p>Depth: 105mm</p> <p>Weight: 6.7kg</p> <p><u>Large Box</u></p> <p>Height: 290mm</p> <p>Width: 215mm</p> <p>Depth: 105mm</p> <p>Weight: 9.2kg</p>
<p>1FD Schwegler Bat Box (or a comparable design)</p> 	<p>3* On tree</p>	<p>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.</p> <p>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.</p> <p>This box is designed to be sited on trees using the galvanised steel hanger and aluminium nail provided.</p>	<p>Dimensions</p> <p>Height: 360mm</p> <p>Diameter: 160mm</p> <p>Weight: 4.8kg</p>



		<p>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.</p>	
<p>Schwegler 2FN Bat Box (or a comparable design)</p> 	<p>3* On tree</p>	<p>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.</p> <p>It is manufactured from long-lasting WoodCrete, which should last for at least 20-25 years.</p>	<p>Dimensions</p> <p>Height: 360mm</p> <p>Diameter: 160mm</p> <p>Weight: 4.9kg</p>
<p>Isabella Bat Box (or a comparable design)</p> 	<p>1 On building or tree</p>	<p>The Isabella Bat Box is designed to provide a large internal cavity, suitable for small groups of bats to roost in. It can be mounted on buildings, trees, and poles, via its large, galvanised steel hanging loop. The material it is constructed from is wood concrete, a blend of concrete and wood fibres that balances excellent strength and thermal properties with a lighter weight than a pure concrete box.</p> <p>The base's sloping design, leading to an entry space at the rear, ensure that droppings fall out of the box to remove the need for ongoing maintenance. A variety of bat species will inhabit the box's single internal cavity, including brown long eared bat, noctule bat, and Daubenton's bat.</p>	<p>Dimensions</p> <p>Length: 180mm</p> <p>Width: 150mm</p> <p>Height: 470mm</p>
<p>* The 6 bat boxes proposed should be installed onto 2 trees in clusters of 3 (as shown in Appendix 3). These clusters should be composed of a mix of both the Schwegler 1FD and 2FN.</p>			



5.2.5 **Bat bricks** have been selected to be incorporated into the buildings. The bricks should be positioned high on the walls of the building, and the gap within the brick only a few centimetres wide. These gaps are often overlooked by residents and so should not cause conflict with occupants. 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 (as shown in **Appendix 3**).

5.2.6 **Bat boxes** should be positioned at least 5m high, in groups of three, with their front facing north, southwest and southeast (as recommended by the Bat Conservation Trust). 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 to increase their life expectancy.

5.3 Bird Nesting Provisions

5.3.1 In the UK there are approximately 600 species of birds. Many birds regularly visit gardens 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 Starlings, house sparrows, tree sparrow, dunnocks, and song thrushes are species that can be found in urban gardens and are locally important (KBAP) and nationally important (NERC S41) species. The boxes incorporated into this enhancement plan are therefore aimed at attracting these species. A total of 10 bird boxes comprising of 1 bird box on a building and 9 bird boxes installed in clusters of 3 on mature trees on site must be installed as part of the proposed development.

5.3.3 The specifications of all bird boxes to be installed on site post-development are detailed below in **Table 7** below, and locations shown in **Appendix 3**.



Table 7: Bird nesting opportunities to be installed as part of the proposed development.

Bird Box	Number to be Installed	Description	Details
1SP Schwegler Sparrow Terrace (or comparable design)	2 On building or wall	This terrace provides ideal nesting opportunities for three sparrow families. Made of Schwegler's revolutionary WoodCrete mix, this terrace is durable, breathable and will last many decades. It may also occasionally attract tits, redstarts and spotted flycatchers. The terrace can be fixed on to the surface of a suitable wall or incorporated into the wall. It is	Dimensions <u>Brood Chamber</u> Height: 160mm Width: 105mm Depth: 150mm



		<p>suitable for all types of houses in built-up areas, and on industrial and agricultural buildings. Due to its weight (15kg), it is not suitable for fences or garden sheds. Either install on the surface of the wall using the plugs and screws provided or install directly into the wall. Cleaning is advisable but not necessary. The front panel can be removed by turning the screw hook.</p>	<p><u>External Dimension</u></p> <p>Height: 245mm</p> <p>Width: 430mm</p> <p>Depth: 200mm</p>
<p>Vivara Pro Barcelona WoodStone Open Nest Box (or comparable design)</p> 	<p>3* On tree</p>	<p>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).</p> <p>These open nest boxes are suitable for wrens, robins, spotted flycatchers, pied and grey wagtails, song thrushes and blackbirds.</p> <p>These nest boxes have a removable front panel for easy cleaning. We recommend cleaning the boxes out at the end of each breeding season may encourage them to be used again in future years, as it reduces parasites. We recommend using hot water rather than chemicals to remove any parasites that remain.</p>	<p>Dimensions</p> <p>Height: 240mm</p> <p>Width: 190mm</p> <p>Length: 175mm</p>
<p>Vivara Pro Seville 32mm WoodStone Nest Box (or comparable design)</p>	<p>3* On tree</p>	<p>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).</p> <p>These 32mm hole nest boxes are suitable for blue tits, tree sparrows, house sparrows, great tits, blue tits, nuthatches,</p>	<p>Dimensions</p> <p>Height: 310mm</p> <p>Width: 200mm</p> <p>Length: 200mm</p> <p>Weight: 6.9kg</p> <p>Entrance hole diameter: 32mm</p>



		<p>coal tits and pied flycatchers and they are available in brown, green or grey to complement both natural woodland and garden settings.</p> <p>These nest boxes have a removable front panel for easy cleaning. We recommend cleaning the boxes out at the end of each breeding season may encourage them to be used again in future years, as it reduces parasites. We recommend using hot water rather than chemicals to remove any parasites that remain.</p>	
<p>Vivara Pro WoodStone Starling Nest Box (or comparable design)</p> 	<p>3* On tree</p>	<p>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.</p> <p>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.</p>	<p>Dimensions</p> <p>Height: 395mm</p> <p>Width: 190mm</p> <p>Length: 220mm</p> <p>Weight: 7.4kg</p> <p>Entrance hole diameter: 45mm</p>
<p>* The bird boxes proposed should be installed onto trees (of the same box type) in clusters of 3 (as shown in Appendix 3).</p>			

5.3.4 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 an easterly direction, as to avoid direct heat of the sun and prevailing wind and rain.

5.3.5 Bird boxes on trees should be installed in clusters 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.



5.4 Invertebrate Provisions

- 5.4.1 Insects are the primary food source for many rare and/or protected animals that regularly visit gardens, such as locally and nationally important bird and bat species. Therefore, encouraging insects into a site will then attract their rare and/or protected predators.
- 5.4.2 Many insect species will hibernate over winter, including butterflies, ladybirds and lacewings; of which hibernate in leaf litter or other plant debris. However, residents 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 towers, boxes and/or log piles (Kirby, 2013).
- 5.4.3 To ensure the site maintains its' value for invertebrates, **1** insect log pile should be placed on site. An example of an insect log pile is shown below in **Figure 1**, and its proposed locations on site shown in **Appendix 3**.



Figure 1: Insect log pile (can be created through own design)

- 5.4.4 Plenty of wildlife makes its home in dead wood, and other animals use it as a source of food. In woodlands, fallen wood occurs naturally and many species have adapted to use this habitat. But in our increasingly tidy countryside, fallen and dead wood is not so common. Any tree works required in the woodland should result in the creation of additional insect log piles through piling of timber created through the tree works.
- 5.4.5 Insect piles are best placed in a shady spot, so that it remains cool and damp.



5.5 Hedgehog Provisions

Hedgehog Access Holes

- 5.5.1 Hedgehog numbers have declined by 90% over the past 50 years due to several factors including habitat loss, fragmentation and parasites.
- 5.5.2 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 to allow hedgehogs to freely move between green spaces (Bunnell, 2014).

Hedgehog Shelters

- 5.5.3 Providing shelter for hedgehogs within green spaces will encourage this species to visit the site and utilise the natural space. Therefore, **1** hedgehog shelter must be included post-construction (locations shown in **Appendix 3**).
- 5.5.4 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 **Figures 2 & 3**.

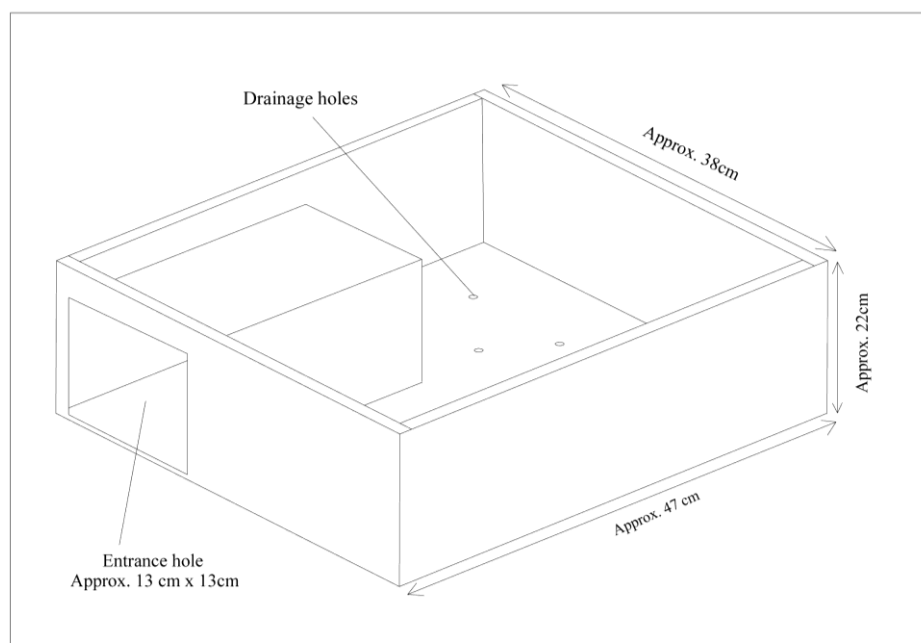


Figure 2: Hedgehog shelter construction and measurements.





Figure 3: Example of hedgehog shelter *in-situ*.

5.6 Management and monitoring

5.6.1 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, an effective and adaptive management scheme cannot be maintained and revised.



6. Ecological Recommendations

6.1 Lighting

6.1.1 The site is suitable for bats which are nocturnal species sensitive to lighting. This highlighted as the site sits within the Kirklees Bat Alert Zone.

6.1.2 As such, the following lighting guidance measures have been provided in line with recommendations provided by the Institute of lighting Professionals (ILP) and the Bat Conservation Trust (BCT) (ILP & BCT, 2023). The proposed development should seek to:

- Use lighting which is functional and directional only.
- Ensure lighting will not illuminate features of ecological interest such as retained hedgerows, trees or woodlands.
- Prohibit the use of floodlight style lighting on-site. Any lights present must be on timers/motion sensors and not permanently turned on during hours of darkness (from sunset to sunrise).
- Plant natural shrub buffers to minimise light spill onto the site's adjacent habitats.
- Maintain dark zones on site to preserve wildlife areas of low light pollution.
- Use the minimum light levels necessary for the relevant task/function, this may equate to reducing light intensity, and/or using the minimum number of light sources or minimum column height.
- Use hoods, louvres or other luminaire design features to avoid light spill onto retained and newly created areas of vegetation likely to be used by foraging and commuting bats.
- Use light sources that emit minimal ultra-violet light to avoid attracting night-flying invertebrate species which in turn may attract bats to the light (BCT, 2009).
- Use recessed internal light fixtures.

6.1.3 **Note:** Special attention should be made to ensure that no light spill falls upon any of the trees within Ings Grove Park that is directly adjacent to the site, either pre- or post-development.

6.1.4 Proposed dark corridors containing all bat bricks and boxes, and connecting the site to Ings Grove Park can be seen in **Appendix 3**.



7. Conclusion

- 7.1.1 JCA Limited (Ltd.) have been instructed by **West End Joiners & Builders Ltd** to produce an Ecological Design Strategy (EDS) in association with the planning application proposed for **St Pauls Road, Mirfield**.
- 7.1.2 The development proposed at this site is for the construction of an extra care residential development with associated garden and parking areas.
- 7.1.3 The site is predominantly hard standing, meaning the site has high potential to increase its biodiversity value through planting of new wildflowers, shrubs and trees. New habitat creation will deliver a biodiversity net gain of **+34.27%** whilst also satisfying the metric Trading Rules.
- 7.1.4 In accordance with Chapter 15 of the NPPF and 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.
- 7.1.5 The site has potential to support bats, birds, invertebrates, and hedgehogs. As a result, **2** integral bat bricks (within the building), **7** bat boxes (on trees), **11** bird boxes (2 on buildings, 9 on trees), **1** hedgehog shelters, and **1** insect log pile have been recommended. The location of each faunal provision to be installed can be seen in **Appendix 3**.
- 7.1.6 Monitoring of faunal boxes and wildlife features over a 5-year period is recommended to ensure they are being effective. Should it be identified that the ecological provisions are no longer fit for purpose, revisions should be made to the management plan of the site.
- 7.1.7 The site is suitable for bats, which are nocturnal species sensitive to lighting. As such, guidance relating to appropriate lighting on site has been provided in **Section 6.1**.



8. References

External References

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JCA Ltd. – Bat Emergence Survey Report, Aug 2024 (22040b/ADo).

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



Relevant Legislation:

Wildlife and Countryside Act (WCA) 1981 (as amended)

- <http://jncc.defra.gov.uk/page-3614>
- <https://www.legislation.gov.uk/ukpga/1981/69/contents>

The Conservation of Habitats and Regulations (CHSR) 2017.

- <https://www.legislation.gov.uk/uksi/2017/1012/contents/made>

The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.

- <https://www.legislation.gov.uk/uksi/2019/579/contents/made>

Natural Environment and Rural Communities (NERC) Act 2006

- <https://www.legislation.gov.uk/ukpga/2006/16/contents>

Environment Act 2011

- <https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted>

Protection of Badgers Act 1992

- <https://www.legislation.gov.uk/ukpga/1992/51/contents>

Countryside and Rights of Way Act 2000

- <https://www.legislation.gov.uk/ukpga/2000/37/contents>



Appendices

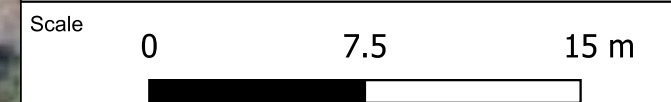
Appendix 1: Baseline Habitat Map



Site name & address
St Pauls Road
Mirfield
WF14 8AX

Key

- Red Line Boundary
- HABITATS**
- Habitats - Baseline
- Bramble scrub
- Developed land; sealed surface
- INDIVIDUAL TREES**
- Individual trees - Baseline
- ◆ Existing Medium Urban Tree
- ◆ Existing Small Urban Tree



Site St Pauls Road	Client West End Joiners & Builders Ltd
Project 22040a Ecological Design Strategy	Author ADo
Plan ref 22040a/ADo	Revision 001












The Eye Pharmacy

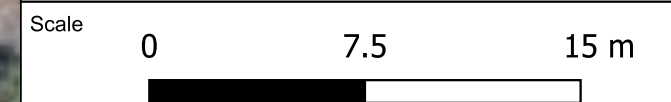
Appendix 2: Proposed Habitat Map



Site name & address
St Pauls Road
Mirfield
WF14 8AX

Key

-  Red Line Boundary
- HABITATS**
- Habitats - Proposed
 -  Developed land; sealed surface
 -  Mixed scrub
 -  Other neutral grassland
 -  Vegetated garden
- INDIVIDUAL TREES**
- Individual trees - Proposed
 -  Proposed Medium Urban Tree
 -  Retained Medium Urban Tree
 -  Lost Tree
- HEDGEROWS**
- Hedgerows - Proposed
 -  Native hedgerow



Site St Pauls Road	Client West End Joiners & Builders Ltd
Project 22040a Ecological Design Strategy	Author ADo
Plan ref 22040a/ADo	Revision 001



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Appendix 3: Faunal Box and Dark Corridor Plan



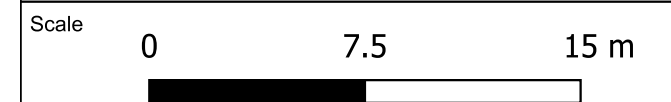
Site name & address
St Pauls Road
Mirfield
WF14 8AX

Key

- Red Line Boundary
- Dark Corridors

Faunal Boxes

- 1 - 1x Istock Enclosed Bat Box 'C'
- 2 - 3x mix of 1FD Schwegler Bat Boxes and Schwegler 2FN Bat Boxes
- 3 - 1x Isabella Bat Box
- 4 - 1x 1SP Schwegler Sparrow Terrace
- 5 - 3x Vivara Pro Barcelona Woodstone Open Nest Boxes
- 6 - 3x Vivara Pro Seville 32mm Woodstone Nest Boxes
- 7 - 3x Vivara Pro Woodstone Starling Nest Boxes
- 8 - 1x Insect Log Pile
- 9 - 1x Hedgehog Shelter



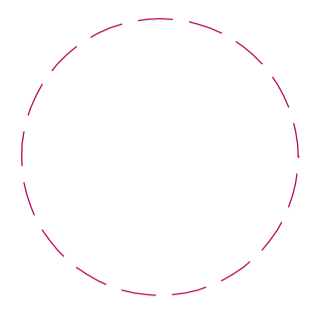
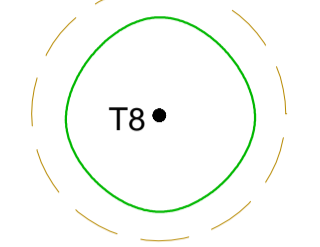



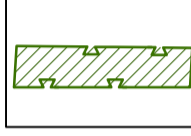
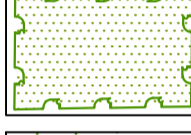
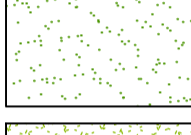
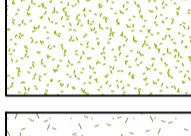


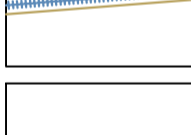

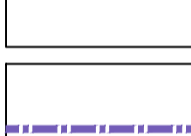

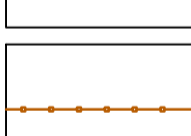
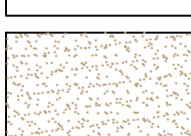

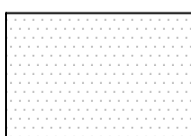
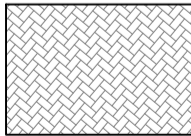
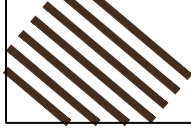
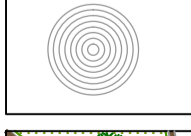
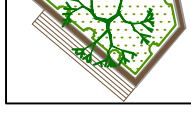

Site St Pauls Road	Client West End Joiners & Builders Ltd
Project 22040a Ecological Design Strategy	Author ADo
Plan ref 22040a/ADo	Revision 001



Appendix 4: Proposed Development Plan



KEY

-  Existing tree to be removed
-  Existing trees and vegetation to be retained. Refer to arboricultural report and tree constraints plan by JCA Ltd, dated December 2018
-  Proposed extra-heavy standard (14-16cm girth) tree
-  Proposed heavy standard (12-14cm girth) trees
-  Proposed native species shrub mix
-  Proposed native species hedge
-  Proposed ornamental shrub planting
-  Proposed turf to private garden areas
-  Proposed species rich grass seed mix
-  Proposed wildflower grass seed mix
-  Existing stone wall retained
-  Existing stone wall reduced to 1200mm height with metal railings added to top
-  Proposed 1800mm height stone wall and stone coping built with existing material. Retaining wall below where necessary. Detailed by others
-  Proposed 1000mm metal railings above 1800mm height existing building retaining wall
-  Proposed 900mm height timber fence detailed by others
-  Proposed 1800mm height metal railings detailed by others
-  Proposed 1500mm height metal railings detailed by others
-  Proposed resin bonded gravel areas
-  Proposed paving detailed by others
-  Proposed tarmac detailed by others
-  Proposed block paving to parking bays detailed by others
-  Proposed timber pergola to seating area
-  Proposed cobble sett paving to seating area
-  Proposed raised planting bed formed using timber sleepers with integral bench seating



NOTES

PROTECTION OF EXISTING VEGETATION

Existing vegetation to be retained on site shall be protected where necessary during works by a tree protective barrier, secured to a scaffold tubing framework with fluorescent tape to the top rail. Protective fencing shall be erected on the canopy drip line wherever possible. Laminated, waterproof A4 signs shall be fixed to the fence posts at 10m intervals bearing the words 'PROTECTED TREE ZONE - NO STORAGE OR OPERATIONS WITHIN FENCED AREA'.

Tracking of machinery, storage of chemicals and building materials shall not be permitted within the protected area. Leaks or spills should be removed immediately and the contaminated soil replaced. No bonfires shall be lit within 5m of the canopy spread. Any excavation work beneath the canopy spread shall be carried out by hand. All works affecting trees within the development shall be subject to BS 5837:2012.

TREE PLANTING

New tree planting will break up the hard lines of the buildings and create focal points within the development. The tree species selected will maximise food and nectar sources for birds and invertebrates. Trees will be planted as Extra-Heavy and Heavy Standards to provide a reasonable degree of instant maturity to the development. Foundation design of new buildings shall accommodate proposed tree planting in accordance with NHBC guidelines.

Species to be selected from:

- | | |
|--|--|
| Acer campestre 'Elsrijk' (ACE) | Prunus subhirtella 'Autumnalis Rosea' (PsAR) |
| Acer platanoides 'Laciniatum' (Apl) | Pyrus calleryana 'Chanticleer' (PcC) |
| Alnus incana (Ai) | Quercus robur (Qr) |
| Betula pendula (Bp) | Sorbus aria 'Majestica' (SaM) |
| Betula utilis var. jacquemontii (Bu) | Sorbus aucuparia (Sau) |
| Carpinus betulus 'Frans Fontaine' (CbFF) | Sorbus 'Embley' (SE) |
| Malus sylvestris (Ms) | Sorbus 'Joseph Rock' (SJR) |
| Malus 'Rudolf' (MR) | Tilia x euchlora (Te) |
| Prunus padus 'Albortii' (PpA) | Tilia cordata 'Green Spire' (TcGS) |
| Prunus sargentii (Ps) | |

SHRUB PLANTING

A mix of evergreen and deciduous shrubs will be planted within the garden areas to soften the development, create year round interest through form, foliage and colour and to provide a valuable food source for birds and invertebrates. A mix of medium/low shrubs will be planted around paths and parking areas and medium/large varieties as specimens and against boundaries.

Species to be selected from: () density/m2



- Berberis frikartii 'Amstelveen' (5), Berberis thunbergii 'Atrorubra Nana' (5), Berberis 'Blue' (4), Hebe 'Autumn Glory' (4), Hypericum x moserianum (4), Juniperus sabinna 'Tamariscifolia' (3), Lavandula 'Hidcote' (6), Lonicera 'Maygreen' (4), Lonicera 'Silver Beauty' (4), Nepeta faassenii (4), Perovskia 'Blue Spire' (6), Phormium var. Potentilla 'Red Ace' (5), Prunus laurocerasus 'Zabelliana' (3), Pyracantha 'Orange Charm' (3), Rubus x 'Betty Ashburner' (4), Spiraea 'Gold Flame' (4), Spiraea 'Shirobana' (4), Viburnum tinus 'Eve Price' (3)

HEDGE PLANTING

Hedges will be planted to create structure to the development. Ornamental hedge planting will consist of Beech, which will contribute to all year round colour and texture. Hedges are to be planted as a double staggered row of 40-60cm high hedging plants.

NATIVE HEDGE PLANTING

Native hedgerows will be planted along the frontage of the site and where possible along the boundaries to improve wildlife foraging opportunities. Native hedge planting will consist of Blackthorn, Spindle, Dog rose, Guelder rose and Hazel. Hedges are to be planted as a double staggered row of 40-60cm high hedging plants.

 <p>Sue Farmer BA MALD MLU Landscape Architect</p>	client	West End Joiners Ltd	
	project	Supported Living Development St Pauls Road Mirfield	
 <p>Westleigh Hall Wakefield Road Denby Dale Huddersfield TQ12 2RQ telephone 01484 866166 fax 01484 866166 isdn 01484 866900 email info@fdalandscape.co.uk www.fdalandscape.co.uk</p>	drawing title	LANDSCAPE MASTERPLAN	
	scale	date	drwn by
1:200 @A1	Nov 24	CS	R/2815/1



Appendix 5: 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 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. As part of his degree programme, Alex spent an industrial placement year working in the Uplands Research Department of the Game and Wildlife Conservation Trust, assisting on various ecological surveys and projects. Alex is a registered Trainee Bird Ringer, licensed through the BTO and is experienced in conducting preliminary ecological surveys, bat roost assessments and emergence surveys, Biodiversity Net Gain, and has knowledge of wildlife legislation. Alex is a CIEEM Qualifying Member and is currently working towards a Natural England level 1 bat licence, level 1 great crested newt licence, and a barn owl survey licence.

Richard Westwood, Graduate Ecologist

BA (Hons) History and Politics

Rick gained his undergraduate degree in History and Politics in 2001 from Leeds Metropolitan University before going on to complete a PGCE in History at the University of Leeds in 2003. After 18 years in secondary education and the NHS, Rick began assisting on bat emergence surveys in 2023, after which, he gained employment as a Graduate Ecologist at JCA Ltd.



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)*

12/12/2024

Reviewed by



.....
Richard Westwood

13/12/2024

Approved by



.....
Adam West *BSc (Hons), ACIEEM*

16/12/2024



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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