Pitt Street, Darfield

Ecological Management Plan & Ecological Enhancement Plan

Barratt Homes & David Wilson Homes Yorkshire West

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April 2021

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Report Title: **Pitt Street, Darfield**
Ecological Management Plan & Ecological Enhancement Plan

Version: **V2.0**

Issue Date: **April 2021**

Report Ref: **16606**

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Version	Author	Description	Date
V0.1	Katie Smith	Initial Draft	17.03.2021
V0.2	Natasha Firth	QA1	18.03.2021
V0.3	Katie Smith	Amendments following QA1	23.03.2021
V0.4	Faye Durkin	QA2	26.03.2021
V1.0	Natasha Firth	Final Version for Issue	26.03.2021
V1.1	Katie Smith	Amendments to report	12.04.2021
V2.0	Natasha Firth	Final Version for Issue following minor amendments	16.04.2021

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FIGURE 1: ECOLOGICAL ENHANCEMENT PLAN

1. Introduction

1.1 Background

1.1.1 This Environmental Management Plan (EMP) and Ecological Enhancement Plan (EEP) have been produced by Ecus Limited (Ltd) on behalf of Barratt & David Wilson Homes Yorkshire West to inform a proposed residential development at Land at Low Valley Farm, Pitt Street, Darfield, Barnsley, S73 9PY, hereafter referred to as 'the Site'. The central Ordnance Survey (OS) National Grid Reference (NGR) of the Site is SE 40530 04166.

1.1.2 Proposals for the Site include construction of 104 residential plots with associated access, infrastructure and landscaping (Barnsley Council planning application reference: 2019/1117).

1.1.3 The EMP and EEP detail the necessary information as recommended within the following Enzygo Ltd reports:

- '*Preliminary Ecological Appraisal - Land at Low Valley Farm, Pitt Street, Barnsley'* reference: CRM.1122.003.EC.R.001, dated July 2019. The survey was undertaken in August 2018 with the findings reported within the PEA in July 2019. This is hereafter referred to as the Enzygo Ltd PEA report (2019).
- '*Ecological Impact Assessment - Pitt Street, Wombwell*' reference: CRM.1122.003.EC.R.002, dated December 2019. This is hereafter referred to as the Enzygo Ltd EcIA report (2019).

1.1.4 It should be noted that the Enzygo Ltd EcIA report (2019) builds upon the findings of the PEA report therefore the EcIA report is referred to more frequently within this EMP as it contains the most up to date survey information.

1.1.5 It should also be noted that the Enzygo Ltd EcIA report (2019) included a superseded version of the approved '*Illustrative Masterplan'* drawing produced by JRP Associates (drawing no. P09 4270 101 Rev E, dated February 2020).

1.1.6 This EMP and EEP serves to discharge planning condition 14, which states:

> *"The reserved matters submission shall include full details of the mitigation measures identified in the Preliminary Ecological Assessment (ref: CRM.1122.003.EC.R.001) and Ecological impact Assessment (ref: CRM.1122.003.EC.R.002), including a timetable for their implementation. The approved development shall be implemented in accordance with the approved details.*
>
> *Reason: To conserve and enhance biodiversity in accordance with Local Plan Policy BIO1".*

1.1.7 This EMP and EEP should be read in conjunction with the latest versions of the following reports and drawings:

- '*Land at Low Valley Farm, Pitt Street – Phase I Habitat Map*' by Enzygo Ltd (drawing no. CRM.1122.003.EC.D.001, dated July 2019);
- *'Pitt Street, Wombwell - Arboricultural Impact Assessment and Arboricultural Method Statement*' by Ecus Ltd (ref: 16623, dated March 2021);
- '*Illustrative Masterplan'* drawing produced by JRP Associates (drawing no. P09 4270 101 Rev E, dated February 2020);
- '*Landscape Masterplan'* drawing produced by Rosetta Landscape Design (drawing no. 3759/1, dated April 2021);
- *'Proposed Site Layout'* drawing produced by JRP Associates (drawing no. 20-5429-01,

dated April 2021); and

- '*Combined Hardstanding and Building Area Plan'* drawing produced by JRP Associates (drawing no. 20:5429:04, dated April 2021).

1.1.8 The measures set out in this EMP and EEP serve to inform the discharge of a planning condition, and should be adhered to from commencement on Site until the completion of the development and for a minimum of five years post-development.

2. Existing Site Condition and Features of Interest

2.1 Overview

2.1.1 The Site is located within the village of Darfield, Barnsley, South Yorkshire and comprises land to the north of Pitt Street. The Site is bounded by residential properties to the north, allotment gardens to the east, Pitt Street to the south and grazing pasture to the west. The Site comprises approximately 3.3 hectares of poor semi-improved grassland, dense and scattered scrub, ruderal vegetation, scattered trees and an intact hedgerow. The Site is frequented by the public for recreation (i.e. dog walkers and pedestrians) and there is a pedestrian footpath running south west to north east through the Site.

2.2 Designations

2.2.1 There are no statutory or non-statutory designations associated with the Site itself.

2.2.2 A total of three non-statutory designated sites, all comprising Local Wildlife Sites (LWS), were identified within 2 km of the Site by Enzygo Ltd. during their PEA and EcIA dated July 2019 and December 2019. None are in close proximity to the Site, with the closest LWS being 675 m from the Site.

2.2.3 The Ecus Ltd. Arboricultural Assessment has not identified any of the on-Site trees as being protected by Tree Preservation Orders and the Site is not located within a Conservation Area.

2.3 Ecological Summary

2.3.1 The below provides a summary of the habitats present on Site (pre-development) and their associated potential to support protected species. Full details are provided within the Enzygo Ltd. PEA and EcIA reports, dated July 2019 and December 2019, respectively.

Habitats

2.3.2 Habitats at the Site predominantly comprise a combination of poor semi-improved grassland, dense and scattered scrub, ruderal vegetation and scattered trees. An intact hedgerow is located along part of the eastern boundary. The hedgerow is considered to be of local ecological importance and the remaining habitats are considered to be of negligible ecological importance (Enzygo, 2019).

Species

Great Crested Newt

2.3.3 No ponds are present within the Site, and only one pond is present within 500 m of the Site, located approximately 350 m to the west. The Site does offer some suitability for great crested newt *Triturus cristatus* when foraging or seeking shelter in their terrestrial phase due to the presence of grassland and scrub habitats. However it is considered that Pitt Street/Netherwood Road act as a partial barrier to dispersal should a population of great crested newts be present within the pond located 350 m from the Site, and there are more suitable terrestrial habitats surrounding the pond which make it less likely that great crested newts will travel so far to seek shelter and foraging opportunities within the Site. It is considered that great crested newt are highly unlikely to be associated with the Site.

Badger

2.3.4 No setts or evidence of badger *Meles meles* activity on the Site was recorded within the Enzygo Ltd. PEA (July 2019) or EcIA (December 2019) reports. The grassland within the Site is considered to provide a limited extent of suitable foraging habitat. As such no further mitigation was recommended, however badgers may utilise the Site from time to time as part of a wider foraging resource but are unlikely to create setts at the Site due to a lack of suitable sett building habitat

and the level of human disturbance.

Bats

2.3.5 No buildings or structures are present within the Site. When surveyed by Enzygo Ltd, all trees were considered to display negligible suitability for roosting bats due to a lack of maturity and absence of suitable roosting features.

2.3.6 Site habitats, namely the hedgerow, scrub, and scattered trees were considered to have moderate suitability for foraging and commuting bats within the PEA report (Enzygo, 2019), and subsequently nocturnal bat activity surveys were undertaken in 2019, as reported in the EcIA by Enzygo Ltd (2019).

2.3.7 Bat activity surveys were undertaken once per month between June and October 2019. Overall activity levels were considered to be very low, and the most bat activity was recorded along the eastern boundary hedgerow. Six species of bat were recorded during these surveys, namely common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *P. pygmaeus*, nathusius' pipistrelle *P. nathusii*, noctule *Nyctalus noctula*, Daubenton's bat *Myotis daubentonii* and brown long-eared bat *Plecotus auritus*.

Birds

2.3.8 The scrub, hedgerow and scattered trees are considered to offer foraging and breeding habitat for a range of common passerine bird species. The grassland areas within the Site are considered to offer some, albeit limited, suitability for ground nesting birds including skylark *Alauda arvensis* and lapwing *Vanellus vanellus*.

Reptiles

2.3.9 Within the EcIA (Enzygo, 2019) it is considered that the Site has the potential to support small numbers of common reptile species. The unmanaged grassland is considered to offer some basking and foraging habitat, with the scattered scrub and hedgerow providing opportunities for shelter. However the Site does have limited connectivity to other suitable habitat in the surrounding area which limits its suitability.

Riparian Mammals

2.3.10 Otter and water vole are considered to be likely absent from the Site due to a lack of suitable aquatic habitat at and within 30 m of the Site.

Other Key and Notable Species

2.3.11 The Site habitats, particularly the unmanaged grassland, scattered scrub and hedgerow, provide a limited amount of suitable foraging and sheltering habitat for hedgehog *Erinaceus europaeus*.

Invasive Species

2.3.12 No evidence of invasive plant species was recorded on Site by Enzygo Ltd.

3. Proposals and Impacts

3.1 Proposals

3.1.1 The proposed development consists of the construction of a total of 104 no. residential plots with associated access, infrastructure and landscaping. Vehicular access is due to be located in the south of the Site, with access from Pitt Street. Vehicle access will be provided through the Site; an access point in the north east of the Site will offer potential vehicle access to a future area of residential development. The Site will connect to existing housing to the north via pedestrian footpaths.

3.1.2 The soft landscaping proposals are detailed on the '*Landscape Masterplan'* drawing produced by Rosetta Landscape Design (drawing no. 3759/1, dated April 2021). The Site will incorporate areas of Public Open Space (POS) alongside the built infrastructure and gardens. This includes an area of POS along the northern boundary, within the centre of the Site adjacent a children's play area, and along the full extent of the western boundary. In the south west of the Site the POS incorporates an attenuation basin.

3.1.3 The majority of Site habitats will be lost to facilitate the development, particularly the poor semi-improved grassland and scrub habitats. The hedgerow along the eastern boundary will partially be cut back to the boundary line and be replanted where required.

3.2 Potential Impacts

3.2.1 Potential sources of ecological impact arising from the development based on the conclusions of the Enzygo Ltd PEA and EcIA reports (2019) and based on a review of the Site layout are considered to include:

- Loss, damage and/or fragmentation of semi-natural habitats (namely scattered trees, scrub, grassland and hedgerow) within the Site resulting from the development;
- Damage and/or degradation of bat foraging and commuting habitat;
- Risk of killing/injury and disturbance to nesting birds (including ground-nesting birds) during vegetation clearance where it takes place during the nesting bird season;
- Risk of killing/injury of small numbers of reptiles resulting from vegetation clearance; and
- Risk of killing/injury of individual numbers of Priority Species (i.e. hedgehog) during Site clearance.

4. Mitigation Measures

4.1.1 In accordance with best practice, the following measures and considerations specific to habitats and species/species groups will be undertaken by the contractor and developer. The methods proposed are based on legal requirements, best practice and the requirements for Site development.

Hedgerow and Green Infrastructure

4.1.2 The retained hedgerow in the east of the Site and several scattered trees in the north west of the Site will be protected from damage during the development works.

4.1.3 Root Protection Zones (RPZs) will be implemented in accordance with British Standard 5837 (British Standard, 2012). Full details are provided in the *Pitt Street, Wombwell - Arboricultural Impact Assessment and Arboricultural Method Statement*' report by Ecus Ltd, dated March 2021.

4.1.4 RPZs will be fenced off with site hoarding or secure temporary steel mesh fencing to prevent encroachment of construction personnel, materials or machinery which may result in their accidental damage or ground compaction and they will remain in place for the duration of the construction period. The RPZs will also act as biodiversity protection zones, safeguarding any fauna which may inhabit or utilise the retained hedgerows and trees.

4.1.5 To minimise the impacts of habitat fragmentation, street tree planting has been incorporated as part of the development, and creates an east to west green corridor through the Site. Areas of POS will also be created. These will provide continued ecological connectivity around the Site, particularly along the northern and western Site boundaries.

Bats

4.1.6 All bats are protected under the European Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora ("the Habitats Directive"), which is implemented through the Conservation of Habitats and Species Regulations 2017 as amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 ("the Habitats Regulations") and the Wildlife and Countryside Act 1981 (as amended, WCA 1981).

4.1.7 The construction phase and operational development will incorporate a sensitive lighting scheme to minimise the risk of disturbance to foraging and commuting bats which use the Site. This will be produced at the Reserved Matters stage, as agreed with the Council Biodiversity Officer (Enzygo Ltd EcIA report, 2019). The sensitive lighting scheme will be designed by a lighting engineer and will avoid any direct lighting onto retained and proposed boundary features as detailed in Figure 1 and the *'Landscape Masterplan'* drawing produced by Rosetta Landscape Design (drawing no. 3759/1, dated April 2021. Any light spill onto retained boundary features will be limited to a maximum of 5 lux as far as is practicable (Guidance Note 08/18, BCT ILP). The lighting strategy will be developed by a lighting engineer in close consultation with an ecologist who will need to review a lux plan and lighting specifications to confirm compliance with the above recommendations.

4.1.8 The tree and hedgerow measures described above will also minimise the risk of direct damage to habitat features used by commuting and foraging bats during the construction works.

4.1.9 The creation of a green corridor and incorporation of POS within the development will also create long-term opportunities for foraging and commuting bats at the Site.

Birds

4.1.10 Birds and their nests are protected under the WCA 1981. Breeding birds may be impacted if clearance of woody vegetation including trees and scrub occurs within the nesting season (typically March - August inclusive).

4.1.11 Tree and scrub clearance works will preferentially take place outside of the nesting bird season. Where this cannot be accommodated or where the timing conflicts with the reptile active period (described below), a suitably qualified ecologist will check the vegetation up to 48 hours in advance of its removal. If nesting birds are recorded, they will be protected from disturbance by establishing a suitable buffer zone (in which no potentially disturbing works will take place) to remain in place until any chicks have fledged and all nesting activity has been completed, which is to be determined by the ecologist.

4.1.12 The results of a breeding bird survey incorporating three survey visits undertaken at the Site between April and June will be provided at the Reserved Matters stage. The findings will inform appropriate mitigation measures to ground nesting birds should they be present within the Site.

Common Reptiles

4.1.13 Common reptile species including grass snake *Natrix helvetica*, common lizard *Zootoca vivipara*, and slow worm *Anguis fragilis* are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) against intentional killing or injuring.

4.1.14 To minimise the risk of injury or death to reptiles should they be present within the Site, grassland, tall ruderal and scattered scrub habitats will be cleared under supervision of an Ecological Clerk of Works (ECoW). This will include a Toolbox Talk to all relevant Site workers to inform them of the potential for reptiles and what to do in the event of finding any on Site.

4.1.15 The vegetation clearance will be done starting from the centre of the Site working out towards the east and west boundaries to encourage any wildlife to disperse to adjacent suitable off-site habitats. The vegetation will firstly be cut to a height of 0.15 m to encourage wildlife to move out of the working area, followed then by removal of the remaining vegetation and topsoil (Enzygo Ltd EcIA report, 2019).

4.1.16 The above works should preferentially take place during the reptile active season (typically March to October, depending on prevailing weather conditions) to allow any reptiles present the ability to move away under their own volition. Any reptiles that do not move away by themselves will be carefully picked up and moved to a suitable area of shelter away from the works (such as along the eastern or western boundary) by the ECoW.

4.1.17 The above measures for common reptiles are also appropriate measures to manage the risk of injury or death to common amphibians, should they also be present at the Site.

Badger

4.1.18 Badgers and their setts are protected under the Protection of Badgers Act 1992. It is an offence under the act to kill, injure or take a badger. It is also an offence to destroy, damage or obstruct a currently active badger sett, or to disturb animals within the sett.

4.1.19 Whilst badgers are not resident within the Site and it is considered unlikely that they will move into the Site, they may from time to times pass through the site as part of a wider foraging territory.

4.1.20 Badgers are inquisitive and will investigate anything new within their territories, so general safeguards will be implemented during construction as a precaution. These safeguards will also act to protect other mammals such as hedgehog and will include:

- Food/litter will not be left on Site; and,
- Any trenches/ deep excavations should be back filled or covered overnight to prevent animals falling in and becoming trapped; if this is not possible, a sloping ramp (i.e. roughened scaffold board or similar) should be placed within the excavation to permit animals to escape in this event. The latter will act to allow any animals entering the trench to escape which is particularly important if the trench fills with water. Trenches will also be inspected each morning to ensure that no animals have become trapped overnight.

4.1.21 If in the unlikely event that badgers are suspected to be associated with the Site once construction

has commenced, including should a suspected badger sett be recorded on or within 30 m of the Site during the works, works will cease and an appropriately experienced ecologist will be contacted for advice before continuing.

Priority Species

Hedgehogs

4.1.22 Hedgehogs are highly mobile and inquisitive animals that therefore have potential to move onto the Site at any time. Should a hedgehog be discovered on Site at any time during the works, contractors would be permitted to move the animal carefully with gloved hands to a sheltered area away from the footprint of works, e.g. amongst scrub/tall ruderal/long grassland outside of the works area.

4.2 Timing of Works

4.2.1 Ecological considerations which will constrain the timing of the proposed works primarily concern the recommendation to undertake removal of grassland, ruderal vegetation and scattered scrub during the active reptile season (March to October inclusive), and to avoid removal of woody vegetation during the bird breeding season (i.e. remove woody vegetation between September and February inclusive).

4.2.2 Where grassland removal takes place during the nesting bird season, appropriate mitigation measures will be implemented should further bird survey identify the presence of ground nesting birds within the Site.

4.2.3 Further details with respect to recommended timings are detailed in section 4.1 above.

4.3 Ecological Clerk of Works

4.3.1 An ECoW is to be present where woody vegetation will be removed during the bird breeding season as identified above.

4.3.2 An ECoW is to be present to supervise removal of grassland, tall ruderal and scattered scrub habitats to manage potential impacts to reptiles.

4.4 Contact Details

4.4.1 The overall responsibility of the Site during the construction phase lies with Barratt & David Wilson Homes Yorkshire West and their appointed contractor. The person in charge of day to day Site activities will be the Site Manager.

4.4.2 Ecus has prepared this document and can be the main point of contact for ecological advice and the provision of ECoW, as required.

5. Ecological Enhancement Measures

5.1 Overarching Objectives

5.1.1 Key ecological management objectives are described below as follows:

- Retention of key habitat areas to retain existing habitat structure for use by foraging/commuting bats and birds, and potential wildlife corridor links for badger, amphibians, reptiles, invertebrates and small mammals. Habitat to be retained comprises a number of scattered trees and the majority of the hedgerow along the eastern boundary. The functionality of the existing retained habitat will also be maintained for nocturnal wildlife, namely bats, via the implementation of a sensitive lighting strategy.

- Enhancement of existing habitat features, where appropriate, with native species to complement the existing flora and appropriate management measures.

- Creation of new habitats to compensate for habitat loss and to benefit bats, birds, amphibians, invertebrates and small mammals through the provision of foraging and sheltering opportunities. This will include native and naturalised trees and shrubs around the proposed residential plots and access roads. It is proposed to sow a wildflower grassland mix within the attenuation basin and within areas of POS. It is recommended that the wildflower mixes be appropriate to the Site soil conditions with a relaxed mowing regime adopted to enhance species diversity and habitat structure on the Site.

- Incorporation of features to enhance the value of the Site for specific species groups, such as bats, birds, reptiles, hedgehogs and invertebrates.

Habitat Management Objectives for the Establishment Period to Ten Years

5.1.2 General management and maintenance objectives for the new and existing habitat on the Site are as detailed below. These objectives will help to create a sustainable soft landscape in the long term, which will thereby serve to enhance the biodiversity value of the Site. Management and maintenance objectives include:

- To ensure the longevity of new areas of landscape planting and seeding through regular and effective management and maintenance.

- To maintain successful green links through the Site and connectivity with the surrounding landscape and habitat context for the benefit of biodiversity and residents.

- To achieve an environmentally and economically sustainable management level for the Site that is sensitive to future changes.

- To maintain existing habitat for the benefit of biodiversity and conservation.

- To provide additional habitat structure and foraging/sheltering opportunities for a diversity of wildlife through new planting.

- To maximise the provision and establishment of native species and species of local provenance that are appropriate to the immediate surrounds and local area.

Habitat Management Actions

5.1.3 The following management actions have been formulated based on the Proposed Site Layout

drawing produced by JRP Associates, dated April 2021. A Landscape Masterplan has also been produced by Rosetta Landscape Design (drawing no. 3759/1, dated April 2021) in collaboration with the Proposed Site Layout and recommendations outlined below.

New Tree Planting

5.1.4 On the Proposed Site Layout Plan (JRP Associates, April 2021) and Landscape Masterplan (Rosetta Landscape Design, April 2021), new tree planting is located within POS along the western and northern boundaries. Tree planting is also located along street avenues, part of which forms an east to west green corridor. Native and naturalised tree species will be selected, such as field maple *Acer campestre*, pedunculate oak *Quercus robur* and wild cherry *Prunus avium*. Management will ensure the new trees establish and remain in a healthy condition to allow establishment of mature trees into the future.

5.1.5 Newly planted trees will be inspected throughout each year during maintenance activities including weed control around the base, formative pruning and maintaining the depth of mulch and soil conditions. Where tree guards are used in early development, these will be removed in five years or once the trees have established.

5.1.6 Trees will provide additional nesting habitat for birds, once they are established and provide cover. Fruiting and berry producing species such as wild cherry and rowan *Sorbus aucuparia* will also provide a valuable food source for invertebrates and birds.

Existing Trees

5.1.7 Several trees are due to be retained, notably in the north west of the Site. Trees will be inspected for pests and diseases, deadwood, impaired physiological and structural condition every year during late spring/summer and after severe weather. During the winter any tree management is to be undertaken where necessary following the inspection, observing wildlife legislation.

5.1.8 Any cut material resulting from tree removal will be kept on Site and used to create log piles for the benefit of invertebrates and small mammals.

Existing Hedgerow

5.1.9 The existing hedgerow along the eastern boundary will be brought into active management to promote a feature of high biodiversity value (Enzygo Ltd EcIA report, 2019). Additional planting to extend the hedgerow using native species such as hawthorn *Crataegus monogyna* and blackthorn *Prunus spinosa* will enhance the wildlife corridor along this boundary. Management activities such as pruning will take place between September and February, and ideally in late winter, to avoid the risk of impacts to nesting birds and allow wintering birds the opportunity to forage for berries.

5.1.10 Similarly to new tree planting, the newly planted hedgerow will be inspected throughout each year during maintenance activities including weed control around the base, formative pruning and maintaining the depth of mulch and soil conditions. Where tree guards are used in early development, these will be removed in five years or once the hedgerow planting has established.

New Hedgerow Planting

5.1.11 New hedgerow planting will be incorporated along the western boundary as an ecological enhancement as a wildlife corridor feature. The hedgerow will include native species such as hawthorn and blackthorn, and will also contain standard trees of native species including field maple and oak at intervals along the hedgerow.

5.1.12 The new hedgerow will be subject to appropriate management to allow it to become an established feature of nature conservation interest over a long-term period. Maintenance will be as described above where the existing hedgerow is to be enhanced.

Native Shrubs

5.1.13 Native shrub planting will be incorporated into the landscape design as an ecological enhancement for a range of species. Native species which provide a source of nectar and berries will be favoured. Areas of native shrub planting will be kept free of weeds by careful application of weed killer three times per annum until the canopies of the shrubs have closed. After five years, management of these areas will be minimal to allow a semi-natural vegetation to develop which will provide a valuable food source for birds and invertebrates and suitable nesting habitat for birds at the Site.

Ornamental Planting

5.1.14 Where ornamental planting is incorporated into the landscaped areas, pruning of shrubs will be timed to encourage the best display of each species. Herbaceous perennials and ornamental grasses are to be cut back during the autumn and winter once they have died back. Some may be retained to provide structural interest during the winter. Evergreen perennials will not be cut back but should be tidied during spring and summer by removing dead foliage. Thinning of vegetation and weed control will be undertaken as required. Through considered species selection and management, ornamental planting can be of some value to pollinators (and hence their predators) and small mammals providing foraging opportunities and cover.

Attenuation Basin

5.1.15 A new attenuation basin will be located in the south west of the Site. As recommended in the EcIA report (Enzygo Ltd, 2019), this should be managed in a way to ensure that it holds water in the spring, therefore creating an opportunity for breeding common amphibians. It is understood that Yorkshire Water will permit up to 1 m water depth within attenuation basins that they are to adopt and maintain. The attenuation basin will be planted with a grassland seed mix suitable for wetland areas, such as the Emorsgate Seeds EG8 mixture. This will also provide enhanced opportunities for wildlife such as invertebrates, bats, and small mammals.

5.1.16 Newly seeded areas are to be cut regularly throughout the first year of establishment to help maintain balance between faster growing grasses and slower developing wild flowers. Mowing to remove surplus top growth will give smaller slower growing plants more light and space to grow into. In the first summer meadow mixtures sown on to bare soil are frequently dominated by a flush of annual weeds which come from the soil. Regular mowing will also therefore help to remove annual weed competition and prevent them seeding and will be mown to a height of 40-60 mm.

POS

Wildflower Meadow

5.1.17 Across the development, such as along the western and northern boundaries, sowing of a seed mix containing wildflowers native to the local area will provide benefits for invertebrates, and the species that prey on them (e.g. hedgehogs, birds). These areas will have a more relaxed mowing regime to allow for a taller sward height and increased species diversity. An appropriate seed mix includes the Emorsgate Seeds EM1 – Basic General Purpose Meadow Mixture. The mix will include a diversity of species to maximise flowering and pollen/nectar production to benefit invertebrates and small mammals, and the species assemblages they subsequently support.

5.1.18 As described above for the attenuation basin, newly seeded areas are to be cut regularly throughout the first year of establishment to help maintain balance between faster growing grasses and slower developing wild flowers. Mowing to remove surplus top growth will give smaller slower growing plants more light and space to grow into. In the first summer meadow mixtures sown on to bare soil are frequently dominated by a flush of annual weeds which come from the soil. Regular mowing will also therefore help to remove annual weed competition and prevent them seeding and will be mown to a height of 40-60 mm.

5.1.19 For the second year onwards, the sward is to be left uncut throughout the summer season to allow

flowering and seed to be set, with a single cut then undertaken in late summer. Arisings should be removed as much as feasible to avoid mulch of decomposing grass covering fresh seedlings. Unwanted perennial weeds (docks, thistles) may need control by occasional spot treatment with a herbicide.

Amenity Grassland

5.1.20 Amenity grassland and areas of turf are generally maintained at a short sward. These areas will be cut every two weeks during the growing season to maintain a short sward (<50 mm). Fertiliser will be applied during spring and autumn of each year and weeding of these areas will occur as required during the growing season. These areas will be of limited value to biodiversity but do provide some foraging opportunities for wildlife nonetheless.

5.2 Protected Species

Birds

5.2.1 As reported in the EcIA report (Enzygo Ltd, 2019), new nesting provision will be provided across the development, as an enhancement for a range of bird species. Installation of 30 nest boxes will achieve at least 25% coverage of new properties at the Site. In the longer term, the planting of new trees and shrubs will also provide additional nesting and foraging opportunities for birds.

5.2.2 As advised by Enzygo Ltd, suitable provision may include a combination of boxes suitable for a range of species. Bird boxes which can be integrated into buildings are preferred as they can be securely built into the fabric of a building and are long lasting. Recommended designs include the 'Vivara Pro WoodStone House Sparrow Nest Box', the 'Starling Box - Smooth Brick', by Ecosurv Ltd., the 'Habibat' Swift Box, and the Vivara Pro Seville 32mm Woodstone Box or similar products dependant on availability. House sparrows *Passer domesticus* and starlings *Sturna vulgaris* are both Red listed Birds of Conservation Concern in the UK, and swifts *Apus apus* are an Amber listed BoCC (Eaton et al., 2015) due to declines in the populations. Therefore, nesting provision aimed for these species would be valuable for local populations.

5.2.3 Indicative locations and orientations of bird nest boxes are provided in Figure 1. Nest boxes will be erected at a minimum height of 4 m and preferably at eaves level. Finalised positions should be micro sited so as to avoid windows and doorways beneath and provide a clear entrance into any given box. The boxes will be positioned to face onto areas of suitable foraging habitat including the retained hedgerow and new garden habitats. All nest boxes will be positioned to avoid true south aspects which carry a risk of overheating during the summer months.

Bats

5.2.4 As reported in the EcIA report (Enzygo Ltd, 2019), new bat roosting opportunities will be created at the Site. Installation of 10 bat boxes across the Site would provide coverage of 10% of the properties, however to further enhance the Site for roosting bats a total of 20 boxes providing a coverage of 20% of the properties is recommended. This will contribute towards biodiversity enhancement at the Site.

5.2.5 Integrated boxes are a preferred option as they can be securely built into the fabric of the building and are long lasting. The bat boxes will be positioned on south and west facing elevations fronting on to suitable foraging habitat including boundary hedgerows, POS and gardens. The Schwegler 1FR bat box is suggested as they can be integrated within the fabric of new properties during the construction period for longevity. A suitable alternative is the Habibat bat box, which can also be integrated into buildings, and are available in a variety of finishes to suit the aesthetic of the development. Such boxes are self-contained and permit bat access within a given box only and do not allow bats to enter cavity walls. The boxes are to be located beneath the eaves at a minimum height of 4 m. Indicative locations of bat boxes are provided in Figure 1. Finalised positions should be micro sited so as to avoid doorways or windows and beneath, avoiding external light and with

a clear flight path to the box entrances free from clutter. No specific maintenance is required as any droppings from boxes occupied by bats will roll out from the box at the base and will rapidly disintegrate when exposed to the weather.

Reptiles

5.2.6 As reported in the EcIA report (Enzygo Ltd, 2019), five informal hibernacula will be installed along the Site boundaries to provide opportunities for shelter for reptiles, alongside small mammals, common amphibians and invertebrates. These would be most appropriate along the western boundary and in proximity to the attenuation basin, as displayed in Figure 1. The hibernacula would comprise informal brash and log piles. To minimise waste leaving the Site and importing material from offsite, it is recommended that the brash and log piles are created using the logs from felled trees at the Site.

Invertebrates

5.2.7 To enhance the Site for invertebrates, it is recommended that five insect boxes (such as the Elba Insect Tower, or similar design subject to availability) are installed at suitable locations close to and within landscaped areas. These will provide opportunities for a range of invertebrate species, particularly solitary bees. Suggested locations are displayed in Figure 1.

Hedgehog

5.2.8 The creation and maturing of new garden habitats, POS areas and the creation of informal hibernacula on the Site will provide foraging and sheltering opportunities in the long term for small mammals such as hedgehog, which have suffered significant and widespread declines over the past decade.

5.2.9 To allow for dispersal of hedgehogs between gardens, which are increasingly important to hedgehogs, it is recommended that small gaps are incorporated beneath or between garden/boundary fences and walls across the development.

5.2.10 Natural gaps will be left under or around fencing where possible at fence junctions, or where this is not feasible, gaps measuring 130 mm x 130 mm will be created to the base of panels/gravel boards to allow the movement of hedgehogs between gardens. Gaps will be widespread across the development to ensure that the Site continues to be fully permissible and interconnected for small mammals. The indicative location of the hedgehog gaps is detailed on Figure 1.

5.2.11 Further information and examples of such fencing gaps put into practice can be found in the following webpage:

https://www.hedgehogstreet.org/helphedgehogs/link-your-garden.

5.3 Management Responsibilities

5.3.1 The Site is to be managed by a management company not yet confirmed. The developer, Barratt Homes & David Wilson Homes Yorkshire West is responsible for funding the long term management of the Site.

5.3.2 Prior to the commencement of the long term management of the Site, the management company will provide a detailed management programme to demonstrate how management responsibilities will be handled and implemented in accordance with the management plan.

5.3.3 Following the initial development of the Site, it is anticipated that the first 12 months planting maintenance will be the responsibility of the landscape sub-contractor as appointed by the developer.

5.3.4 Ecus Ltd role as designers under The Construction (Design and Management) (CDM) Regulations 2015 has been through planning, managing and monitoring health and safety in the pre-

construction phase, including; identifying, eliminating or controlling foreseeable risks. The designer's pre-construction information will be provided to designers and contractors. The appointed contractor will then be responsible for the construction phase.

5.4 Plant Replacements

5.4.1 Any plants that fail to establish within a period of five years are to be replaced in the next planting season with others of similar size and species unless written consent is provided by the Local Planning Authority to vary the approved details.

5.4.2 Any trees, shrubs or other planting that die, become damaged or are removed within a period of five years following the first occupation of the development are to be replaced in the next planting season with other plants of similar size and species as the failed specimens, unless written consent is provided by the Local Planning Authority to vary the approved details.

5.4.3 After five years it is recommended that a Site inspection occurs to record Site conditions and to determine whether replacement planting or over-seeding is required to maintain a high quality landscape scheme that is consistent with the original objectives.

5.4.4 After the initial five year period, the maintenance schedule should be checked and updated to reflect the situation for future years as required. Work only to be undertaken following client and Local Authority approval.

5.5 Ongoing Monitoring and Remedial Measures

5.5.1 This management plan will be continually monitored and reviewed annually with any resulting changes incorporated into the subsequent years' programme. The review will be in consultation with the Local Planning Authority and other interested parties and will provide an updated management plan for ongoing management. The updated management plan shall be submitted to and agreed by the Local Planning Authority.

6. Maintenance Schedule and Specification

6.1 Introduction

6.1.1 The following schedule in section 6.4 outlines the key management objectives for each landscape type and habitat feature within the Site.

6.1.2 The schedule outlines recommended maintenance operations, the appropriate times of year they should be undertaken and the recommended frequency each year in order to achieve these objectives. The schedule details operations that are recommended for the establishment phase up to five years following implementation and also those operations required in the mid to long-term.

6.1.3 The landscape management plan is to be carried out as approved to ensure the successful aftercare of the landscaping.

6.2 Standards and References

6.2.1 All maintenance operations should be undertaken in accordance with the following best practice guidance:

- BS3998:2010 Tree Works Recommendations; and
- BS7370-4: 1993 Grounds maintenance. Recommendations for maintenance of soft landscape (other than amenity turf).

6.3 Implementation of the Maintenance Works

6.3.1 Planting should be maintained by the landscape contractor for a minimum of 12 months following planting, with any defective planting replaced by the end of the first year.

6.3.2 Maintenance of the landscape areas shall be undertaken by a competent Landscape Contractor, registered with the British Association of Landscape Industries (BALI).

6.3.3 Maintenance visits shall be undertaken at minimum monthly intervals (i.e. 12 visits per annum). An increased number of visits may be required at certain times of the year, for instance fortnightly March-September to cut the grass.

6.3.4 The landscape maintenance of the Site is to be carried out to a high standard at all times and in accordance with the schedule and specifications within this management plan and specific details provided within the detailed landscape scheme when this is available.

6.3.5 The contractor shall ensure that the Site is left tidy and safe following all maintenance works. All arisings should be removed from Site in accordance with the maintenance schedule.

6.3.6 The contractor shall programme their visits to coincide with appropriate weather conditions for carrying out maintenance operations including the use of chemicals and the mowing of grass. Grass mowing in excessively wet conditions is prohibited.

6.3.7 A record of all maintenance visits should be completed by the maintenance contractor and these should be submitted to the Client for review every six months.

6.3.8 The maintenance contractor shall ensure that any chemical application is undertaken by trained personnel only with the appropriate NPTC certificates and in accordance with the manufacturer's recommendations. The 'Code of Practice for the Safe Use of Pesticides for Non-agricultural Purposes' will be observed where applicable. The use of any chemicals shall be included within the maintenance visit records as described above.

6.3.9 The Contractor should notify the Client immediately to any significant pest or disease problem affecting plant stock and a suitable strategy for treatment should be discussed and agreed with the Client.

6.4 Five Year Maintenance Schedule

Component	Management Objectives	Code	Operation(s) / Prescription(s)	Time of Year	Frequency per Year
General maintenance requirements to all planted areas, unless otherwise stated in the detailed schedule below.	To maintain high standard planting scheme across Site and ensure healthy establishment of plants to achieve landscape character and benefit biodiversity.	A	Inspection	March-September	Annually.
		B	Inspect tree stakes, ties and shelters and replace where necessary. Remove in Year 5.	February and after strong winds	Annually. In Year 5- Remove.
		C	Watering - during establishment and to ensure continued thriving	As necessary during dry spells, or indicated in the detailed schedule below.	As required- daily in dry spells mainly April- September.
		D	Refirm new tree / shrub / hedgerow planting	February and after strong winds	Annually and as required following inspection.
		E	Removal of debris and litter	Throughout	Each maintenance visit.
		F	Plant replacements and reinstatement to Year 5 when instructed	November to March	Annually next following planting season.
		G	Fertiliser	March	Annually.
		H	Top up mulch to 60 mm or 75 mm depth (bark or gravel - refer to specification)	November	Annually.
New tree and hedgerow planting	To ensure that trees and the hedgerow establish and remain in a healthy condition, which will encourage use by fauna into the future.	A	Establishment maintenance (weed control, fertiliser, tree guy wires, refirming, formative pruning)	As necessary following inspection	As required.
		B	Maintain 1 m diameter weed free area, adjust soil and maintain depth of mulch	As necessary following inspection	As required.
Existing Trees	To ensure continued healthy growth of trees and safety of	A	Inspect to record pests and diseases, deadwood, impaired physiological and structural condition	Late spring/summer and following severe	Annually.

	the site, which will encourage use by fauna into the future.			weather (heavy snow, strong wind)	
		B	Tree management operations or removal as required (observing wildlife legislation i.e. nesting birds)	As necessary in winter or immediately following receipt of inspection report if urgent action is required	As required.
Native / Semi-Native Shrub Mix	To create a good, healthy block of semi-natural vegetation, which also serves to benefit species and structural diversity.	A	Ensure the area is kept entirely free of weeds by careful application of Roundup three times per annum around each shrub until canopies close.	As necessary following inspection.	Three times per annum.
		B	Strim off weed growth and remove arisings off site. Avoid damage to tree and shrub stems from nylon filament rotary cutters or other mechanical tools.	As necessary following inspection.	Three times per annum.
		C	After five years establishment, management of the planting will be low key with minimal management intervention to reduce disturbance and allow a semi-natural vegetation to establish.	-	-
Ornamental planting - shrubs and herbaceous material	To provide attractive and healthy landscape year-round. To create healthy attractive plant mixes. To control weed growth.	A	Pruning to encourage best display of given species, taking into account of natural habit and form:		
			a) Winter flowering	Prune Spring	Annually
			b) Shrubs flowering between March and July	Prune immediately after flowering	Annually
			c) Shrubs flowering between July and October	Prune back to old wood in winter	Annually

		B	Thinning	As necessary following inspection	Annually if required
		C	Weed Control	March- September	As required
		D	Soil aeration	April	When required
		E	Soil level readjustment/ edging	Spring	Annually
		F	All herbaceous perennials and ornamental grasses that die back in winter to soil level can be cut back in autumn and winter, using the following guidance: •Using a knife, shears or secateurs, cut stems close to the 'crown' or dormant base of the plant •If there is any young growth, cut to just above it •Take the opportunity to remove weeds, digging out those with thick or fleshy roots •Cut back perennials that produce leaves and flower stems from below the soil level, to soil level •Less severely cut back perennials showing new basal shoot growth (e.g. Sedum) •Any attractive dead stems or flower heads can be left until early spring to provide structural interest throughout the winter. •Separate and dispose of diseased material (showing signs of leaf-spots, mildew and rusts, for example).	Autumn / Winter	Annually
		G	Evergreen perennials are not to be cut back, but should be tidied during spring and summer by removing dead foliage.	Spring and Summer	Annually
		H	Thinning herbaceous perennials	Spring	As required

		I	Maintain climber growth and train along wires where necessary	Mach - September	As required.
Amenity Grassland	Good sward of even colour and smooth gradients. Height maximum 50 mm	A	Reinstatement of eroded / damaged areas:	May-September	As required
		B	Cutting, remove arisings, trim edges and collect trimmings-remove	April-October	15 visits. Maintain 50-70mm height. Approx. every 2 weeks in growing season
		C	Reforming edges to paths	Autumn	Annually
		D	Fertiliser- Spring	April	Annually
		E	Fertiliser- Autumn	October	Annually
		F	Light scarification / raking	March	Annually (if required)
		G	Weed control	March - October	As required
Proposed Grassland Seed Mixes i.e. within attenuation basin and POS e.g. Emorsgate EG8 - Meadow grass mixture for wet soils and EM2 - Standard General Purpose Meadow Mixture (or similar approved)	Maintain to achieve the greatest species diversity. Prevent future encroachment by scrub/ saplings. Control coarse grasses from outcompeting perennial wildflowers thereby maintaining a variety of foraging resources and cover for fauna.	A	Year 1: Most of the sown species are perennial and will be slow to germinate and grow and will not usually flower in the first growing season. There will often be a flush of annual weeds from the soil in the first growing season. This weed growth is easily controlled by topping or mowing.	March, May and September (weed growth control)	3
		B	Year 1 Establishment cut - AUTUMN SOWN Avoid cutting in the spring and early summer if the mixture is autumn sown. These sown annuals should be allowed to flower, then in mid-summer cut and remove the vegetation.	August (cut and remove vegetation)	1
		C	Year 1 establishment cut SPRING SOWN	September / October	1
		D	Cutting to 50mm (after establishment).	July / August, October / November and March / April	3

			July - August: After flowering take a 'hay cut'. Leave 'hay' to dry and shed seed for 1 - 7 days then remove from site. October - November: Mow the re-growth and remove clippings. March - April: Mow the re-growth and remove clippings.		
Bird boxes	To provide nesting opportunities	A	Inspect bird boxes and clean as required to remove waste, debris and potential fleas/ ticks etc. (The integrated swift and starling boxes will not require maintenance).	October/ November	Annually
		B	Make repairs	September-February	As required
Bat boxes *Any monitoring should be non-invasive conducted from a distance. Any invasive checks to be undertaken by a licensed bat worker.	To provide roosting opportunities	A	Monitor* bat boxes to ensure they are not inhabited by pests such as wasps.	As required. Remove wasps in late winter / early spring	As required
		B	Make repairs.	Only when not inhabited. Careful Monitoring* to ensure they are empty beforehand.	As required
Reptile hibernacula	To provide shelter opportunities for reptiles, common amphibians and small mammals.	A	Inspect hibernacula and add further brash/logs if features have been damaged or destroyed in any way.	As necessary following inspection.	Annually
Insect towers	To provide shelter and breeding opportunities for a range of invertebrate species	A	Repair and replace any boxes if found to be damaged or missing.	As necessary following inspection.	Annually

Figure 1: Ecological Enhancement Plan



Habibat
003
Swift Box

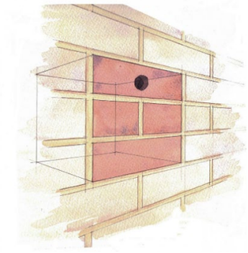


Vivara Pro Seville
32mm WoodStone
Nest Box



Vivara Pro WoodStone
House Sparrow Nest
Box

ecosurv
ECOLOGICAL CONSULTANTS



Starling Box - Smooth
Brick', by Ecosurv Ltd



Schwegler
1FR bat
tube

OR



Habibat
3S bat
box



Example of
hedgehog holes

30 bird boxes to be installed during/post construction, comprising:
- 8x Habibat 003 Swift Box
- 7x Vivara Pro Seville 32mm WoodStone Nest Box
- 8x Vivara Pro WoodStone House Sparrow Nest Box
- 7x Starling Box - Smooth Brick', by Ecosurv Ltd

Creation of east to west green corridor via tree and shrub planting to provide a green link through the site for various wildlife

Creation of species-rich grassland habitat by sewing and appropriate management of a native wildflower grassland seed mix.

Installation of informal reptile hibernacula (brash and log piles) to create shelter opportunities for reptiles.

New hedgerow and tree planting along western boundary to provide foraging, shelter and breeding opportunities for wildlife.

Creation of new attenuation basin, planted with a suitable seed mix appropriate for wetland areas. E.g. Emorsgate EG8

Provision of Insect boxes such as the Elba Insect Tower to create shelter and breeding opportunities for invertebrates e.g. solitary bees.



Hedgehog holes to be installed in garden fences to allow the movement of hedgehogs through the completed site.

A section of the existing hedgerow will be removed and cut back to boundary.

Enhancement of the existing hedgerow through additional planting of native species. Note that this hedgerow will be outside of rear gardens.

Public Open Space planted with native wildflower grassland seed mix.

20 bat boxes to be installed during construction, comprising either 'Schwegler 1FR bat tube' or 'Habibat 3S bat box'

ecus

Bat boxes will be installed at approx. 4 m high (eaves level) on multiple elevations of the new houses. The boxes will be located around habitats which provide commuting/foraging habitat. Areas of bright lighting should be avoided.

The bird boxes will be placed at a minimum height of 3 m (near eaves level) facing different aspects to maximise chances of occupation. North and east aspects are favoured, whereas full south aspects present a risk of overheating and should therefore be avoided.

Insect boxes should be positioned on fencing within landscaped areas.

NB. Mapped locations are for indicative purposes.

HARDSTANDING AREA PLAN KEY:

- COMBINED HARDSTANDING & BUILDING AREA (1.47 HECTARES)
- POS AREA (0.59 HECTARES)
- BASIN AREA (0.26 HECTARES)
- COMBINED GARDEN AREA (0.69 HECTARES)

Barratt & David Wilson Homes Yorkshire West

Pitt Street, Darfield

Figure 1. Ecological Enhancement Plan

Brook Holt 3 Blackburn Road Sheffield S61 2DW
T: 0114 2669292 www.ecusltd.co.uk

Base plan produced by JRP Associates for Barratt & David Wilson Homes Yorkshire West – Drawing number: 20:5429:04, dated 16.04.2021

Date: April 2021 | **Drg. Ref: KS/16606/F1**

CDM

GENERAL NOTES

- Building / Site Layout provided by Barratt Homes and David Wilson Homes Yorkshire West in March 2021.
- Do not scale from this drawing
- This drawing is Copyright
- All details subject to approval by the local authority for the discharge of relevant planning conditions.

3RD-PARTY INFORMATION NB This drawing includes information provided by independent surveyors and / or consultants, to whom all queries shall be made. Ecus Ltd can accept no liability for its context or accuracy.

DESIGN Unless stated otherwise, the designs shown are subject to detailed site survey, investigations, and legal definition, the CDM regulations and the comments and / or approval of the various relevant Local Authority Officers, Statutory Undertakers, Fire Officers, Engineers and the like. They are copyright, project specific and confidential. No part is to be used or copied in any way without the express prior consent of Ecus Ltd.

<u>CDM - Risks / Hazards</u>

1. Integral bat and bird boxes are to be securely built in to walls during the construction stage.
2. Woodstone/woodcrete boxes have been recommended as they are more durable and less susceptible to damage.
3. If any bat and bird boxes require attachment to external walls rather than being built in during the construction stage, they should be attached securely following manufacturers guidelines and using sturdy screws supplied by the manufacturer at purchase or an equivalent. Non-corrosive fixings should be used.
4. Any external boxes should be checked by Keepmoat Homes' appointed management company, annually and after any period of high winds, to ensure they are still securely in place.
5. External bird boxes have been positioned in locations away from public walkways or footpaths to minimise the risk of falling and causing an injury. Lighter box models have been selected to reduce the potential for personal injury.
6. Box designs which do not typically require maintenance have been selected to reduce potential for contact with bat/bird droppings. Boxes will be positioned at a height which is out of reach thereby reducing likelihood for contact with droppings. Any bat droppings which fall from boxes will naturally break down outdoors and will not persist in the environment.
7. Reptile hibernacula should be positioned in suitable locations away from public footpaths to reduce the risk of trips and falls.

Barratt & David Wilson Homes Yorkshire West

Pitt Street, Darfield

Figure 1. Ecological Enhancement Plan

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