

LAND AT 25 ORCHARD WAY, HARWALL

BIODIVERSITY ENHANCEMENT PLAN

AMENDED REPORT MARCH 2024

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1.0 INTRODUCTION

1.1 Background

1.1.1 The site has Outline Planning Permission for five dwellings. An ecological appraisal was provided with the Outline Application (see Aluco Ecology, 2019).

1.1.2 The planning permission contains a condition directly related to the site's ecological enhancement:

“Concurrent with the submission of a reserved matters application, a Biodiversity Enhancement Plan (BEP) shall be submitted to and approved in writing by the Local Planning Authority. The BEP should be broadly in accordance with the outline details of habitat enhancements illustrated on the ecological appraisal (Aluco Ecology, March 2019) save for any Biodiversity Offsetting Scheme that forms part of the BEP. The BEP should include:

a. Details of habitat creation or enhancements (this could cross reference relevant landscape plans) and include suitably detailed drawings and cross sections as required;

b. Details of species enhancements including relevant scale plans and drawings showing the location, elevation and type of features such as bat and bird boxes etc. as appropriate;

c. Selection of appropriate strategies for creating / restoring target habitats or introducing target species;

d. Selection of specific techniques and practices for establishing vegetation; e. Sources of habitat materials (e.g. plant stock) or species individuals;

f. Method statement for site preparation and establishment of target features;

g. Extent and location of proposed works;

h. Full details of a biodiversity metric assessment to demonstrate a biodiversity net gain taking into account any Biodiversity Offsetting Scheme.

No development shall commence unless and until a certificate confirming the agreement of an Offsetting Provider to deliver any Biodiversity Offsetting Scheme forming part of the BEP has been submitted to and agreed in writing by the Local Planning Authority. Thereafter, the development shall be implemented in accordance with the approved BEP and all ecological mitigation and enhancement features shall be delivered on site prior to first use and retained as such thereafter.”

1.1.3 A detailed scheme for the site has been developed, and this is reproduced at **Figure 1** below. This document provides biodiversity enhancement measures for the scheme, including a Biodiversity Net Gain assessment. These are to be implemented by the development team responsible for initial establishment and then the maintenance team for

ongoing management. The 2024 amendments relate to minor changes in design following consultation.

1.2 Previous Survey Work

Summary of Previous Survey

1.2.1 A number of species are protected under legislation and policy; namely the Conservation of Habitats & Species Regulations 2010 in relation to the European protected species (eg bats, dormouse, great crested newts) and the Wildlife & Countryside Act 1981 (as amended) and Countryside & Rights of Way Act (CROW) 2000 for protected species and the designation and protection of SSSIs (**Technical Appendix 1**). The Protection of Badgers Act 1992 gives protection to Badgers *Meles meles*.

1.2.2 Aluco Ecology has undertaken ecological survey work on the site (see Aluco Ecology 2019). The results included:

- Vegetation and habitats – the site is a single dwelling on a relatively large plot, containing garden habitats and a single bungalow with garage;
- Nesting birds are likely to be present on site, eg in site woody features/boundaries;
- The survey in 2019 recorded low-moderate potential for roosting bats on site, and the 2019 survey recommended a single emergence survey, which has been undertaken in July 2023 (see **Technical Appendix 2** for details of the survey). No bat roosts were recorded on site and foraging bats were recorded around the site in low numbers (Common Pipistrelle *Pipistrellus pipistrellus* and Noctule Bat *Nyctalus noctula*);
- Badgers *Meles meles*, Fox *Vulpes vulpes* and Hedgehog *Erinaceus europaeus* are likely to be present in the wider area, but no direct evidence was noted on site has been recorded;
- Limited suitable herpetofauna habitat has been recorded in garden habitats on site.

2023 Update

1.2.3 A walkover survey to re-confirm habitats on site and undertake a bat emergence survey as undertaken on 27 July 2023. The habitats on site are similar to those from the previous survey work. The results of the survey are provided at **Technical Appendix 2**

1.3 Development Details

2.1.1 This enhancement plan details mitigation for works relating to the detailed development scheme, which is shown at **Figure 1**, with a Landscape plan shown at **Figure 2**.

- 1.3.2 This enhancement plan sets out detailed biodiversity mitigation measures for creation and operation of the development. Mitigation measures in relation to potential for protected species, for site construction are set out in the initial ecological appraisal (Aluco Ecology, 2019).

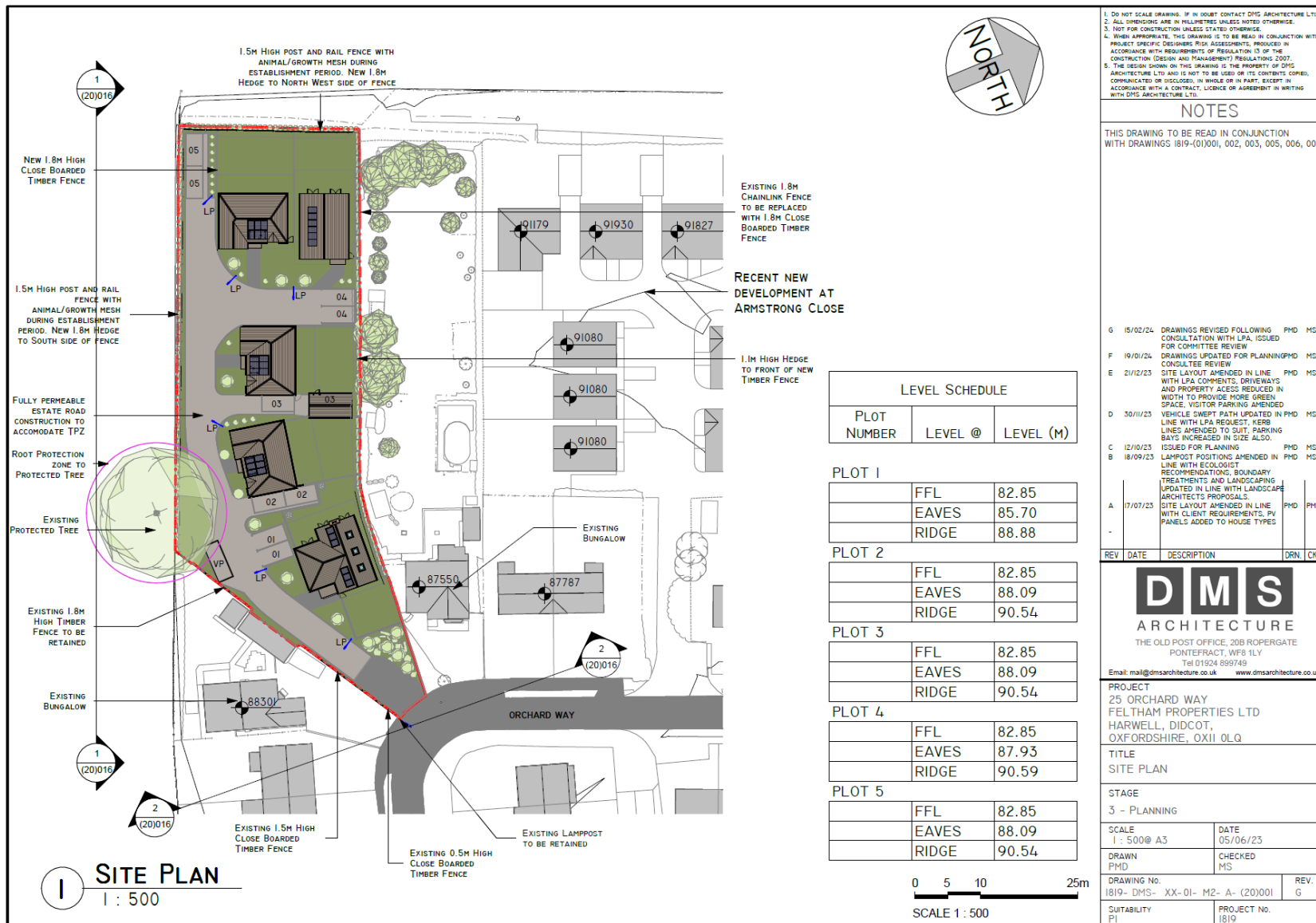


Figure 1: Masterplan and Red Line Boundary (DMS Architecture, 2024)

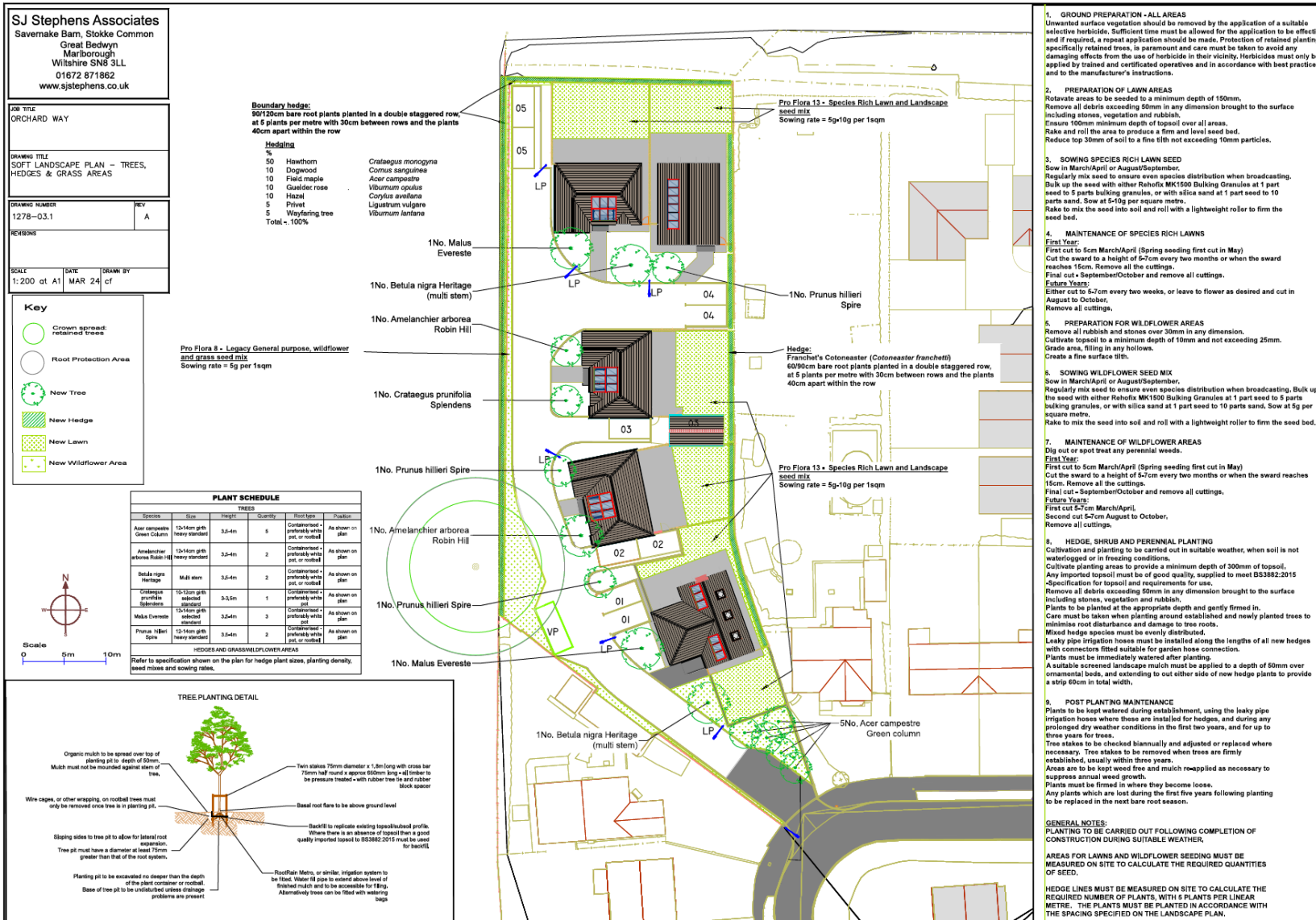


Figure 2a: Landscape Plan (SJ Stephens Associates 2024)

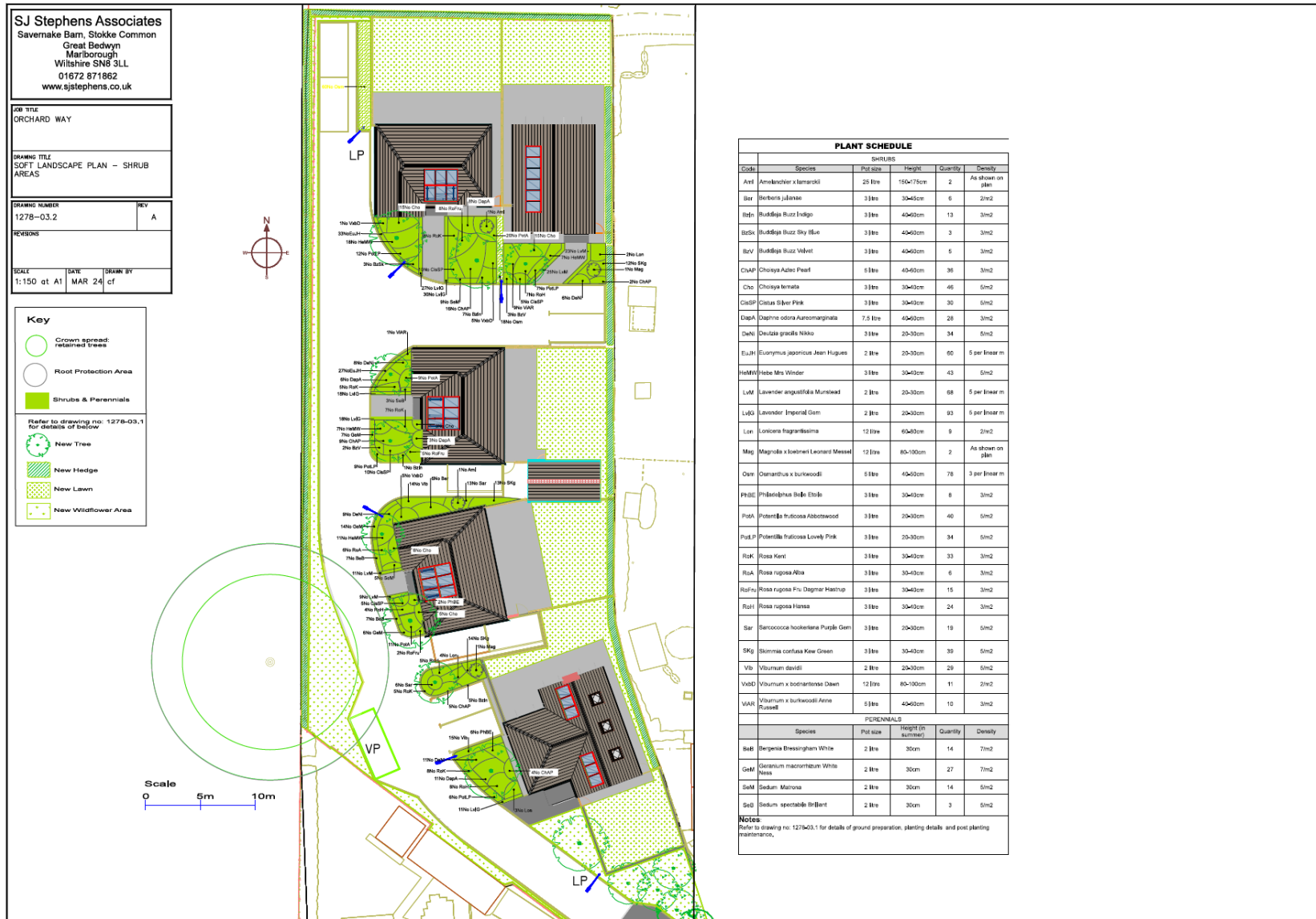


Figure 2b: Landscape Plan (SJ Stephens Associates 2024)

2.0 BIODIVERSITY ENHANCEMENT PROPOSALS

2.1 Introduction

2.1.1 The following biodiversity enhancements have been proposed as part of the development scheme. These have been included where appropriate within the accompanying landscaping proposals and the Biodiversity Net Gain (BNG) assessment, see also Section 4 below.

2.2 New Habitats on Site

Vegetated Gardens

2.2.1 The landscape proposals for the scheme provide a number of measures to enhance the biodiversity of the new gardens on site. These include:

- Provision of small trees where space allows (at total of 10 small trees that are mostly native species cultivars – see **Figure 2**). These trees are selected for growing in the space available;
- Lawns are provided at the rear of the new properties, they are to be seeded with a wildflower lawn mix Pro Flora 13, which includes 19 wildflower species that are native locally, and 7 native grass species. A good proportion of these species are adaptable to flowering in a mown lawn setting;
- Pollinator friendly shrubs and flowers are proposed as part of soft landscaping details.
- New native species hedgerows are to be provided on the rear of properties. This is to be planted with a native species mix of 7 species, including Hawthorn *Crataegus monogyna*, Dogwood *Cornus sanguinea*, Field Maple *Acer campestre*, Guelder-rose *Viburnum opulus*, Hazel *Corylus avellana*, Privet *Ligustrum vulgare*, Wayfaring-tree *Viburnum lantana*.

2.3 Retained Vegetation

2.3.1 A large Sycamore *Acer pseudoplatanus* is present off site in the recreation ground. A root protection area for this tree is built into the scheme. Edge habitat to the hedgerow at the northern end of the site will be retained on this boundary.

2.4 New Hedgerow

2.4.1 In addition to the new hedgerows in the rear gardens of the site, a new native species hedgerow is to be planted along the south west boundary of the site, adjacent to the existing recreational area. This is to have the same native species mix, with 7 species that are locally native. The management of these will be to allow for maturing then low intensity/sensitive cutting to allow fruiting and habitat to develop for wildlife, in a regime similar to the retained hedges above. Grassland edge habitat around hedges will be allowed to develop. This habitat will be allowed to develop from existing edge grassland in retained open space areas, or created from wildflower grassland in open space areas. This will comprise tall tussocky grassland edges that can be allowed to develop with some limited woody infiltration from suckering woody species and bramble, to create a grassland edge habitat to the hedges and

native species woody areas of scrub/woodland. This will be managed in the longer term through ensuring that tall grassland habitat is retained in extent through cutting of the woody encroachment

2.5 Semi-natural Grassland

2.5.1 Two sections of public open space on the site are to be seeded with a wildflower mix. This is proposed to be the Pro Flora 8 legacy general purpose wildflower and grass seed mix with 19 species that are native locally (13 herb species). This should be undertaken in either autumn or spring. Management in the longer term will be of a hay cut (1-3 times a year depending upon growth rates – late summer, late autumn and if considered necessary, early spring) with cuttings removed. To keep a neat look at the edge of the development a c0.5m edge can be regularly mown along outer boundaries (eg road edges).

2.6 Tree Planting

2.6.1 In addition to new small trees within the vegetated gardens on the site, a total of 5 small trees are to be planted in the open space part of the site. These are proposed to be *Acer campestre* ‘Green column’, which will be suitable sizes for the open space area.

2.7 Provision of Bird Nest Boxes

2.7.1 A total of 4 bird nest boxes will be provided within the scheme and locations are shown at **Technical Appendix 3**. The boxes can include:

- Swift box or brick;
- Woodcrete type House Martin
- Brick/Woodcrete type House Sparrow

2.8 Provision of Bat Boxes

2.8.1 A total of 3 bat roosting structures will be erected on site (see **Technical Appendix 3**), using Schwegler or inbuilt designs.

2.9 Bat Foraging and Commuting

2.9.1 The design of the development allows for enhanced boundary hedges, as well as providing new garden habitats and new open space habitats, including a new linear hedgerow feature to develop to provide links through the site, including a new native species hedgerow along the south west boundary of the site.

2.9.2 The provision of new woody planting and less intensive maintenance of parts of the open space grasslands will provide additional semi-natural habitats for commuting and foraging in the local area.

2.9.3 Street lighting has the potential to impact on bat foraging and mitigation guidelines have been developed (see BCT 2023). Design and location of lighting within the new scheme will consider the following:

- Identify key points in the landscape where artificial light at night disrupts spatial connectivity of dark areas, and reduce or remove lighting in these areas if possible. On the site this would include boundaries. Location of bat boxes/roost features will also need to be in a dark zone;
- Maintain and create unlit ‘dark corridors’ between habitat patches where possible.
- Avoid use of, and remove where possible, lamps that waste light by emitting vertically or horizontally – ensure that lighting is designed with minimum spill and is downward facing and directional and that retained hedges and trees are not lit.
- Reduce as much as possible the intensities of light emitted from lamps
- Avoid use of white and blue light wherever possible. The broader the spectrum of light that a lamp produces the wider the range of organisms it is likely to affect.
- Avoid use of lamps that emit in the ultraviolet (UV) range. UV light is not seen by humans but many animals see UV and it may disrupt their natural behaviour.

2.9.4 A detailed lighting strategy is to be prepared, with a plan showing the proposed location of street lighting and the impacts of that street lighting. This has considered the location of main bat commuting and foraging habitat around the scheme, i.e. principally around the boundaries of the site. The aim has been to reduce and preventing light spill into these habitats. Regard has also been had to the location of Bat box mitigation and lighting. Lighting design is shown on plan Figure 1: Masterplan (DMS Architecture, 2023)

2.10 Hedgehog

2.10.1 Hedgehog *Erinaceus europaeus* are recorded in the wider local area and may use the site. New fencing proposals will include hedgehog highways – small gaps under the fences to allow movement through the site (see **Figure 2**).

3.0 HABITAT MANAGEMENT PROPOSALS

3.1 Introduction

3.1.1 The proposed habitats outlined above will be subject to the following creation and management.

3.2 Vegetated Gardens

Small Trees

3.2.1 The landscape plan (reproduced at **Figure 2**) provides a detailed specification for tree planting detail. This includes:

- Use of organic mulch;
- Suitable sized tree pits,
- Tree stakes
- Suitable hydration system

3.2.2 Aftercare of the trees will include:

- Initial planting at a suitable time of year (early spring and autumn are optimum);
- Monitoring in the first two years following planting, on a fortnightly basis to ensure they are upright, firm and stable and in good health, and have adequate water, supplemented if necessary. by inspecting soils to a depth of 300mm at regular intervals during the growing season to determine whether watering is required.

Lawns

3.2.3 The landscape plan (reproduced at **Figure 2**) provides a detailed specification for tree planting detail. This includes:

- Seed mix Pro Flora 13, with an appropriate mix of locally native species and aiming to provide over 9 species per m2.
- Prepare and seed the open space with a wildflower seed mix in the first autumn once construction has commenced on site.
- Seed bed will be levelled and bare ground substrate with a medium tilth, then rolled to provide a firm surface.
- Seeding will be surface sown and can be applied by machine (or by hand) and evenly distributed. The seed will then be compacted into the bare ground. Sowing rates will be as per supplier's guidelines.
- The grasslands are likely to be managed through regular maintenance as a lawn by mowing.
- Mowing can be either regular through the summer, as the mix provided allows for a flowering lawn vegetation, or parts of the lawn/all of the lawn can be managed as a hay meadow with an autumn cut (Sept-Oct) and then potentially a late autumn cut (Nov) and/or spring cut (April). This will be down to the new owners specification.

Garden Hedgerow

3.2.4 The following measures are proposed for establishment of the native hedgerow in the gardens on site:

- Plant a new native hedgerow along south western site boundary (see Landscape Planting Plan – reproduced at **Figure 2**). 90/120cm bare root plants to be planted in a double staggered row at 5 plants per metre with 30cm between rows and the plants 40 cm apart in the row.
- To be planted naturally with diversity through the hedge line, and fairly evenly distributed. Species will be from locally native Hawthorn *Crataegus monogyna*, Dogwood *Cornus sanguinea*, Field Maple *Acer campestre*, Guelder-rose *Viburnum opulus*, Hazel *Corylus avellana*, Privet *Ligustrum vulgare*, Wayfaring-tree *Viburnum lantana*.
- Planting to take place in first spring or autumn bare root planting season following commencement of site construction in suitable weather.
- Ground will be prepared with 300mm of top soil, preparation of ground and removal of debris. Plants to be planted at appropriate depth and gently firmed in.
- Cane and biodegradable rabbit guards will be provided.
- Leaky pipe irrigation hoses will be installed and watering checks will need to take place during establishment, with checks every two weeks and watering where required for the first two years.
- Areas under the hedge are to be kept weed free and mulch re-applied as necessary.
- Where possible, once established, guards should be removed for natural growth.
- Uptake of hedgerow will be monitored and any gaps in the first 5 years re-planted to the same specification.

Shrubs and Formal Planting

3.2.5 The formal planting is set out in the Landscape Plan (a copy reproduced at **Figure 2**).

3.3 New Native Species Hedge***Establishment***

3.3.1 The following measures are proposed for establishment of the native hedgerow on site:

- Plant a new native hedgerow along south western site boundary (see Landscape Planting Plan – reproduced at **Figure 2**). 90/120cm bare root plants to be planted in a double staggered row at 5 plants per metre with 30cm between rows and the plants 40 cm apart in the row.
- To be planted naturally with diversity through the hedge line, and fairly evenly distributed. Species will be from locally native Hawthorn *Crataegus monogyna*, Dogwood *Cornus sanguinea*, Field Maple *Acer campestre*, Guelder-rose *Viburnum opulus*, Hazel *Corylus avellana*, Privet *Ligustrum vulgare*, Wayfaring-tree *Viburnum lantana*.
- Planting to take place in first spring or autumn planting season following commencement of site construction in suitable weather.

- Ground will be prepared with 300mm of top soil, preparation of ground and removal of debris. Plants to be planted at appropriate depth and gently firmed in.
- Cane and biodegradable rabbit guards will be provided.
- Leaky pipe irrigation hoses will be installed and watering checks will need to take place during establishment, with checks every two weeks and watering where required for the first two years.
- For new native species planting in open space the establishment of new woody planting should ideally allow for grasses to develop at the base of the planting to create a natural woody habitat with associated grassland edge rather than over managed bare base. This can however include weeding, where tall ruderal species colonise that may compromise the hedge establishment. This is to allow more natural growth than the garden native hedgerows.
- Where possible, once established, guards should be removed for natural growth.
- Uptake of hedgerow will be monitored and any gaps in the first 5 years re-planted to the same specification.

Management Prescription

- 3.3.2 Hedgerows should be managed to allow flowering and fruiting of shrubs/trees through lower intensity cutting. Given location and space, as far as possible ongoing hedgerow management should be relaxed, with trimming reduced to lowest maintenance regime given the location, and staggered with one side a year cutting, if possible, in the space provided. Trimming should be carried out in late winter to prolong habitat resources during winter but prior to the commencement of the bird nesting season.

Target = To manage all woody habitat on site (retained hedgerows/boundary vegetation, and new native planted) to flower/fruit with cutting to take place outside the bird nesting season and in late winter, with limits of cutting below taken into account.

Upper Limit = Cutting up to 50% of the resource late winter (Jan-Feb) on rotation, so that only half the resource is cut annually. Regard can be had to encroachment into formal areas to ensure that sightlines of roads is taken into account and that hedges do not encroach into private gardens.

Lower Limit = Cut every second late winter (Jan-Feb)

- 3.3.4 Tall (uncut) Grassland Margin/Edge Habitat: Management will include annual or every second year cutting of encroaching woody vegetation (eg Bramble) to maintain an area of grasslands that are left uncut to form tussocky grassland edges. This will allow existing rough grassland habitats to develop into more complete habitats around the edges of the site, particularly the scrub habitats proposed.

Target = To retain and enhance tall grassland edge habitat to woody and other features, to provide important suitable habitats for birds, small mammals, foraging bats, reptiles, amphibians and invertebrates.

Upper Limit = Cutting of encroaching scrub either annually or every second year, to ensure a rough grassland edge is retained at the edges of the boundaries/woody habitat. Scrub encroachment (eg Brambles) can feature in this habitat type, but should not be more than 30% of area.

Lower Limit = No cutting of grasslands within designated rough grassland areas

3.4 Semi-natural Grassland

Establishment

3.4.1 The following measures will be undertaken in establishment of semi-natural grasslands on site:

- Seed mix Pro Flora 8 – Legacy general purpose wildflower and grass seed mix, with an appropriate mix of locally native species and aiming to provide over 9 species per m² – the mix includes 13 species of wildflower, suitable for the location on site in the open space and adjacent to the newly planted hedgerow.
- Prepare and seed the open space with a wildflower seed mix in the first autumn (September) or spring (March/April) once construction has commenced on site.
- Seed bed will be levelled and bare ground substrate with a medium tilth, then rolled to provide a firm surface.
- Seeding will be surface sown and can be applied by machine (or by hand) and evenly distributed. The seed will then be compacted into the bare ground. Sowing rates will be as per supplier's guidelines. Have regard to Landscape specification for broadcasting and potential for bulk up.
- In the first year cut sward to 5-7cm every two months or when the sward is greater than 15cm, remove all arisings.
- The grassland creation will be monitored for the first 5 years. Where the minimum of 9 species per m² is not achieved in the lawn, after year 5, then re-seeding of the grassland should be repeated as necessary.

Management Prescription

3.4.2 Once established (after year 1), the grassland should be managed through cutting in the late summer/early autumn annually. Cuttings to lay on ground for 1-2 days and then collected. This should be undertaken during dry periods. A second cut can be undertaken in late autumn (Oct). Where grass growth is vigorous a further early spring cut can be taken (April). A marginal edge to the road can be created by mowing the first 0.5-1m to provide a neat edge to the habitat.

Target = To manage wild flower meadows to allow flowering of herbaceous and grass species, followed by traditional hay cut maintenance to allow seeds to drop and maintain meadow habitat.

Upper Limit = Cutting up to three times annually; late summer, late autumn and early spring. Cuttings should lay on ground and then be removed 1-2 days later. Compost can take place on site in compost pile, if a suitable discrete location can be located. Scrub encroachment (eg Brambles) and uncut tall grassland can feature in this habitat type, but should not be more than 10% of area.

Lower Limit = Cutting of grassland once per year in late summer, cuttings to be removed as above.

3.5 New Tree Planting in Open Space

Establishment

3.5.1 The following measures are proposed for establishment of new trees on site in open spaces:

- The Landscape planting plan provides details of location and planting of 5 trees in the site's open space.
- Initial planting at a suitable time of year (early spring and autumn are optimum);
- Monitoring in the first two years following planting, on a fortnightly basis to ensure they are upright, firm and stable and in good health, and have adequate water, supplemented if necessary. by inspecting soils to a depth of 300mm at regular intervals during the growing season to determine whether watering is required.

Management Prescription

3.5.2 Once established, the trees in the open space will be monitored annually as part of ongoing site maintenance. Care should be taken to ensure that other management, for example grass cutting, does not impact on the health of the trees.

3.5.3 It is anticipated that all stakes and ties shall be removed in the region of 5 years after planting, but this should be reviewed by the maintenance team.

3.5.4 Trees shall be pruned as necessary to remove any dead, diseased or damaged shoots and to create a balanced form for future growth.

Target = To maintain all trees in open space on site in a healthy condition

Upper & Lower Limit = Retain and manage the 5 Acer campestre on site.

4.0 BIODIVERSITY NET GAIN SUMMARY

4.1 Introduction

4.1.1 A Biodiversity Net Gain (BNG) matrix assessment has been undertaken to provide information and assessment of proposed biodiversity mitigation and enhancement measures that can be put in place for the development proposals at 25 Orchard Way Harwell.

4.2 Planning Policy for Biodiversity Net Gain

4.2.1 The Environment Act 2021, which received royal assent in November 2021 provides legislation relating to biodiversity net gain for development, and this is being phased into law over the next two years.

4.2.2 The updated National Planning Policy Framework states (paragraph 174) that:

“Planning Policies and decisions should contribute to and enhance the natural and local environment by... minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.”

4.3 Methodology

4.3.1 The DEFRA Biodiversity Metric 4.0 Calculation Tool has been used to determine a quantifiable number of biodiversity units produced during the operational stage of a project. The post-construction/operational value is compared to the baseline biodiversity (pre-construction) value to determine if the proposals will result in a net gain or net loss in biodiversity.

4.3.2 The following documents submitted as part of the Planning Application have been used to inform this report:

- Ecological Appraisal (Aluco Ecology, 2019) – to assess baseline/pre-intervention habitats.
- Landscape Assessment including Landscape Masterplan (S J Stephens Ass, Drawing No, 1278), – to assess operational stage habitats of the scheme.

4.3.3 The assessment has been undertaken by Aluco Ecology Ltd, with a site visit to classify habitats according to the UKHab criteria (Butcher et al, 2023). The matrix assessment is provided as an excel accompanying this document.

4.4 Headline Results

4.4.1 The Matrix has provided the following headline results. The full details of the matrix are provided as a separate document at **Technical Appendix 4**:

FINAL RESULTS				
Total net unit change <small>(Including all on-site & off-site habitat retention, creation & enhancement)</small>	Habitat units		-0.85	
	Hedge row units		0.03	
	Watercourse units		0.00	
Total net % change <small>(Including all on-site & off-site habitat retention, creation & enhancement)</small>	Habitat units		-72.84%	Total net gain achieved is less than target set ▲
	Hedge row units		372.99%	
	Watercourse units		0.00%	
Trading rules satisfied?		No - Check Trading Summaries ▲		
Unit Type	Target	Baseline Units	Units Required	Unit Deficit
Habitat units	10.00%	1.17	1.28	0.97
Hedge row units	10.00%	0.01	0.01	0.00
Watercourse units	10.00%	0.00	0.00	0.00

4.5 Baseline Metric Assessment

4.5.1 In undertaking the net gain assessment, the following habitats were present on site during the baseline survey work. Condition assessments were undertaken on these habitat types, with a summary provided in the assessor comments section of the matrix:

- Vegetated garden – the majority of the site comprised this habitat type, with a largish rear garden that appears to have been managed as a formal amenity space for many years, with species poor lawn and some young and managed fruit trees at the end of the garden. Some formal shrubs are also present.
- Ornamental non-native hedgerow – two sections of hedge are present on site, along the rear boundaries, which are to be managed hedges.
- Urban Trees – Within the site are a number of small and two medium size fruit trees. Outside of the site is a mature Sycamore *Acer pseudoplatanus*, of which a small proportion of the root protection area is present on site.

4.6 Created & Enhanced Habitats

4.6.1 The following measures are incorporated into the scheme design to help ensure that the project provides a biodiversity gain. These are outlined in the Masterplan and Landscape Assessment for the site, which represents the created habitats post intervention plan for the biodiversity net gain assessment.

4.6.2 The following semi-natural habitats are to be provided:

- Creation of new areas of Vegetated Garden. The garden areas are around the rear of the development and will include new planting is detailed in the Landscape Assessment and plans, and includes a variety of native and non-native planting and shrubs. The variety and structure aims to provide a resource for suburban wildlife. In

addition, the rear lawns of the new properties are to be seeded with a wildflower lawn mix, that includes wildflower species that are able to cope with regular mowing and still provide some flowering potential.

- Urban Trees. 5 small *Acer campestre* cultivars and one *Betula nigra* are proposed in open space on site.
- Semi-natural Grassland – two small areas of neutral semi-natural grassland are proposed to be seeded with an appropriate native lawn flowering species mix. Given the space and proposed management it is assessed as a modified grassland but with appropriate management it can at least a moderate condition on habitat criteria.
- New hedgerow planting. For the matrix, the hedgerows in the garden are not included in the new hedgerow total (as they are incorporated into ‘vegetated garden’ habitat). The new open space hedge is proposed to be a native species rich hedge with the following species being incorporated: Hawthorn *Crataegus monogyna*, Dogwood *Cornus sanguinea*, Field Maple *Acer campestre*, Guelder-rose *Viburnum opulus*, Hazel *Corylus avellana*, Privet *Ligustrum vulgare*, Wayfaring-tree *Viburnum lantana*.

4.7 Summary

- 4.7.1 The BNG score exceeds the 10% gain score for hedgerows on site, but does not meet the 10% net gain criteria for habitats on site, and the consented scheme does not provide sufficient space to create new habitats to reach the 10% gain given it’s small-scale nature. Therefore, off site measures are recommended with agreement with a local landowner, or through offsite biodiversity credit purchasing.

5.0 OVERALL SUMMARY

- 5.1 A detailed biodiversity enhancement strategy has been devised to ensure that biodiversity features are built into the proposed development scheme and that there are long term measures to maintain and enhance biodiversity during operation.
- 5.2 A Biodiversity Net Gain assessment using Matrix 4 has provided a >10% gain in hedgerow units but not provided a 10% gain in habitat units for the scheme, therefore off-site measures to buy credits or create new habitats are recommended to ensure that the development can reach the 10% gain in habitat units for BNG.

6.0 REFERENCES

Aluco Ecology (2019) Land at 25 Orchard Way, Harwell. Ecological Appraisal. March 2019

Butcher, B, Carey, P, Edmonds, R, Norton, L, and Treweek, J. (2023) The UK Habitat Classification User Manual Version 2 at <http://www.ukhab.org/>

DEP Landscape Architecture Ltd (2024) Landscape Planting Plan 5143 updated in 2024

Technical Appendix 1
Wildlife & Countryside Act
Habitats Regulations and Schedule 2 Species
Natural Environment & Rural Communities Act 2006

WILDLIFE & COUNTRYSIDE ACT 1981 (AS AMENDED)

The Wildlife and Countryside Act 1981 (as amended) (WCA) is the principle legislation in Britain for the protection and conservation of our wildlife and its habitats of national importance. The legislation adopts a habitat and species based approach to nature conservation. Habitats and some species are protected in designated Sites of Special Scientific Interest (SSSI). Other species are afforded some protection from harm or disturbance by way of inclusion in either Section 1 (birds), Schedule 1 (specially protected birds), Schedule 5 (specially protected animals) or Schedule 8 (specially protected plants).

Protection Afforded to SSSIs

The presence of an SSSI on or near to a development is a material consideration, and this is discussed further in planning policy (see National Planning Policy Framework)

Law Relating to Protected Species

The WCA provides protection to such species in Part 1 of the Act. These sections provide protection from intentionally:

- killing, injuring or taking any wild bird or taking, damaging or destroying the nest or eggs of a wild bird
- disturbing any wild bird in Schedule 1 whilst building, on or near a nest, or disturbing dependant young of such birds
- damaging, destroying or obstructing access to any structure or place of shelter or protection of a schedule 5 animal, or disturbs any such animal whilst it is occupying a structure or place it uses for that purpose
- killing, injuring or taking any animal listed in Schedule 5
- Having in possession or control any live or dead wild bird or egg, or any wild animal in Schedule 5, or trading in any animal under Schedule 5.
- Damage to plants listed in Schedule 8 or uprooting of wild plants unless an authorised person.

Exemption and licences for development can be obtained in certain circumstances. Protected species are also a material consideration in planning applications.

Disturbance & Recklessness

The Countryside and Rights of Way Act 2000 (CRoW Act 2000) adds to protected species legislation in the WCA. The lesser test of 'Recklessness' is added to the protection from disturbance in three circumstances. These are:

- disturbance to Schedule 1 birds and their nests, eggs and dependant young,
- disturbance to Schedule 5 animals in their place of shelter/protection, and
- disturbance to the places of shelter/protection of Schedule 5 animals.

This addition means that any person who deliberately takes an unacceptable risk or fails to notice an obvious risk is falls under the Section irrespective of intention. The CRoW Act also provides greater protection to SSSIs from operations (and non-operations) of owners, occupiers and third party users of the SSSI.

For further information see: <https://www.legislation.gov.uk/ukpga/1981/69>

HABITAT REGULATIONS 2017***General***

The Conservation of Habitats and Species Regulations 2017 ('The Habitat Regulations') consolidate the Conservation of Habitats and Species Regulations 2010 with subsequent amendments. The Regulations transpose Council Directive 92/43/EEC, on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive), into national law. They also transpose elements of the EU Wild Birds Directive in England and Wales. The Regulations provide for the designation and protection of 'European sites', the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European Sites.

European Protected Species

Species listed under Annex II of the Habitats Directive were formally afforded protection by the Habitat Regulations. European protected species include the great crested newt, dormice and all species of bats. The provision relating to wild animal offences is reproduced below:

Protection of certain wild animals: offences

43.—(1) A person who—

- (a) deliberately captures, injures or kills any wild animal of a European protected species,
 - (b) deliberately disturbs wild animals of any such species,
 - (c) deliberately takes or destroys the eggs of such an animal, or
 - (d) damages or destroys a breeding site or resting place of such an animal,
- is guilty of an offence.

(2) For the purposes of paragraph (1)(b), disturbance of animals includes in particular any disturbance which is likely—

- (a) to impair their ability—

- (i) to survive, to breed or reproduce, or to rear or nurture their young; or
(ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate;
or
(b) to affect significantly the local distribution or abundance of the species to which they belong.
- (3) It is an offence for any person—
(a) to be in possession of, or to control,
(b) to transport,
(c) to sell or exchange, or
(d) to offer for sale or exchange,
anything to which this paragraph applies.
- (4) Paragraph (3) applies to—
(a) any live or dead animal or part of an animal—
(i) which has been taken from the wild, and
(ii) which is of a species or subspecies listed in Annex IV(a) to the Habitats Directive;
and
(b) anything derived from such an animal or any part of such an animal.
- (5) Paragraphs (1) and (3) apply regardless of the stage of the life of the animal in question.
- (6) Unless the contrary is shown, in any proceedings for an offence under paragraph (1) the animal in question is presumed to have been a wild animal.
- (7) In any proceedings for an offence under paragraph (3), where it is alleged that an animal or a part of an animal was taken from the wild, it is presumed, unless the contrary is shown, that that animal or part of an animal was taken from the wild.
- (8) A person guilty of an offence under this regulation is liable on summary conviction to imprisonment for a term not exceeding six months or to a fine, or to both.
- (9) Guidance as to the application of the offences in paragraph (1)(b) or (d) in relation to particular species of animals or particular activities may be published by—
(a) the appropriate authority; or
(b) the appropriate nature conservation body, with the approval of the appropriate authority.
- (10) In proceedings for an offence under paragraph (1)(b) or (d), a court must take into account any relevant guidance published under paragraph (9).
- (11) In deciding upon the sentence for a person convicted of an offence under paragraph (1)(d), the court must in particular have regard to whether that person could reasonably have avoided the damage to or destruction of the breeding site or resting place concerned.

Section 44 provides certain defences to the above.

The granting of a licence under Part 5 Section 55 of the Habitat Regulations

In order to carry out a lawful operation (e.g. development work which has full planning permission) that may result in any of the offences above, it is necessary to obtain a licence from Natural England to allow the operation to proceed.

However, in accordance with the requirements of the Habitats Regulations, a licence can only be issued after the following conditions have been satisfied:

- *that there is no satisfactory alternative, and*

- *that the action authorized will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.*
- *that the action is required in preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment;*

Full planning permission is required to apply for a Natural England licence (where such a consent is necessary for the work to be carried out). In addition, a method statement which details the survey results, methodology of work to be undertaken, mitigation and compensation measures, must be submitted to Natural England with the licence application.

Plans and Projects & Designated Sites

The Regulations provide procedure whereby designated SAC or SPA and other European Protected Sites are afforded protection from plans and projects that may be likely to have a significant effect on the Features for which these sites are designated. Where a significant effect is considered likely in combination with other projects an appropriate assessment is required to be undertaken. Details of this procedure can be found at Part 6 of the Act onwards, see link below.

For Full details of the 2017 Habitat Regulations see:

http://www.legislation.gov.uk/ukxi/2017/1012/pdfs/ukxi_20171012_en.pdf

NATURAL ENVIRONMENT AND RURAL COMMUNITIES ACT 2006

This Act places a specific duty to conserve biodiversity on all public bodies, including Local Planning Authorities. In order to aid with this process Section 41 of the Act requires the Secretary of State to publish lists of living organisms and habitats which are of principal importance for the purpose of conserving biodiversity. These are the national Biodiversity Action Plan (BAP) lists, and BAP projects are also undertaken at a County, Borough or District level.

For further information see: <https://www.legislation.gov.uk/ukpga/2006/16/part/3>

Technical Appendix 2

Update Bat Emergence Survey and Site Visit 27 July 2023

Introduction

The ecological appraisal for the site (Aluco Ecology, 2019) recommended a single emergence survey for bats on the dwelling on site. This was undertaken on the 27th July 2023. A walkover of the site was also undertaken to re-confirm the habitats present from the 2019 survey.

Bat Survey Methods

The emergence survey used a methodology following best practice guidelines set out in the Bat Conservation Trust (2016) ‘Bat Survey Good Practice Guidelines’ (3rd Edition), which provides guidance on assessing and evaluating development sites and features for bat roost potential, and guidelines for survey effort.

Bat detection equipment was used to listen for bats and observations were made for any bats emerging from roosts. Bats flying over the site were also identified and their behaviour assessed e.g. commuting, foraging or other behaviour to determine how any bats on or adjacent to the site may use it. The survey was conducted by Gareth Knass LLb (Hons) MSc MCIEEM, who has over 20 years survey experience, and Graham Long FLS assisting with emergence survey for building coverage.

The survey was undertaken during suitable weather conditions, and using the guidelines set out in the BCT (2016) Bat Survey Good Practice Guidelines.

Bat Survey Results

Table 1 below shows the details of the bat survey. No bat emergence was recorded from the site and foraging activity in the garden (excluding Noctule bats that were foraging high up over the local residential area and adjacent farmland and recreational ground) was generally low early in the survey, and with 2-3 Common Pipistrelle foraging in the rear garden boundaries by the end of the survey. Two species were recorded in total.

Table 1: Bat Survey Results – Emergence Survey 01 August 2023

Survey	Weather	Results Summary
27/07/2023 Emergence Survey	Cloud 0/8	Rear garden position – First bat NN at 21:14, 21:19 then 1-3 NN
	Wind SW1-2	21:25-36 F over local area.
	Temp 17c	21:31 PP F over garden & 21:33. 21:40, 21:42, 21:46. PP x 1-3 bats from 21:46 to end of survey, main foraging along NW field boundary.
	Precip – 0	Front garden position – NN foraging as per rear garden position. No PP passes. Nil emergence and limited activity during early survey period

Key: PP = Common Pipistrelle, NN = Noctule, HxS = Heard only, F = Foraging, P=Pass



Figure A1: Bat Survey 27 July 2023

Update Walkover Photos

The habitats on site on the 27 July 2023 are broadly similar to those surveyed previously (see Aluco Ecology, 2019). Photos below show the current site condition on 27 July 2023. The site remains a large residential vegetated garden with a bungalow and garage. A number of small fruit trees are at the rear of the garden, and a large Sycamore is present just off site to the south.



Photo A1: Hedge, Garage and Rear Garden



Photo A2: Dwelling, Mature Sycamore off site, and rear garden



Photo A3: Dwelling and hardstanding


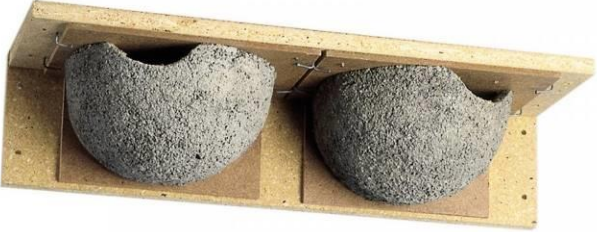



Photo A4: Fruit Trees with some understory longer lawn grass not recently cut – rear garden

Technical Appendix 3

Bat & Bird Box Mitigation Examples

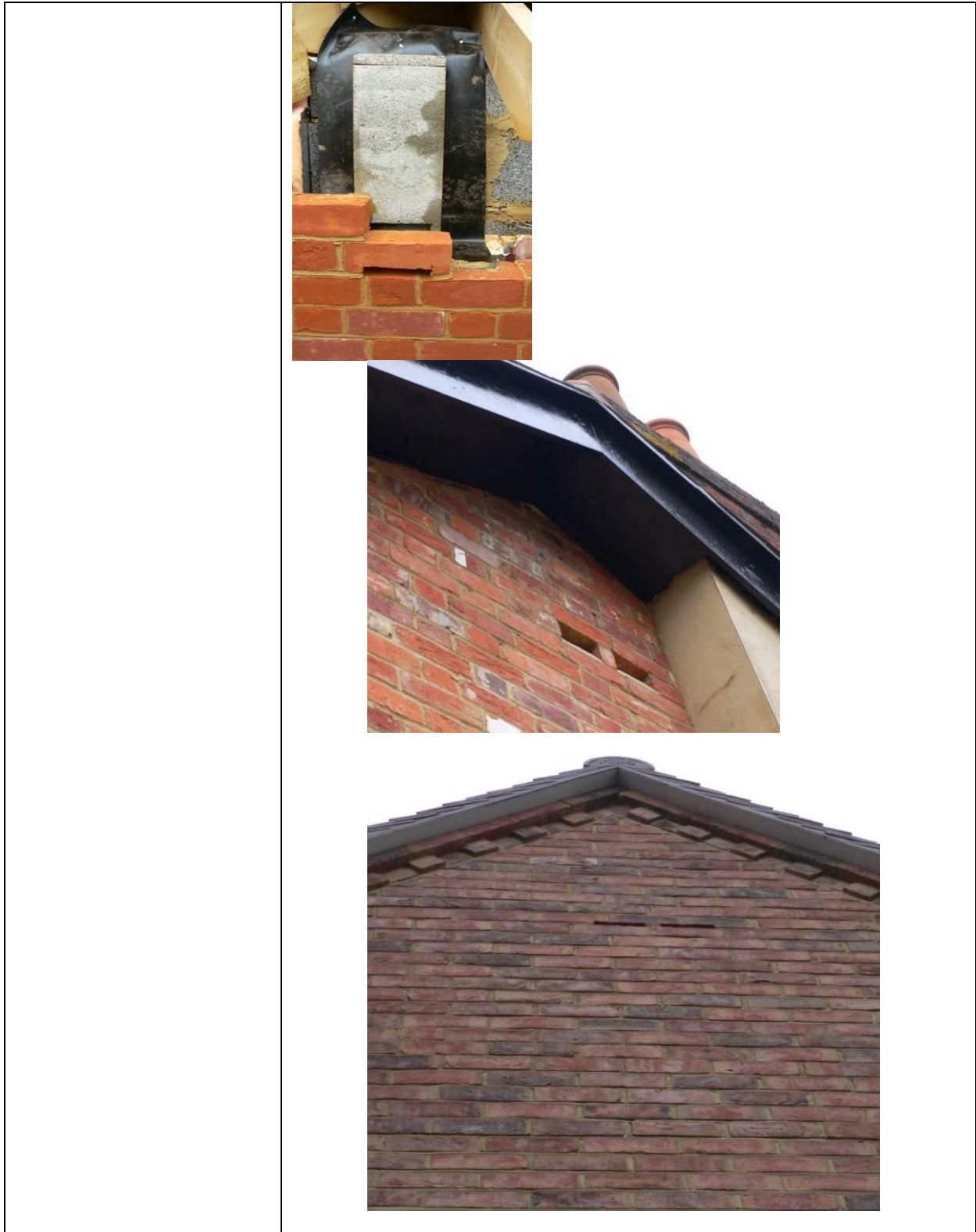
Examples of Bird Nesting Opportunities for buildings

<p>Swift Nesting Brick – It needs to be positioned near Apex or high up – position advised by ecologist.</p> <p>Design shown is from Istock Bricks. https://www.istockbrick.co.uk/kevington/eco-products/</p> <p><i>see also:</i> https://www.rspb.org.uk/globalassets/downloads/documents/conservation--sustainability/help-swifts/swift-bricks.pdf</p>	
<p>House Martin Schwegler Nest Placed under roof overhang, bargeboard – high up position advised by ecologist</p> <p>Design shown Schwegler from NHBS: https://www.nhbs.com/9a-schwegler-house-martin-nest</p>	
<p>House Sparrow Terrace Schwegler Usually placed under roof overhang, bargeboard – high up position advised by ecologist</p> <p>Design shown Schwegler from Wildcare: https://www.wildcare.co.uk/sparrow-terrace.html</p>	



Examples of Bat Bricks/Mitigation for buildings

<p>Schwegler Bat Roost Unit 2FR</p> <p>This Tube system meets the characteristic behavioural requirements of the types of bats that inhabit buildings. Made with Schwegler wood-concrete, the design maintains excellent climatic conditions inside the roost unit allowing the animals to either hang onto the wooden rear or onto the wood-concrete front. The box, once installed is maintenance free and self cleaning.</p> <p>The roost unit can be installed within any external walls (brick, block or panelling) either flush or beneath the wall surface (with suitable entrance ramp extension)</p> <p>Dimensions: height 47.5 x width 20 x depth 12.5 cm, Entrance: width 15 x height 2 cm, Weight: ca. 9,8 kg</p> <p>Within Brick, can also be placed within cavity with only entrance visible</p>	
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Summary of Bat and Bird Box Locations on site: ■ = Bat brick/box ■ = Bird brick/box



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- G 15/02/24 DRAWINGS REVISED FOLLOWING PHD MS CONSULTATION WITH LPA, ISSUED FOR COMMITTEE REVIEW
- F 19/01/24 DRAWINGS UPDATED FOR PLANNING/PHD MS CONSULTÉE REVIEW
- E 21/12/23 SITE LAYOUT AMENDED IN LINE WITH LPA COMMENTS, DRIVEWAYS AND PROPERTY ACCESS REDUCED IN WIDTH TO PROVIDE MORE GREEN SPACE, VISITOR PARKING AMENDED
- D 30/11/23 VEHICLE SWEEP PATH UPDATED IN PHD MS LINE WITH LPA REQUEST, KERB LINES AMENDED TO SUIT, PARKING BAYS INCREASED IN SIZE ALSO.
- C 12/10/23 ISSUED FOR PLANNING LAMPPOST POSITIONS AMENDED IN PHD MS LINE WITH ECOLGIIST RECOMMENDATIONS, BOUNDARY TREATMENTS AND LANDSCAPING
- B 18/09/23 VEHICLE SWEEP PATH AMENDED IN PHD MS ARCHITECTS PROPOSALS
- A 17/07/23 SITE LAYOUT AMENDED IN LINE WITH CLIENT REQUIREMENTS, PV PANELS ADDED TO HOUSE TYPES

REV	DATE	DESCRIPTION	DRN	CKD.

DMS

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PROJECT
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 FELTHAM PROPERTIES LTD
 HARWELL, DIDCOT,
 OXFORDSHIRE, OX11 0LQ

TITLE
 SITE PLAN

STAGE
 3 - PLANNING

SCALE
 1 : 500@ A3

DATE
 05/06/23

DRAWN
 PMD

CHECKED
 MS

DRAWING NO.
 1819- DMS- XX-01- M2- A- (20)001

REV.
 G

SUITABILITY
 PI

PROJECT NO.
 1819

LEVEL SCHEDULE		
PLOT NUMBER	LEVEL @	LEVEL (M)

PLOT 1

	FFL	82.85
	EAVES	85.70
	RIDGE	88.88

PLOT 2

	FFL	82.85
	EAVES	88.09
	RIDGE	90.54

PLOT 3

	FFL	82.85
	EAVES	88.09
	RIDGE	90.54

PLOT 4

	FFL	82.85
	EAVES	87.93
	RIDGE	90.59

PLOT 5

	FFL	82.85
	EAVES	88.09
	RIDGE	90.54

0 5 10 25m

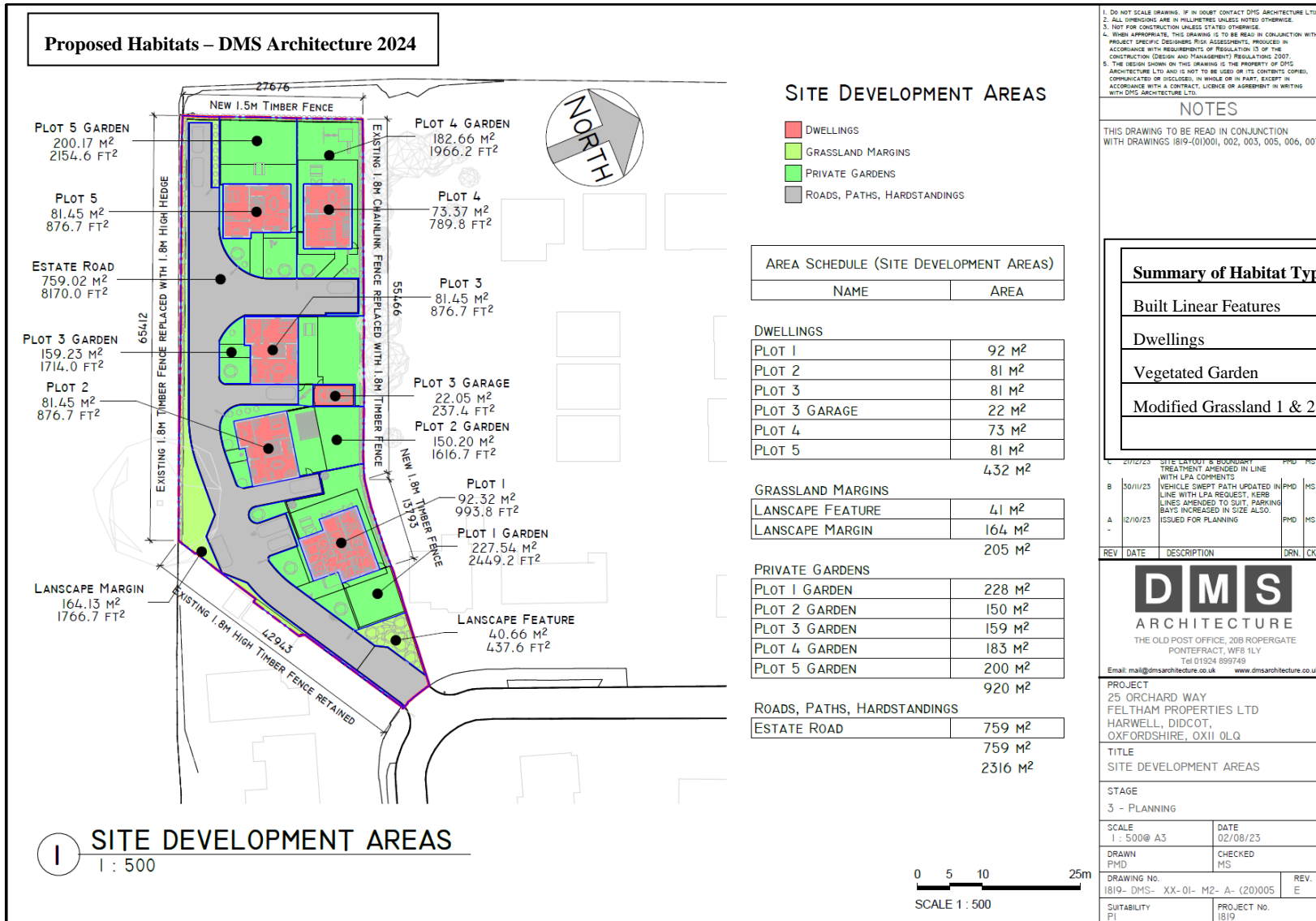
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Technical Appendix 4

Biodiversity Net Gain Plans





Biodiversity Net Gain Metrix 4 excel spreadsheet – see separate attachment.