Habitat Management and Monitoring Plan



Dwyer Road, Reading

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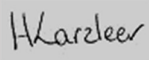
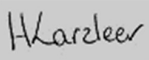
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The information which ADAS has prepared and provided is true and has been prepared and provided in accordance with the CIEEM's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

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Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK ADAS Limited.

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1 Introduction

1.1 Background

This report has been commissioned by Francis Construction Ltd on behalf of Reading Borough Council. The report is to inform a planning application of land at Dwyer Road, Reading RG30 3PN (central OS grid reference: SU 68232 71885), hereafter referred to as 'the site'. ADAS completed a biodiversity net gain (BNG) assessment (ADAS, 2023a) for the site in line with local and national policy which showed that a 10.07 % net gain in area habitats and a 202.83 % net gain in linear habitats could be achieved.

Biodiversity net gain is defined as an approach to development or land management that leaves the natural environment in a measurably better state than it was prior to development.

Planning approval was granted for the proposed development (Application No. 230612) with condition 21 below, in relation to habitat creation and management:

> *No development shall commence on site (including demolition or preparatory works) until details of a habitat enhancement scheme are submitted to and approved in writing by the Local Planning Authority. The scheme is to include a programme for implementation and ongoing maintenance. The habitat enhancement scheme shall thereafter be implemented and adhered to in accordance with agreed programme. REASON: Details are required prior to commencement as insufficient information was submitted with the application and in order to avoid harm to habitats and species whilst securing biodiversity enhancement in the long term. This accords with Paragraph 175 of the NPPF (2019), Policy EN12 of the Reading Borough Local Plan 2019, the Wildlife and Countryside Act 1981 (as amended) and The Conservation of Habitats and Species Regulations 2017.*

Accordingly, ADAS has been commissioned to produce a habitat management and monitoring plan (HMMP) for the site. The ecological assessments and recommendations included in the ADAS BNG report (ADAS, 2023a) have been used to inform this document. Habitat creation on-site, and land acquired off-site have been used to meet the necessary uplift.

1.2 Objectives of the Report

This report has been produced in accordance with the British Standard (BS) for Biodiversity – Code of practice for planning and development, BS42020:2013.

The objectives of this report are as follows:

1. To fulfil the requirements of the above-referenced planning condition;
2. To identify persons responsible for implementation and funding of the works;

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3. To ensure that all ecological features to be created or enhanced as part of the development are correctly installed and establish successfully;
4. To provide aftercare and long-term management objectives for a period of 30 years that will ensure all ecological features achieve the target conditions outlined in the BNG assessment report;
5. To provide a schedule and criteria for monitoring that will allow for identification of progress or issues in a timely fashion;
6. To set out requirements for reporting on monitoring results, recommendations and contingency measures or changes to proposed management measures in the event that habitats are failing to achieve the target conditions; and
7. To identify a mechanism to secure the agreement and implementation of these contingency measures.

This will ensure that a biodiversity net gain is secured for the site, in accordance with the rationale for the planning condition detailed above.

1.3 Structure of the Report

The remainder of this report is structured in the following manner:

- Section 2 Responsibilities: Describes the delivery, management and funding responsibilities for the development.
- Section 3 Legislation and Policy Background: Describes the national, county and district level planning policy relevant to biodiversity net gain matters in relation to the proposed development.
- Section 4 Proposed Development: Describes the proposed development.
- Section 5 Retained Ecological Features: Describes the baseline biodiversity features which are being retained and protected during development and provides the baseline biodiversity units. Describes how retained ecological features on site will be protected during construction.
- Section 6 Habitat Objectives: Describes the habitat creation and enhancement objectives for the development.
- Section 7 Assessment of Habitat Conditions: Describes the Defra Biodiversity Metric condition scoring and how it will be used to measure the success of the habitat objectives for the development.
- Section 8 Creation of Ecological Habitats: Describes the installation and establishment specifications for the proposed habitats to be created.
- Section 9 Management of Ecological Habitats: Describes the long-term management requirements for habitats on site to achieve their biodiversity net gain objectives.

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- Section 10 Monitoring: Describes the ongoing habitat monitoring and reporting requirements for the development.
- Section 11 Remediation or Adaptive Management: Describes the mechanisms to agree and set out remediation or alternative management approaches as required.

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2 Responsibilities

2.1 Management Responsibilities

Francis Construction will be responsible for the management of pre-construction and construction activities, including the protection of relevant ecological features on the site, and the implementation of the final development landscape plans.

Reading Borough Council will be responsible for the long-term management and monitoring obligations set out in this document. Reading Borough Council will appoint a suitably qualified principal contractor or management company to undertake the landscape maintenance and management in line with this HMMP. As a minimum, the landscape contractor or management company will be a registered member of the British Association of Landscape Industries (BALI) or a similar approved governing body or institute.

It is the responsibility of the principal contractor or management company (appointed by Reading Borough Council (or those legally responsible for the proposed development site) to ensure that the measures within this report are adopted, or that the Local Planning Authority (LPA) are notified where there is to be any deviation from what is proposed in this report.

Ongoing management will be the responsibility of the end user tasked with overseeing the site post-construction. They will be responsible for all communication, monitoring, audit mechanisms and reporting of control measures outlined in this report, with the support of the appointed landscape contractor or management company. This document will be passed on to all relevant parties at project hand-over. The appointed contractor will be legally obligated to provide a detailed site-specific method statement, and any task-specific risk assessments, including Control of Substances Hazardous to Health Regulations (COSHH) assessments.

The site will be managed to comply with all relevant health and safety legislation, best practice standards, approved codes of practice (ACOP) and Health and Safety Executive (HSE) guidance, including the Construction (Design and Management) (CDM) Regulations 2015. It will be the responsibility of the appointed landscape contractor or management company to fulfil the role of Reading Borough Council. This places an obligation on the landscape management company to ensure that any contractor understands and fulfils their health and safety role and any work undertaken on the site will follow the guidelines of the HSE.

2.1 Funding Responsibilities

This plan and its delivery, including long-term monitoring and management as well as any corrective contingency measures, will be implemented and funded by Reading Borough Council.

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3 Legislation and Policy Background

3.1 Local Planning Policy

The Reading Borough Council Local Plan (adopted November 2019) makes provision for protecting biodiversity and the green network in Policy EN12, which states the following in relation to biodiversity net gain:

- *On all sites, development should not result in a net loss of biodiversity and geodiversity and should provide a net gain for biodiversity wherever possible. Development should:*
    - *protect and wherever possible enhance features of biodiversity interest on and adjacent to the application site, incorporating and integrating the into development proposals wherever practicable; and*
    - *provide new tree planting, wildlife friendly landscaping and ecological enhancements (such as wildlife ponds, bird and bat boxes) wherever practicable.*

  In exceptional circumstances where the need for development clearly outweighs the need to protect the value of the site, and it is demonstrated that the impacts cannot be: 1) avoided; 2) mitigated; or 3) compensated for on-site; then the new development will provide off-site compensation to ensure that there is "no net loss" of biodiversity. Provision of off-site compensation shall be calculated in accordance with nationally or locally recognised guidance and metrics. It should not replace existing alternative habitats, and should be provided prior to development.

3.2 National Planning Policy Framework

The government policy for England on biodiversity is covered under the National Planning Policy Framework (NPPF) (2023), which includes multiple mentions of the requirement for a measurable net gain (highlighted in the following extracts below):

- *Para 174d: 'Planning policies and decisions should contribute to and enhance the natural and local environment by… minimising impacts on and improving **net gains** for biodiversity, including by establishing ecological networks that are more resilient to current and future pressures…'*
- *Para 179b: 'To protect and enhance biodiversity and geodiversity, plans should… promote the conservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing **measurable net gains** for biodiversity.'*
- *Para 180d: 'development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be*

*integrated as part of their design, especially where this can secure **measurable net gains** for biodiversity or enhance public access to nature where this is appropriate.'*

3.3 The Environment Act (2021)

Para 2 (3) of Schedule 14 of The Environment Act 2021 makes it mandatory for all new developments (with some limited exceptions) to achieve a biodiversity net gain (BNG) of at least 10% by the time the development is completed compared to the pre-development biodiversity value of the onsite habitat. This percentage may be amended in the future by the Secretary of State. Please note that some Local Policies stipulate a higher target than this.

The Act allows three methods for securing biodiversity net gains:

1. enhancement of the biodiversity of land to which the planning permission relates;
2. the allocation of registered offsite biodiversity gain to any development for which the planning permission is granted; and
3. the purchase of biodiversity credits for any such development.

A biodiversity gain statement must set out whether, and if so how, the biodiversity gain objective applies in relation to development where the onsite habitat is irreplaceable, how the development will minimise any adverse effects to the onsite habitat, and what the evidence must be produced to show how the biodiversity net gain has been met upon completion of the development.

4 Proposed Development

The development proposal, shown in Appendix 1, is for the development of residential dwellings and associated hard and soft landscaping on the land at Dwyer Road, Reading RG30 3PN (central OS grid reference: SU 68232 71885) by Francis Construction, on behalf of Reading Borough Council.

The dwellings will include four four-bedroom residential houses within semi-detached three-storey buildings and one detached five-bedroom house along the southern side of the site; a row of ten terraced houses with four three-storey four-bedroom houses and six two-storey houses running east to west through the centre of the site; and three additional one-bedroom flats in the north of the site; as well as associated hard and soft landscaping. This includes 18 car parking spaces (all of which will have electric charging) accessed from Appleford Road through the centre of the site and will allow large vehicles to reverse into the site. A further six residential parking spaces will be provided alongside the houses along the south of the site, accessed from Dwyer Road.

Soft landscaping includes private amenity grass lawns associated with the residential housing, with shade tolerant species-rich grassland turf within the community green space in the north of the site and within the 'Biodiverse Open Green Space' in the southwest corner of the site. There will be a mix of 23 small and medium Urban trees planted throughout the site – within green spaces and residential gardens. Most trees will be non-native, however a small number will be native and/or Royal Horticultural Society (RHS) species beneficial for pollinators.

The development will result in the loss of 0.46 ha of Other Neutral Grassland, 0.03 ha of Developed Land; Sealed Surface, 29 Urban Trees, and two Lines of Trees.

Habitats to be created as part of the development, along with their target conditions are set out in Section 6.

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5 Retained Ecological Features

5.1 Baseline Features

Table 1 below provides a summary of the ecological features present in and around the proposed development site (as identified within the 2023 ADAS BNG report – ADAS, 2023a) which will be protected and retained under the proposed development.

Table 1: Summary of retained baseline ecological features

UK Habitat classification	Baseline Area (hectares)	Baseline Condition	Retained (ha)	Total baseline habitat units retained
Modified Grassland	0.03	Poor	0.03	0.06
Modified Grassland (Off-site)	1.6	Moderate	1.6	6.4
Urban Tree	0.23	Good	0.23	3.23
Urban Tree	0.29	Moderate	0.18	1.65
Developed sealed surface	0.09	Condition assessment N/A	0.06	0

5.2 Protection of Retained Ecological Features

The 0.03 ha area of Modified Grassland and 0.52 ha of Urban Trees are the only areas of development on-site considered to be of ecological value. These will be retained as part of the ADAS BNG (ADAS, 2023a) recommendations and will require protection during construction.

A 1.6 ha area of Modified Grassland has been retained off-site, but this land will not be enhanced. This area will be used for the creation of Other Neutral Grassland in line with the biodiversity uplift requirement of the proposed development.

Protection measures for birds, bats, and other wildlife must be implemented in accordance with the recommendations of the ADAS PEA (ADAS, 2023b), subsequent survey reports for Badgers, reptiles, and bats, and relevant legislative requirements. These measures are summarised below.

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5.2.1 Site Preparation: General Measures

Prior to the start of work, the following steps will be taken to minimise environmental impacts:

- works access routes and works zones will be planned and agreed in advance;
- defined work areas will be clearly delineated using appropriate fencing around the development area;
- no unauthorised construction works, machinery, workers or storage of materials will be allowed outside of these areas or into the surrounding grassland;
- plant and vehicles will be kept on areas of hardstanding where possible;
- material which can contaminate the soil, e.g. diesel oil and vehicle washings, will not be discharged on the site. A suitable pollution control plan will be in place throughout the development period;
- all operatives must be appropriately skilled and experienced for the type and quality of work, especially where COSHH is applicable; and
- landscape contractors must produce method statements for approval by the main contractor or management team for all operations.

A recording programme will be implemented for all site preparation and construction operations that will including the following details:

- weather;
- date the operation took place;
- who carried out the operation;
- success of the operation;
- necessary alterations that affected the operation (e.g. to prevent wildlife disturbance); and
- any wildlife disturbance caused.

5.2.2 Urban Trees

Tree root and ground protection measures will be implemented in accordance with guidance provided in BS5837:2012 *Trees in Relation to Design, Demolition and Construction (Recommendations)*.

To avoid compaction, there will be no vehicle or plant access within root protection areas. Where appropriate, protective fencing will be used. Where accidental compaction has occurred, advice will be sought from an arboricultural consultant.

Care will be taken when planning site operations to ensure that wide or tall loads, or plants with booms, jibs, and counterweights can operate without encountering retained trees. Such contact can result in serious damage to trees and might make their safe retention impossible.

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5.2.3 Modified Grassland

Exclusion fencing will be installed around retained grassland areas to ensure no negative impacts resulting from development. No unauthorised construction works, vehicles, machinery, workers, or storage of materials will be allowed within these areas.

These areas will be managed by mowing. Mowing is to be carried out by approved machinery to maintain vegetation length with limits of 30 mm to 50 mm during April and August inclusive, and between 50 mm and 70 mm for the remainder of the year. Care will be taken to ensure mowing will be carried out without rutting or compaction of the surface. To achieve this, mowing will not be carried out when ground conditions are wet, without prior agreement of the management team. Arisings will be taken off the grassland.

Nylon-fitted rotatory cutters or other mechanical tools are not to be used within 100 mm of any tree or plant. They will have appropriate guarding to prevent damage to surrounding planting.

Spot weeding may be necessary. This will be done in line with manufacturer guidance. Where areas have become worn, reseeding may be required. This can be done by cultivating the damaged area until it resembles a fine tilth, filling the area with BS 3882 premium (or as originally laid) grade topsoil, and reseeding the area with an appropriate seed mix to match the surrounding grassland. Water is necessary to encourage germination. Temporary fencing around new areas can be used to protect the areas while germination occurs.

Reinstate grassland edges, borders, and clear manhole covers once a year using a suitable edging tool. A clean edge shall be formed, sloping slightly back from vertical as per Figure 1 below.

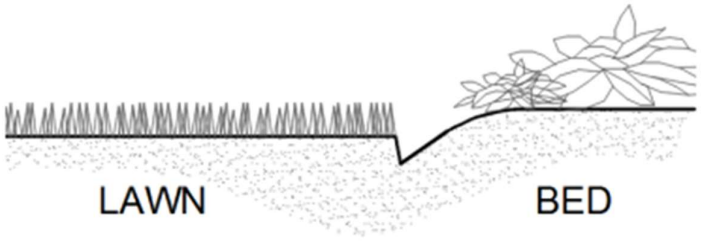


***Figure 1**. Border and edge creation around modified grasslands.*

5.2.4 Badger

The Badger survey did not identify any signs of current use of the mammal holes by Badgers (*Meles meles*); however, at the time of last survey, Foxes (*Vulpes vulpes*) appeared to be using the mammal holes on site (ADAS, 2024). Foxes are protected against certain cruel acts such as asphyxiation or crushing under the

Wild Mammals (Protection) Act 1996 (as amended). Appropriate/humane methods of exclusion are therefore required.

A suitably qualified pest controller will be hired before the works commence to remove the den appropriately and humanely from site to prevent asphyxiation or crushing of Foxes. To avoid harming/killing Foxes, the area will be dug by hand. If any Foxes or other mammals are found during the works, they will be safely and humanely removed from site. This is only required if works are to affect the inhabited area.

A pre-works Badger check undertaken by an experienced ecologist is recommended to confirm likely presence/absence in the works area before works commencing, to search for signs/evidence of new Badger setts. A 20 m buffer around any identified sett will be adhered to.

In addition, it is recommended that any excavations are either back-filled or covered up at the end of each working day, or that ramps/mammals are installed within the excavations to allow any Badgers to escape if they were to fall in.

5.2.5 Bats

Trees 15, G1.1, and G5.1 are currently marked for removal as part of the works (ADAS, 2023c). These trees have all been assessed as having low suitability to support roosting bats. In accordance with good practice guidelines, trees with low potential require no further survey work. However, each tree with low suitability will be section felled when clearing to ensure the work is compliant with good practice guidelines. This requires the trees to be lowered to the ground in sections under the supervision of a bat licensed ecologist and left on the ground in situ for a minimum timeframe of 24 hours, with any potential bat roosting features (PRFs) left uncovered.

If bats are discovered during the works, the works will stop, and a suitably qualified ecologist contacted for advice. Failure to do so may result in offences being committed. Further surveys and a European protected species mitigation licence may be required.

Night-time work will be avoided to ensure compliance with good working practices. If this is not possible, then an appropriate lighting strategy will be implemented. Residential, exterior and street lighting will be installed in accordance with the Bat Conservation Trust – Bats and artificial lighting in the UK (BCT, 2023) which includes:

- use of low-pressure sodium lamps, LEDs, or high-pressure sodium instead of mercury or metal halide lamps;
- lighting will be directed to where it is needed, and light spillage avoided; and
- the height of lighting columns in general will be as short as is possible.

5.2.6 Reptiles

No reptiles, amphibians or other mammals were recorded on site during the reptile survey.

Based on the results of the survey, it can be concluded that reptiles are likely absent from the site. Although suitable habitat remains on-site, there is limited chance (albeit highly unlikely due to dispersal barriers) that herpetofauna could migrate into the site between the survey date and the start of works. Despite this, in in line with best practice and to be confident that an offence is not caused under the legislation the following precautionary procedures must be followed. All contractors carrying out vegetation clearance must be aware of and carry out these responsibilities.

Any vegetation clearance of suitable habitat (tall grassland, scrub, hedgerows) must be carried out in a 2-stage cut using hand tools. Any suitable refugia (stumps, log / brash piles and rubble) must be taken apart by hand prior to removal during the active reptile period (April to September/October). Any removed vegetation will be removed immediately or stored off the ground, so as to prevent fauna such as reptiles accessing it.

5.2.7 Nesting Birds

Removal of habitats suitable for nesting birds will be avoided within the nesting bird season (March to August, inclusive). If this is not possible, a nesting bird check by a competent person will be undertaken of the area proposed for disturbance at a maximum of 48 hours before the development works. To comply with the Wildlife and Countryside Act 1981 (as amended), active bird nests will need to be safeguarded with a buffer of at least 5 m in place around any active nests discovered until the young have fledged.

5.2.8 Other Terrestrial Invertebrates

The grassland and shrub provide a habitat capable of supporting common assemblages of invertebrates, such as grasshoppers and Hymenoptera. Damage to these habitats will be avoided where possible. Habitat features outlined in Section 6.2.4 will be implemented in order to preserve biodiversity at the site, in line with policies set out in the Reading Borough Local Plan.

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6 Habitat Creation

The BNG Assessment has set out the following habitat creation in relation to the proposed development.

6.1 Habitat Features

The new on-site area habitats are based on the development plan in Appendix 1 and are summarised in Table 2. The objectives for each habitat are to reach the stated condition targets within the required timeframe.

Table 2: Summary of on-site habitat creation

Habitat type	Area (hectares)	Condition	Time to target condition (years)	Strategic significance	Total habitat units
Other Neutral Grassland	0.05	Moderate	5	Formally identified in local strategy	0.37
Vegetated Garden	0.11	N/A	2	Area not in local strategy/ no local strategy	0.20
Urban Tree	0.19*	Moderate	28	Formally identified in local strategy	0.64
Ground-Based Green Wall	0.02*	Moderate	1	Area not in local strategy/ no local strategy	0.05
Developed Land; Sealed Surface	0.33	N/A	4	Area not in local strategy/ no local strategy	0.00
Total	**0.49**	-	-	-	**1.27**

**The metric calculator does not include the area measurement for urban street trees and green walls in the total due to the overlap in habitats*

Table 3: Summary of on-site linear feature creation

Linear type	Length (km)	Condition	Time to target condition (years)	Strategic significance	Total habitat units
Native Hedgerow	0.15	Moderate	5	Formally identified in local strategy	0.56
Total	**0.15**	-	-	-	**0.56**

Table 4: Summary of off-site habitat creation

Habitat type	Area (hectares)	Condition	Time to target condition (years)	Strategic significance	Total habitat units
Urban Trees	1.68	Moderate	27	Formally identified in local strategy	5.70
Total	**1.68**	-	-	-	**5.70**

**The metric calculator does not include the area measurement for urban street trees and green walls in the total due to the overlap in habitats*

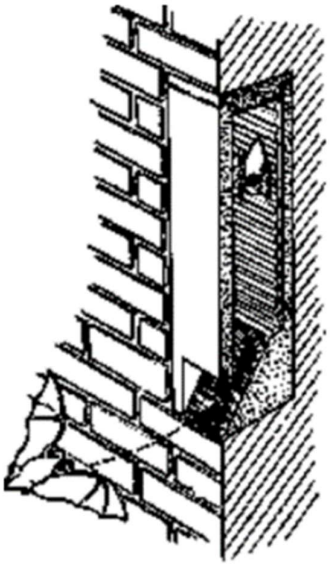
6.2 Wildlife Features

6.2.1 Bats

On building B2 facing southeast, eight artificial bat boxes will be fit, as in Appendix 2. Schwegler 1FR Bat Tubes (see images from NHBS website in Figure 2 below) will be built into the newly constructed dwellings. If this model is unavailable then a suitable alternative of similar specifications will be used.



Figure 2. *Schwegler 1FR Bat Tube*



Schwegler 1FR Bat Tube (as built into a wall)

Bat boxes and tubes of this type can sit flush with the brickwork and can be built directly into the wall. They will be placed between 9 m and 13 m above the ground, and positioned in an open, sunny location with 6-8 hours of direct sunlight (see Appendix 3). There will be no vegetation or structures 4-6 m below the bottom of the bat boxes to allow for access.

New and existing street lighting, including electrical plans provided by Hydrock, were taken into account when determining the location of the bat boxes. The plans provided by Hydrock were used as a basemap for a bat lighting plan, as seen in Appendix 4. An isoline drawing was unavailable and as such this is a limitation for the placement of these bat boxes. Given the existing surrounding urban environment and only low suitability roosting features were highlighted in the ground level tree assessment (ADAS, 2023c), the significance of this limitation has been determined to be minimal. Furthermore, species that have a higher tolerance for ambient light such as Common Pipistrelles (*Pipistrellus pipistrellus*) and Soprano Pipistrelles (*Pipistrellus pygmaeus*) have been highlighted as the targeted species for these bat boxes.

A dark corridor of minimal street and home lighting will allow access from the bat boxes on the south side of B2, east towards Burghfield Road. This existing road possesses heavy tree cover and connects to agricultural land and the River Kennet to the south, both suitable foraging habitats.

As per the Bat Conservation Trust guidance note (BCT, 2023), all lampposts will be directional lighting (no output above 90°) and will be at least 1 m shorter than the height of the integrated bat boxes. As stated the bat boxes are to be fitted between 9 m and 13 m, whilst the lamps used are to be mounted at 5 m from the ground. Lighting specifications have been set as warm white LEDs (2700 Kelvin or lower) with a peak wavelength of no more than 550 nm. Internal lighting must also be ensured to be angled downwards as demonstrated by Figure 3 below, taken from the aforementioned guidance note (BCT, 2023). All bat boxes on building B2 will be fitted with no windows directly above them (see Appendix 3).

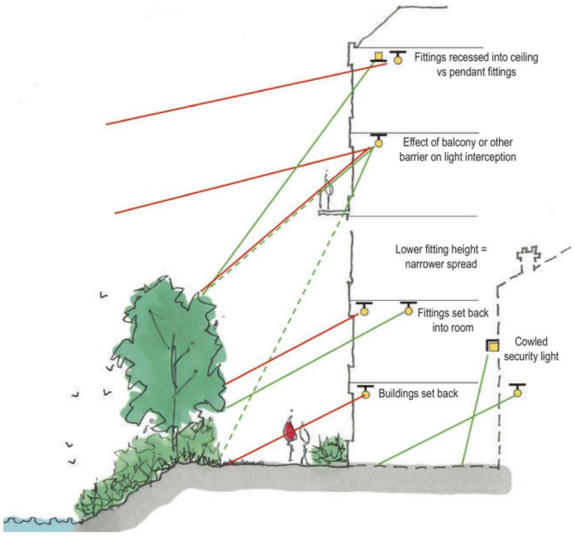


***Figure 3**. Internal lighting mitigation options.*

6.2.2 Birds

A minimum of seventeen Swift boxes and four Sparrow boxes will be installed on newly built dwellings to ensure that no nesting opportunities are lost. Seven Swift boxes will be installed on building B1 (see Appendix 2) with four facing west and three facing east of the building. A further ten Swift boxes will be installed on buildings B3, B4, and B5 (see Appendix 2) facing north, northeast, northwest, and north. Furthermore, two Sparrow boxes will be installed on building B1 facing west, and two on building B2 facing north.

The Woodcrete Schwegler 16 Swift Box (see images from the NHBS website in Figure 4 below) will be used. If these models are unavailable then a suitable alternative of similar specifications will be used. These models have a 67 x 38 mm hole and are durable, low maintenance and suitable for a variety of bird species. This includes tit species (*Paridae sp*.), House Sparrows (*Passer domesticus*) and other small birds. These will be fitted at roughly 6 m above the ground and avoid areas where foliage obscures the entrance hole. The front of the box will be angled vertically or slightly downwards to present rain from entering the nest box and shelter it from prevailing winds, rain, and strong sunlight.





Figure 4. *Schwegler 16S Swift Box* *Schwegler 16 Swift Box*

6.2.3 Reptiles

As there was suitable reptile habitat on site, it is recommended that reptile enhancements be incorporated into the proposed development (ADAS, 2023d). This is to provide an additional net gain for biodiversity where possible, in line with the Reading Borough Local Plan. Two hibernacula will be created within the site to increase resting and hibernating opportunities for reptiles (Figure 5). These hibernacula may also be utilised by amphibians and invertebrates. Hibernacula with above-ground log piles would provide further habitat suitable for refuge in the active season. Hibernacula will be located along scrub, tree lines, or woodland edges, ideally with south-facing aspects exposed to the sun for basking on

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emergence. Recommendations for location are the two amenity areas along hedgerows or scrub, as in Appendix 2.

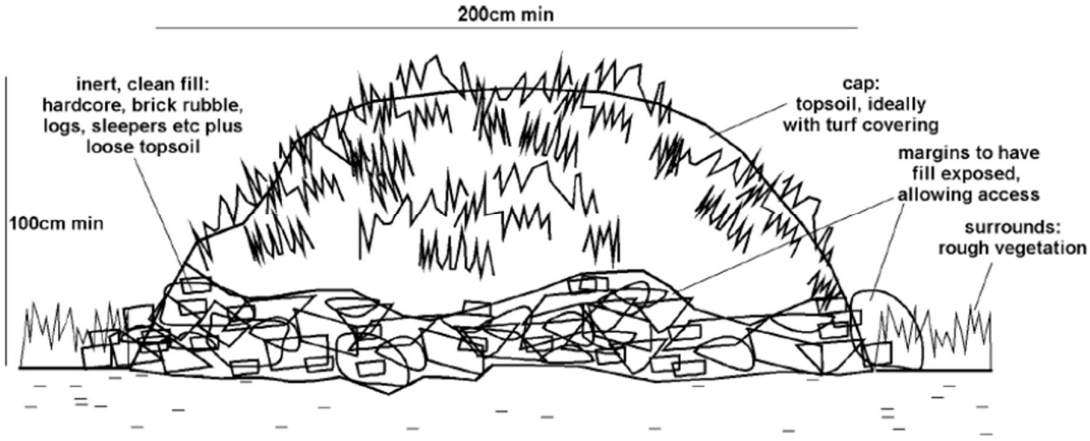


***Figure 5**. Hibernacula design for reptiles and amphibians.*

6.2.4 Other Terrestrial Invertebrates

Impacts on suitable habitats will be minimised pre- and post-construction. However, where impacts to these habitats cannot be avoided, compensatory measures will be implemented at the site, which could include planting of native wildflowers and shrubs, such as flowering and/or fruiting plants from the families Asteraceae, Fabaceae, and Rosaceae and other pollen/nectar-rich plants such as Honeysuckle (*Lonicera* sp.) and Foxglove (*Digitalis* sp.). Bee bricks will be added to the new dwellings to provide additional habitat for invertebrates. Suggested locations for these can be found in Appendix 2.

7 Assessment of Habitat Conditions

To determine whether the habitat objectives for the site have been achieved, the site will be assessed at appropriate intervals of time by a suitably qualified ecologist. These assessments will be at year 1, 6, 10, 20, 30 (see Section 10.3 below). Habitats on site will be assessed and given a condition score for the relevant version of the Defra Biodiversity Metric (Statutory Biodiversity Metric for this development) using guidance provided by Defra (Defra 2024a-c).

The condition score is a means to measure the quality of a habitat based on a series of physical characteristics and typical species of a particular habitat type. To aid in assessment, the Statutory Biodiversity Metric user guide (Defra 2024b), provides 'condition assessment sheets'. These provide a list of positive indicators for each habitat. The number of positive indicators a particular habitat meets will determine the relevant condition for that habitat.

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8 Creation of Ecological Habitats

8.1 Other Neutral Grassland

A biodiverse green space and green verges will be created on-site to compensate for the loss of habitats on site. In particular, 0.05 ha of Other Neutral Grassland will be created with a shade-tolerant species-rich wildflower seed mix.

If, prior to the creation of this grassland, an ephemeral community (e.g. weedy growth during construction) establishes, then additional ground preparation will be necessary. In order to remove undesirable weed species, the area will be mown prior to overseeding. Arisings will then be scarified and removed. This grassland area will be sown with a meadow mixture suitable for a range of soil types, tolerant of shade and with a high species diversity. A suitable mixture would be such as EM2 Standard General Purpose Meadow Mixture or equivalent, which would meet the requirements of species diversity whilst requiring less maintenance.

For establishment the seed mix will be surface sown in autumn (September to October) or spring (March to May) following the supplier's instructions. Sowing at other times of year may be possible if there is sufficient warmth and moisture. To get an even distribution, divide the seed mix into two or more parts and sow in overlapping sections at right angles to each other. Do not incorporate or cover the seed, but firm in with a roll, or by treading, to give good soil/seed contact.

The seed mix can be slow to establish. A first flush of annual weeds is likely to develop which will be left in place to provide cover for seedlings and habitat for invertebrates. If spring sown, and during the first year of establishment, the area will be cut once to 60 mm during mid- to late-summer (ideally early August). All arisings will be removed from the site to retain low soil fertility and prevent competitive species from dominating. Localised cultivation and seeding will be repeated if any substantial bare patches remain after one year, or if this is required to eradicate any substantial colonisation of undesirable species.

8.1 Urban Trees

There will be 23 new Urban Trees planted within the site (excluding the 20 trees within private gardens), to give a total area of 1.68 ha. This assumes a composition of 20 small[1] and three medium[2] trees, based on the tree species to be planted with a cautious approach due to the difficulty in predicting tree girth. It is assumed the trees will be in moderate condition and reach proposed condition/size by 27 years post-development. The planting scheme for these trees includes mostly non-native species but also includes a

[1] Small trees are those classed in the Biodiversity Metric User Guide as having a diameter at breast height between 7 and 30cm.

[2] Medium trees are those classed in the Biodiversity Metric User Guide as having a diameter at breast height between 30 and 90cm.

mix of native species and RHS species beneficial for pollinators, such as Midland Hawthorn (*Crataegus laevigata*), Judas Tree (*Cercis siliquastrum*) and Rowan (*Sorbus aucuparia*).

The obstruction of light and views, the creation of shade by new trees, and the likely extent and density of tree crowns when fully grown, will be taken into account when designing new planting adjacent to buildings. Design and species selection will allow the enjoyment of reasonable light and shading where desirable as the trees develop into mature specimens.

8.2 Ground-based Green Wall

The Ground-based Green Wall will be established by planting climbing species such as Honeysuckle (*Lonicera periclymenum*) and Common Jasmine (*Jasminum officinale*) at the base of the wall structure. A framework of climbing-enabling structures will be fitted to the wall. This will allow species to climb up the wall as they grow giving the wall its green covering.

8.3 Vegetated Garden

Vegetated Gardens have negligible biodiversity value. These will be installed and managed according to the standard details outlined in the landscape management plan for the development. No ongoing management measures are required in the context of biodiversity net gain

8.4 Native Hedgerow

A network of 0.15 km of new Native Hedgerows will be created throughout the site, primarily hedges outside residential properties and hedge boundaries at the site boundaries. Species include Hazel (*Corylus avellana*), Blackthorn (*Prunus spinosa*) and Common Privet (*Ligustrum vulgare*). Non-native or invasive species will not be used.

Hedgerows will be planted around the site, according to the landscape plan. Planting will be avoided during droughts, hard frosts (most likely in January and February) or particularly cold, windy periods.

The new plants will be established according to the following recommendations:

- plants will be supplied from an approved local nursery and will conform to either the 'British Standard 3936-1:1992 Nursery Stock Part 1: Specification for Trees and Shrubs' (BS3936) or the 'National Plant Specification' (NPS) produced by the Horticultural Trades Association (HTA).
- new hedgerows will be planted between November and March, avoiding periods of hard frost and waterlogged conditions;
- plant whips in a double staggered row 450 mm apart in trenches or individual pits large enough to accommodate roots without constriction, with roughly half a meter between rows;
- water well after installation and provide a thick mulch;

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- young hedgerows will require watering in dry conditions and the regular reapplication of mulch during establishment; and
- protect using either Rabbit-proof fence on both sides or individual tree shelters (commonly spiral guards, tubes or quills).

During establishment, the following measures will be taken:

- boundary beds around the hedgerows will be kept clear of weeds by maintaining a full thickness of mulch;
- hand pulling of aggressive and noxious weeds from the hedgerows while minimising disturbance to desirable hedgerow species; and
- ensure that the hedgerow is not damaged by use of mowers, nylon filament rotary cutters and similar power tools.

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9 Management of Ecological Habitats

9.1 Habitat Features

A schedule of works covering pre-construction, construction, and management post-construction is provided in Appendix 5.

9.1.1 Other Neutral Grassland

The grassland being created on site will be managed to achieve a target 'moderate' condition over a five-year period with a one year delay in creation.

The grassland will be managed to meet the minimum habitat requirements of 'Other Neutral Grassland', as per UK Habs 2.0, which is to have less than 30% cover of Perennial Ryegrass (*Lolium perenne*), varied sward heights, and more than 8 species per m^2 present. There must be less than 20% cover of Bracken (*Pteridium aquilinum*), and 1-5% cover of bare ground. No further criteria need to be met to achieve a 'moderate' condition.

In the first year, if seed is sown in spring then cut the grass 8 weeks after the seed has been sown, then repeat every 2 months thereafter to a height of 40 – 60 mm. Remove all arisings from the site. Remove weeds where necessary following manufacturer instructions to prevent unnecessary competition. Weed species such as nettles (*Urtica sp.*), Cleavers (*Galium aparine*), and docks (*Rumex sp.*) will be controlled through targeted weeding to ensure that the target species are not out-competed. Weeding will be done by hand with chemical use kept to a minimum only using where necessary.

If seed is sown in autumn avoid cutting between April and July to allow Yellow Rattle (*Rhinanthus minor*) seed to set. Instead cut the area in early August and remove arisings.

In year 2, the area will be cut in late July to a height of 45 – 75 mm. The grass cuttings will remain on-site for up to 7 days to allow the grass to dry out assisting in the dispersal of seeds. Where possible leave some areas around the boundary edge uncut to provide habitat for overwintering insects.

From years 3 onwards, the cut will be varied between mid-June to late August to maintain a diverse sward. Do not cut the grass in May or early June to prevent disturbance to wildlife. The grass cuttings will remain on-site for up to 7 days to allow the grass to dry out assisting in the dispersal of seeds. Where possible leave some areas around the boundary edge uncut to provide habitat for overwintering insects. Where soils are more fertile and growth is greater a second cut may be done in Spring (cut to 40-75mm height before the end of April) or Autumn (cut to 40-75mm twice from the time of the main cut to the end of November).

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All arisings will be removed from the site to retain low soil fertility and prevent competitive species from dominating. Any undesirable weed species such as nettles, Cleavers and docks will be controlled to ensure that the target species are not out-competed.

Throughout this process, pathways through the south western and northern parcels of Other Neutral Grassland will be mown short and maintained to 20 – 40 mm for amenity and access purposes (see Appendix 1). These pathways were denoted as Vegetated Gardens (UKHab secondary code 828) in the BNG report (ADAS, 2023a).

9.1.2 Urban Trees

A weed-free area will be maintained around the base of each planted tree, and where grassland surrounds the trees a minimum 1 m diameter mulched circle of at least 75 mm will be maintained at the base of each tree. Weeding will be done by hand with chemical use kept to a minimum only using where necessary. Stakes and ties will be checked regularly, and immediately after strong winds, to ensure trees are firm, upright, and healthy. Soil shall be firmed around the roots to ensure that trees are securely planted in the ground and upright. All trees shall be re-firmed in the spring period following planting. Any trees loosened due to late frosts, strong winds or surface water movement shall be re-firmed as required. 'Collars' at the base of tree stems created by tree movement to be broken up by fork, avoiding damage to roots and stem, backfilled with topsoil as necessary, and re-firmed.

For the first 2 years, trees will be checked fortnightly to ensure they are healthy and remain undamaged. Furthermore, the soil around planted trees and in tree pits shall be checked regularly at a depth of 300 mm during the growing season to determine whether supplementary watering is required.

From year 3 onwards, newly planted trees will be watered fortnightly throughout the summer months (May to August) after any period of four weeks without significant rainfall (less than 5 mm). Should the statutory undertakers impose restrictions on the use of water for watering any plants, the Landscape Contractor shall be responsible for making any special arrangements that may be necessary to ensure regular and adequate watering of plant material to ensure successful establishment. Statutory undertakers will take care not to over-water trees by regularly checking drainage points. Where plants are lost due to water-logging or drought, they will be replaced with a plant of the same species and age as the one lost, not that of the one that was originally planted. Exceptions to this may be agreed with the main contractor or the management team. Stakes and ties will be checked regularly, and immediately after strong winds, to ensure trees are firm, upright, and healthy. Ties will be loosened as appropriately as the tree matures and grows. After 5 years, once the trees have reached suitable maturity the stakes and ties can be removed once agreed with the management team. Trees will be pruned to remove any

dead, diseased, or damaged shoots and to create a balanced form for future growth between November and March.

Regular checks are to be made on the condition of existing trees. Any necessary tree works are to be carried out by a qualified tree surgeon to BS 3998:2010 and approved by the management team. The Wildlife and Countryside Act 1981 will be adhered to and any specialist licenses obtained before commencement of work e.g. for bat roosts.

9.1.3 Ground-based Green Wall

Green walls will only be pruned between January and March to avoid potential effects on nesting birds. Plants may be added or removed to maintain the density of the wall over time.

9.1.4 Native Hedgerow

The hedgerow on site will be managed to achieve a target 'moderate' condition over five years with a one-year delay in creation.

The hedge will be kept free of weeds. Weeding will be done by hand with chemical use kept to a minimum only using where necessary. If required use a suitable approved selective herbicide in accordance with manufacturer instructions. Hedges will be pruned to encourage bushy growth. This will be done by the specific need of each scrub. The main stems of plants shall not be visible on the sides or top of the hedge. Where possible an undisturbed vegetative strip will be left, but it is understood that this may not be possible in some urban areas.

Hedgerows will be cut twice a year in January and March, and November to December to 1 m width, ideally 1.5 m. The height must be an average of 1.5 m in order to meet the criteria necessary for achieving 'moderate' condition within 5 years.

An organic compound and controlled-release fertiliser will be added to the bed each spring to encourage growth, and a 75 mm deep mulch cover will be maintained with the same or similar mulch material. Soil roots will be re-firmed as necessary to ensure plants are secure and upright, particularly after periods of high winds. Plants will not be allowed to climb other plant stems. Ensure all post and wire fencing remains in good condition with taut wires, and that all hedge plants are regularly checked to ensure that they are tied in.

When cutting hedges, care will be taken to ensure that there are no nesting birds within the hedging as it is an offense under the Wildlife and Countryside Act 1981 to disturb wild birds, their nests, or eggs. This means trimming between January and March to avoid potential effects on nesting birds and to allow the berry crop to be used by wintering birds.

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9.2 Wildlife Features

9.2.1 Bird Boxes

Bird boxes will be left undisturbed within the bird nesting season (March – August inclusive).

It is recommended that annual inspections of all the installed boxes are carried out by a suitably experienced individual, to ensure they are in a good state of repair and kept clean. Guidance is given below:

- cleaning out and maintenance of the Woodcrete nest boxes will be conducted over winter between October and January to minimise the risk of disturbing breeding birds. Care will be taken to ensure that no breeding is taking place during this period and that birds are not flushed out during inclement weather conditions before the boxes are cleaned;
- if it is necessary, delouse boxes. A dry, short-lived natural-based insecticide, such as pyrethrum powder, will be used;
- checks of the overall state of the box, including the proper fixing of the box where they are surface mounted, will also be carried out;
- if there is any sign of water ingress the boxes will need to be either repaired or replaced; and
- any necessary repairs will be carried out before the next breeding season.

Nest boxes will be left untouched during the breeding season (March to August inclusive) to avoid disturbance. Inspections when the nest box contains any young may cause the parents to desert the nest, and cause death of the young nestlings.

9.2.2 Bat Boxes

The bat boxes specified are maintenance free so no regular maintenance or cleaning will be required.

An annual visual check of bat boxes will be conducted to ensure that the boxes are still present and free from damage. Any missing or damaged bat boxes will be replaced.

Bats are a European protected species and therefore if any disturbance, including repair and maintenance works to the bat boxes are required, a licensed ecologist or bat worker will be consulted for further advice.

9.2.3 Reptile Hibernacula

These features do not require ongoing maintenance but will be checked annually for damage or vandalism. In the case of damage, they will be replaced or repaired as needed.

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9.2.4 Invertebrate Habitats

Other Neutral Grasslands being resown, as per grassland guidance, will maintain wildflower distribution.

The Bee bricks do not require ongoing maintenance but will be checked annually for damage or vandalism.

In the case of damage, they will be replaced or repaired as needed.

10 Monitoring

10.1 Post-construction Verification Visit

It is understood that habitat creation will be implemented after completion of construction i.e. operational year 1. Within the first year of habitat creation, a suitably experienced ecologist will visit the site and off-site area to evaluate whether the as-built landscape plans are in accordance with the proposed development design. This will include a review of planting to ensure specifications for installation have been followed. Any amendments or shortfalls will be identified.

Should the as-built landscape plan differ from the original designs, more detailed information will be required to ensure transparency about what has been delivered. Where differences occur, an updated copy of the biodiversity metric (using the same version as initially prepared) will be submitted.

Where shortfalls are identified these will be discussed with Reading Borough Council. Alternative planting or management recommendations will be formulated using standardised protocols and methods and must be agreed upon with Reading Borough Council before being enacted. In this case, an update or addendum to this report will be submitted.

10.2 Site Assessment

Habitat establishment will be monitored for 5 years following habitat establishment (operational year 6) and then at 10, 20, and 30 years. During monitoring visits the site and off-site area will be visited and evaluated by a suitably qualified ecologist with good botanical identification skills, to review the progress of any changes or remedial measures and advise of any further modifications or remedial measures required.

Evaluation of the habitats is to be completed by a walkover survey of the site, recording all species present, assessing each habitat against the relevant biodiversity metric condition table assessment and, for grassland areas, giving a DAFOR[3] scale figure for each species. The survey must be undertaken between May and August. The assessment will also identify any habitats deemed to require remedial measures or changes to the proposed management. Appendix 6 sets out the condition criteria that will be reviewed for each habitat.

10.3 Monitoring Report

At years 6, 10, 20 and 30 a formal monitoring report will be prepared that will summarise the progress of each habitat and include biodiversity reconciliation calculations. The monitoring survey results will be

[3] DAFOR = Dominant, Abundant, Frequent, Occasional and Rare. L is also used, standing for Local.

detailed in a short report which will include an updated condition assessment, highlighting which criteria have shown improvement and noting where remediation measures may be required. Full results of any botanical surveys will be included in the report appendices including but not limited to a list of species present; a DAFOR scale figure for each species; overall percentage of wildflowers to grassland; percentage of bare ground; and percentage of injurious weeds.

This report will be submitted to client or appointed management company to demonstrate the progress of habitats on site, update on the progress of previous remedial measures, summarise how management is meeting the objectives and note where changes in management have been advised.

Table 5: Summary of monitoring reports required

Monitoring Report	Contents
Year 1 (Establishment)	A post-construction verification report will be submitted to Reading Borough Council which evaluate whether the as-built landscape plans are in accordance with the proposed development design. Any deviations will be described and explained along with any alternative planting or management recommendations, as required.
Year 6	Following the Year 6 review, there will be a clear statement to confirm the final biodiversity units that have been delivered for the 'moderate' condition of Other Neutral Grassland and The Ground Based Green Wall.
Year 10	The Year 10 monitoring report will contain a monitoring report will be submitted to Reading Borough Council to demonstrate the management of the site, update on the progress of remedial measures, summarise how management is meeting the objectives, and note where appropriate changes in management have been advised
Year 20	Following the Year 20 review, a monitoring report will be submitted to Reading Borough Council to demonstrate the management of the site, update on the progress of remedial measures, summarise how management is meeting the objectives and note where appropriate changes in management have been advised.
Year 30	The Year 30 final monitoring report will contain a clear statement to confirm the Urban Trees have achieved 'moderate' condition. The report will also state whether all habitats which have successfully established on site have continued to meet, or have exceeded, their targeted conditions.

11 Remediation or Adaptive Management

In the event that remediation measures are deemed to be required, either due to failed management or unforeseen circumstances e.g. droughts, flooding etc. these will be discussed with Reading Borough Council. Alternative approaches to the management or monitoring will be formulated using standardised protocols and methods. In this case, an update or addendum to this report will be submitted.

Amendments to management may be made, provided they adhere to Natural England guidance and recognised best practice.

12 References

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Appendix 1: Proposed development

See following page.

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0m 5m

north

- All dimensions in millimetres unless otherwise indicated. All levels in metres relative to Ordnance Datum and are positive (AOD) unless otherwise indicated.
- Figure dimensions only to be taken from this drawing. Dimensions and levels to be checked on site.
- Do not re-scale this drawing.
- For civil and structural matters including existing and proposed services, sub-base construction and site structures (including retaining walls over 900mm height) refer to information by others.
- The original version of this drawing was produced in colour - monochrome copies should not be relied upon to accurately reflect all drawing elements.
- This drawing has been prepared for planning purposes only and should not be used for quantification, tender or construction.

Notes:
- All materials to be as detailed or accepted equivalent.
- Refer also to architectural and engineering drawings as applicable.

- Site boundary
- Existing tree to be retained and protected in accordance with BS 5837:2012 - refer to arboricultural report 'RT-MME-158951B-02-Rev C'; dated November 2023
- Root Protection Area - refer to arboricultural report. To remain undisturbed and uncompacted (no material or equipment storage permitted)
- Existing tree to be removed
- Root barrier
- Existing bitmac/ asphalt to be retained
- Existing grass
- Proposed vehicular bitmac; sub base to engineers spec
- Proposed pedestrian bitmac; sub base to engineers spec.
- Proposed permeable concrete slab paving to parking bays
- Proposed concrete flagstone paving slabs to patios
- Proposed tumbled clay, brick pavers to private and communal entrances
- Proposed resin bound gravel paving to garden path No-dig construction
- Proposed block paving to highway entrance
- Proposed tactile paving
- Proposed trees
- Proposed specimen shrubs
- Proposed clipped hedges
- Amenity turf: To include Smooth stalked meadow grass 20%, Browntop Bent Grass 20%, Creeping Red Fescue 20% and Pedigree Perenial Rye Grass 20%.
- Mown grass footpath
- Wildflower turf: WFT-Shade-41 as supplied by Wildflower Turf Ltd. Made up of over 40 species of wildflowers and grasses, with a minimum of 75% wildflowers. (500mm mown edge).
- Ornamental shrub and groundcover planting beds (within private gardens)
- Ornamental shrub and groundcover planting beds (within public realm)
- Climbing plant
- Proposed free-standing timber trellis panels to northern wall
- Proposed external walls- 200 thick; refer to architects drawings for details
- Proposed timber closeboard fence
- Proposed larch lap panel fence to back gardens; Concrete slot posts and gravel boards with pre-cast hedgehog holes
- Proposed chestnut post and rail fence
- EV chargers
- Bench
- Bike lockers; details by architect
- Proposed play equipment surrounded with tiger mulch
- ASHP enclosure; concrete base to be formed below drainage below drainage point located at the centre of the slab

rev.	date	by	chk	notes
P09	24.03.25	MS	MH	NE ornamental planting area amended
P08	19.03.25	MH	-	Resin bound path within play space reverted to mown grass
P07	30.01.25	MH	-	Clarification within key (addition of last 2 items)
P06	28.01.25	MH	-	Minor adjustments to latest Architects layout
P05	27.01.25	EB	MH	Climbers added to northern boundary
P04	02.01.25	MS	MH	Changes to site entrance, east wall, front gardens
P03	29.10.24	MH	-	Re-position Amelanchier tree from adjacent binstore to Burghfield Road frontage
P02	23.09.24	NC	MH	Developed issue
P01	12.09.24	SM	MH	First issue

project	Dwyer Road, Reading
title	Landscape GA
status	Stage 3/4
scale @ A1	1:200
dwg no	**2530-TFC-00-00-DR-L-1001**
references	28178-WD100 Site Layout Plan

terrafirma
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Appendix 2: Bat, bird, reptile and invertebrate artificial habitat locations

See following page.

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Francis Construction

Dwyer Road, Reading,
Berkshire, RG30 3PB

Bat, Bee, Reptile & Bird Feature Locations

- Site Boundary
- Buildings
- Bat Box
- Bee Brick
- Reptile Hibernacula
- Sparrow Box
- Swift Box

B1
B2
B3
B4
B5

Drawn by Haley Cotton 20/06/2025, Verified by Rajan Jandu 20/06/2025

N
W E
S

0 10 20
Metres

1:350 at A3 size

Basemap: 28178-WD100 Site Layout Plan.

ADAS, Unit 14 Newton Court,
Pendeford Business Park,
Wolverhampton, WV9 5HB
Tel +44 (0)333 0142950

ADAS

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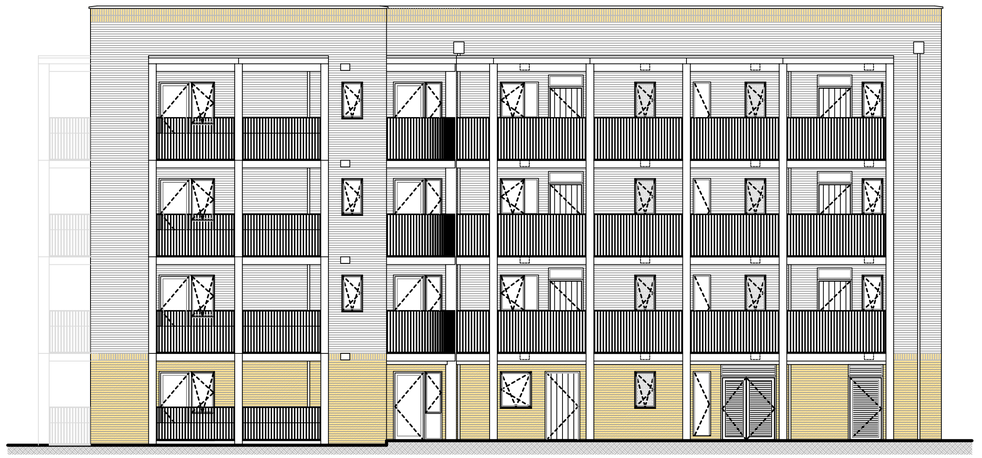
Path: C:\Users\thomas.burke\OneDrive - RSK Group\Documents - Geospatial projects\Ecology\105297\5_DwyerRoad\Ecological Measures Map.aprx

Appendix 3: Bat, bird and invertebrate artificial habitat locations – architectural drawings

See following page.



East Elevation



North Elevation



South Elevation



West Elevation

Ecological Enhancements Schedule

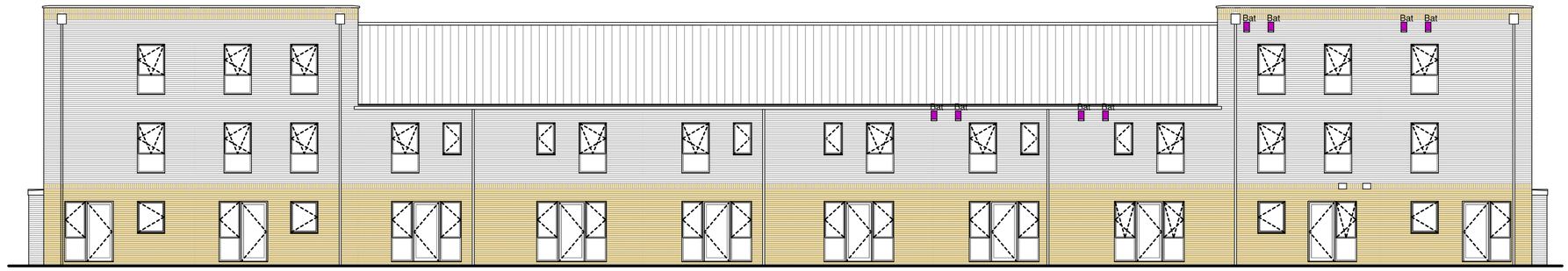
Bee	Bee Brick - 215x65x102.5mm proprietary brick with openings for solitary bees, colour white
Sw	Swift Bird Brick - brick integrated bird box with facing brick slips to to match surrounding brick work with single opening suitable for Swifts
Sp	Sparrow Bird Brick - brick integrated bird box with facing brick slips to to match surrounding brick work with two openings suitable for a Sparrow
Bat	Bat Box - Cavity bat roost with external opening within facing brick opening

New Development
Dwyer Road, Reading

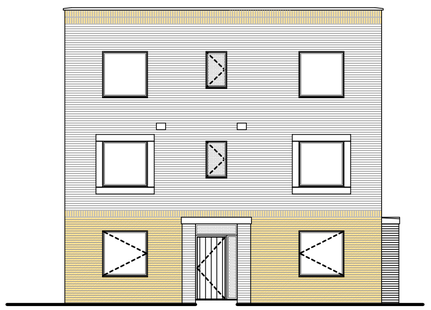
ECOLOGY MEASURES BLOCK 1



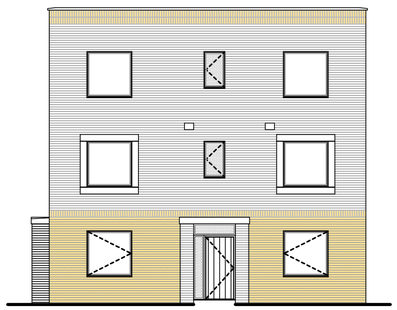
North Elevation



South Elevation



East Elevation



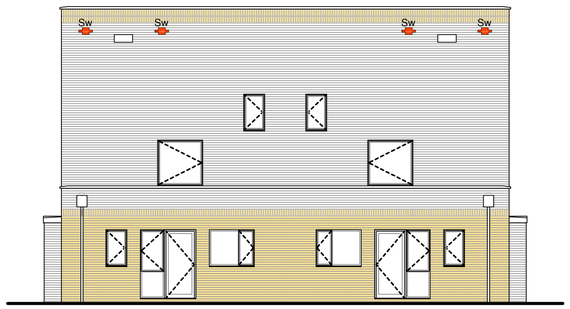
West Elevation

Ecological Enhancements Schedule

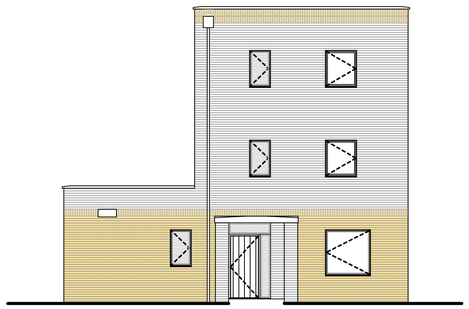
Bee	Bee Brick - 215x65x102.5mm proprietary brick with openings for solitary bees, colour white
Sw	Swift Bird Brick - brick integrated bird box with facing brick slips to to match surrounding brick work with single opening suitable for Swifts
Sp	Sparrow Bird Brick - brick integrated bird box with facing brick slips to to match surrounding brick work with two openings suitable for a Sparrow
Bat	Bat Box - Cavity bat roost with external opening within facing brick opening

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ECOLOGY MEASURES BLOCK 2



North Elevation



West Elevation

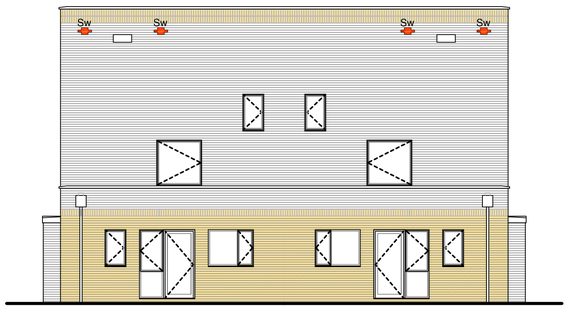


East Elevation

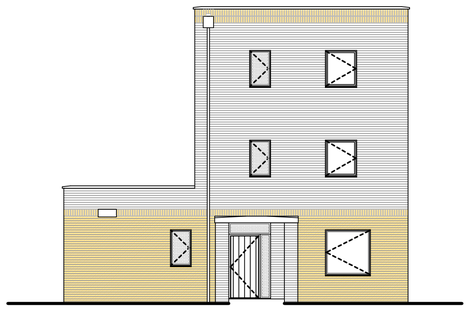


South Elevation

BLOCK 3



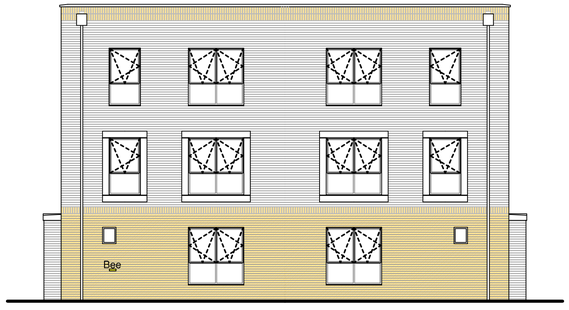
North Elevation



West Elevation

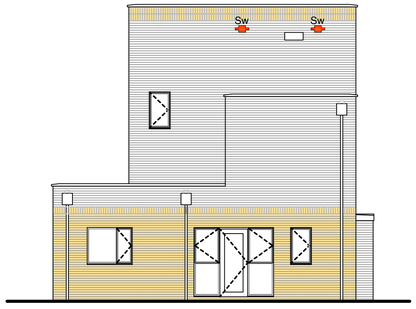


East Elevation



South Elevation

BLOCK 4



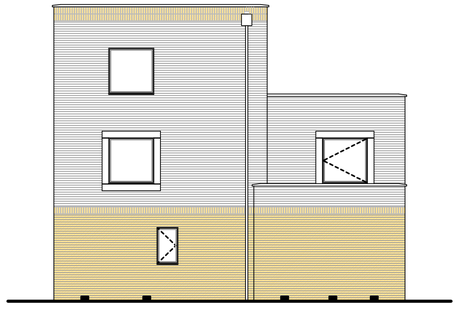
North Elevation



West Elevation



South Elevation



East Elevation

BLOCK 5

Ecological Enhancements Schedule

Bee	Bee Brick - 215x65x102.5mm proprietary brick with openings for solitary bees, colour white
Sw	Swift Bird Brick - brick integrated bird box with facing brick slips to to match surrounding brick work with single opening suitable for Swifts
Sp	Sparrow Bird Brick - brick integrated bird box with facing brick slips to to match surrounding brick work with two openings suitable for a Sparrow
Bat	Bat Box - Cavity bat roost with external opening within facing brick opening

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ECOLOGY MEASURES BLOCK 3,4 and 5

Appendix 4: Bat lighting plan

See following page.

Francis Construction

Dwyer Road, Reading,
Berkshire, RG30 3PB

Bat Lighting Plan

- Site Boundary
- Buildings
- Dark Corridor
- Bat Box

Drawn by Haley Cotton 01/04/2025, Verified by Rajan Jandu 01/04/2025

N
W E
S

0 10 20
Metres

1:320 at A3 size

Basemap: Drawing No. 26888-HYD-XX-00-DR-E-9000

ADAS, Unit 14 Newton Court,
Pendeford Business Park,
Wolverhampton, WV9 5HB
Tel +44 (0)333 0142950

ADAS

468190 468200 468210 468220 468230 468240 468250 468260 468270

171920 171910 171900 171890 171880 171870 171860 171850

B1 B2 B3 B4 B5

CONTRACTOR SHALL INCLUDE ALLOWANCE FOR EXTERNAL BUILDING MOUNTED PHOTOCELLS, EXTERNAL LIGHTING MANUAL OVERRIDE SWITCHES AND TIMECLOCK FOR EXTERNAL LIGHTING CONTROL.

TIMECLOCK TO BE SET TO OPERATE THE LIGHTS AT TIMINGS TO SUIT RBC REQUIREMENTS

COLUMN LIGHTING AND LIGHTING TO THE STREET AREAS TO BE FED FROM STREET FURNITURE SUPPLY FROM SSE SUBSTATION

APPLEFO

50 MPH

GAS ENDS HERE ON RECORDS.

EXISTING STREET LIGHTING COLUMN TO BE REMOVED

Path: C:\Users\haley.cotton\RSK Group\Geospatial projects - Ecology\105297-5_DwyerRoad\Ecological Measures Map.aprx

© RSK ADAS Ltd

Appendix 5: Schedule of works

See following pages.

Work phase	Feature	Task	Timetable
Site setup and pre-construction	General Measures	Prior to the start of work, the following steps will be taken to minimise environmental impacts: • Works access routes and works zones will be planned and agreed in advance; • Defined work areas will be clearly delineated using appropriate fencing around the development area; • No unauthorised construction works, vehicles, machinery, workers, or storage of materials will be allowed outside of these areas; • Plant and vehicles must be kept on areas of hardstanding where possible; • Material which can contaminate the soil, e.g. diesel oil and vehicle washings, will not be discharged on the site; and • A suitable pollution control plan will be in place throughout the development period. Maintenance of protective fencing and exclusion zones must continue throughout construction.	Prior to start of works
	Retained Modified Grassland	Works access routes and works zones will be planned and agreed in advance. Defined work areas will be clearly delineated using appropriate fencing around the development area. No unauthorised construction works, machinery, workers or storage of materials will be allowed outside of these areas or into the surrounding grassland.	Prior to start of works

		Maintain these areas through mowing. Mowing is to be carried out by approved machinery to maintain vegetation length with limits of 30 mm to 50 mm during April and August inclusive, and between 50 mm and 70 mm for the remainder of the year. Mowing must be carried out without rutting or compaction of the surface, therefore mowing will not be carried out when ground conditions are wet, without prior agreement of the management team. Arisings will not be left. If spot weeding is deemed necessary, this will be done in line with manufacturer guidance. Where areas have become worn, reseeding may be required. Use appropriate methods detailed in this report.	April to August
	Retained Urban Trees	Works access routes and works zones will be planned and agreed upon in advance. Defined work areas will be clearly delineated using appropriate fencing around the development area. All trees are to be protected in line with the guidance provided in BS5837:2012 *Trees in Relation to Design, Demolition and Construction (Recommendations)*.	Prior to start of works
		Regular checks are to be made on the condition of existing trees. Any necessary tree works are to be carried out by a qualified tree surgeon to BS 3998:2010 and approved by the Management Team. The Wildlife and Countryside Act 1981 must be adhered to and any specialist licences obtained before commencement of work e.g. for bat roosts. Existing hedges, shrubs, groundcover and perennials retained will be regularly cut, trimmed, pruned, and thinned as required. Planting beds are to be maintained as weed free at all times	April or October

Operational phase (year 1)	Creation of Other Neutral Grassland	Sowing: Carry out two equal sowings of Emorsgate EM2 Standard General Purpose Meadow Mixture by dividing the seed into two or more parts and sowing in overlapping sections. Broadcast manually or use seed drill, rake level, and roll.	Spring (March to May) or Autumn (September to October)
		In the first year if the seed is sown in spring then cut the grass eight weeks after the seed has been sown, then repeat every two months thereafter to a height of 40 – 60 mm. Remove all arisings from the site. If seed is sown in autumn when the Yellow Rattle has become established then Avoid cutting between April and July to allow yellow rattle seed to set. Instead cut the area in early August and remove arisings.	August
	Creation of Urban Trees	Twenty small and three medium trees, based on the tree species to be planted with a cautious approach due to the difficulty in predicting tree girth. The obstruction of light and views, the creation of shade by new trees, and the likely extent and density of tree crowns when fully grown, must be taken into account when designing new planting adjacent to buildings. Design and species selection will allow the enjoyment of reasonable light and shading where desirable as the trees develop into mature specimens. A weed-free area will be maintained around the base of each planted tree, and where grassland surrounds the trees a minimum 1 m diameter mulched circle of at least 75 mm will be maintained at the base of each tree. Soil shall be firmed around the roots to ensure that trees are securely planted in the ground and upright. All trees shall be re-firmed in the spring period following planting. Any trees	September to February

		loosened due to late frosts, strong winds or surface water movement shall be refirmed as required. 'Collars' at the base of tree stems created by tree movement to be broken up by fork, avoiding damage to roots and stem, backfilled with topsoil as necessary, and refirmed.	
	Creation of Green Wall	The ground-based green wall will be established by planting climbing species such as Honeysuckle (*Lonicera periclymenum*) and Common Jasmine (*Jasminum officinale*) at the base of the wall structure. A framework of climbing-enabling structures will be fitted to the wall. This will allow species to climb up the wall as they grow giving the wall its green covering.	Between March and May
		The area will be kept weed-free at all times and plants pruned to encourage healthy regeneration and flowering in line with the specific needs of each variety of scrub. An organic compound and controlled-release fertiliser will be added to the bed in spring to encourage growth, and a 75 mm deep mulch cover will be maintained with the same or similar mulch material. Grass will be trimmed as necessary to form a neat and tidy interface.	Spring (March to May)
	Creation of Native Hedgerow	Hedgerows will be planted around the site, according to the landscape plan. Planting will be avoided during droughts, hard frosts (most likely in January and February) or particularly cold, windy periods. The new plants must be established according to the following recommendations: • Plants will be supplied from an approved local nursery and will conform to either the 'British Standard 3936-1:1992 Nursery Stock Part 1: Specification for Trees and Shrubs'	Between the end of October and end of March, depending on soil type and conditions

		(BS3936) or the 'National Plant Specification' (NPS) produced by the Horticultural Trades Association (HTA). • New hedgerows will be planted between November and March, avoiding periods of hard frost and waterlogged conditions; • Whips will be planted in a double staggered row 450 mm apart in trenches or individual pits large enough to accommodate roots without constriction, with roughly half a meter between rows; • Water well immediately after installation and provide a thick mulch; • Young hedgerows will require watering in dry conditions and the regular reapplication of mulch during establishment; and • Protect using either Rabbit-proof fence on both sides or individual tree shelters (commonly spiral guards, tubes or quills). During establishment, the following measures will be taken: • Boundary beds around the hedgerows will be kept clear of weeds by maintaining a full thickness of mulch; • Hand pull aggressive and noxious weeds from the hedgerows while minimising disturbance to desirable hedgerow species; • Ensure that the hedgerow is not damaged by use of mowers, nylon filament rotary cutters and similar power tools.	

	Bat Boxes	Bat boxes will be installed at least 4 m (13 feet) above the ground, and position them in an open, sunny location with 6-8 hours of direct sunlight. There will be no vegetation 4-6 m below the bottom of the bat house to allow for access.	Any time of year
	Reptile Hibernacula	Create soil mounds, above-ground log piles, and grassy areas along scrub, tree lines, or wooded edges to low far shade and basking opportunities.	Any time of year
	Bird Boxes	Bird boxes will be installed roughly 3 m above the ground and avoid areas where foliage obscures the entrance hole. The front of the box will be angled vertically or slightly downwards to present rain from entering the nest box and shelter it from prevailing winds, rain, and strong sunlight.	Any time of year
	Invertebrate features	Planting of native wildflowers and shrubs, such as flowering and/or fruiting plants from the families Asteraceae, Fabaceae, and Rosaceae and other pollen/nectar-rich plants such as Honeysuckle (*Lonicera* sp.) and Foxglove (*Digitalis* sp.).	Spring (March to May) or Autumn (September to October)
		Bee bricks will be added to the new dwellings to provide additional habitat for invertebrates.	Any time of year
	All Features	Monitoring: Year 1 monitoring visit to be undertaken by a suitably qualified ecologist to evaluate whether the as-built landscape plans are in accordance with the proposed design.	Within first year of establishment
Operational phase (year 2)	Other Neutral Grassland	In year 2, the area will be cut in late July to a height of 45 – 75 mm. The grass cuttings will remain on site for up to seven days to allow the grass to dry out assisting in the dispersal of seeds. Where possible leave some areas around the boundary edge uncut to provide habitat for overwintering insects.	May to August

		Pathways through the south western and northern parcels of Other Neutral Grassland will be mown short for amenity and access purposes.	
	Urban Trees	For the first 2 years, trees will be checked fortnightly to ensure they are healthy and remain undamaged. Furthermore, the soil around planted trees and in tree pits shall be checked regularly at a depth of 300 mm during the growing season to determine whether supplementary watering is required. Any failed/dead trees will be replaced to ensure the full extent of Urban Trees to be created is achieved.	November to March
	Green Wall	Green walls will only be pruned between January and March to avoid potential effects on nesting birds. Plants may be added or removed to maintain the density of the wall over time.	January to March
	Native Hedgerow	Any failed/dead trees will be replaced to ensure that no canopy gaps are formed within the hedgerow.	November to March
		The hedge will be kept free of weeds. Hedges will be pruned to encourage bushy growth. Hedges will be cut to 1.2 m in height between January and March. The hedgerow will be maintained to a uniform 1.5 m in width.	January to March
	All Grasslands	Re-seeding: Localised cultivation and seeding must be repeated if any substantial bare patches remain, or if this is required to eradicate any substantial colonisation of undesirable species.	Late summer (mid-July to August) and October
	All Grasslands	Weeding: Any undesirable weed species must be controlled to ensure that the target species are not outcompeted.	March to October

Operational phase (year 3 onwards)	Other Neutral Grassland	From years 3 onwards, the cut will be varied between mid-June to late August to maintain a diverse sward. Do not cut the grass in May or early June to prevent disturbance to wildlife. The grass cuttings will remain on site for up to seven days to allow the grass to dry out assisting in the dispersal of seeds. Where possible leave some areas around the boundary edge uncut to provide habitat for overwintering insects Where soils are more fertile and growth is greater a second cut may be done in Spring (cut to 40-75 mm height before the end of April) or Autumn (cut to 40-75 mm twice from the time of the main cut to the end of November). Pathways through the south western and northern parcels of Other Neutral Grassland will be mown short and maintained for amenity and access purposes.	Spring (April - May) or Autumn (September - November)
		Weeding: Any undesirable weed species must be controlled to ensure that the target species are not outcompeted.	March to October
	Urban Trees	From year 3 onwards, newly planted trees will be watered fortnightly throughout the summer months (May to August) after any period of four weeks without significant rainfall (less than 5 mm). Stakes and ties will be checked regularly, and immediately after strong winds, to ensure trees are firm, upright, and healthy. Ties will be loosened as appropriately as the tree matures and grows. After 5 years, once the trees have reached suitable maturity the stakes and ties can be removed once agreed with the management team. Trees will be pruned to remove any dead,	November to March

		diseased, or damaged shoots and to create a balanced form for future growth between November and March. Regular checks are to be made on the condition of existing trees. Any necessary tree works are to be carried out by a qualified tree surgeon to BS 3998:2010 and approved by the Management Team. The Wildlife and Countryside Act 1981 must be adhered to and any specialist licenses obtained before commencement of work e.g. for bat roosts.	
	Green Wall	Green walls will only be pruned between January and March to avoid potential effects on nesting birds. Plants may be added or removed to maintain the density of the wall over time.	January to March
	Native Hedgerow	Hedgerows will be cut twice a year in January to March, and November to December to 1.2 m, ideally 1.5 m. The width at 1m must be a uniform 1.5 m in order to meet the criteria necessary for achieving moderate condition within 5 years.	January to March, and November to December
	All Features	Monitoring: Visits to be undertaken during operational years 6, 10, 20, and 30 by a suitably qualified ecologist to evaluate the success of management and to ascertain if BNG targets have been achieved.	May to August
	Bat Boxes	An annual visual check of bat boxes will be conducted to ensure that the boxes are still present and free from damage. Any missing bat boxes must be replaced. Any disturbance, including repair and maintenance works to the bat boxes, must be done by a licensed ecologist or bat worker must be consulted for further advice.	Any time of year once box has been checked by licensed ecologist

	Bird Boxes	Woodcrete nest boxes will be cleaned out annually in Winter. Care must be taken to ensure that no breeding is taking place. The boxes may need delousing. Use a natural-based insecticide for this. Repair and replace boxes if damage or water ingress has occurred.	October to January
	Invertebrate features	Resow Other Neutral Grasslands as per grassland guidance to maintain wildflower distribution.	Spring (April - May) or Autumn (September - November)
		Replace bee bricks if they become damaged.	Any time of year

Appendix 6: Condition Assessment Tables

Area Habitats

Other Neutral Grassland Condition Assessment (Medium distinctiveness)			
	Criteria	**Y/N**	**Notes**
1	The appearance and composition of the vegetation closely matches characteristics of the specific grassland habitat type. Wildflowers, sedges, and indicator species for the specific habitat type are very clearly and easily visible throughout the sward. NB – This criterion is essential for achieving moderate condition for non-acid grassland types.		
2	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm)		
3	Cover of bare ground between 1% and 5%, including localised areas, for example, rabbit warrens.		
4	Cover of bracken less than 20% and cover of scrub (including Bramble (*Rubus fruticosus agg.*)) less than 5%.		
5	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981). Combined cover of species indicative of sub-optimal condition and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area.		
6	There are greater than 9 species per metre squared. NB – This criterion is essential for achieving good condition for non-acid grassland types.		
	Condition:		

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Condition Assessment Results: Non-acid grassland types		
Number of attributes that must pass criteria to meet condition	**Category**	**Achieves**
Passes 5 of 6 criteria, including essential criterion 1.	Good	
Passes 3 or 4 of 6 criteria, including essential criterion 1.	Moderate	
Passes 0, 1, 2 of 6 criteria, OR Passes 3 or 4 criteria excluding criterion 1 and 6.	Poor	

Species indicative of sub-optimal condition for this habitat type include: Creeping Thistle (*Cirsium arvense*), Spear Thistle (*Cirsium vulgare*), Curled Dock (*Rumex crispus*), Broad-leaved Dock (*Rumex obtusifolius*), Common Nettle (*Urtica dioica*), Creeping Buttercup (*Ranunculus repens*), Greater Plantain (*Plantago major*), White Clover (*Trifolium repens*), Cow Parsley (*Anthriscus sylvestris*).

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Urban Tree Condition Assessment			
	Criteria	**Y/N**	**Notes**
A	The tree is a native species (or at least 70% within the block are native species).		
B	The tree canopy is predominantly continuous, with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide (individual trees automatically pass this criterion).		
C	The tree is mature (or more than 50% within the block are mature).		
D	There is little or no evidence of an adverse impact on tree health by human activities (such as vandalism, herbicide or detrimental agricultural activity). And there is no current regular pruning regime, so the trees retain >75% of expected canopy for their age range and height.		
E	Natural ecological niches for vertebrates and invertebrates are present, such as presence of deadwood, cavities, ivy or loose bark.		
F	More than 20% of the tree canopy area is oversailing vegetation beneath.		
	Condition:		

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Condition Assessment Results: Urban Tree		
Number of attributes that must pass criteria to meet condition	**Category**	**Achieves**
Passes 5 or 6 criteria	Good	
Passes 3 or 4 criteria	Moderate	
Passes 2 or fewer criteria	Poor	

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Ground-Based Green Wall Condition Assessment			
	Criteria	**Y/N**	**Notes**
A	Vegetation structure is varied, providing opportunities for vertebrates and invertebrates to live, eat and breed. A single structural habitat component or vegetation type does not account for more than 80% of the total habitat area.		
B	The habitat parcel contains different plant species that are beneficial for wildlife, for example flowering species providing nectar sources for a range of invertebrates at different times of year.		
C	Invasive non-native plant species (listed on Schedule 9 of WCA) and others which are to the detriment of native wildlife (using professional judgement) cover less than 5% of the total vegetated area. **Note - to achieve Good condition, this criterion must be satisfied by a complete absence of invasive non-native species (rather than <5% cover).**		
	Condition:		

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Condition Assessment Results: Ground-Based Green Wall		
Number of attributes that must pass criteria to meet condition	**Category**	**Achieves**
Passes all 3 core criteria; AND Meets the requirements for Good condition within criterion C.	Good	
Passes 2 of 3 core criteria; OR Passes 3 of 3 core criteria but does not meet the requirements for Good condition within criterion C.	Moderate	
Passes 0 or 1 of 3 core criteria.	Poor	

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Linear Habitats

Hedgerow Habitat Types Condition Assessment (Native Hedgerow)			
Criteria		**Y/N**	**Notes**
A1	Height: >1.5 m average along length		
A2	Width: >1.5 m average along length		
B1	Gap – hedge base: Gap between ground and base of canopy <0.5 m for >90% of total length.		
B2	Gap – hedge canopy continuity: Gaps make up <10% of total length and no canopy gaps >5 m.		
C1	Undisturbed ground and perennial vegetation: >1 m width of undisturbed ground with perennial herbaceous vegetation for >90% of its length: - Measured from outer edge of hedgerow, and - is present on one side of the hedge (at least)		
C2	Undesirable perennial vegetation: plant species indicative of nutrient enrichment of soils dominate <20%cover of the area of undisturbed ground (indicator sp. Include nettles, Cleavers, and docks).		
D1	>90% of the hedgerow and undisturbed ground is free of invasive non-native and neophyte species (neophytes are plants that have naturalised in the UK since AD 1500).		
D2	Current damage: >90% of the hedgerow or undisturbed ground is free of damage caused by human activities (could include evidence of pollution, piles of manure, rubble, excessive hedge cutting)		
	Condition:		

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Condition Assessment Results: Hedgerows without trees		
Category	**Maximum number of attributes that can fail to meet 'favourable condition' in criteria**	**Achieves**
Good	No more than 2 failures in total; **AND** No more than 1 in any functional group.	
Moderate	No more than 4 failures in total; **AND** Does not fail both attributes in more than one functional group.	
Poor	Fails a total of more than 4 attributes; **OR** Fails both attributes in more than one functional group.	

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