Persimmon Homes Ltd

Wykham Park Farm, Banbury

LANDSCAPE AND ECOLOGICAL MANAGEMENT PLAN

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### 1.0 INTRODUCTION

1.1 The following Landscape and Ecological Management Plan (LEMP) has been prepared by FPCR Environment and Design Ltd. on behalf of Persimmon Homes Ltd in response to Condition 18 of planning consent for development at Wykham Park Farm, Banbury (Cherwell District Council Application Number 14/01932/OUT) which states:
A Landscape and Ecological Management Plan (LEMP) for areas identified on plan ref JJG043/057 $C$ shall be submitted to and approved by LPA prior to the commencement of new soft landscaping works or development (with the exception of works undertaken in accordance with Condition 50) within those identified areas. The LEMP shall include:

- Description and evaluation of the features to be managed;
- Ecological characteristics and constraints of the site that may influence management;
- Aims and objectives of management;
- Appropriate management options for achieving aims and objectives;
- Mechanism for management review, monitoring and, if necessary, remedial measures;
- Personnel responsible for implementation of the plan.

Thereafter, the LEMP shall be implemented and carried out as approved or in accordance with such modification/variation as may be agreed in writing by the LPA.
1.2 This LEMP sets out the creation and on-going management approaches for the landscape and ecology proposals associated with the site.

## Site Location and Context

1.3 The site largely comprised improved grassland with areas of mixed semi-natural woodland, bare ground and hardstanding also present with the field boundaries largely bordered by hedgerows. There were no internationally designated sites within 5 km of the site and no nationally designated sites within 2 km of the site boundary. There were no locally designated sites present within the site boundary, however Salt Way potential Local Wildlife Site (pLWS) was located approximately 20 m north of the site.
1.4 A suite of ecological surveys for protected species was undertaken on-site and within the wider site area between 2012-2014 and 2018 with an update walkover survey carried out within the phases $1 \& 3$ area in 2022. No evidence of bat roosts or great crested newts (GCN) was observed whilst bat activity surveys recorded relatively low numbers of common and widespread species using the site for foraging/commuting during the transects. Three outlier badger setts were recorded on-site in both 2013 and 2014, however no evidence of these setts was found during subsequent update surveys in 2018 and 2022. Although no dedicated reptile surveys were undertaken, an incidental sighting of a single grass snake was recorded during a walkover survey in 2012 within the wider site area. Full details of the surveys undertaken can be found in the ES Chapter (Gallagher Estates, 2014¹) and Ecological Appraisal (FPCR, 2022²).

[^0]
### 2.0 LEGISLATION AND POLICY

2.1 All relevant EU and UK nature conservation law will be adhered to in relation to the protection of ecological features and ecological enhancement. This will primarily include the protection afforded to nesting birds under the Wildlife and Countryside Act 1981 (as amended) and also with reference to the protection of water vole and bats and their roosts under the Conservation of Habitats and Species Regulations 2017 (as amended). Regard has also been given to the Protection of Badgers Act 1992, Local Biodiversity Action Plan (LBAP) and 'Habitats of Principal Importance' (HPI) as listed within Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

### 3.0 FUNDING MECHANISMS

3.1 Long-term landscape and biodiversity management will be secured by way of a site wide management company that will be established prior to completion of the development that will be funded by the development. This will initiate and maintain the specific biodiversity objectives and habitats of principal ecological importance for the long-term in a sustainable manner. This will be part of a comprehensive management scheme undertaken by the management company to ensure the future management and maintenance of the site as a whole.

### 4.0 OBJECTIVES

## Objective 1: Retain and Enhance Existing Habitats

4.1 Retained habitat areas include boundary hedgerows and mature and semi-mature trees. The aims for these areas are to:

- Protect valuable habitats in situ during development and remediation works;JD
- Enhance the existing ecological interest and provide additional habitat for species of interest known to be present within retained and disturbed habitats through appropriate management or intervention.


## Objective 2: Develop Diversity and Sustainability in New Habitats

4.2 The proposals include the creation of new habitats to mitigate for loss of, and impacts to, existing habitats, enhance the biodiversity of the local area and maximise its value through appropriate management ensuring significant green links between habitats are maintained and created.

## Objective 3: Management and Enhancement for Wildlife

4.3 Opportunities to ensure that protected/notable species are able to utilise retained areas and extend suitable areas for use by such species through the creation of a variety of habitats. Habitat creation measures will endeavour to provide a wide range of environmental conditions and habitats that are known to be of value to specific groups and to more generally occurring species.

## Objective 4: Monitor Habitats and Allow Flexibility to the Management Approach

4.4 To monitor and manage retained and newly created habitats throughout the management period to ensure their ecological diversity is enhanced and maintained in the long-term in tandem with ensuring their safe and appropriate use. Feedback from site monitoring will be applied to appropriate refinement and/or revision of the plan, as long as the modifications that are agreed remain in accordance with the vision and objectives set out above.

### 5.0 HABITATS TO BE RETAINED AND PROTECTED, TO BE CREATED AND TO BE MANAGED FOR WILDLIFE

## Objective 1: Retain and Enhance Existing Habitats

5.1 Retained habitats will be protected and enhanced in order to increase their biodiversity in the longterm. Those habitats to be retained within the footprint of the proposed development include:

## Existing Hedgerows and Trees

5.2 The existing boundary hedgerows and trees are largely to be retained within the proposed scheme (refer to the Tree Protection Plan, Wardell Armstrong, 20143). Retained mature trees will be left unmanaged unless otherwise dictated for reasons of public safety or to benefit woodland/tree structure or associated habitats or species. Recently planted individual trees will be managed in accordance with the management regime outlined in Section 6 below.
5.3 Retained trees and hedgerows in the vicinity of the construction works will be protected by high visibility fencing erected approximately 2 m from the outside edge of the hedgerow. Trees will be protected by fencing erected according to their calculated root protection area (RPA) (refer to the Tree Protection Plan, (Wardell Armstrong, 2014). No removal of woody vegetation will take place during the bird nesting season (March to August, inclusive) unless a thorough survey by an appropriately experienced ecologist first confirms that no active nests are present. Any work will accord with the Wildlife and Countryside Act 1981 (as amended).
5.4 Trees will be inspected for signs of stress, disease or damage and appropriate remedial action taken. Arisings from any tree management activity will, where appropriate, be retained on site to create deadwood habitat to maximise invertebrate and bryophyte biodiversity. Where possible standing deadwood will be left in-situ to provide additional habitats.
5.5 Existing hedgerows will be gapped up with complementary native hedgerow species where required.
5.6 Hedgerows will be managed in rotation, cutting only half of the hedgerow stock within the site annually to ensure that there is a continuous supply of fruit during the winter months for birds and small mammal species. Hedgerows will be managed to a minimum height of 2 m and a minimum width of 1.5 m and cutting will take place outside of the breeding bird season in late January or February, avoiding any periods of heavy frost. A herbaceous strip measuring $2 m$ either side of

[^1]each hedgerow will be maintained through an appropriate mowing regime, to enhance the value of the hedgerow as a wildlife corridor.

## Objective 2: Develop Diversity and Sustainability in New Habitats

5.7 As part of the proposals for the residential development (Detailed Soft Landscape Proposals, drawing numbers: P21-2662_100-P21-2662_106, Pegasus Group) new naturalistic areas will be created, to provide a matrix of new grassland areas and attenuation features together with existing habitats, creating corridors along the boundaries of the site to encourage the establishment and movement of wildlife.
5.8 The following section outlines the specification and implementation methods, with Section 6 outlining the works programme and management regime.

## General

5.9 Shrub, tree and hedgerow planting as required are to be delivered and planted in accordance with Horticultural Trades Association (HTA) Standard 'Handling and establishing landscape plants' (obtainable from the HTA) Part III, paragraphs 6.2 to 6.6 . and should also accord with the soft works drawings.
5.10 Planting is to remain materially undamaged, sturdy, healthy and vigorous, planted upright or well balanced with best side to front. Trees and shrubs are to be of good shape and without elongated shoots, grown in a suitable environment and hardened off before being delivered to the site.
5.11 All planting is to be true to name and free from pests, diseases, discoloration, weeds, fungus and physiological disorders.
5.12 All works are to be undertaken with due diligence being sure to leave the works area in a clean and tidy condition at completion and after any maintenance operations. Protect areas affected by planting operations using boards/tarpaulins and do not place excavated or imported material directly on adjacent grassed areas.
5.13 All plants should be stored only when necessary in accordance with the HTA's 'Handling and establishing landscape plants' Part I, Part II and Part III, paragraphs 1.3.3 to 1.3.6, 3.0, and 4.0.
5.14 If plants/trees are unobtainable, alternatives are to be agreed with the Landscape Architect in writing prior to ordering.
5.15 After planting, water plants to ensure that the full depth of topsoil is wetted. Apply water evenly and without damaging or displacing plants or soil. Continue to water as necessary to ensure the successful establishment and continued thriving of planting.
5.16 If water supplies are restricted or likely to become restricted by emergency legislation, do not carry out planting until instructed. If planting has been carried out, obtain instructions on watering.
5.17 Bare root deciduous planting shall be carried out from late October to late March, only during suitable ground and weather conditions; conifers and evergreens either September/October or April/May, herbaceous plants (including aquatic and marginal) September/October or March/April. Container grown plants at any time of year if ground and weather conditions are favourable. Planting shall not be carried out in waterlogged or frozen ground.

## Ornamental Shrub Planting

5.18 Formal ornamental shrub and hedgerow planting will be located in more formal areas of the site.
5.19 Plants are to be maintained by suitable means, to prevent competition by weeds and grasses until planting has established.
5.20 Plant protection to be regularly inspected and any damaged protection replaced.
5.21 Plants found to be dead or dying within the first two years post planting to be replaced on a like-for-like basis as soon as possible within the next available planting season.
5.22 Until establishment, formative pruning will be undertaken once annually to keep shrubs tidy.
5.23 Ornamental hedgerows will be allowed to establish to a height of 1-2metres after which they will be cut once annually to a height of approximately 1 metre, with sides, ends and tops of the hedgerow pruned to an ' $A$ ' profile, where practicable and dependent on access, to achieve an appropriate shape and structure in relation to the height of the hedge.
5.24 Plants will be cut during the winter months, following fruiting, during frost free periods. Cutting should not be carried out during the bird nesting season (March-August) unless supervised by a suitably qualified person.
5.25 Following pruning operations, all arisings should be removed from the site.
5.26 Plant protection and any protective fencing will be removed once the hedgerows are established.

## Amenity Grassland

5.1 New short sward amenity grassland areas will be established using a suitable seed mix such as 'British Seed House A22' as below, or similar approved, sown as per the manufacturer's instructions.
5.2 Species within this mix include:

| Scientific Name | Common Name | $\%$ |
| :--- | :--- | :---: |
| Agrostis castellana | Highland Browntop Bentgrass | 5 |
| Festuca rubra | Borluna Slender Creeping Red Fescue | 35 |
| Lolium perenne | Calico Perennial Ryegrass | 40 |
| Lolium perenne | Cabrio Perennial Ryegrass | 20 |

5.3 Areas to be sown will be first rotovated and raked or harrowed to produce a medium fine, firm tilth. Seed will be sown in the autumn or spring, selecting a time when the soil is moist and can be worked.
5.4 The above seed mix includes perennial species that can be slow to germinate and grow. Ground cover will therefore likely take longer to develop than conventional lawn sowings and may take 1218 months to knit together as turf. Newly seeded areas will therefore be protected to prevent seedling destruction by pedestrians.

## Tree Planting

5.5 New trees should be planted between October and March, avoiding periods of inundation or prolonged ground frost. This will accord with BS 8545:2014. Trees are to be mulched using wood chippings or bark to establish a 1 m diameter around the tree stem.
5.6 Trees to be planted in accordance with BS 4428 Code of Practice for General Landscape Operations and double staked ( $10-12 \mathrm{~cm}-14-16 \mathrm{~cm}$ girth trees) or triple staked ( $16-18 \mathrm{~cm}-19$ 20 cm girth trees) and tied in prepared pits. These stakes can be removed after 2-3 years, unless there is soil or root movement when the tree is rocked. Stakes and ties to be regularly inspected and adjusted or replaced as necessary.
5.7 Trees should be watered during establishment to field capacity if the tree is under stress during dry periods.
5.8 Trees found to be dead or dying within the first two years post planting to be replaced on a like-forlike basis as soon as possible within the next available planting season. After two years and throughout the preceding management period, grasslands at the base of trees are to be kept weed free and grass maintained as per amenity grass schedule, taking care not to damage trunks.
5.9 Within public areas, trees will be checked annually, and after major storms, for necessary remedial works, any works should be undertaken as advised by a suitably qualified tree person.
5.10 Pruning of dead, diseased or damaged branches should be carried out as appropriate to promote healthy growth and natural shape, and to favour a single central leading shoot.
5.11 Arisings from tree works will, where practical, be used to create dead wood piles within or adjacent to hedgerows or chipped to provide mulch for use in amenity planting areas. Alternatively, they will be removed from site.

## Specimen Tree Planting Species List

| Acer campestre | Field maple |
| :--- | :--- |
| Acer campestre 'Elsrijk"' | Field Maple 'Elsrijk' |
| Acer campestre 'Streetwise' | Field maple 'Streetwise' |
| Alnus glutinosa | Common Alder |
| Amelanchier larmarkii | Snowy Mesipilus |
| Betula nigra | River Blrch |
| Betula pendula | Silver Birch |
| Carpinus betulus 'Frans Fontaine' | Hornbeam 'Frans Fontaine' |
| Crataegus monogyna | Common Hawthorn |
| Malus Tschonoskii | Crab Apple |
| Prunus 'Spire' | Flowering Cherry 'Spire' |
| Prunus sargentii 'Rancho' | Sargent Cherry 'Rancho' |
| Pyrus calleryana 'Chanticleer' | Chanticleer Pear |
| Quercus ilex | Holly Oak |
| Quercus Robur | Common Oak |
| Quercus rubra | Northern Red Oak |
| Salix fragilis | Crack Willow |
| Sorbus aria | Whitebeam |
| Sorbus aucuparia | European Mountain Ash |

## Proposed Meadow Grassland

5.12 The Emorsgate EM3 special general purpose meadow mixture (or an equal and approved mix) is to be sown in the western section of the site as well as small areas in the south and south-east of the site in association with the proposed attenuation features as detailed in the landscape proposals. It includes the species shown below that are suited to a range of soil types and are typical of good quality semi-improved grassland found in traditional wildflower meadows.
5.13 The Emorsgate EH1 hedgerow mixture (or an equal and approved mix) is to be sown alongside the existing hedgerow on the northern boundary of the site as detailed in the landscape proposals. It includes the species shown below that are suited to a range of soil types and are typical of good quality semi-improved grassland found in traditional wildflower meadows.
5.14 These grassland habitats will provide suitable habitat for a wide range of invertebrates, enhancing the foraging opportunities along this linear feature for bats. The combination of flower seed heads and invertebrates will also be beneficial for birds and badgers which are known to be active in the local area. The meadow grassland habitats sown in association with proposed hedgerow and woodland planting will provide suitable and varied foraging habitat for this species.

| Emorsgate EM3 Special General Purpose Meadow Mixture Species List |  |  |
| :--- | :--- | :--- |
| 20\% Wildflowers |  |  |
| TBD | Agrimonia eupatoria | Agrimony |
| TBD | Anthyllis vulneraria | Kidney Vetch |
| TBD | Carex flacca | Glaucous Sedge |
| TBD | Centaurea scabiosa | Greater Knapweed |
| TBD | Chaerophyllum temulum | Rough Chervil |
| TBD | Daucus carota | Wild Carrot |
| TBD | Filipendula ulmaria | Meadowsweet |
| TBD | Filipendula vulgaris | Dropwort |
| TBD | Galium verum | Lady's Bedstraw |
| TBD | Knautia arvensis | Field Scabious |
| TBD | Leucanthemum vulgare | Oxeye Daisy |
| TBD | Lotus corniculatus | Common Bird's-foot Trefoil |
| TBD | Malva moschata | Mibwort Plantain |
| TBD | Plantago lanceolata | Cowslip |
| TBD | Primula veris | Meadow Buttercup |
| TBD | Ranunculus acris | Yellow Rattle |
| TBD | Rhinanthus minor | Sheep's Sorrel |
| TBD | Rumex acetosella |  |


| TBD | Scabiosa columbaria |
| :--- | :--- |
| TBD | Silene latifolia |
| TBD | Trifolium pratense |
| $\mathbf{8 0 \%}$ Grasses: |  |
| 8 | Agrostis capillaris |
| 32 | Cynosurus cristatus |
| $\mathbf{2 4}$ | Festuca rubra |
| 16 | Poa pratensis |
|  |  |
| Hedgerow Mixture Species Lis |  |

## 20\% Wildflowers

TBD Agrimonia eupatoria
TBD Alliaria petiolata
TBD Arctium minus
TBD Anthriscus sylvestris
TBD Carex echinata
TBD Centaurea nigra
TBD Chaerophyllum temulum
TBD Cruciata laevipes
TBD Daucus carota
TBD Dispsacus fullonum
TBD Filipendula ulmaria
TBD Galium album
TBD Geranium pratense
TBD Leucanthemum vulgare
TBD Origanum vulgare
TBD Primula veris
TBD Rumex acetosa
TBD Saponaria officinalis
TBD Silene dioica
TBD Silene vulgaris
TBD Torilis japonica
TBD Vivia cracca
80\% Grasses:
TBD Agrostis capillaris
TBD Anthoxanthum odoratum

Small Scabious<br>White Campion<br>Wild Red Clover

Common Bent
Crested Dog's-tail
Red fescue
Smooth-stalked Meadow-grass

Agrimony
Garlic Mustard
Lesser Burdock
Cow Parsley
Star Sedge
Common Knapweed
Rough Chervil
Crosswort
Wild Carrot
Wild Teasel
Meadowsweet
Hedge Bedstraw
Meadow Crane's-bill
Oxeye Daisy
Wild Marjoram
Cowslip
Common Sorrel
Soapwort
Red Campion
Bladder Campion
Upright Hedge-parsley
Tufted Vetch

Common Bent
Sweet Vernal-grass

| TBD | Brachypodium sylvaticum | False Brome |
| :--- | :--- | :--- |
| TBD | Cynosurus cristatus | Crested Dog's-tail |
| TBD | Deschampsia cespitosa | Tudter Hair-grass |
| TBD | Festuca rubra | Red fescue |
| TBD | Poa nemoralis | Wood Meadow-grass |

## Creation and Management

5.15 Areas to be sown will be first rotovated and raked or harrowed to produce a medium fine, firm tilth. Fertiliser will not be applied at any point as this will lead to dominance of nutrient loving species such as broad-leaved grasses, nettles and docks. The seed mix will be sown at a density as per the general manufacturer's recommendation $(4 \mathrm{~g} / \mathrm{m} 2)$ to allow space for each species to establish and to produce good ground cover.
5.16 Seed will be sown in the autumn or spring, selecting a time when the soil is moist and can be worked. Seeding will be sown by hand broadcasting, seed fiddle, spinner, hydra seeding or grass seed drill on the surface and will not be raked or harrowed in.
5.17 Newly seeded areas will be protected to prevent seedling destruction by pedestrians.
5.18 Cutting the sward on a rotational basis will ensure that a continuous supply of nectar and seeds for local fauna are available across the site and floristic diversity is maintained. The different sward lengths will provide habitat diversity of interest to a range of local fauna including invertebrates, butterflies and small mammals.
5.19 All litter, stones or other debris will be collected and removed by the Contractor immediately prior to grass cutting operations.
5.20 All arisings will be left in situ for 48 hours to allow appropriate time for seeds to fall and any invertebrates to move back into the sward.
5.21 Arisings will then be removed to prevent enrichment of the soil through decomposition. This is likely to be achieved through bailing. Arisings removed from meadow grassland will be placed in piles not adjacent to public access routes or waterways to provide microhabitat for amphibians, invertebrates and small mammals.
5.22 Unwanted perennial weeds may need control by occasional spot treatment with herbicide.
5.23 Further details of the management regime are provided in Section 6 of this report.

## Native Scrub Planting

5.24 A small area of scrub will be located on the south-western boundary of the site. Scrub should be planted between October and March, avoiding periods of inundation or prolonged ground frost.
5.25 Weeds can be controlled around the bases of trees and shrubs using non-residual herbicide during establishment. The use of herbicides will be avoided thereafter.
5.26 Following establishment, planting will be managed through coppicing on a three-year rotation with no more than $1 / 3^{\text {rd }}$ of the overall resource cut each rotation. Dead wood will be retained within the site, except where there is a risk of significant disease.
5.27 Any failures will be replaced in the next planting season.

Scrub species will comprise the following:

| Native Scrub Planting Species List | \% of Mixture |  |
| :--- | :--- | :--- |
| Alnus glutinosa | Common Alder | 5 |
| Cornus sanguinea | Common Dogwood | 25 |
| Corylus avellana | Hazel | 20 |
| Prunus spinosa | Blackthorn | 20 |
| Salix caprea | Goat Willow | 15 |
| Salix cinerea | Grey Willow | 15 |

## Attenuation Features

5.29 Six new attenuation facilities will be created within the GI, one of which will be located on the western boundary of the site, three are located centrally within the site and the remaining two on the eastern boundary of the site. Design will be undertaken which will contribute towards biodiversity objectives. The attenuation features will be designed to hold some water throughout the year, with more extensive areas becoming seasonally wet during periods of increased rainfall.
5.30 The botanical diversity will provide foraging opportunities for a range of invertebrate species which will in turn provide opportunities for bird, bat and amphibian species with the attenuation features proposed to be seeded with a wetland wildflower meadow grassland (Emorsgate EM8 Meadow Mix for Wetlands (or similar approved)). These attenuation features will be bordered by grassland areas which will serve to increase the structural diversity of habitats whilst foraging opportunities for the local badger populations.

| Marginal Vegetation Planting Species List | \% of Mixture |  |
| :--- | :--- | :--- |
| Cardamine pratensis | Cuckoo Flower | 20 |
| Carex pseudocyperus | Cyperus Sedge | 10 |
| Carex riparia | Greater Pond Sedge | 10 |
| Iris pseudacorus | Yellow iris | 20 |
| Lychnis flos-cuculi | Ragged Robin | 15 |
| Lythrum salicaria | Purple loosestrife | 10 |
| Persicaria amphibia | Amphibius Bistort | 15 |

## Creation and Management

5.31 To ensure successful colonisation of the different seed mixes used, marginal vegetation should not be seeded if the water levels are too high. Factors to consider when seeding these mixes include:

- Sow in still wind conditions and bulk the seed with sand to make sowing easier
- Ensure soil is saturated but not flooded.
- Avoid sowing in low points or depressions.
- Sow during April or May when daytime temperatures are in the range $10-25^{\circ} \mathrm{C}$ and nights are frost free.
- For bankside vegetation and large marginal species sow $20-125$ viable seeds per square metre.
- Do not apply any fertiliser or topsoil dressing.
5.32 Marginal and emergent plants may be best introduced as young plants or cuttings if water levels are too high for effective seeding. Where introducing plants in this way the following factors will be taken into consideration:
- Pot grown plants or plugs will be planted out in April or May when frosts have passed.
- Plants can be obtained from a reputable supplier or can be grown in advance from seeds or cuttings. All material will be locally sourced.
- Many wetland plants (e.g. reeds) spread via rhizomes and can be planted by transplanting the rhizomes.
- Rhizomes will be dug out and transplanted in November to February. Care must be taken to avoid drying out.
- Avoid incidental introduction of invasive non-native species with imported material.
- Do not apply any fertiliser or introduce topsoil.
5.33 In addition, the following recommendations should be applied to the creation of all habitats within the proposed attenuation features:
- Clearance operations will be carried out between September-November avoiding the egglaying/breeding season of amphibian and reptile season
- Arisings will be left on pond margins for two weeks to allow invertebrates to move out of the vegetation, prior to removal
- Cut tree/scrub branches to be retained as brash piles in suitable locations as faunal habitat


## Objective 3: Management and Enhancement for Wildlife

5.34 The scheme will incorporate areas of visually attractive meadow grassland, short sward/amenity grassland, trees, scrub and ground flora.
5.35 Litter and dog waste bins will be provided at appropriate locations throughout the site and litter will be regularly collected and removed to avoid harm to wildlife or encouragement of pests.

## Bird Boxes and Bat Boxes

5.36 A range of bat boxes will be used to provide various roosting opportunities across a range of environmental conditions for use throughout the year including during the hibernation period.

Bat boxes will be attached to retained trees throughout the site. The trees used will be determined by an ecologist on-site to ensure that the positioning of the bat boxes minimises potential disturbance to the new roosting habitat in relation to surrounding land use and maximises their potential for use by bats.
5.38 The bat boxes for installation on trees within the woodland in the north-west of the site will comprise four Schwegler 2F boxes (or similar), which are suitable for smaller British bats such as pipistrelle

Pipistrellus sp, and four Schwegler 2FN (or similar), suitable for larger British bats such as noctule Nyctalus noctule with three bat boxes installed per tree.
5.40 Bird boxes would be installed at least 4 m from the ground, on the north and east aspect of trees, thus avoiding strong sunlight and wet winds and with a clear flight path to the box.
5.41 The boxes should ideally be installed between October and March, when there are the least number of leaves on the trees and suitable locations are easier to identify. Any necessary remedial works to these trees should be completed prior to installation. It is proposed that three Schwegler 1B Nest boxes ( 32 mm hole) (or similar) are installed on a retained tree to provide nesting opportunities for species such as blue tit Cyanistes caeruleus and great tit Parus major. These boxes generally have a high uptake rate.
5.42 The boxes should ideally be installed between October and March, when there are the least number of leaves on the trees and suitable locations are easier to identify. Any necessary remedial works to these trees should be completed prior to installation. The following boxes and quantities are suggested for within the woodland in the north-west of the site:

- $3 \times 1$ B Schwegler Nest Box (of similar ( 26 mm Hole)
- $3 \times 1$ B Schwegler Nest Box (of similar (32mm Hole)
- $3 \times$ Woodstone Barcelona Open Nest Box
5.43 The installation of bat and bird boxes will be overseen by an appropriately experienced ecologist to ensure that the most suitable locations are chosen.


## Artificial Lighting

5.44 Illumination either of external lighting or light spill from the development may impact on bats commuting and foraging along retained hedgerows, mature trees and associated periphery habitats. The lighting and layout of the proposed development will be designed to minimise lightspill onto habitats both within and adjacent to it that are used by the local bat population. This will be achieved by ensuring that the design of lighting is based upon guidelines presented in the Bat Conservation Trust \& Institute of Lighting Engineers 'Bats and Lighting in the UK - Bats and Built Environment Series', the Bat Conservation Trust 'Artificial Lighting and Wildlife Interim Guidance' and the Bat Conservation Trust 'Statement on the impact and design of artificial light on bats'. Therefore, the lighting scheme will include the following:

- The strategic use of landscaping and planting to avoid light spill on sensitive habitats;
- The avoidance of direct lighting of existing trees and hedgerows or proposed areas of habitat creation/landscape planting;
- Unnecessary light spill will be controlled through a combination of directional lighting, low lighting columns, hooded/shielded luminaires or strategic planting;
- All new column mounted car park luminaires shall be fitted with flat glass where appropriate to aid 0\% upward light discharge;
- Where appropriate, luminaires on the site boundary will be fitted with light baffles to prevent light spill.


## Deadwood Refugia

5.45 Artificial hibernacula suitable for reptiles, small mammals, hedgehogs, invertebrates and amphibians will be created within areas of longer grassland adjacent to the SuDS features. These will comprise piles of wooden logs of varied size and structure which will be constructed to be 23 m high, $2-3 \mathrm{~m}$ in width and 1-2m deep and should be sited away from public footpaths and other high use areas or areas that are lit by street lighting.

### 6.0 LANDSCAPE AND ECOLOGICAL MANAGEMENT

6.1 The following section outlines the works programme and management regime.

Table 1: Proposed Rolling Ten Year Work Programme

| Prescriptions | Years with Priority |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Species-rich Grassland |  |  |  |  |  |  |  |  |  |  |
| The Contractor will protect newly seeded areas where appropriate to prevent seedling destruction by pedestrians. Fertiliser will not be applied at any point. | $\checkmark$ |  |  |  |  |  |  |  |  |  |
| Following establishment grassland will be mown on a rotational basis with areas being either mown twice annually in early spring (March) and late summer (late August-September) OR once during either early spring or late summer. Arisings will be left for 48 hours to allow dispersal of seeds and invertebrates prior to removal, to encourage grassland establishment and prevent soil enrichment and thatching. |  | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |
| Grassland adjacent to hedgerows and woodland/plantation habitat will be cut once on alternate years with some ruderal species being allowed to colonise for further species and habitat diversity. Arisings will be left for 48 hours to allow dispersal of seeds and invertebrates prior to removal, to encourage grassland establishment and prevent soil enrichment and thatching. | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |
| All litter, stones or other debris will be collected and removed by the Contractor immediately prior to grass cutting operations. Care shall be exercised when mowing or strimming around trees and hedges or other structures. | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |
| Spot treat persistent pernicious weeds using herbicide following the first season's growth and/or manual hand strimming of target areas either in late summer when adjacent grassland is mown or in early spring. Care will be taken when using herbicide adjacent to riparian and aquatic habitats to prevent pollution of such habitats. | As required |  |  |  |  |  |  |  |  |  |
| Scrub |  |  |  |  |  |  |  |  |  |  |
| Selective thinning of poor-quality specimens as necessary | $\checkmark$ |  |  |  | $\checkmark$ |  |  |  |  | $\checkmark$ |


| Prescriptions | Years with Priority |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Invasive tree species management |  | $\checkmark$ |  |  |  | $\checkmark$ |  |  |  |  |
| Bramble/ivy control as necessary. | $\checkmark$ |  | $\checkmark$ |  | $\checkmark$ |  | $\checkmark$ |  | $\checkmark$ |  |
| Introduce coppicing where appropriate with rotational management |  |  |  |  | $\checkmark$ |  |  |  |  | $\checkmark$ |
| Monitor tree condition and undertake remedial works as necessary | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |
| Create and maintain dead wood habitat | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |




| Prescriptions | Years with Priority |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Log/brash piles to be created by habitat management arisings | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |
| Litter will be removed from the site as part of the general management and maintenance visits. | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |
| Litter bins and dog bins will be emptied at regular intervals to be determined based upon the level of use. | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |
| Arboricultural visual inspection, as part of the tree safety risk assessment for the development. | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |
| Monitor Landscaping and habitats annually and use results to inform future management for coming years. Results of this monitoring should be used to inform annual changes to the management plan, and at the end of the ten-year rolling work programme. | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |
| Attenuation Features |  |  |  |  |  |  |  |  |  |  |
| Scrub and invasive weed encroachment management | $\checkmark$ |  | $\checkmark$ |  |  |  | $\checkmark$ |  |  |  |
| Pond clearance | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |

### 7.0 MONITOR AND MANAGE THE SITE FOR BIODIVERSITY IN THE LONG-TERM

## Objective 4: Monitor Developments and Allow Flexibility to the Management Approach

7.1 In order to ensure that the habitats created within the site reach and maintain their maximum value to nature conservation, all habitats will be monitored every year.
7.2 Results of this monitoring will be used to inform changes to the management plan and ten-year work programme. The prescriptions provided here will not be set in stone and will be altered if required in agreement with the LPA. The management plan will be reviewed on a ten-year rolling basis, with the work programme fully reviewed at the end of the initial five-year period by those members of staff involved in site management.

## Appendix A - Detailed Landscape Proposals




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Wykham Park Road Banbury Proposals Landscape Prawing Ref: P21-2662_102


|  | PLANT SCHEDULE continued．．． <br> PROPOSED LAWN TURF lor similar approved） MIX NAME SEEDIX SUPPLIER AREA Medolion Turf Rolawn Limited $\quad \mathbf{2 8 8 3 . 1 6 5 m ^ { 2 }}$ |
| :---: | :---: |
| － | And |
|  |  |
|  |  |
|  | PROPOSED HEDGEROW EDGE MEADOW MIX（or similar approved） MIX SEED MX SUPPLIER AREA EH1 $\quad$ DENSITY EHEDGEROW MIXTURE Emorsgate Seeds $133.4728 \mathrm{~m}^{2} 4 \mathrm{~g} / \mathrm{m}^{2}$ |


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[^0]:    ${ }^{1}$ Gallagher Estates, 2014. Land at Wykham Park Farm, Banbury. Environmental Statement
    ${ }^{2}$ FPCR, 2022, Oakley Grove Phase 3, Royal Leamington Spa, Warwickshire - Ecological Appraisal

[^1]:    ${ }^{3}$ Wardell Armstrong, 2014. Wykham Park Farm - Tree Protection Plan

[^2]:    

